

Preliminary Site Investigation and Geotechnical Investigation

106 Anambah Road, Anambah, NSW

Prepared for: Stevens Holdings Pty Ltd

EP0454 27 February 2017

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EP RISK

Preliminary Site Investigation and Geotechnical Investigation

106 Anambah Road, Anambah, NSW

Stevens Holdings Pty Ltd
PO Box 3171
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27 February 2017

Our Ref: EP0454

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Executive Summary

This report presents the findings of a Preliminary Site Investigation ('PSI') and Geotechnical Investigation ('GI') undertaken at a property located at lot 90 in DP785244, Anambah Road, Anambah, NSW ('the Site'). The Site comprised of a large vacant, agricultural plot of land approximately 22.84 ha in size. The Site was proposed to be redeveloped into a low density residential development consisting of 33 residential lots ranging in size between 542 m^2 to 1,033 m^2 and associated roadways. An additional Lot 34 was proposed to be created in the eastern portion of the Site, approximately 1.9 ha in size to accommodate the current residential dwelling, livestock yards and machinery shed.

The PSI was commissioned by Stevens Holdings Pty Ltd to assess the potential for contamination associated with historical use of the Site in accordance with the decision process for land use changes outlined in State Environmental Planning Policy ('SEPP') 55.

The Geotechnical Investigation ('GI') was commissioned to assess the occurrence and mitigating measures for acid sulfate soils, salinity, preliminary site soil classification, instability and erosion having regard to the development of the Site and stormwater management along with preliminary pavement design.

The investigations were limited to the part of the Site where the residential development was proposed ('Developable Portion').

Fieldwork Observations and Site Condition

The Site was observed to be an operational farm, used for livestock grazing. All the livestock, except for one horse have been removed from the Site in preparation for the proposed redevelopment. Several structures were observed at the Site which include a residential dwelling, machinery shed, hay shed, fencing, livestock watering troughs and associated pipework. A stockpile of soil and anthropogenic material was observed in the eastern portion. Two large water bodies were located in the eastern portion and a smaller dam in the western portion. A Hunter Water Pumping Station was observed in the southern portion of the Site outside the Developable Portion.

Fieldwork investigations identified soils at the Site to comprise of topsoil overlying residual clays to the maximum investigation depth of 3 metres below ground surface ('mBGS'). Bedrock or groundwater was not encountered to the maximum extent of the investigation. No staining, hydrocarbon odours or elevated volatile organic compound readings were observed in soil during fieldwork investigations. Fieldwork investigations comprised of the collection of soil samples from 18 locations from across the Developable Portion.

Summary of Site History Review

In summary, the history of the Site is as follows:

- The Site has been previously utilised as agricultural purposes for at least the past 60 years.
- Historical aerial photography showed a residential dwelling located in the western portion of the Site since prior to 1976.

Potentially Contaminating Activities

The potentially contaminating activities within the Developable Portion identified in the site history review included the following:

- Agricultural land use; and
- Potential imported fill in the eastern portion of the Developable Portion.

The potential contaminating activities within proposed Lot 34 include:

- The operation of a septic system and effluent disposal area; and
- the operation of a machinery shed.

Potential human and ecological receptors

Potential human and ecological receptors were considered to be:

- Site workers and residents.
- Residents occupying properties to the south and east.
- Recreational users of the two water bodies, dam, lagoon and Hunter River.
- Users of licensed groundwater bores in the vicinity of the Site.
- Terrestrial and aquatic flora and fauna at the Site.
- Terrestrial and aquatic flora and fauna on adjacent land and within the lagoon and the Hunter River to the north of the Site.
- Future construction workers, sub-surface maintenance workers.
- Future residents.

Results of Analytical Soil Testing

All soil samples analysed reported concentrations of the contaminants of potential concern ('COPC') below the adopted criteria, with the exception of the following:

- Elevated levels of E. coli at SS1 were recorded in a location suspected to be an effluent disposal area within proposed Lot 34.

The results of acid sulfate soil and salinity testing reported the following:

- All soil samples taken did not indicate the presence of potential acid sulfate soils.
- All samples tested for Electrical Conductivity indicated non-saline soils.

Results of Geotechnical Investigation

Investigation across the Site indicated the subsurface profile comprised of relatively thick topsoil (≤0.5m), overlying a, medium to high plasticity generally stiff or better clay profile (≥ 2.5m).

Laboratory testing indicated that the soil on Site are "Type D" when assessed in accordance with the Blue Book and are Emerson Class 4. The surficial soils were highly erodible, with the subsoil being high reactivity and relatively low strength. The topsoils were considered moisture sensitive and would pose trafficability issues during wet periods. The underlying silty clays were highly reactive with shrink swell index ('Iss') values of 4.6% to 6.2% for the samples tested and were of relatively low strength with CBR in the range of 2% to 4.5% obtained at assumed subgrade level.

The site clays were generally stiff however firm moist clays were encountered in TP05, TP06 and TP08 at around 0.6m -0.9m considered associated with perching of groundwater at a less permeable layer. The issue will likely be resolved during the installation of inground services when subsurface drainage is provided. Densification by rolling the surface following installation of drainage should improve consistency.

Conclusion and Recommendations

The Site history review indicated that the Site has been previously utilised for agricultural purposes. Historical aerial photography shows minimal demolition of buildings.

The results of the acid sulfate soil and salinity testing showed that the soils were non-saline and did not indicate a risk of potential acid sulfate soils.

Based on the site history review and the results from the analytical testing, the Developable Portion of the Site, with the exception of the onsite effluent disposal area in proposed Lot 34, was considered to contain a low risk of contamination associated with historical agricultural land use, subject to the following recommendations:

- All anthropogenic materials should be removed from the Developable Portion to the extent practicable.
- An unexpected finds protocol is developed for the construction phase of the Proposed Development.
- A hazardous materials assessment of any buildings proposed to be demolished during construction of the Proposed Development is undertaken prior to demolition.

It is understood that the existing residential dwelling and septic system in proposed Lot 34 of the Developable Portion is to remain and this lot will not be redeveloped. The effluent disposal area in Lot 34 should be extended or redesigned to accommodate actual on-site waste water loading in order to reduce water logging of surface soils. Should the septic system be decommissioned, then impacted soils should be remediated in accordance with a Remediation Action Plan.

The recommended site classification was Class H2- Highly Reactive in its current state. Any proposed cutting or filling during development may alter the site classification increasing the site classification

to Class E. Where filling is proposed, low reactivity material should be imported. All footings should be founded below the topsoil in the stiff or better natural clay profile or controlled fill.

Some lower strength (firm) material was encountered at a depth a depth of 0.6 mBGS in TP's 05, 06 and 08 believed associated with perching of water at the interface of lower permeable material and localised softening. These issues will likely be resolved during development with installation of inground services and subsoil drainage.

Uncontrolled fill stockpiles (anthropogenic material) located on proposed lots 32 and 33 will need to be removed and can potentially be used as fill in the road alignment.

Pavement designs are presented in Tables 21 and 22 and reflect both bound and unbound granular design compositions based on a design CBR of 2%. The Unbound Design is recommended with provision of a 300mm minimum CBR 15% Select layer allowed for in costings. The select layer is likely to be required where wet weather precedes or is encountered during development.

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1 Introduction

1.1 Overview

EP Risk Management Pty Ltd ('EP Risk') was engaged by Stevens Holdings Pty Ltd ('Stevens') to undertake a Preliminary Site Investigation ('PSI') and Geotechnical Investigation ('GI') at a property located at Lot 90 in Deposited Plan ('DP') 785244 Anambah Road, Anambah, NSW ('the Site'). The Site has formerly been used for agricultural purposes and contains a residential dwelling.

The Site was proposed to be redeveloped into a low-density residential development consisting of 34 lots and associated roadway.

The investigations were limited to the portion of the Site where the residential development was proposed ('Developable Portion').

1.2 Objectives and Scope

PSI

It was considered that the specific objective of the PSI was to determine the risk of contamination (if any) from historical activities undertaken at the Site in relation to the proposed residential land use and to satisfy the decision process for land use changes outlined in State Environmental Planning Policy No. 55 – Remediation of Land ('SEPP 55').

The scope of work completed to achieve those objectives included:

- Inspect the Site to observe onsite and offsite conditions;
- undertake a desktop review of available historical information; and
- prepare a PSI report in accordance with the OEH (2011) Contaminated Sites, Guidelines for Consultants reporting on Contaminated Sites.

Geotechnical Investigation

The purpose of the GI was to assess the occurrence and mitigating measures for acid sulfate soils, salinity, instability and erosion potential, preliminary site soil classification having regard to the development of the Site and stormwater management. Preliminary site soil classification and pavement design were also undertaken as part of the GI.

The scope of work undertaken included:

- Inspection of the site to observe onsite and offsite condition;
- undertake subsurface investigation;
- laboratory testing of representative samples; and
- preparation of geotechnical report.

1.3 Site Identification

The Site Identification details are presented in **Table 1.**

Table 1 – Site Identification	
Item	**Description**
Site Address	106 Anambah Road, Anambah, NSW (**Figure 1**)
Legal Description	Lot 90 DP 785244 (**Figure 1**).
Approximate Site Area	22.84 ha[1]
Municipality	Maitland City Council (Council)
Site Zoning	The Maitland Local Environment Plan 2011 (LEP) identified the land as **RU2 Rural Landscape**

[1] Based upon the survey drawings attached as **Appendix A**.

2 Methodology

The PSI was conducted in general accordance with the following:

- Australia and New Zealand Environment and Conservation Council and Agriculture and Resource Management Council of Australia and New Zealand (2000), Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000 ('ANZECC 2000').
- National Environment Protection Council (2013), National Environment Protection (Assessment of Site Contamination) Measure, 1999 ('ASC NEPM 2013').
- Department of Environment and Conservation (NSW) (2005) Guidelines for Assessing Former Orchards and Market Gardens ('DEC 2005').
- Department of Urban Affairs and Planning (1998) Managing Land Contamination, Planning Guidelines - State Environmental Planning Policy No. 55 - Remediation of Land ('SEPP 55').
- Office of Environment and Heritage (2011) Contaminated Sites, Guidelines for Consultants reporting on Contaminated Sites ('OEH 2011').
- Department of Environment and Conservation (2007), Guidelines for the Assessment and Management of Groundwater Contamination ('DEC 2007').

The GI was undertaken in general accordance with the following:

- Subsurface investigation was generally undertaken in accordance with AS1726 -1993, Geotechnical Site Investigation with the excavation of twelve test pits to assess the subsurface profile.
- Laboratory testing was undertaken by NATA endorsed facilities.
- Site classification was in general accordance with AS2879-2011, Residential Slabs and footing.
- The Geotechnical Report was undertaken with regard to Maitland City Council's Manual of Engineering Standards (MoES) 2014.

3 Site Condition and Surrounding Environment

The majority of information provided in the following sections was obtained from Lotsearch Environmental Risk and Planning Report (2017), provided as **Appendix B**.

3.1 Proposed Land Use

The proposed land use at the Site can be split into three separate areas as follows:

1. The northern portion consisting of flood prone land ('Undevelopable Portion');
2. The portion where redevelopment to residential land use is proposed ('Developable Portion'); and
3. Proposed Lot 34 which contains the current residential dwelling ('Proposed Lot 34').

The proposed redevelopment within the Developable Portion consisted of a residential subdivision with 33 residential lots ranging in size between 542 m^2 to 1,033 m^2 and associated roadways. An additional Lot 34 was proposed in the eastern portion of the Site approximately 1.9 ha in size to accommodate the current residential dwelling, livestock yards and machinery shed. A copy of the plans of the proposed development are attached as **Appendix E**.

3.2 Current Land Use and Layout

The Site currently comprised of a large single lot with a residential dwelling and agricultural infrastructure. EP Risk undertook a Site inspection on 19 January comprising of a Site walkover and visual assessment. The general Site features and infrastructure observed during the inspection are presented in **Figure 2** and the detailed Site survey plan attached as **Appendix A**. Infrastructure observed during the Site inspection is summarised below with the Site photos attached as **Appendix D.**

Developable Portion

- Cleared, fenced, agricultural land with livestock watering troughs and associated pumps and pipework.
- Large hay shed.

Proposed Lot 34

- Residential dwelling in the western corner of the Site, with an on-site disposal wastewater treatment system.
- Machinery shed and livestock yards including a livestock loading ramp.

Undevelopable Portion

- Cleared, fenced, agricultural land with livestock watering troughs and associated pumps and pipework.
- Dam located in the north-east corner of the property.
- Two large water bodies located on the eastern boundary.

- Hunter Water sewer pumping station in the south-eastern portion.

3.3 Surrounding Land Use

The Site is located on Anambah Road just north of Niven Parade and is surrounded by residential and rural land. As of the 20 January 2017, surrounding land use comprised of the following:

To the North

- Rural properties.
- Lagoon and the Hunter River.

To the South

- Low density residential properties, with the former Anambah Road Landfill and commercial / industrial properties beyond.

To the East

- Mix of open space and low density residential properties.

To the West

- Anambah Road, rural land and Maitland Airport beyond.

3.4 Topography and Drainage

The Developable Portion of the Site was located on a topographical high with an approximate elevation of 20 meters above the Australian Height Datum ('mAHD'). The Undevelopable Portion of the Site slopes down to the north and east toward the two large water bodies located at approximately 10 mAHD. Site drainage is expected to follow the topography of the Site. The Topographical contours are presented within the Lotsearch (2017) report as **Appendix B**.

3.5 Geology

With reference to the Newcastle 1:100,000 Geological Series Sheet 9231, the Site is underlain by Rutherford Formation of the Dalwood Group consisting of siltstone, Marl and Minor Sandstone.

3.6 Soil Landscapes

With reference to the Lotsearch (2017) report, onsite soil landscapes have been identified as being predominately Wallalong Transferral. Soil landscapes with 1 km of the Site consist of Bolwarra Heights Erosionals to the east and Patterson River Alluvials to the north.

3.7 Dryland Salinity

High risk of Dryland Salinity was identified on-site, results of the salinity of the soils is presented in **Section 9**.

3.8 Hydrogeology

Ten registered groundwater bores were identified to be located with 2 km of the Site. Six out of the ten bores were used for monitoring purposes, one was a test bore with the remaining two used for domestic purposes. Depth of bores mostly ranged from 5 to 9 meters below ground surface ('mBGS') with the two domestic bores reaching around 20-25 metres deep each. Standing water levels ('SWLs') for three of the bores measured around 8.5 mBGS. In general, porous, extensive highly productive aquifers were identified at the majority of locations. A summary of the wells is shown in **Table 2**.

Table 2– Summary of Groundwater data within 2 km of the Site

Bore ID	Purpose	Bore Depth (mBGS)	Water Bearing Zone (mBGS)	Standing Water Level (mBGS)	Yield (L/sec)	Distance and Direction from Site
GW201981	Monitoring	10.5	8.7-10.5	8.7		774 m south
GW201982	Monitoring	9.4	8.7-9.4	8.7		806 m south
GW201980	Monitoring	10.0	8.35-10.0	8.35		907 m south
GW027289		5.5				1265 m west
GW202693	Monitoring	7.5				1866 m south east
GW202692	Monitoring	9.0				1870 m south east
GW201738	Domestic, Stock, Irrigation	80.0	20-80	20	1	1875 m north east
GW202694	Monitoring	6.5				1894 m south east
GW080337	Test Bore					1903 m north
GW202923	Domestic, Stock	78	26-78	26	0.89	1983 m east

The full reports obtained from the NSW Office of Water are attached as **Appendix I.**

3.9 Acid Sulfate Soils

With reference to the CSIRO National Acid Sulfate Soil Database, the Site is located within an area of no known occurrence of acid sulfate soils. In relation to the Maitland LEP (2011) the Site is located in an Acid Sulfate Soils Class 5, which requires Development Consent for Works within 500 metres of adjacent Class 1, 2, 3 or 4 land that is below 5 mAHD and by which is likely to lower the water table below one mAHD on adjacent Class 1, 2, 3 or 4 land.

3.10 Mining Subsidence

No Mining Subsidence Districts have been identified within 1 km of the Site.

3.11 Coastal Protection Act 1979

The Site is not subject to the operation of section 38 or 39 of the Coastal Protection Act 1979.

3.12 Biodiversity Certified Land

The Site is not identified as biodiversity certified land within the meaning of part 7AA of the Threatened Species Conservation Act 1995.

3.13 Ecological Constraints

A summary of the ecological constraints found on the Site is presented in **Table 3**.

Table 3 – Ecological Constraints

Description	Species	Distance	Direction
Alluvial Tall Moist Forest	E. Saligna/ S. Glomulifera/ Glochidion Ferdinandi	0 m	Onsite
Lower Hunter Spotted Gum – Ironbark Forest	C.Maculata / E. Fibrosa / E. Punctata	0 m	Onsite
Hunter Lowland Redgum Forest	E. Tereticornis / E. Punctata / E. Crebra / A. Floribunda / C. Maculata	89 m	East
Lower Hunter Spotted Gum – Ironbark Forest	C.Maculata / E. Fibrosa / E. Punctata	297 m	South west
Alluvial Tall Moist Forest	E. Saligna/ S. Glomulifera/ Glochidion Ferdinandi	400 m	North east
Hunter Lowland Redgum Forest	E. Tereticornis / E. Punctata / E. Crebra / A. Floribunda / C. Maculata	421 m	East
Lower Hunter Spotted Gum – Ironbark Forest	C.Maculata / E. Fibrosa / E. Punctata	429 m	West
Alluvial Tall Moist Forest	E. Saligna/ S. Glomulifera/ Glochidion Ferdinandi	589 m	North west

3.14 Biobanking Agreement

Under Part 7A of the Threatened Species Conservation Act 1995, the land is not the subject of a biobanking agreement.

3.15 Contaminated Land

The Contaminated Land Management Act 1979 is not applicable to the land.

3.16 State Environmental Planning Policy Protected Areas

No State Environmental Planning Policy ('SEPP') protected area has been identified at the Site or within 1 km of the Site.

3.17 State Environmental Planning Policy Major Developments

A summary of the State Environmental Planning Policy Major developments within 1 km of the Site are provided in **Table 4.**

Table 4 – State Environmental Planning Policy Major Developments

Map ID	Feature	Effective Date	Distance from Site
62918	Qld Hunter Gas Pipeline	13/06/2008	82 m North West

3.18 State Environmental Planning Policy Strategic Land Use Area

A summary of the State Environmental Planning Policy Strategic Land use areas within 1 km of the Site are provided in **Table 5.**

Table 5 – State Environmental Planning Policy Strategic Land Use Areas

Strategic Land Use	SEPP No.	Effective Date	Distance from Site
Biophysical Strategic Agricultural Land	2007	28/01/2014	Within the Undevelopable Portion of the Site

3.19 Heritage Items

A summary of heritage items within 1 km of the Site are provided in **Table 6**.

Table 6 – Local Heritage Items within 1km of the Site

Name	Classification	LEP or Act	Distance	Direction
Anambah House	State	Maitland LEP 2011	626 m	North west

3.20 Contaminated Sites Notified to the NSW EPA

As of 12 January 2017, the Site was not on the New South Wales Environment Protection Authority ('NSW EPA') database for Contaminated Sites notified to the NSW EPA in accordance with the Contaminated Land Management Act, 1997. There were no records of Notifications or Notices within 1 km of the Site.

3.21 Former Gasworks

There were no records of the presence of any former gasworks facilities within 1 km of the Site.

3.22 Waste Management Facilities and UPSS Sensitive Zones

There are no records of waste management facilities within 1 km of the Site, however, a former landfill known as the Anambah Road Landfill is located 330 m to the south.

The Site is within an Underground Petroleum Storage System Sensitive ('UPSS') regulated environmentally sensitive zone.

3.23 Licensed Activities Under the POEO Act 1997

A summary of the licensed activities under the POEO Act 1997 undertaken within 1 km of the Site are provided in **Table 7**.

Table 7 – Licensed Activities Under the POEO Act 1997

EPL	Organisation	Activity	Distance from Site
10393	Maitland City Council	Application of herbicides to waterways	On-Site

3.24 Delicensed Activities Still Regulated by the NSW EPA

There were no records of delicensed activities within 1 km of the site.

3.25 Former Licensed Activities under the POEO Act, now Surrendered

Former licensed activities under the POEO Act, now surrendered identified within 1 km of the Site are provided in **Table 8**

Table 8 – Former licensed activities under the POEO Act, now surrendered

Licence No.	Organisation	Location	Activity	Distance from Site
4653	Luhrmann Environment management Pty Ltd	Waterways throughout NSW	Application of Herbicides	On-Site
4838	Robert Orchard	Waterways throughout NSW	Application of Herbicides	On-Site
6630	Sydney Weed and Pest Management Pty Ltd	Waterways throughout NSW	Application of Herbicides	On-Site

3.26 Sensitive Receptors

Current and future sensitive receptors identified at and in the vicinity of the Site are summarised as follows:

Current Sensitive Receptors

- Site workers and residents.
- Residents occupying properties to the south and east.
- Recreational users of the two water bodies, dam, lagoon and Hunter River.
- Users of licensed groundwater bores in the vicinity of the Site.
- Terrestrial and aquatic flora and fauna at the Site.

- Terrestrial and aquatic flora and fauna on adjacent land and within the lagoon and the Hunter River to the north of the Site.

Future Sensitive Receptors – Proposed Residential Land Use

In addition to the sensitive receptors identified above, the following future sensitive receptors have been identified:

- Future construction workers, sub-surface maintenance workers.
- Future residents.

4 Site History

4.1 Sources of Information

The Site history sources utilised during the review include:

- Historical aerial photography from the years: 1958, 1965, 1976, 1983, 1993, 2006 and 2010
- Historical title search

4.2 Review of Historical Aerial Photos

Aerial photographs of the Site for the years 1958, 1965, 1976, 1983, 1993, 2006 and 2010 were reviewed, and a summary is provided in **Table 9**. Copies of photos are contained within the Lotsearch report in **Appendix B**.

Table 9 – Historical Aerial Photograph Review

Year	Description
1958	**Site:** The Site is largely vacant and cleared. **Surrounds:** Surrounding land use appears to comprise of rural/agricultural lots with no residential dwellings visible.
1965	**Site:** The Site remains unchanged. **Surrounds:** No significant change has occurred.
1976	**Site:** The addition of a house on the site. **Surrounds:** Land has been cleared to the South and development is underway.
1983	**Site:** The Site remains unchanged. **Surrounds:** There has been construction of roads and dams to the South
1993	**Site:** The Site remains unchanged. **Surrounds:** First residential dwellings constructed to the South.
2006	**Site:** Construction of a Shed on the site **Surrounds:** Development to the South East of the site.
2010	**Site:** The Site remains unchanged. **Surrounds:** Roads and a few residential dwellings are present to the South. Roads and Residential properties beginning construction to the West.

The historical aerial photographic review indicated the following:

- A residential dwelling was constructed on the Site between 1965 and 1976.
- The Site appears to have been utilised for rural/agricultural purposes including the construction of a number of small sheds/buildings around the Site from 1976 until present.
- At some time between 1993 and 2006 the large hay shed in the middle of the Developable Portion was constructed.

4.3 Historical Title Search

A review of historical title information for the Site is summarised below. The historical title search information is attached as **Appendix C**.

- The Site was occupied by auctioneers, gentlemen and accountants until 1962, and then by a truck driver until 1984.
- The Site was then purchased by Christopher Harold Lucas in 1985.
- The Site was purchased by Kenneth William John Saxby and Karenne Dianne Saxby in 1989, who are the current owners to date.

4.4 Previous Environmental Investigations

No previous environmental investigation reports were available for review.

5 Potential Contaminating Activities

Based on the inspection and review of historical records, a number of activities have occurred within the Developable Portion of the Site which may have resulted in the potential for contamination. These activities are summarised as follows:

Developable Portion

- Agricultural land use.
- Potential imported fill.

Undevelopable Portion

- Agricultural land use.
- Operation of a Hunter Water Sewage Pump Station.

Proposed Lot 34

- Operation of a machinery shed.
- Operation of septic system and effluent disposal area.

6 Contaminants of Potential Concern

Based upon a review of historical information and an inspection of the Site the contaminants of potential concern ('COPC') are presented in **Table 10**. The COPC associated with the potential contaminating activities in the Undevelopable Portion have not been considered as they are outside the scope of the assessment.

Table 10– Contaminants of Potential Concern

Historical Activity	Portion of Site	Evidence	COPC
Developable Portion			
Agricultural Land Use	Entire portion	Site history and Site Inspection	Heavy metals [arsenic ('As'), cadmium ('Cd'), chromium ('Cr'), copper ('Cu'), lead ('Pb'), nickel ('Ni'), mercury ('Hg') and zinc ('Zn')], Organochlorine pesticides ('OCPs') and organophosphate pesticides ('OPPs').
Potential imported fill	Eastern portion	Site inspection	TRH, BTEX, PAH, OCP, OPP, PCB and heavy metals (As, Cd, Cr, Cu, Pb, Ni, Hg, Zn), Asbestos ID.
Proposed Lot 34			
Machinery Shed	Western portion	Site inspection	Total Recoverable Hydrocarbons ('TRH'), benzene, toluene, ethylbenzene, xylene and naphthalene ('BTEXN'), polycyclic aromatic hydrocarbons ('PAH'), organochlorine pesticides ('OCP'), polychlorinated biphenyls ('PCBs') and Phenols
Septic system	Western portion	Site inspection	E. Coli and total coliforms.

7 Sampling and Analysis

7.1 Data Quality Objectives

To assess whether an appropriate sampling strategy was adopted for the PSI, EP Risk has adopted the data quality objectives (DQOs) planning process as:

- Recommended in the ASC NEPM, 2013;
- Required within the NSW Department of Environment and Conservation 2006, Guidelines for the NSW Site Auditors Scheme (2nd edition) (DEC, 2006); and
- With consideration to technical details outlined in United State Protection Agency: Guidance on Systematic Planning Using the Data Quality Objectives Process, ref: EPA QA/G-4 (US EPA, 2006) and AS 4482.1 2005, Guide to the investigation and sampling of sites with potentially contaminated soil – Part 1: Non-volatile and semi-volatile compounds.

State the Problem

A portion of the Site was proposed to be developed into a low density residential development. The PSI was required to satisfy the decision process for land use changes outlined in the SEPP 55 in order to assess the potential for contamination within the Developable Portion associated with historical land use.

The potentially affected media at the Site include soil, sediment, surface water and groundwater. Given that there were no water bodies within the Developable Portion and deep groundwater identified in surrounding licensed bores, sampling of soil was undertaken at the Site to provide a preliminary assessment of the potential for contamination.

Identify the Decision

To assess the soil conditions at the Site, the following decisions need to be addressed:

- Is there sufficient information to adequately assess the potential for contamination to be present in the Developable Portion?
- Do the findings provide a higher degree of certainty of the source of identified contamination?

Identify Inputs into the Decision

The inputs required to make the decision include the following:

- Site visit;
- Geological data;
- Hydrogeological data;
- Visual observations of staining, odours; and
- Concentrations of the COPC in soil.
- Define the Boundaries of the Study

The spatial boundaries of the assessment comprise Lot 90 DP 785244 with a maximum proposed depth for the investigation has been set at 3 mBGS with the approximate boundaries identified in **Figure 2**. The temporal boundaries of the assessment are from the 10 January 2017 to the date of this report.

Develop a Decision Rule to Identify the Decision

The assessment criteria for the contaminants of concern are presented in Section 8. These criteria have been adopted to determine whether additional assessment is required and whether the Site is suitable for the proposed redevelopment. The following decision statements for analysis of the results were adopted with respect to the adopted criteria:

Soil Health-Based Investigation Levels

- Where the data sets are not sufficiently populated to allow calculation of the 95% upper confidence limit ('UCL_{mean}') then the individual results must be less than the adopted criteria. If all the individual results are below the adopted criteria, then no additional assessment and/or management is required. Where individual results exceed that adopted criteria, then further assessment and/or management is required.
- In accordance with the ASC NEPM (2013), where 95% UCL_{mean} of the average concentration for each soil analyte can be calculated, then the 95% UCL_{mean} must be below the adopted criteria; no single analyte concentration exceeds 250% of the adopted criteria; the standard deviation of the results must be less than 50% of the adopted criteria; and the normal distribution will only be used where the coefficient of variance is not greater than 1.2. Where 95% UCL_{mean} results exceed the aforementioned criteria, then further assessment and/or management is required.

Soil Ecological-Based Investigation Levels

The same approach as adopted above for assessment against health-based criteria will also be applied to the assessment against ecological criteria. However, where exceedances are observed, the data will also be compared to published background levels or further assessment and/or management is required.

Should contamination be found in soil at the Site, then additional assessment of sediment, surface water and groundwater would be required.

Specify Acceptable Limits of Decision Errors

The acceptable limits will be as follows:

- Individual or 95% UCL_{mean} concentrations are below the adopted criteria.
- 95% of the data will satisfy the Data Quality Indicators (DQIs) which were determined for completeness, representativeness, precision and accuracy of both field and laboratory data. Therefore, the limit on the decision error will be 5% that a conclusive statement may be incorrect.
- A comprehensive Quality Assurance/Quality Control (QA/QC) program will be undertaken including representative sampling and sampling at an appropriate density for the purpose of the investigation.

The acceptable limit of error for sampling techniques and laboratory analysis is defined by the DQIs as follows:

Data Representativeness

Expresses the accuracy and precision with which sample data represents an environmental condition. Data representativeness was achieved by the collection of samples at an appropriate pattern and density as well as consistent and repeatable sampling techniques and procedures.

Completeness

Refers to, the percentage of data that could be considered valid data. Sufficient data was required to enable an assessment of the Decision Rules.

Comparability

A qualitative comparison of the confidence with which one data set could be compared to another. This was achieved through consistent sampling and analytical testing and reporting techniques.

Precision

Is a measure of the reproducibility of on measurements under a given set of conditions. The relative percent difference (RPD) was adopted to assess the precision of data between duplicate sample pairs according to the following equation.

$$RPD\% = \frac{[\mathrm{Cp} \quad \mathrm{Cd}]}{\mathrm{Cp} + \mathrm{Cd}} \times 200$$

Where:
Cp = Primary sample
Cd = Duplicate Sample

An acceptance criterion of ±30% had been adopted for inorganic field duplicates and triplicates and ±50% for organic field duplicates and triplicates. However, it should be noted that exceedances of these criteria are common for heterogeneous soil or fill or for low analyte concentrations.

Accuracy

Is a measure of the bias in the analytical results and can often be attributed to: field contamination; insufficient preservation or sample preparation; or inappropriate analytical techniques. Accuracy of the analytical data was assessed by consideration of laboratory control samples, laboratory spikes and analytical techniques in accordance with appropriate standards.

Optimise the Design for Obtaining Data

A systematic and targeted based sampling pattern was designed based on the results of site history review and site inspection. A comprehensive suite of COPC was selectively adopted for assessment to provide preliminary characterisation of the status of soil contamination (if any). The adopted sampling approach is consistent with AS4482.1 (2005).

7.2 Data Quality Indicators

The data quality objectives, requirements and indicators for the assessment are presented in **Table 11**.

Table 11 – DQO, Requirements and Indicators

DQO	Requirement	Data Quality Indicator
Precision		
Standard operating procedures appropriate and complied with	The sampling methods comply with industry standards and guidelines	Meet Requirement
Intra-laboratory Duplicates	1 per 20 samples	RPDs < 50%
Inter-laboratory Duplicates	1 per 20 samples	RPDs < 50%
Laboratory Duplicates	Minimum of 1 per batch per analyte.	RPDs < 50%
Accuracy		
Laboratory Matrix Spikes	1 per batch per volatile/semi-volatile analyte	Recoveries 50% to 150%
Laboratory Surrogate Spikes	1 per volatile/semi-volatile analyte sample (as appropriate)	Recoveries 70% to 130%
Laboratory Control Samples	At least 1 per batch per analyte tested for	Result < Limit of reporting
Representativeness		
Sampling methodology - preservation	Appropriate for the sample type and analytes	Meet Requirement
Samples extracted and analysed within holding times	Specific to each analyte	Meet Requirement
Field equipment calibration	All field equipment calibrated and calibration records provided.	Meet Requirement
Laboratory Method Blanks	At least 1 per batch per analyte tested for	Result < Limit of reporting
Trip Blanks	1 per lab batch for volatile analytes	Result < Limit of reporting
Trip Spikes	1 per lab batch for volatile analytes	Recoveries 60-100%
Rinsate	1 per lab batch for volatile analytes	Result < Limit of reporting
Comparability		
Sampling approach	Consistent for each sample	Meet Requirement

Table 11 – DQO, Requirements and Indicators		
DQO	**Requirement**	**Data Quality Indicator**
Analysis methodology	Consistent methodology for each sample	Meet Requirement
Handling conditions and sampler	Consistent for each sample	Meet Requirement
Field observations and analytical	Field observations to support analytical results	Meet Requirement
Consistent laboratory Limit of Reporting (LOR)	Consistent between primary and secondary laboratories	Meet Requirement
Completeness		
Sampling staff	Consistent sampling staff used.	Meet Requirement
Laboratory accreditation	NATA Accredited laboratory for methods used	Meet Requirement
Accredited methods	NATA accredited methods used appropriate for each analyte.	Meet Requirement
ASC NEPM (2013) lab methods	Lab methods consistent with the ASC NEPM (2013).	Meet Requirement
Limits of reporting	Limits of reporting consistent and appropriate	Meet Requirement
Consistent weather / field conditions	Consistent	Meet Requirement
Chain of Custody Documentation	Appropriately completed	Meet Requirement
Field Sampling Documentation	Appropriately completed	Meet Requirement

7.3 Sampling and Analysis Methodology

Soil Sampling Methodology

The methodology for soil sampling was outlined as follows:

- Soil samples were collected from a total of 12 test pits, three stockpile samples and two surface samples in a grid based sampling pattern across the Site.
- Test pits were advanced with a 4-tonne excavator with a 300 mm bucket to a maximum depth of 3 mBGS.
- Stockpile samples were collected from test pits advanced with the 4-tonne excavator.
- Surface samples were collected using hand tools from a maximum depth of 0.1 mBGS
- Soils were logged for type, colour, texture, other characteristics and indications of contamination as presented in the bore logs attached as **Appendix F**.
- A dedicated pair of nitrile gloves was used for each sample to prevent cross contamination.
- All samples were screened with a photoionisation detector ('PID'), with calibration certificate attached as **Appendix H**.
- Sufficient samples were collected and placed into laboratory prepared sampling jars with the sample details added to the label on the jar. Bull samples and undisturbed 50mm diameter (u50) sample were also obtained for geotechnical purposes.
- The sample jars were preserved in a chilled esky containing ice immediately after sampling and during shipment to the laboratories. The laboratory chain of custody documentation was completed and accompanied the samples during shipment.

7.4 Acid Sulfate Soil Field Screening

The methodology adopted for field screening of acid sulfate soils is provided as follows:

- The pH meter was calibrated using buffer solutions with a pH of 4, 7 and 10.
- A dedicated pair of nitrile gloves was used for each sample to prevent cross contamination.
- A sub sample of the soil was placed in a clean jar and De-ionised ('DI') water was added and mixed to make a paste.
- A separate sub sample was placed in another clean jar and a pH adjusted solution of Hydrogen Peroxide (pH 5.5) was added to make a paste.
- Reactions were observed and recorded for both samples.
- The pH was then measured in each jar after waiting 5 minutes for any reactions to take place.
- The pH of each paste was recorded and the jars were cleaned out with DI water.

7.5 Analytical Testing

EP Risk used ALS Global as the project laboratory and Envirolab Services for the independent check laboratory, both of which are NATA[2] registered for the required analysis. The laboratory analysis was undertaken in accordance with **Table 12.**

[2] NATA – National Association of Testing Authorities.

Table 12 – Analytical Testing of Primary Samples		
Media	**Sampling locations**	**Number of Analysis (including QA/QC)**
Soil	18	• Total Recoverable hydrocarbons (TRH)/Benzene, Toluene, Ethylbenzene, Xylene (BTEXN)/Polycyclic Aromatic Hydrocarbons (PAH) Organochlorine pesticide (OCP)/ Organophosphate pesticide (OPP)/Heavy metals (As, Cd, Cr, Cu, Pb, Ni, Hg, Zn)/Phenols – 8 • OCP/OPP/Heavy Metals – 10 • Cation exchange capacity (CEC)/% Clay/pH – 1 • Cation Exchange Capacity - 1 • Asbestos Australian Standard test (AS 4964 – 2004) – 3 • Electrical Conductivity (EC)/Resistivity/Exchangeable Cations/Sulfate/Chloride – 12 • Faecal Coliforms and E. coli - 3
Rinsate Trip Blank / Trip Spike	-	• TRH (C6-C9) / BTEX – 1 • TRH (C6-C9) / BTEX – 2

7.6 Field and Laboratory Quality Assurance and Quality Control (QA/QC)

An assessment of the Quality Assurance/Quality Control Procedures was undertaken, with the results presented in **Table 13**.

Table 13 – DQO, Requirements and Indicators		
DQO	**Requirement**	**DQI met?**
Precision		
Standard operating procedures appropriate and complied with	The sampling methods comply with industry standards and guidelines	Yes
Intra-laboratory Duplicates	1 per 20 samples RPDs < 50%	Yes[3] Yes[4]
Inter-laboratory Duplicates	1 per 20 samples RPDs < 50%	Yes Yes
Laboratory Duplicates	Minimum of 1 per batch per analyte. RPDs < 50%	Yes[5] Yes
Accuracy		

[3] Exceedance of the DQI for field duplicate RPDs was reported for xylene. Given the low concentrations encountered and volatile nature of xylene, the precision of the analytical results is not considered to be compromised in the context of the assessment.
[4] Exceedance of the DQI for field duplicate RPDs was reported for total nitrogen and phosphorus. Given the low concentrations encountered, the precision of the analytical results is not considered to be compromised in the context of the assessment.
[5] The frequency of laboratory duplicates in soil was below the quality control specification for PAHs, phenols, pesticides, PCBs and TRH. Given the low concentrations and small number of water samples collected, the precision of the analytical results is not considered to be compromised in the context of the assessment.

Table 13 – DQO, Requirements and Indicators		
DQO	**Requirement**	**DQI met?**
Laboratory Matrix Spikes	1 per batch per volatile/semi-volatile analyte Recoveries 50% to 150%	Yes[6] Yes
Laboratory Surrogate Spikes	1 per volatile/semi-volatile analyte sample (as appropriate) Recoveries 70% to 130%	Yes Yes
Laboratory Control Samples	At least 1 per batch per analyte tested Result < Limit of reporting	Yes Yes
Representativeness		
Sampling methodology - preservation	Appropriate for the sample type and analytes	Yes
Samples extracted and analysed within holding times	Specific to each analyte	Yes
Field equipment calibration	All field equipment calibrated and calibration records provided.	Yes
Laboratory Method Blanks	At least 1 per batch per analyte tested Result < Limit of reporting	Yes Yes
Trip Blanks	1 per lab batch for volatile analytes Result < Limit of reporting	Yes Yes
Trip Spikes	1 per lab batch for volatile analytes Recoveries 60-100%	Yes Yes
Rinsate	1 per lab batch for volatile analytes Result < Limit of reporting	Yes Yes
Comparability		
Sampling approach	Consistent for each sample	Yes
Analysis methodology	Consistent methodology for each sample	Yes
Handling conditions and sampler	Consistent for each sample	Yes
Field observations and analytical	Field observations to support analytical results	Yes
Consistent laboratory Limit of Reporting (LOR)	Consistent between primary and secondary laboratories	Yes
Completeness		

[6] The frequency of matrix spikes for pesticides, PAH, Phenols, PCBs and TRH for soil was below the laboratory quality control specification. This outlier was considered acceptable given the small batch size of samples analysed.

Table 13 – DQO, Requirements and Indicators		
DQO	**Requirement**	**DQI met?**
Sampling staff	Consistent sampling staff used.	Yes
Laboratory accreditation	NATA Accredited laboratory for methods used	Yes
Accredited methods	NATA accredited methods used appropriate for each analyte.	Yes
ASC NEPM (2013) lab methods	Lab methods consistent with the ASC NEPM (2013).	Yes
Limits of reporting	Limits of reporting consistent and appropriate	Yes
Consistent weather / field conditions	Consistent	Yes
Chain of Custody Documentation	Appropriately completed	Yes
Field Sampling Documentation	Appropriately completed	Yes

Based on the results presented in **Table 13**, it was considered that the DQOs for the project have been met and the data is appropriate for the purposes of the assessment.

8 Environmental Quality Criteria

8.1 Soil Criteria

For the purposes of assessing the results of analytical testing of soils at the Site, the following guidelines were considered:

- NSW DEC (2006) Guidelines for the NSW Auditor Scheme (Second Edition).
- National Environment Protection Council (NEPC) 2013, National Environment Protection (Assessment of Site Contamination) Measure 1999 (April 2013), Canberra (ASC NEPM, 2013).
- CRC Care (2011) Technical Report: Health Screening Levels for Petroleum Hydrocarbons in soil and Groundwater.

In accordance with the decision-making process for assessing urban redevelopment sites (Appendix I, NSW EPA, 2006), soil concentrations were compared against the following soil investigation levels (SILs):

- **Health-based Criteria for the current and proposed land use**: ASC NEPM (2013) Health-based Investigation levels (HILs) for low density residential land use, the Health Screening Levels (HSLs) and the CRC Care (2011) Soil Health Screening Levels for Direct Contact and intrusive maintenance worker (HSLs).
- **Environmental Criteria**: ASC NEPM (2013) Ecological Screening Levels (ESLs) and Ecological Investigation Levels (EILs) for low density residential land use.

- **Aesthetics**: The consultant should also consider the need for remediation based on the 'aesthetic' contamination as outlined in Schedule B (1) of the ASC NEPM (2013) that states that *'there are no numeric Aesthetic Guidelines however site assessment requires balanced consideration of the quality, type and distribution of foreign material or odours in relation to the specific land use and its sensitivity*'. Soil odour, discolouration and the presence of anthropogenic materials will need to be assessed during the assessment.

EP Risk has adopted the most recent ASC NEPM (2013) Tier 1 Guidelines over the criteria listed in NSW DEC (2006) as it is the most recent guidance available that has been approved by the NSW EPA under Section 105 of the Contaminated Land Management Act, 1997.

The adopted soil criteria are listed in **Table 14** below.

Table 14 – Soil Criteria

Analyte	ASC NEPM 2013 HIL A	ASC NEPM 2013 HSLs for vapour intrusion HSL A		ASC NEPM 2013 ESLs[7]	ASC NEPM 2013 EILs	ASC NEPM 2013 Management Limits for TPH Fractions [8]	CRC Care (2011) Direct Contact / Intrusive Maintenance Worker	NSW EPA 2000 Use and Disposal of Biosolids Products (MPN/g)
		Silt	Clay					
Heavy metals								
Arsenic	100	-	-	-	100	-	-	-
Cadmium	20	-	-	-	-	-	-	-
Chromium	100 (Cr VI)	-	-	-	660 (Cr III)	-	-	-
Copper	6,000	-	-	-	100[9]	-	-	-
Nickel	400	-	-	-	290	-	-	-
Lead	-	-	-	-	1,100	-	-	-
Zinc	7,400	-	-	-	180	-	-	-
Mercury (inorganic	40	-	-	-	-	-	-	-
TRH								
>C6-C10 fraction	-	-	-	-	-	-	4,400 / 82,000	-
>C6-C10 fraction (F1)	-	40/65/100/190	50/90/150/290	180	-	700/800	-	-
>C10-C16	-	-	-	-	-	-	3,300 / 62,000	-
>C10-C16 fraction (F2)	-	230/NL/NL/NL	280/NL/NL/NL	120	-	1,000	-	-
>C16-C34 fraction (F3)	-	-	-	300/1300	-	2,500/3,500	4,500 / 85,000	-
>C34-C40 fraction (F4)	-	-	-	2800/5600	-	10,000	6,300 / 120,000	-

[7] Assuming coarse/fine soil.

[8] Assuming coarse/fine soil.

[9] Based on site specific EILs calculated from the 'Ecological Investigation Levels – Interactive (Excel) Calculation Spreadsheet – December 2010 for Urban Residential land use (ASC NEPM, 2013). Using site specific pH, CEC, and clay content data for sample depths 0.2 mBGS data.

Table 14 – Soil Criteria

Analyte	ASC NEPM 2013 HIL A	ASC NEPM 2013 HSLs for vapour intrusion HSL A		ASC NEPM 2013 ESLs[7]	ASC NEPM 2013 EILs	ASC NEPM 2013 Management Limits for TPH Fractions [8]	CRC Care (2011) Direct Contact / Intrusive Maintenance Worker	NSW EPA 2000 Use and Disposal of Biosolids Products (MPN/g)
		Silt	Clay					
BTEX								
Benzene	-	0.6/0.7/1/2	0.7/1/2/3	50/65	-	-	100 / 1,100	-
Toluene	-	390/NL/NL/NL[10]	480/NL/NL/NL	85/105	-	-	14,000 / 120,000	-
Ethylbenzene	-	NL/NL/NL/NL	NL/NL/NL/NL	70/125	-	-	4,500 / 85,000	-
Xylenes	-	95/210/NL/NL	110/310/NL/NL	105/45	-	-	12,000 / 130,000	-
PAH								
Benzo(a)pyrene	-	-	-	3[12]	-	-	-	-
Benzo(a)pyrene TEQ[11]	3	-	-	-	-	-	-	-
(WHO)	-	-	-	-	-	-	-	-
Total PAH	-	-	-	-	170	-	-	-
Naphthalene								
Phenols								
Pentachlorophenol	100	-	-	-	-	-	-	-
Phenol	3,000	-	-	-	-	-	-	-
OCP								
DDT	-	-	-	-	180	-	-	-
DDT+DDE+DDD	3,600	-	-	-	-	-	-	-
Aldrin and Dieldrin	6	-	-	-	-	-	-	-
Chlordane	50	-	-	-	-	-	-	-
Endosulfan	270	-	-	-	-	-	-	-
Endrin	10	-	-	-	-	-	-	-
Heptachlor	6	-	-	-	-	-	-	-
HCB	10	-	-	-	-	-	-	-
Methoxychlor	300	-	-	-	-	-	-	-

[10] NL – not limiting
[11] TEQ - Toxic equivalence quotient
[12] It is noted that ESL for benzo(a)pyrene is based on limited data and is therefore of low reliability and may be overly conservative. The main driver for benzo(a)pyrene is typically the associated human health risk. In the absence of more reliable ecological criteria, the residential HIL for benzo(a)pyrene of 3 mg/kg is considered to be sufficiently protective of ecological receptors. (SA, EPA 2015).

Table 14 – Soil Criteria

Analyte	ASC NEPM 2013 HIL A	ASC NEPM 2013 HSLs for vapour intrusion HSL A		ASC NEPM 2013 ESLs[7]	ASC NEPM 2013 EILs	ASC NEPM 2013 Management Limits for TPH Fractions [8]	CRC Care (2011) Direct Contact / Intrusive Maintenance Worker	NSW EPA 2000 Use and Disposal of Biosolids Products (MPN/g)
		Silt	Clay					
OPP								
Chlorpyrifos	160	-	-	-	-	-	-	-
PCBs								
Total PCBs	1	-	-	-	-	-	-	-
Asbestos								
Asbestos ID in soil	Presence / absence	-	-	-	-	-	-	-
Coliforms								
E. coli	-	-	-	-	-	-	-	100

9 Results

9.1 Soil Lithology

The soil lithology at the Site generally comprised of topsoil to 0.5 mBGS overlying residual silty CLAY to the maximum depth of investigation of 3 mBGS. Natural soils comprised of residual silty clays of medium to high plasticity, generally of stiff or better consistency and moist. Red and Orange Mottling was visible generally below 2 mBGS, no odours were observed during sample collection with all PID readings recorded at <1 ppm. Subsurface profiles are described on attached test pit logs in Appendix F.

9.2 Acid Sulfate Soils Field Screening

The results of acid sulfate soil field screening are provided in **Table 15.**

Table 15 – Acid Sulfate Soil Test Results

Sample ID	pH_F	pH_{FOX}	Reaction	pH Difference
TP12/0.2	4.51	4.83	None	0.32
TP12/0.5	4	4.03	None	0.03
TP12/1	3.87	4.02	None	0.15
TP12/2	4.12	4.03	None	0.09
TP12/3	5.01	5.08	None	0.07
TP11/0.2	4.89	5.03	None	0.14
TP11/0.5	3.89	4.05	None	0.16
TP11/1	4.04	3.94	None	0.1
TP11/2	4.28	4.07	None	0.21
TP6/0.2	4.87	5.2	None	0.33
TP6/0.5	3.98	3.9	None	0.08
TP6/1	4.34	4.2	None	0.14
TP6/2.5	4.47	4.44	None	0.03
TP2/0.2	4.85	5.24	None	0.39
TP2/0.5	3.85	3.97	None	0.12
TP2/1	4.42	4.15	None	0.27
TP2/2	4.43	4.36	None	0.07
TP2/2.5	4.1	3.94	None	0.16
TP9/O.2	4.08	4.12	None	0.04
TP9/O.5	3.82	3.97	None	0.15
TP9/1	4.35	4.24	None	0.11
TP9/2	4.39	4.18	None	0.21

Based on the results provided in **Table 15**, none of the samples reported a pH increase in excess of 1 pH unit or chemical indicating a low risk of potential acid sulfate soils. The samples did, however, record low pH levels indicative of actual acidity.

9.3 Salinity Results

The adopted criteria used for the salinity assessment is presented in **Table 16**.

Table 16 – Adopted Criteria for Classifying Saline Soils[13]

Class	Electrical Conductivity (ds/m)
Non-Saline	<2
Slightly Saline	2-4
Moderately Saline	4-8
Highly Saline	8-16
Very Highly Saline	>16

The results of the analytical testing are presented in **Table 17**.

Table 17 – Salinity Classification

Sample ID	Depth (m)	Electrical Conductivity (at 25 °C) (ds/m)	Salinity
TP1/0.2	0.2	0.076	Non-Saline
TP2/0.5	0.5	0.385	Non-Saline
TP3/1	1	0.886	Non-Saline
TP4/2	2	0.913	Non-Saline
TP5/2.5	2.5	0.975	Non-Saline
TP6/0.2	0.2	0.189	Non-Saline
TP7/0.5	0.5	0.685	Non-Saline
TP8/1	1	0.967	Non-Saline
TP9/2	2	0.894	Non-Saline
TP10/2	2	1.060	Non-Saline
TP12/3	3	0.484	Non-Saline

The soil samples were tested over a wide range of depths and on eleven out of the twelve test sites. Out of the eleven samples tested for electrical conductivity, all the samples were classified as non-saline.

[13] Based on Table 6.2 of Department of Land and Water Conservation NSW, 2002: Site Investigations for Urban Salinity.

9.4 Analytical Soil Testing

The results of soil analytical testing are contained in the analytical summary tables in the rear of the report and the full NATA Laboratory Reports are attached as **Appendix G**.

BTEXN

- All BTEX concentrations were recorded below laboratory limits of reporting and adopted assessment criteria in all locations.

TPH

- All TPH concentrations were recorded below laboratory limits of reporting or adopted assessment criteria in all locations.

PAH

- All PAH concentrations were recorded below laboratory limits of reporting or adopted assessment criteria in all locations.

Heavy Metals

- All heavy metal concentrations were recorded below the adopted assessment criteria in all locations.

Phenols

- All phenolic concentrations were recorded below laboratory limits of reporting and adopted assessment criteria in all locations.

OCP

- All OCP concentrations were recorded below laboratory limits of reporting or adopted assessment criteria in all locations.

OPP

- All OPP concentrations were recorded below laboratory limits of reporting and adopted assessment criteria in all locations.

Asbestos

- All Asbestos concentrations were recorded below the laboratory limit of reporting.

Coliforms

- Coliforms were present in SS1 at a concentration of 700 organisms/g of which 480 organisms/g were Escherichia Coliforms ('E. coli'). This sample was taken at a location that was believed to be the onsite Effluent Disposal Area. All other locations recorded levels below the laboratory limit of reporting.

10 Conceptual Site Model

A preliminary conceptual site model ('CSM') was developed based upon the information provided in the previous sections of this report.

10.1 Potentially Contaminating Activities

A number of potentially contaminating activities have been undertaken within the Developable Portion, Proposed Lot 34 and the remainder of the Site as follows:

Developable Portion

- Agricultural land use.
- Potential imported fill.

Proposed Lot 34

- Operation of a machinery shed.
- Operation of septic system.

Remainder of the Site

- Agricultural land use.
- Operation of a Hunter Water Pump Station

In accordance with the DQOs, and given that only a portion of the Site is proposed to be redeveloped to a more sensitive land use, the potentially contaminating activities associated with the Developable Portion and Proposed Lot 34 were assessed in the PSI.

10.2 Potentially Affected Media

The potential affected media at the Site is considered to the soil. Given that there were no water bodies within the Developable Portion and deep groundwater identified in surrounding licensed bores, sampling of soil was undertaken at the Site to provide a preliminary assessment of the potential for contamination. Additional assessment of sediment, surface water and groundwater will be required to complete the CSM should soil contamination be identified.

10.3 Potential Human and Ecological Receptors

The current and future sensitive receptors within the Developable Portion, Proposed Lot 34 and remainder of the Site and off-site are provided below.

Developable Portion

- Site workers and residents.
- Terrestrial and aquatic flora and fauna at the Site.
- Future construction workers, sub-surface maintenance workers.
- Future residents.

Proposed Lot 34

- Site workers and residents.
- Terrestrial and aquatic flora and fauna at the Site.

Remainder of the Site and Off-site

- Site workers.
- Residents occupying properties to the south and east.
- Recreational users of the two water bodies, dam, lagoon and Hunter River.
- Users of licensed groundwater bores in the vicinity of the Site.
- Terrestrial and aquatic flora and fauna on adjacent land and within the lagoon and the Hunter River to the north of the Site.

In accordance with the DQOs, and given that only a portion of the Site is proposed to be redeveloped to a more sensitive land use, the potential human and ecological receptors associated with the Developable Portion and Proposed Lot 34 were assessed in the PSI.

10.1 Summary of Soil Contamination

Based upon the analytical results reported at the Site, no analyte concentrations have been identified in excess of the adopted criteria for low density residential land use within the Developable Portion. Anthropogenic materials associated with the former agricultural use (hay shed, fencing, irrigation equipment, etc.) as well as building and demolition waste in the stockpiled material were identified.

Elevated levels of E. coli were reported within a surface sample collected from the effluent disposal area in Proposed Lot 34.

10.2 Potential and Complete Exposure Pathways

Given that there were no water bodies and deep groundwater within the Developable Portion and Proposed Lot 34, a preliminary assessment of potential and complete exposure pathways associated with potentially contaminated soil was assessed in the PSI.

An analysis of the potential exposure pathways between the COPC and the identified human and ecological receptors are presented in **Table 18**.

Table 18– Potential Exposure Pathways

Sources	Media	Release Mechanism	Pathway	Site workers and residents	Residents occupying properties to the south and east	Recreational users of the two water bodies, dam, lagoon and Hunter River	Users of licensed groundwater bores in the vicinity of the Site	Terrestrial and aquatic flora and fauna at the Site.	Terrestrial and aquatic flora and fauna on adjacent land and within the lagoon and the Hunter River	Future construction workers, sub-surface maintenance workers	Future residents
Developable Portion											
Agricultural land use, and imported fill	Soil	Fugitive Dust	Air – ingestion / inhalation	Yes	Yes	No	No	No	No	Yes	Yes
		Direct Contact	Dermal contact	Yes	No	No	No	No	No	Yes	Yes
			Ingestion	Yes	No	No	No	No	No	Yes	Yes
			Uptake by flora and fauna	No	No	No	No	Yes	No	No	No
Proposed Lot 34											
Operation of a machinery shed and septic system	Soil	Fugitive Dust	Air – ingestion / inhalation	Yes	Yes	No	No	No	No	Yes	Yes
		Direct Contact	Dermal contact	Yes	No	No	No	No	No	Yes	Yes
			Ingestion	Yes	No	No	No	No	No	Yes	Yes
			Uptake by flora and fauna	No	No	No	No	Yes	No	No	No

Notes:

Yes Current potential Yes Future potential

11 Site Classification

EP Risk were also requested to provide site classification in accordance with AS 2870-201 for the thirty-three (33) proposed new allotments as shown in **Figure 2**.

Along with the twelve (12) test pits undertaken, eight (8) undisturbed U50 samples were secured from various depth within the test pits of material considered representative of the soil profile encountered during the investigation. Six (6) sample were tested in an NATA registered laboratory to determine the shrink Swell Index (Iss) of the soil to allow preliminary site classification. The exact location of dwellings is unknown at this stage so the samples taken are representative of the soil encountered during the investigation.

11.1 Laboratory Test Results

The results of the laboratory shrink swell tests and material properties undertaken on samples of the clay soils encountered during the investigation are detailed on the laboratory test report sheets attached in **Appendix G**, and are summarised below in **Table 19** and **Table 20** and indicate the soil was highly reactive and Type D soils.

Table 19 – Summary of Shrink Swell Test Results

Test Pit	Depth (m)	Soil Type	Esw (%)	Esh (%)	Iss (%)
TP001	1.0-1.4	Silty CLAY (CLAY)	1.8	10.3	6.2
TP002	1.5-1.9	Silty CLAY (Sandy CLAY)	1.6	7.9	4.8
TP004	0.4-0.9	Silty CLAY (CLAY)	0.2	10.0	5.6
TP006	1.0-1.4	Silty CLAY (CLAY)	2.0	8.6	5.3
TP007	0.5-0.9	Silty CLAY (CLAY)	2.1	8.6	5.4
TP008	1.0-1.4	Silty CLAY (Sandy CLAY)	2.5	7.8	5.0
TP011	1.0-1.4	Silty CLAY (Sandy CLAY)	3.3	6.6	4.6
TP012	0.4-0.7	Silty CLAY (Sandy CLAY)	1.6	8.2	5.0

Notes:
Esw Swelling strain
Esh Shrinkage strain
Iss Shrink Swell Index
( ) Description of U50 specimen on extraction by the laboratory.

Table 20 – Material Properties

Location	Depth (m)	Passing 2.36mm%	Passing 75µm %	Emerson Class No	Soil Type[14]
TP003	0.5-0.9	100	95	4	D
TP010	0.5-0.9	100	94	4	D

[14] Managing Urban Stormwater: Soils and Construction V1 Edition 4 – Landcom NSW (2004)

11.2 Comments and Recommendations

Site Classification

Australian Standard AS 2870-2011 establishes performance requirements and specific designs for common foundation conditions as well as providing guidance on the design of footing systems using engineering principles. Site classes as defined on Table 2.1 and 2.3 of AS 2870 are presented in **Table 21**.

Table 21 - General Definition of Site Classes

Site Class	Foundation	Characteristic Surface Movement
A	Most sand and rock sites with little or no ground movement from moisture changes	
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes	0 - 20mm
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes	20 - 40mm
H1	Highly reactive clay sites, which may experience high ground movement from moisture changes	40 - 60mm
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes	60 - 75mm
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes	> 75mm
A to P	Filled sites (refer to clause 2.4.6 of AS 2870)	
P	Sites which include soft soils, such as soft clay or silt or loose sands; landslip; mine subsidence; collapsing soils; soils subject to erosion; reactive sites subject to abnormal moisture conditions or sites which cannot be classified otherwise.	

Reactive sites are sites consisting of clay soils that swell on wetting and shrink on drying, resulting in ground movements that can damage lightly loaded structures. The amount of ground movement is related to the physical properties of the clay and environmental factors such as climate, vegetation and watering. A higher probability of damage can occur on reactive sites where abnormal moisture conditions occur, as defined in AS 2870, due to factors such as:

- Presence of trees on the building site or adjacent site, removal of trees prior to or after construction, and the growth of trees too close to a footing. The proximity of mature trees and their effect on foundations should be considered when determining building areas within each allotment (refer to AS 2870).
- Failure to provide adequate site drainage or lack of maintenance of site drainage, failure to repair plumbing leaks and excessive or irregular watering of gardens.
- Unusual moisture conditions caused by removal of structures, ground covers (such as pavements), drains, dams, swimming pools, tanks etc.

Regarding the performance of footings systems, AS 2870 states "footing systems designed and constructed in accordance with this Standard on a normal site (see Clause 1.3.2) that is:

(a) not subject to abnormal moisture conditions; and
(b) maintained such that the original site classification remains valid and abnormal moisture conditions do not develop.

are expected to experience usually no damage, a low incidence of damage category 1 and an occasional incidence of damage category 2."

Damage categories are defined in Appendix C of AS 2870, which is reproduced in CSIRO Information Sheet BTF 18, Foundation Maintenance and Footing Performance: A Homeowner's Guide.

The laboratory shrink swell test results summarised in **Table 19** indicate that the tested natural clay soils range from highly reactive, with Iss values in the range of 4.6% to 6.2%.

The classification of sites with controlled fill of depths greater than 0.4m (deep fill) comprising of material other than sand would be Class P. An alternative classification may however be given to sites with controlled fill where consideration is made to the potential for movement of the fill and underlying soil based on the moisture conditions at the time of construction and the long-term equilibrium moisture conditions.

Based on the subsurface profiles encountered during the investigation and laboratory shrink swell test results, and in accordance with the AS2870-2011[15]; the lots in their existing condition and in the absence of abnormal moisture conditions would likely be classified as detailed in **Table 22**.

Table 22 - Recommended Site Classifications

Lot Numbers	Site Classification
1-33	Class H2, Highly Reactive

A characteristic surface movement in the order of 60 mm to 70mm has been calculated for the lots dependent on the soil profile, and depth to rock encountered at test locations.

NB: It is noted that the depth of topsoil is relatively deep and was measured up to 0.5m in TP001, and the firm layer of soil encountered in TP's 05, 06 and 08 may impact the type of footing and slab system which can adopted, such as waffle pod type construction. With all footings founded below topsoil.

It should be appreciated that the site classifications provided above are based on test pits and laboratory testing of multiple layers over the depth of total soil suction change in the soil profile. It should be noted that individual lot development can include other geotechnical studies and care should be taken that single laboratory results are not allocated to the full depth of the soil profile, as biased site classifications can result. The location of proposed structures are not known at this stage; however, the soil conditions are not expected to vary significantly, excluding depth to rock which would be expected to vary. Where competent rock is encountered at a depth less than 1.4m a site classification of Class H1, Highly Reactive could be adopted.

15

The above site classifications and footing recommendations are for the site conditions present at the time of fieldwork and consequently the site classification may need to be reviewed with consideration of any site works that may be undertaken after the investigation and this report.

Site works may include:

- Changes to the existing soil profile by cutting and filling;
- Landscaping, including trees removed or planted in the general building area; and
- Drainage and watering systems.

Designs and design methods presented in AS 2870-2011 are based on the performance requirement that significant damage can be avoided if site conditions are properly maintained. Performance requirements and foundation maintenance are outlined in Appendix B of AS 2870. The above site classification assumes that the performance requirements as set out in Appendix B of AS 2870 are acceptable and that site foundation maintenance is undertaken to avoid extremes of wetting and drying.

Details on appropriate site and foundation maintenance practices are presented in Appendix B of AS 2870-2011 and in CSIRO Information Sheet BTF 18, Foundation Maintenance and Footing Performance: A Homeowner's Guide, and the Australian Geoguide (LR8) Hillside Construction Practice.

Adherence to the detailing requirement outlined in Section 5 of AS 2870-2011 is essential, in particular Section 5.6. Additional requirements for Classes M, H1, H2 and E sites, including architectural restrictions, plumbing and drainage requirements.

11.3 Footings

All foundations should be designed and constructed in accordance with AS 2870-2011, Residential Slabs and Footings, with reference to site classifications as presented in **Table 22**.

All footings should be founded below any topsoil, slopewash, deleterious soils or uncontrolled fill in stiff or better residual clay. All footings for the same structure should be founded on strata of similar stiffness and reactivity to minimise the risk of differential movements.

Piered footings for residential structures do not necessarily need to be founded in the natural soils where deep fill is undertaken in accordance with AS3798-2007, given the material site won and controlled nature of the materials utilised.

High-Level Footings

High-level footing alternatives could be expected to comprise slabs on ground with edge beams or pad footings for the support of concentrated loads. Such footings designed in accordance with engineering principles and founded in stiff or better natural soils (below topsoil, slopewash, uncontrolled fill or other deleterious material) or in controlled fill (placed and compacted in accordance with AS3798-2007) may be proportioned on an allowable bearing capacity of 100kPa. The founding conditions should be assessed by a geotechnical consultant or experienced engineer to confirm suitable conditions.

Piered Footings

Piered footings are considered as an alternative to deep edge beams or high level footings. It is suggested that piered footings, founded in stiff or better clay soils or controlled fill could be proportioned on an end bearing pressure of 100kPa. Where uniformly founded in the underlying bedrock, an end bearing pressure of 600kPa could be adopted and a site class of A may be adopted.

Where piered footings are utilised, the potential for volume change in the subsurface profile should be taken into consideration by the designer, along with potential settlement where founded in controlled fill.

All footings should be founded below any topsoil, slopewash, deleterious soils or uncontrolled fill. All footings for the same structure should be founded on strata of similar stiffness and reactivity to minimise the risk of differential movements.

Inspection of high level or pier footings excavations should be undertaken to confirm the founding conditions and the base should be cleared of fall-in prior to the formation of the footing. Pavement Design

11.4 Retaining Walls

All retaining walls and all garden landscaping walls in excess of 1 m in height should be designed by an engineer. Design of retaining walls should:

- Consider surcharge loading from slopes and structures above the wall;
- Take into account loading from any proposed compaction of fill behind the wall;
- Provide adequate surface and subsurface drainage behind all retaining walls, including a free draining granular backfill to prevent the build-up of hydrostatic pressures behind the wall;
- Utilise materials that are not susceptible to deterioration; and
- Ensure walls are founded in materials appropriate for the loading conditions.

Footings for proposed retaining walls should be founded below any topsoil and uncontrolled fill within stiff or better clay or weathered rock.

11.5 Excavation Stability

Excavations or trenches in the clay, silt and sand soils and extremely weathered rock could be expected to stand close to vertical in the short-term. Silt and clay soil were encountered within various site areas down to depths of up to 2.4 m, and unsupported short-term excavations or trenches may undergo some local slumping into the excavation.

Where personnel are to enter excavations, options for short-term excavations include benching or battering back of the excavations to 1H:1V or the support of excavations within the residual soil and extremely weathered rock profile.

It is recommended that long-term excavations are either battered at 2H:1V or flatter and protected against erosion or be supported by engineer designed and suitably constructed retaining walls. Excavations may be battered steeper than 2H:1V in rock materials, subject to specific geotechnical assessment.

12 Pavement Design

Geotechnical investigation has been undertaken to assess existing subsurface conditions for the purpose of preliminary pavement thickness design for the proposed road off Anambah Road to service the development.

Pavement design has been performed in accordance with Austroads AGPT02-12 *Guide to Pavement Technology Part 2: Pavement Structural Design*.

12.1 Design Traffic Loadings

The following design traffic for each road provided in **Table 23** has been determined in accordance with Maitland City Council (MCC) *Manual of Engineering Standards (MoES)* based on assumed road designations.

Table 23 – Design Traffic

Road	Designation	Design Traffic
Proposed Road	Local Secondary	2 x 10^5 DESA

DESA: Design Equivalent Standard Axles (DESA)
HVAG: Cumulative Heavy Vehicle Axle Groups

12.2 Subgrade Conditions

The test bores revealed subgrade conditions comprising of silty CLAYS overlying weathered rock at depth with laboratory testing indicating soaked CBR values of 2% and 4.5%, respectively. Based on these results, a design subgrade CBR of 2% has been adopted.

12.3 Pavement Thickness Design

Two flexible pavement thickness designs are presented below considering a heavily bound ('HBB') and granular pavement approaches.

12.4 Heavily Bound Base

Concrete pavement thickness design for the roundabout is detailed in **Table 24**.

Table 24 – Pavement compositions: Rigid construction

Layer	Proposed Roads
Basecourse	325 mm (HBB)
Subbase	125 mm SS(2)
Select	100 mm(3)
Design Traffic	2 ×10^5 DESA
Design subgrade	CBR minimum 2%

Notes to table:
1. SS: Stabilised Subbase min 2% Stabilment or equivalent.
2. A nominal 100 mm select layer may be required as a working platform on the silty sand subgrade encountered where wet weather precedes pavement construction

12.5 Flexible Granular Pavement

A flexible granular pavement thickness design for construction of the proposed new roads is detailed below.

Table 25 – Pavement compositions: Flexible construction	
Road Section	**Proposed Roads**
Wearing Course (mm)	30 AC10
Basecourse (mm)	160
Subbase (mm)	330
Select (mm)	- (1)
Total Thickness (mm)	370
Subgrade	CBR min 2%
Design Traffic	2 x 10^5 DESA

Notes to table:
1. A 300mm thick select layer of minimum CBR 15% may be required depending on weather conditions prior to and during construction.

12.6 Construction Notes

Subgrade Preparation

Subgrade preparation for pavement areas should be in accordance with MCC MoES[16] and should include the following procedures.

- Remove any organic material or other deleterious material from the widening or new construction areas.
- Removal of the existing wearing course for offsite disposal or recycling.
- Excavation of the existing pavement and fill/subgrade material to design subgrade level, with the stockpiling of the pavement gravel for reuse as select, subject to reconditioning where necessary.
- Proof-roll the exposed subgrade using a heavy (minimum 10 tonne static) roller with loose or yielding areas excavated and replaced with compacted select fill or subgrade replacement.
- Where filling or subgrade replacement is required, the materials employed should be free of organic materials, have a maximum particle size of 100 mm diameter or one third of the layer thickness, and have a CBR value greater than 3%.
- Compaction of the subgrade filling or select should be to at least 100% of Standard Maximum Dry Density (SMDD); in layers of not greater than 330 mm loose thickness and within 70-100% of SOMC. Subgrade should be placed as close to SOMC without exceeding it.

[16] Maitland City Council – Manual of Engineering Standard 2014

Following satisfactory preparation of the subgrade, the pavement should be placed in accordance with the requirements of the appropriate section of this report, depending on the proposed pavement type to be utilised.

12.7 Materials

Pavement material should conform to MCC *Manual of Engineering Standards (MoES)* and the requirements outlined in **Table 26**.

Table 26 – Pavement Materials and Compaction Requirements

Pavement Course	Material Specification	Compaction Requirements
Wearing Course Asphaltic concrete	As required by MCC MoES	As specified by the supplier and complying with MCC specifications
Basecourse Quality crushed rock	Complying with MCC MoES and a CBR>120%)	Min 98% Modified (AS1289 5.2.1) or Min 102% Standard (AS1289 5.1.1)
HBB Basecourse Heavily Bound Base	In accordance with MCC MoES RMS QA Specification R73 and AS1379 Minimum UCS of 5.0 MPa.	
Sub-base Crushed rock or gravel	Complying with MCC MoES	Min 95% Modified (AS1289 5.2.1) or Min 100% Standard (AS1289 5.1.1)
Sub-base stabilised	In accordance with MCC MoES RMS QA Specification R73 and AS1379 Minimum 2 MPa 28-day characteristic compressive strength.	
Select Granular select material	Min CBR 15%	Min 100% Standard (AS1289 5.1.1)
Subgrade or replacement	Min CBR 2%	Min 100% Standard (AS1289 5.1.1)

Where localised subgrade replacement is needed, material of similar consistency should be used. This is to prevent the creation of variable permeability zones in the subgrade which may trap moisture and lead to subgrade deformation.

Minimum testing on all pavement materials should be based on MCC requirements and should include a four day soaked CBR, Atterberg Limits, Particle Size Distribution analysis and Wet/Dry strength determination. Pre-treatment of materials prior to testing would be advisable for material subject to breakdown. The selection of appropriate construction materials that are durable and insensitive to moisture change is essential.

Wearing Courses should be designed in accordance with Maitland City Council Manual of Engineering Standard and RMS QA Specification R116 using Austroads APRG Report No. 18 methodology. Primer seals are required under all asphalt wearing courses.

12.8 Pavement Interface

Where new pavement construction abuts existing pavement, care shall be taken to either create a clean vertical construction joint, or bench in the basecourse and asphalt layers for a minimum of 0.5 m for the entire pavement width.

Where a vertical construction joint is provided at interfaces of existing and new flexible pavements, the use of a strain relieving mechanism would be recommended to inhibit cracking. Alternatively, the use of a saw cut, sealed with a rubber emulsion can be utilised to control the position of cracking.

12.9 Drainage

To protect pavement materials from wetting and softening, particular care is required to provide a waterproof seal for the pavement materials along with adequate surface and sub-surface drainage of the pavement and adjacent areas.

Subsoil drainage is recommended to intercept any subsurface flows and should be located below or behind the kerb to intercept any moisture ingress from outside and from within the roundabout annulus. Subsoil drains will require flush-out points and regular maintenance to ensure their correct operation. The subgrade should be constructed with sufficient cross fall (in general 3%) to assist in reducing retention time for moisture entering the pavement.

12.10 Construction Inspections

The subgrade will require inspection by an experienced geotechnical consultant after boxing out or filling to design subgrade level. The purpose of inspections is to confirm design parameters, assess the suitability of the subgrade to support the pavement, and delineate areas which may require subgrade replacement or remedial treatment prior to construction.

12.11 Construction Guidelines

All works and materials, including wearing courses used in construction of the pavement should be designed and constructed in accordance with Maitland City Council Manual of Engineering Standards or as specified within this report. Where discrepancies may occur, clarification should be sought from Council on their requirements.

13 Conclusions and Recommendations

This report presents the findings of a PSI and GI undertaken at the Site, located at 106 Anambah Road, Anambah, NSW. The Site comprises of a large single lot approximately 22.84 ha in size and the southern portion is proposed to be redeveloped into a residential development. The PSI was commissioned by Stevens in accordance with the decision process for land use changes outlined in SEPP 55.

The Site history review indicates that the Site has been previously utilised for agricultural land use. Historical aerial photography shows minimal demolition of buildings.

The results of the acid sulfate soil and salinity testing showed that the soils were non-saline and did not indicate a risk of potential acid sulfate soils.

Based on the site history review and the results from the analytical testing, the Developable Portion of the Site, with the exception of the onsite effluent disposal area in proposed Lot 34, was considered to contain a low risk of contamination associated with historical agricultural land use, subject to the following recommendations:

- All anthropogenic materials should be removed from the Developable Portion to the extent practicable.
- An unexpected finds protocol is developed for the construction phase of the Proposed Development.
- A hazardous materials assessment of any buildings proposed to be demolished during construction of the Proposed Development is undertaken prior to demolition.

It is understood that the existing residential dwelling and septic system in proposed Lot 34 of the Developable Portion is to remain and this lot will not be redeveloped. The effluent disposal area in Lot 34 should be extended or redesigned to accommodate actual on-site waste water loading in order to reduce water logging of surface soils. Should the septic system be decommissioned, then impacted soils should be remediated in accordance with a Remediation Action Plan.

The site is by relatively thick topsoil underlain by highly reactive clays that are of relatively low strength. From a geotechnical viewpoint, there are no constraints on the type of residential structures that may be constructed at the site of the proposed of the proposed new development, provided all foundations are designed and constructed in accordance with AS 2870-2011, Residential Slabs and Footings [6] (AS 2870-2011) and in accordance with the recommendations of this report and founded in stiff or better natural clay or controlled fill.. Articulation joints should be provided where appropriate. Uncontrolled fill located on proposed lots 32 and 33 will need to be removed and could potentially be used as fill in the road alignment east of proposed lots 16 and 20.

Flexible structures such as articulated brick veneer, timber or similar are considered appropriate.

Pavement design has been undertaken in accordance with the Maitland City Council – MoES and are presented in **Section 12**. It is recommended that provision for a 300mm minimum CBR15% material is allowed for it costing due to the propensity for site material to lose strength when they become wet.

Figures



EP RISK

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Preliminary Site Investigation and Geotechnical Investigation
Lot 90 DP 785244

Job No: EP0454
Date: 11/01/2017
Drawing Ref: EP0454 Fig1_Site Location
Version No: v1

N

0 200 400 800
Approximate Scale Only (m)

Figure 1 – Site Location

Co-ordinate system: MGA 56
Drawn by: NM Checked by: PS
Scale of regional map not shown
Source: SIX Maps

Certified System Quality ISO 9001 SAI GLOBAL
Certified System Health & Safety AS 4801 SAI GLOBAL
Certified System Environment ISO 14001 SAI GLOBAL



EP RISK

www.eprisk.com.au

Preliminary Site Investigation and Geotechnical Investigation
Lot 90 in DP 785244

Figure 2 – Site Layout and Sampling Locations

Job No: EP0454
Date: 18/01/2017
Drawing Ref: EP0454 Fig2_Sampling Location
Version No: v1

N

0 40 80 160

Approximate Scale Only (m)

Co-ordinate system: MGA 56
Drawn by: PS Checked by: NM
Approximate scale shown
Source: Northrop Drawing CSK02 Rev.

Certified System Quality ISO 9001 SAI GLOBAL
Certified System Health & Safety AS 4801 SAI GLOBAL
Certified System Environment ISO 14001 SAI GLOBAL

Analytical Tables

Analytical Summary
California Bearing Ratio

EP0454 Anambah PSI
Lot 90 DP 785244 Anambah Road, Anambah, NSW

	Sample ID:		TP3	TP5	TP10
	Sample date:		19/01/2017	19/01/2017	19/01/2017
	Depth (mBGS):		0.5-0.9	0.5-0.9	0.5-0.9
	Sample Description:		CLAY, brown	CLAY	CLAY, brown
Test		Unit			
California Bearing Ratio (AS 1289.6.1.1)	CBR at 2.5 mm	%	2.5	2	4.5
	Maximum Dry Density	t/m^3	1.46	1.45	1.47
	Optimum Moisture Content	%	27.9	29	26.7
	Dry Density before Soaking	t/m^3	1.46	1.45	1.47
	Density Ratio before Soaking	%	100	100	100
	Moisture Content before Soaking	%	27.5	28.5	27
	Moisture Ratio before Soaking	%	98	99	101
	Dry Density after Soaking	t/m^3	1.42	1.42	1.43
	Density Ratio after Soaking	%	97	98	97
	Swell	%	3.5	2.5	2.5
	Moisture Content of Top 30mm	%	41.9	44.2	38.6
	Moisture Content of Remaining Depth	%	29	31.6	27.8
	Compactive Effort	-	Standard	Standard	Standard
	Surcharge Mass	kg	9	9	9
	Period of Soaking	Days	4	4	4
	Oversize Material	%	0	0	0
	Field Moisture Content	%	34.6	36	23.8

mBGS - meters below ground surface

Analytical Summary
Material Test Report

EP0454 Anambah PSI
Lot 90 DP 785244 Anambah Road, Anambah, NSW

		Sample ID:	TP3	TP10
		Sample date:	19/01/2017	19/01/2017
		Depth (mBGS):	0.5-0.9	0.5-0.9
		Sample Description:	CLAY, brown	CLAY, brown
Test				
Emerson Class Number (AS 1289.3.8.1)	Emerson Class Number		4	4
Particle Size Distribution (AS 1289.3.6.1) - % Passing	Sieve Size	6.7mm	-	100
		4.75mm	100	100
		2.36mm	100	100
		1.18mm	100	100
		600µm	99	100
		425µm	99	99
		300µm	99	99
		150µm	98	98
		75µm	95	94

mBGS - meters below ground surface

Analytical Summary
Shrink Swell

EP0454 Anambah PSI
Lot 90 DP 785244 Anambah Road, Anambah, NSW

	Sample ID:		TP1	TP2	TP4	TP6	TP7	TP8	TP11	TP12
	Sample date:		19/01/2017	19/01/2016	19/01/2016	19/01/2016	19/01/2016	19/01/2016	19/01/2016	19/01/2016
	Depth (mBGS):		1-1.4	1.5-1.9	0.4-0.9	1-1.4	0.5-0.9	1-1.4	1-1.4	0.4-0.7
	Sample Description:		CLAY	sandy CLAY	CLAY	CLAY	CLAY	sandy CLAY	sandy CLAY	sandy CLAY
Test		Unit								
Swell Test (AS 1289.7.1.1)	Swell on Saturation	%	1.8	1.6	0.2	2	2.1	2.5	3.3	1.6
	Moisture Content before	%	35.3	33.6	39.2	33.2	32.1	31.1	29.4	30.7
	Moisture Content after	%	38.7	38.1	41.3	37.6	35.5	36.7	36.2	32.4
	Est. Unc. Comp. Strength before	kPa	170	270	160	260	320	450	570	430
	Est. Unc. Comp. Strength after	kPa	160	230	100	150	130	170	160	130
Shrink Test (AS 1289.7.1.1)	Shrink on drying	%	10.3	7.9	10	8.6	8.6	7.8	6.6	8.2
	Shrinkage Moisture Content	%	35.6	33.5	39.2	32.9	31.8	31.2	29.6	30.8
	Est. inert material	%	0	2	0	2	0	2	2	2
	Crumbling during shrinkage	-	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
	Cracking during shrinkage	-	Minor	Minor	Major	Minor	Minor	Minor	Minor	Nil

mBGS - meters below ground surface

Table 1 – Summary of CBR and Emerson Class Number Test Results								
Test Pit	Depth (mBGS)	Material Type	FMC[1] (%)	OMC[2] (%)	MDD[3] (t/m^3)	Swell (%)	CBR[4] (%)	ECN[5]
TP3	0.5-0.9	Clay	34.6	27.9	1.46	3.5	2.5	4
TP5	0.5-0.9	Clay	36	29	1.45	2.5	2	-
TP10	0.5-0.9	Clay	23.8	26.7	1.47	2.5	4.5	4

Table 2 – Summary of Particle Size Distribution Results										
Test Pit	Depth (mBGS)	Material Type	Sieve Size								
			6.7 mm	4.75 mm	2.36 mm	1.18 mm	600 µm	425 µm	300 µm	150 µm	75 µm
			% Passing								
TP3	0.5-0.9	Clay	-	100	100	100	99	99	99	98	95
TP5	0.5-0.9	Clay	100	100	100	100	100	99	99	98	94

Table 3 – Summary of Shrink Swell Test Results					
Test Pit	Depth (mBGS)	Material Type	Shrink[6] (%)	Swell[7] (%)	ISS[8] (%)
TP1	1-1.4	CLAY	10.3	1.8	6.2
TP2	1.5-1.9	sandy CLAY	7.9	1.6	4.8
TP4	0.4-0.9	CLAY	10	0.2	5.6
TP6	1-1.4	CLAY	8.6	2	5.3
TP7	0.5-0.9	CLAY	8.6	2.1	5.4
TP8	1-1.4	sandy CLAY	7.8	2.5	5
TP11	1-1.4	sandy CLAY	6.6	3.3	4.6
TP12	0.4-0.7	sandy CLAY	8.2	1.6	5

[1] FMC – Field moisture content.
[2] OMC – Optimum moisture content.
[3] MDD – Maximum dry density.
[4] CBR – California bearing ratio at 2.5 mm.
[5] ECN – Emerson Class Number.
[6] Shrink on drying
[7] Swell on saturation
[8] ISS – Shrink Swell Index.

Analytical Summary - Soil
OC/OPs, Metals

EP0454- Anambah DSI
106 Anambah Road, Anambah, NSW

				Sample ID	TP2/0.2	TP3/0.2	TP4/0.2	TP5/0.2	TP6/0.2	TP7/0.2	TP8/0.2	TP9/0.2	TP10/0.2	TP11/0.2	TP12/0.2	SS2	SP1	SP2	SP3
				Sample Depth (mBGS)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1
				Sampled Date	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017
				Sample Description	SILT	SILT	SILT	SILT	SILT	SILT	SILT	SILT	SILT	SILT	SILT	SILT	SILT	SILT	SILT
		NEPM 2013 HILs A Soil	NEPM 2013 EILs Residential,	All results in mg/kg															
Group	**Analyte**																		
Organochlorine Pesticides	4,4-DDE			<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
	a-BHC			<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
	Aldrin			<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
	Aldrin + Dieldrin	6		<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
	b-BHC			<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
	chlordane	50		<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
	Chlordane (cis)			<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
	Chlordane (trans)			<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
	d-BHC			<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
	DDD			<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
	DDT		180	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	DDT+DDE+DDD	240		<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
	Dieldrin			<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
	Endosulfan	270		<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
	Endosulfan I			<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
	Endosulfan II			<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
	Endosulfan sulphate			<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
	Endrin	10		<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
	Endrin aldehyde			<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
	Endrin ketone			<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
	g-BHC (Lindane)			<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
	Heptachlor	6		<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
	Heptachlor epoxide			<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
	Hexachlorobenzene	10		<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
	Methoxychlor	300		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Organophosphorous Pesticides	Azinophos methyl			<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
	Bromophos-ethyl			<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
	Carbophenothion			<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
	Chlorfenvinphos			<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
	Chlorpyrifos	160		<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
	Chlorpyrifos-methyl			<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
	Diazinon			<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
	Dichlorvos			<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
	Dimethoate			<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
	Ethion			<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
	Fenthion			<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
	Malathion			<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
	Methyl parathion			<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2
	Monocrotophos			<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2
	Prothiofos			<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
	Demeton-S-methyl			<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
	Fenamiphos			<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
	Parathion			<0.2	<0.2	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	<0.2	<0.2
	Pirimphos-ethyl			<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
Metals	Arsenic	100	100	**<5**	**<5**	-	**<5**	**<5**	**<5**	**<5**	<5	<5	<5	<5	-	-	-	-
	Cadmium	20		<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	-	-	-	-
	Chromium (III+VI)	100	660	**44**	**31**	-	**37**	**30**	**47**	**32**	**45**	**65**	**48**	**47**	-	-	-	-
	Copper	6000	100	**10**	**9**	-	**8**	**9**	**9**	**8**	**9**	**7**	**11**	**12**	-	-	-	-
	Lead	300	1100	**14**	**11**	-	**11**	**8**	**12**	**10**	**14**	**18**	**12**	**9**	-	-	-	-
	Mercury	40		**<0.1**	<0.1	-	<0.1	**<0.1**	<0.1	**<0.1**	<0.1	<0.1	<0.1	<0.1	-	-	-	-
	Nickel	400	290	**9**	**8**	-	**6**	**7**	**10**	**7**	**12**	**23**	**13**	**12**	-	-	-	-
	Zinc	7400	180	**7**	**5**	-	**5**	**8**	**9**	**5**	**11**	**7**	**10**	**11**	-	-	-	-

iS - meters below ground surface

Analytical Summary - Soil
BTEX and TPH

EP0454- Anambah DSI
106 Anambah Road, Anambah, NSW

							Sample ID	TP4/0.2	SP1	SP2	SP3	QS1	SS2
							Sample Depth (mBGS)	0.2	0.1	0.1	0.1	0.2	0.1
							Sampled Date	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017
							Sample Description	SILT	SILT	SILT	SILT	SILT	SILT
		NEPM 2013 Residential A Soil HSL for Vapour Intrusion			NEPM 2013 ESLs for Residential, Coarse/Fine Soil	CRC Care (2011) Direct Contact / Intrusive Maintenance Worker	NEPM 2013 Management Limits Residential, Coarse/Fine Soil	mg/kg					
Group	**Analyte**	**0-1m**	**1-2m**	**2-4m**	**0-2m**	**0-2m**	**0-2m**						
		Silt	**Clay**	**Clay**									
BTEX	Benzene	0.6	1	2	50/65	100 / 1,100		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Ethylbenzene	NL	NL	NL	70/125	4,500 / 85,000		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Toluene	390	NL	NL	85/105	14,000 / 120,000		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Total BTEX							<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
	Xylene (m & p)							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene (o)							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Xylene Total	95	310	NL	105/45	12,000 / 130,000		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	C6-C10 less BTEX (F1)	40	90	150	180		700 / 800	<10	<10	<10	<10	<10	<11
TPH & TRH	>C10-C16					3,300 / 62,000		<50	<50	<50	<50	<50	<50
	>C16-C34				300/1,300	4,500 / 85,000	2,500 / 3,500	<100	<100	<100	<100	<100	<100
	>C34-C40				2,800/5,600	6,300 / 120,000	10,000	<100	<100	<100	<100	<100	<100
	F2-NAPHTHALENE	230	NL	NL	120		1,000	<50	<50	<50	<50	<50	<50
	C6 - C9							<10	<10	<10	<10	<10	<10
	C10 - C14							<50	<50	<50	<50	<50	<50
	C15 - C28							<100	<100	<100	<100	<100	<100
	C29-C36							<100	<100	<100	<100	<100	<100
	+C10 - C36 (Sum of total)							<50	<50	<50	<50	<50	<50
	C10 - C40 (Sum of total)							<50	<50	<50	<50	<50	<50
	C6-C10					4,400 / 82,000		<10	<10	<10	<10	<10	<10

- meters below ground surface

Analytical Summary - Soil
PAH, Phenols and PCB

EP0454- Anambah DSI
106 Anambah Road, Anambah, NSW

							Sample ID	TP4/0.2	TP12/3	SP1	SP2	SP3	SS1	SS2	QS1
							Sample Depth (mBGS)	0.2	3						
							Sampled Date	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017
							Sample Description	SILT	CLAY	SILT	SILT	SILT	SILT	SILT	SILT
		NEPM 2013 HILs Residential A Soil	NEPM 2013 A Soil HSL for Vapour Intrusion			NEPM 2013 ESLs for Residential, Coarse/Fine Soil	NEPM 2013 EILs Urban Residential and Public Open Space	All results in mg/kg							
Group	**Analyte**		**0-1m SILT**	**1-2m CLAY**	**2-4m CLAY**	**0-2m**									
PAH	Acenaphthene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Acenaphthylene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Anthracene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benz(a)anthracene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(a) pyrene					0.7		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(g,h,i)perylene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(b+j)fluoranthene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(k)fluoranthene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Chrysene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Dibenz(a,h)anthracene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fluoranthene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Fluorene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Indeno(1,2,3-c,d)pyrene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Naphthalene		4	NL	NL		170	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Phenanthrene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Pyrene							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Benzo(a)pyrene TEQ calc (Zero)	3						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Total PAHs	300						<8	<8	<8	<8	<8	<8	<8	<8
Phenols	2,4,5-trichlorophenol							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4,6-trichlorophenol							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,4-dichlorophenol							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2,6-dichlorophenol							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2-chlorophenol							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Pentachlorophenol	100						<2	<2	<2	<2	<2	<2	<2	<2
	2,4-dimethylphenol							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2-methylphenol							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	2-nitrophenol							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	3-&4-methylphenol							<1	<1	<1	<1	<1	<1	<1	<1
	4-chloro-3-methylphenol							<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
	Phenol	3000						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Polychlorinated Biphenyls	PCBs (Sum of total)	1						-	-	-	-	-	-	-	-

1. It is noted that ESL for benzo(a)pyrene is based on limited data and is therefore of low reliability and may be overly conservative. The main driver for benzo(a)pyrene is typically the associated human health risk. In the absence of more reliable ecological criteria, the residential HIL for benzo(a)pyrene of 3 mg/kg is considered to be sufficiently protective of ecological

mBGS - meters below ground surface

Analytical Summary - Soil
Asbestos

EP0454- Anambah DSI
106 Anambah Road, Anambah, NSW

			Sample ID	SP1	SP2	SP3
			Sample Depth (mBGS)			
			Sampled Date	18/01/2017	18/01/2017	18/01/2017
			Sample Description			
			NEPM 2013 HSLs Comm/Ind D Soil			
Group	**Analyte**	**Units**				
Identification of Asbestos in Soils	Asbestos Detected	g/kg				
	Asbestos Type	-				
Asbestos Quantification (non-NATA)	Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	% (w/w)				
	Friable Asbestos	g				
	Friable Asbestos (as Asbestos in Soil)	% (w/w)	<0.001			
	Free Fibres	Fibres				
	Asbestos Containing Material	g				
Identification of Asbestos in bulk samples	Asbestos Detected	g/kg	presence	NO	NO	NO
	Asbestos Type	-		-	-	-
	Sample weight (dry)	g		34.2	40.3	26.4
	Description	-		Pale Brown Sandy Soil	Pale Brown Sandy Soil	Pale Brown Sandy Soil

mBGS - meters below ground surface
ch - chrysotile
* Calculated based upon the mass of ACM in sample

Analytical Summary - Soil
Inorganics and Microbial

EP0454- Anambah DSI
106 Anambah Road, Anambah, NSW

	Sample ID	TP1/0.2	TP2/0.2	TP2/0.5	TP3/1	TP4/2	TP5/2.5	TP6/0.2	TP7/0.5	TP8/1	TP9/2	TP10/0.2	TP12/3	SP3
	Sample Depth (mBGS)	0.2	0.2	0.5	1	2	2.5	0.2	0.5	1	2	0.2	3	0.1
	Sampled Date	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017	18/01/2017
	Sample Description	SILT	SILT	SILT	SILT	CLAY	CLAY	SILT	SILT	SILT	CLAY	SILT	CLAY	SILT
Group	**Analyte**	**Units**												
Exchangeable Cations	Exchangeable Calcium	meq/100g	5.6	2.1	1.4	1.2	0.8	0.7	3.6	4.1	2	1.8	2	2.3	0.6
	Exchangeable Magnesium	meq/100g	8.2	13.7	15.4	15.9	16.5	15.2	13.6	16.6	19.4	15.8	18	17	5.3
	Exchangeable Potassium	meq/100g	0.6	0.2	0.2	0.2	0.1	0.1	0.3	0.2	0.2	0.2	0.2	0.1	0.4
	Exchangeable Sodium	meq/100g	1.3	5	6.3	12.6	13.4	13	2.9	8.6	12.7	10.3	13.8	7.2	2.4
	Cation Exchange Capacity	meq/100g	15.7	22.4	25	31.8	32.4	30.6	22.8	29.6	34.3	28.5	34.4	26.6	8.7

mBGS - meters below ground surface

	Sample ID		NSW EPA 2000	TP1/1	TP1/2	SS1
	Sample Depth (mBGS)			1	2	
	Sampled Date			18/01/2017	18/01/2017	18/01/2017
	Sample Description			SILT	CLAY	SILT
Group	**Analyte**	**Units**				
Coliforms	Coliforms	orgs/g		<3	<3	700
	Escherichia coli	orgs/g	100	<3	<3	480

Analytical Summary - Soil Rinsate

EP0454- Anambah DSI
106 Anambah Road, Anambah, NSW

		Sample ID	RW01
		Sampled Date	18/01/2017
Group	**Analyte**	**Units**	
TRH Volatiles/BTEX	Benzene	µg/L	<2
	Ethylbenzene	µg/L	<5
	Naphthalene	µg/L	<5
	Toluene	µg/L	<5
	Total BTEX	µg/L	<2
	C6 - C9	µg/L	<10
	Xylene (m & p)	µg/L	<5
	Xylene (o)	µg/L	<5
	Xylene Total	µg/L	<5
	C6-C10 less BTEX (F1)	µg/L	<10
	C6-C10	µg/L	<10

Analytical Summary - Soil
Trip Spike and Trip Blank

EP0331 - Prestons DSI
52 Bernera Road, Prestons, NSW

	Sample ID	TB	TSC	TS	Rcovery
	Sampled Date	30/06/2016	30/06/2016	30/06/2016	
Group	**Analyte**	All results in mg/kg			
BTEX	Benzene	<0.2	**0.6**	**0.7**	117%
	Ethylbenzene	<0.5	**2.3**	**2.4**	104%
	Toluene	<0.5	**17**	**18.4**	108%
	Total BTEX	<0.2	**34.8**	**37.4**	107%
	Xylene (m & p)	<0.5	**10.6**	**11.3**	107%
	Xylene (o)	<0.5	**4.3**	**4.6**	107%
	Xylene Total	<0.5	**14.9**	**15.9**	107%
	C6-C10 less BTEX (F1)	<10	**50**	**58**	116%
TPH	C6 - C9	<10	**74**	**84**	114%
	C6-C10	<10	**85**	**96**	113%

Analytical Summary - Soil
RPD %

EP0454- Anambah DSI
106 Anambah Road, Anambah, NSW

	Sample ID	TP4/0.2	QS2	RPD %
	Sample Depth (mBGS)	0.2	0.2	
	Sampled Date	18/01/2017	18/01/2017	
Group	**Analyte**			
BTEX	Benzene	0.2	0.2	0%
	Ethylbenzene	0.5	1	33%
	Toluene	0.5	0.5	0%
	Xylene (m & p)	0.5	2	60%
	Xylene (o)	0.5	1	33%
	Xylene Total	0.5	1	33%
	C6-C10 less BTEX (F1)	10	25	43%
TPH	C6 - C9	10	25	43%
	C6-C10	10	25	43%

Analytical Summary - Soil
RPD %

EP0331 - Prestons DSI
52 Bernera Road, Prestons, NSW

	Sample ID	TP05_0.1	DUP01	RPD %	TRP01	RPD %	TP12_0.5	DUP02	RPD %	TRP02	RPD %	SED01	DUP04	RPD %	TRP04	RPD %
	Sample Depth (mBGS)	0.1	0.1		0.1		0.5	0.5		0.5		0	0		0	
	Sampled Date	30/06/2016	30/06/2016		30/06/2016		30/06/2016	30/06/2016		30/06/2016		30/06/2016	30/06/2016		30/06/2016	
Group	**Analyte**															
Organochlorine Pesticides	4,4-DDE	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	a-BHC	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Aldrin	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Aldrin + Dieldrin	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	b-BHC	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	chlordane	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	Chlordane (cis)	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Chlordane (trans)	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	d-BHC	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	DDD	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	DDT	<0.2	<0.2	0%	<0.1	0%	<0.2	<0.2	0%	<0.1	0%	<0.2	<0.2	0%	<0.1	0%
	DDT+DDE+DDD	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	Dieldrin	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Endosulfan	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	Endosulfan I	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Endosulfan II	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Endosulfan sulphate	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Endrin	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Endrin aldehyde	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Endrin ketone	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	g-BHC (Lindane)	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Heptachlor	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Heptachlor epoxide	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	Hexachlorobenzene	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	Methoxychlor	<0.2	<0.2	0%	<0.1	0%	<0.2	<0.2	0%	<0.1	0%	<0.2	<0.2	0%	<0.1	0%
Organophosphorous Pesticides	Azinophos methyl	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Bromophos-ethyl	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Carbophenothion	<0.05	<0.05	0%		-	<0.05	<0.05	0%		-	<0.05	<0.05	0%		-
	Chlorfenvinphos	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Chlorpyrifos	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	Chlorpyrifos-methyl	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Diazinon	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Dichlorvos	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Dimethoate	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Ethion	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Fenthion	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Malathion	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%	<0.05	<0.05	0%	<0.1	0%
	Methyl parathion	<0.2	<0.2	0%	-	-	<0.2	<0.2	0%	-	-	<0.2	<0.2	0%	-	-
	Monocrotophos	<0.2	<0.2	0%	-	-	<0.2	<0.2	0%	-	-	<0.2	<0.2	0%	-	-
	Prothiofos	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	Demeton-S-methyl	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	Fenamiphos	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-
	Parathion	<0.2	<0.2	0%	<0.1	0%	<0.2	<0.2	0%	<0.1	0%	<0.2	<0.2	0%	<0.1	0%
	Pirimphos-ethyl	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-	<0.05	<0.05	0%	-	-

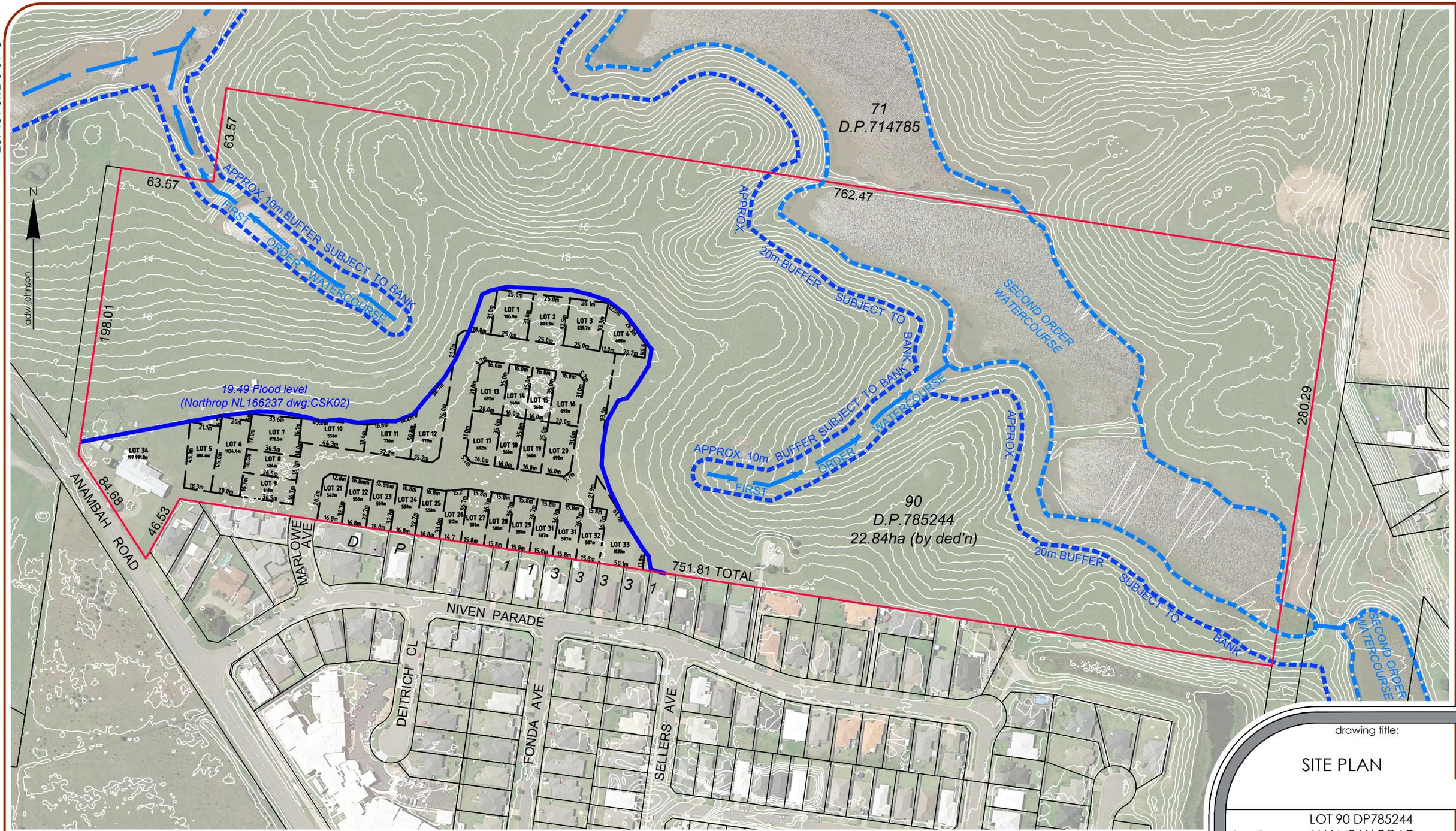
Analytical Summary - Soil
RPD %

EP0331 - Prestons DSI
52 Bernera Road, Prestons, NSW

	Sample ID	TP14_2.0	DUP03	RPD %	TRP03	RPD %
	Sample Depth (mBGS)	2	2		2	
	Sampled Date	30/06/2016	30/06/2016		30/06/2016	
Group	**Analyte**					
Inorganics	Ammonia as N	<20	<20	0%	**1.6**	-
	Kjeldahl Nitrogen Total	**440**	**400**	10%	-	-
	Nitrogen (Total)	**440**	**400**	10%	-	-
	Silica	**64**	**74**	14%	-	-
	Sulphate	**360**	**370**	3%	-	-
	Sulphur as S	**120**	**120**	0%	-	-
	Sulfate as SO4 2-	**360**	**370**	3%	**250**	36%
	Silicon	**30**	**34**	13%	-	-
	Nitrite + Nitrate as N (Sol.)	<0.1	<0.1	0%	-	-
	Total Nitrogen as N	**440**	**400**	10%	**840**	63%
	Total Phosphorus as P	**68**	**56**	19%	**20**	109%
Coliforms	Coliforms	<12	<12	0%	<2	0%
	Escherichia coli	<12	<12	0%	<2	0%

Appendix A
SITE SURVEY DRAWINGS

239481-SITE-0-01-C



NOTE:
THE DCDB HAS BEEN ADOPTED FOR THE WESTERN, NORTHERN & EASTERN SITE BOUNDARIES.

ver.	date	comment	surveyed	drawn	checked	pm
A	26.07.2016	INITIAL ISSUE	-	MS	MD	MD
B	15.11.2016	PROP LAYOUT AND WATERCOURSE LINEWORK ADDED	-	MS	MD	MD
C	22/02/2017	UPDATE LOT LAYOUT	-	RC	MD	MD

co-ordinate & level information:
CO-ORDINATE SYSTEM: MGA 56
ORIGIN OF CO-ORDINATES: N/A
DATUM: AHD
ORIGIN OF LEVELS: N/A
CONTOUR INTERVAL: 0.5m

scale (A3 original size): 0 50 100 125m
SCALE: 1:2500 (FULL)

page: 1 OF 1
Date of Surv: n/a

drawing title:
SITE PLAN

location: LOT 90 DP785244 ANAMBAH ROAD ANAMBAH
council: MAITLAND
dwg ref: 239481-SITE-0-01-C
client: STEVENSGROUP

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• project management • civil engineering • infrastructure • superintendency • economic analysis • social impact • town planning • surveying • development feasibility • visualisation • urban design

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Plotted By: Robert Cromarty Plot Date: 23/02/17 7:48:56AM Cad File: N:\239481\DRAWINGS\239481-SITE-0-01-C.DWG

Appendix B

LOT SEARCH ENVIRONMENTAL RISK AND PLANNING REPORT (2017)

Lotsearch

Environmental Risk and Planning Report

Anambah Road, Anambah, NSW 2320

Report Buffer: 1000m

Report Date: 12 Jan 2017 16:47:49

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

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Location Confidences

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

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

Dataset Listing

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

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Cadastre Boundaries	Land and Property Information	12/01/2017	12/01/2017	Daily	-	-	-
Topographic Data	Land and Property Information	10/04/2015	01/04/2015	As required	-	-	-
List of NSW contaminated sites notified to EPA	Environment Protection Authority	04/01/2017	18/11/2016	Monthly	0	0	0
Contaminated Land: Records of Notice	Environment Protection Authority	10/01/2017	10/01/2017	Monthly	0	0	0
Former Gasworks	Environment Protection Authority	10/01/2017	29/12/2016	Monthly	0	0	0
National Waste Management Site Database	Geoscience Australia	01/11/2016	15/11/2012	Quarterly	0	0	0
Licensed Activities under the POEO Act 1997	Environment Protection Authority	04/01/2017	22/12/2016	Monthly	1	1	1
Delicensed POEO Activities still Regulated by the EPA	Environment Protection Authority	04/01/2017	22/12/2016	Monthly	0	0	0
Former POEO Licensed Activities now revoked or surrendered	Environment Protection Authority	04/01/2017	22/12/2016	Monthly	3	3	3
UPSS Environmentally Sensitive Zones	Department of Environment, Climate Change and Water (NSW)	14/04/2015	12/01/2010	As required	1	1	1
Points of Interest	Land and Property Information	10/04/2015	01/04/2015	Annually	0	0	7
Tanks (Areas)	Land and Property Information	10/04/2015	01/04/2015	Annually	0	0	0
Tanks (Points)	Land and Property Information	10/04/2015	01/04/2015	Annually	0	0	3
State Forest	Land and Property Information	11/04/2016	23/01/2015	As required	0	0	0
NSW National Parks and Wildlife Service Reserves	NSW Office of Environment and Heritage	11/04/2016	31/12/2015	Annually	0	0	0
Hydrogeology Map of Australia	Commonwealth of Australia (Geoscience Australia)	08/10/2014	17/03/2000	As required	1	1	1
Groundwater Boreholes	NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corporation; Commonwealth of Australia (Bureau of Meteorology) 2015	21/03/2016	01/12/2015	Annually	0	0	10
Geological Units 1:250,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	1	-	6
Geological Structures 1:250,000	NSW Department of Industry, Resources & Energy	20/08/2014		None planned	0	-	10
Naturally Occurring Asbestos Potential	NSW Department of Industry, Resources & Energy	04/12/2015	24/09/2015	Unknown	0	0	0
Soil Landscapes	NSW Office of Environment and Heritage	12/08/2014		None planned	3	-	8
Standard Local Environmental Plan Acid Sulfate Soils	NSW Planning and Environment	07/10/2016	07/10/2016	As required	1	-	-
Dryland Salinity Assessment	National Land and Water Resources Audit	18/07/2014	12/05/2013	None planned	1	1	1
Mining Subsidence Districts	Land and Property Information	31/08/2016	31/08/2016	As required	0	0	0
SEPP 14 - Coastal Wetlands	NSW Planning and Environment	17/12/2015	24/10/2008	Annually	0	0	0
SEPP 26 - Littoral Rainforest	NSW Planning and Environment	17/12/2015	05/02/1988	Annually	0	0	0
SEPP 71 - Coastal Protection	NSW Planning and Environment	17/12/2015	01/08/2003	Annually	0	0	0
SEPP Major Developments 2005	NSW Planning and Environment	09/03/2013	25/05/2005	Under Review	0	1	1
SEPP Strategic Land Use Areas	NSW Planning and Environment	06/07/2016	28/01/2014	Annually	1	1	1
Local Environmental Plan - Land Zoning	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	1	3	17
Local Environmental Plan - Minimum Subdivision Lot Size	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	1	-	-
Local Environmental Plan - Height of Building	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	0	-	-
Local Environmental Plan - Floor Space Ratio	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	0	-	-

Dataset Name	Custodian	Supply Date	Currency Date	Update Frequency	No. Features Onsite	No. Features within 100m	No. Features within Buffer
Local Environmental Plan - Land Application	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	1	-	-
Local Environmental Plan - Land Reservation Acquisition	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	0	-	-
State Heritage Items	NSW Planning and Environment	03/01/2017	30/10/2015	Quarterly	0	0	1
Local Heritage Items	NSW Planning and Environment	03/01/2017	04/09/2016	Quarterly	0	0	1
Bushfire Prone Land	NSW Rural Fire Service	11/11/2016	12/08/2016	Quarterly	0	0	2
Lower Hunter and Central Coast Regional Vegetation Survey	NSW Office of Environment and Heritage	28/02/2015	16/11/2009	As required	2	3	8
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	12/01/2017	12/01/2017	Daily	-	-	-

Aerial Imagery 2016

Anambah Road, Anambah, NSW 2320



Scale:
0 75 150 300
Meters

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

Coordinate System:
GDA 1994 MGA Zone 56

Date: 10January, 2017

Contaminated Land & Waste Management Facilities

Anambah Road, Anambah, NSW 2320

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 & Waste Management Facilities

Anambah Road, Anambah, NSW 2320

Contaminated Land: Records of Notice

Record of Notices within the report buffer:

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

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

Former Gasworks

Former Gasworks within the report buffer:

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

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

National Waste Management Site Database

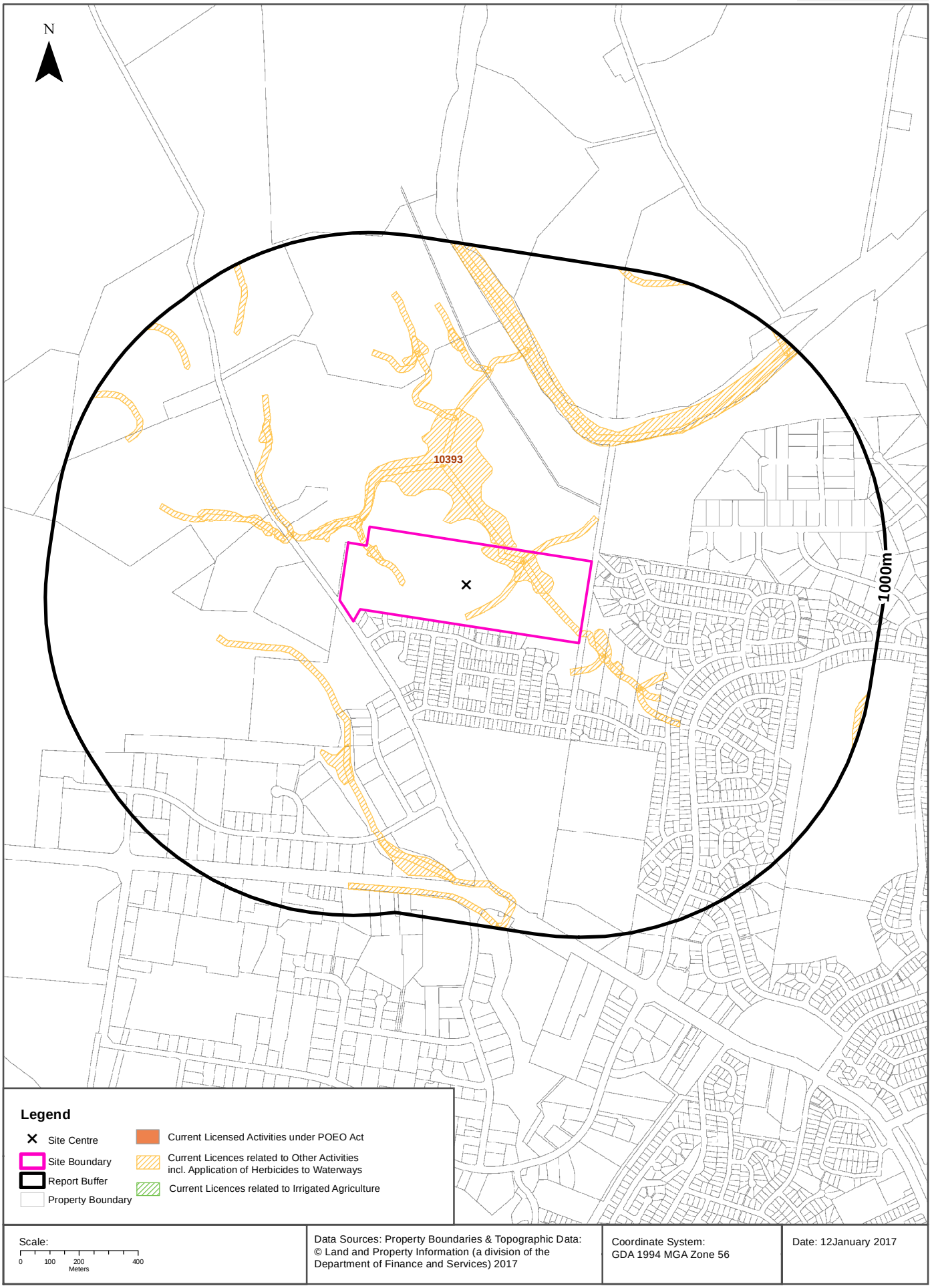
Sites on the National Waste Management Site Database within the report buffer:

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

Wate Management Facilities Data Source: Australian Governement Geoscience Australia
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Current EPA Licensed Activities

Anambah Road, Anambah, NSW 2320



Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 12January 2017

EPA Activities

Anambah Road, Anambah, NSW 2320

Licensed Activities under the POEO Act 1997

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

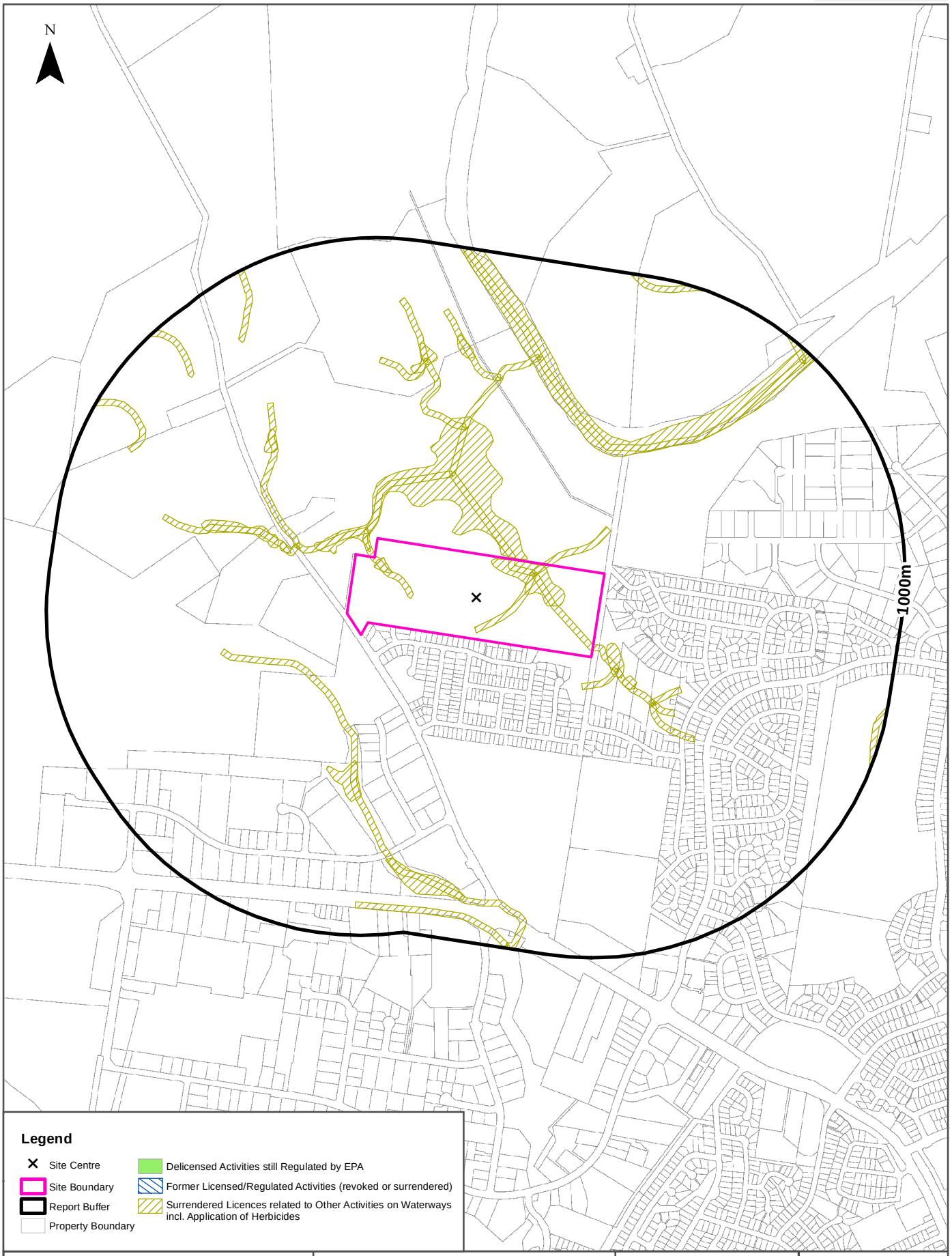
EPL	Organisation	Name	Address	Suburb	Activity	Loc Conf	Distance	Direction
10393	MAITLAND CITY COUNCIL	ALL WATERBODIES IN THE MAITLAND LOCAL GOVERNMENT AREA	.	MAITLAND	Other activities	7	0m	Onsite

POEO Licence Data Source: Environment Protection Authority

© State of New South Wales through the Environment Protection Authority

Delicensed & Former Licensed EPA Activities

Anambah Road, Anambah, NSW 2320



EPA Activities

Anambah Road, Anambah, NSW 2320

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
N/A	No records in buffer							

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

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

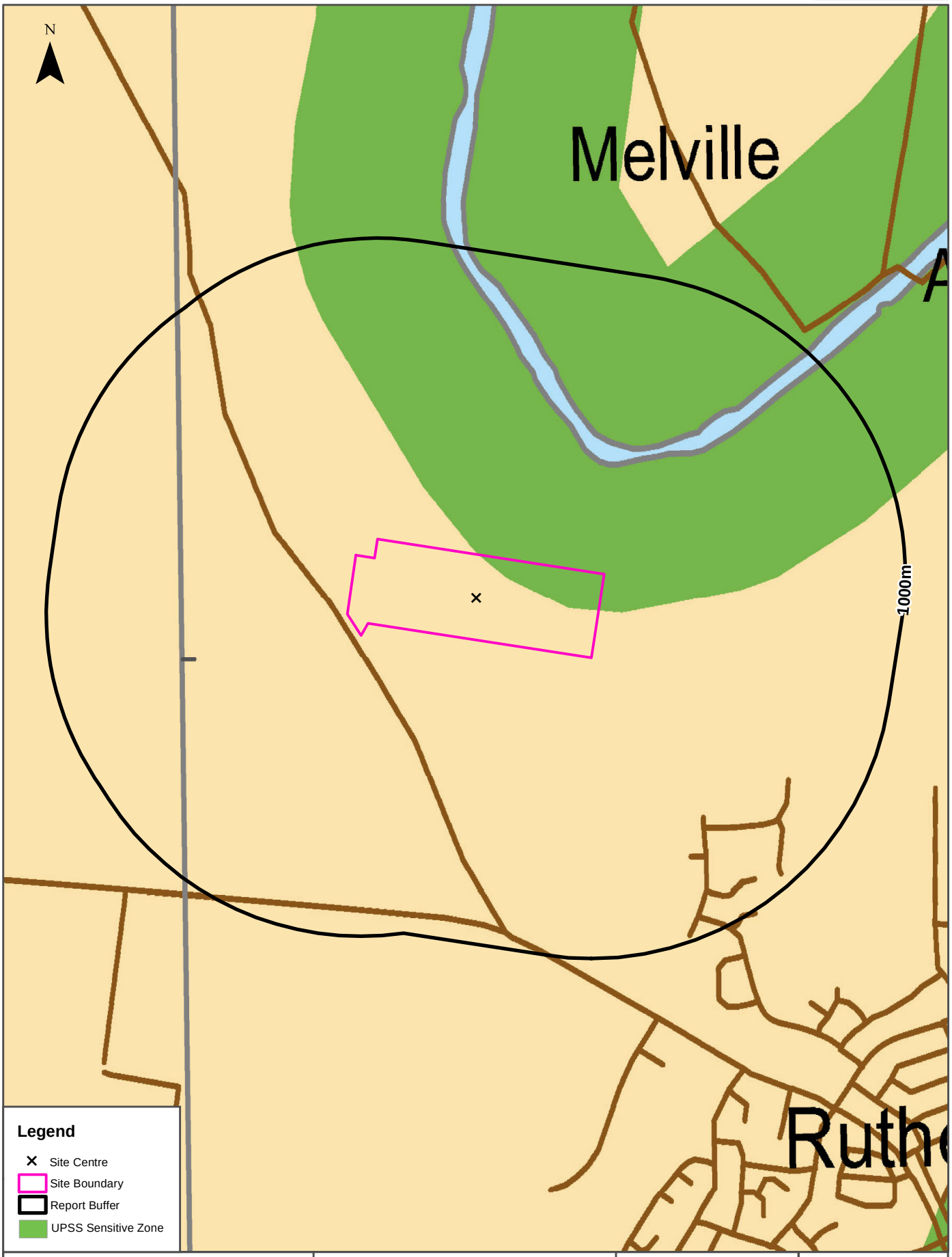
Former Licensed activities under the Protection of the Environment Operations Act 1997, now revoked or surrendered, within the report buffer:

Licence No	Organisation	Location	Status	Issued Date	Activity	Loc Conf	Distance	Direction
4653	LUHRMANN ENVIRONMENT MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	0m	Onsite
4838	Robert Orchard	Various Waterways throughout New South Wales - SYDNEY NSW 2000	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	0m	Onsite
6630	SYDNEY WEED & PEST MANAGEMENT PTY LTD	WATERWAYS THROUGHOUT NSW - PROSPECT, NSW, 2148	Surrendered		Other Activities / Non Scheduled Activity - Application of Herbicides	7	0m	Onsite

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

UPSS Sensitive Zones

Anambah Road, Anambah, NSW 2320



Aerial Imagery 2010

Anambah Road, Anambah, NSW 2320



Scale:
0 75 150 300
Meters

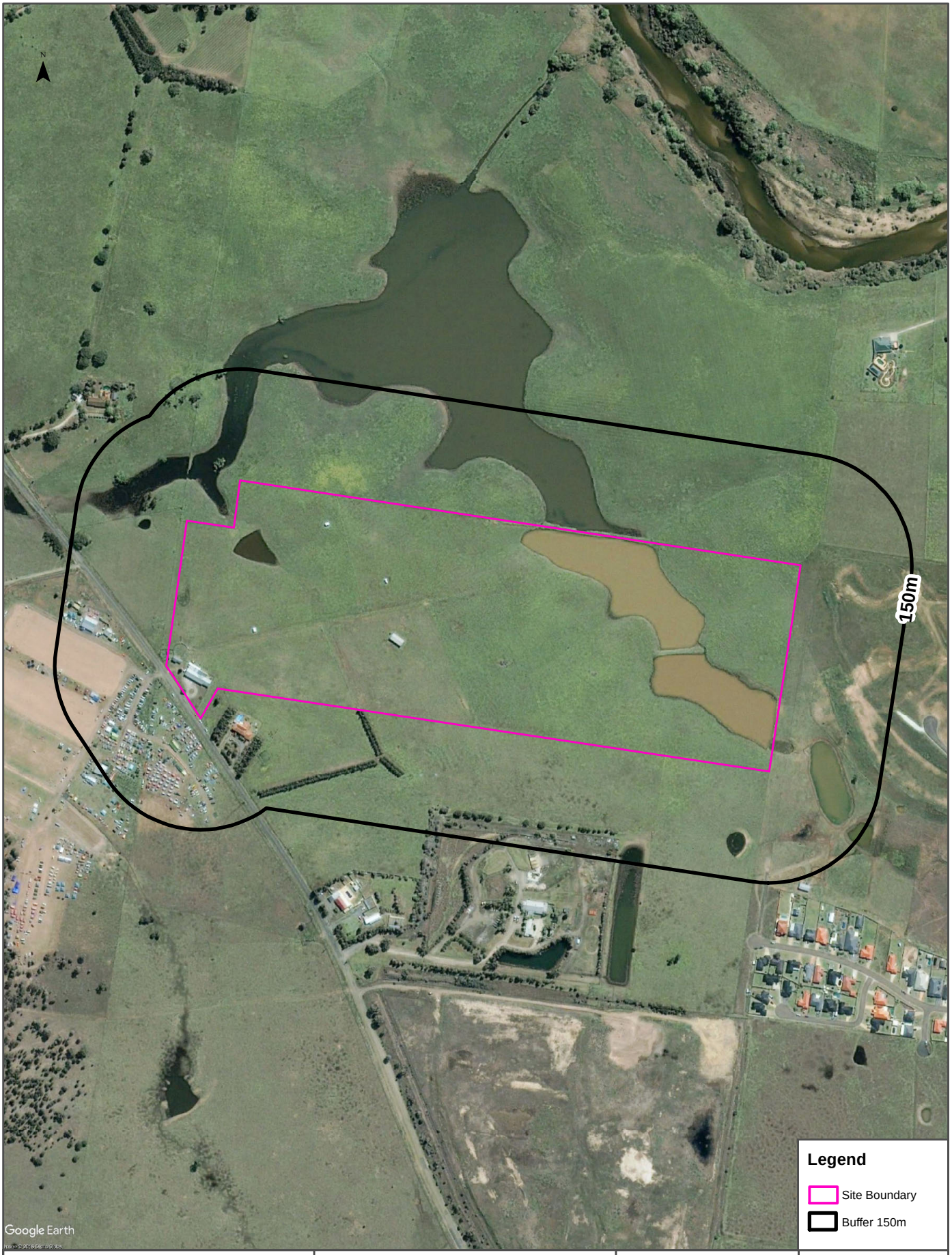
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Coordinate System:
GDA 1994 MGA Zone 56

Date: 10January, 2017

Aerial Imagery 2006

Anambah Road, Anambah, NSW 2320



Scale:
0 75 150 300
Meters

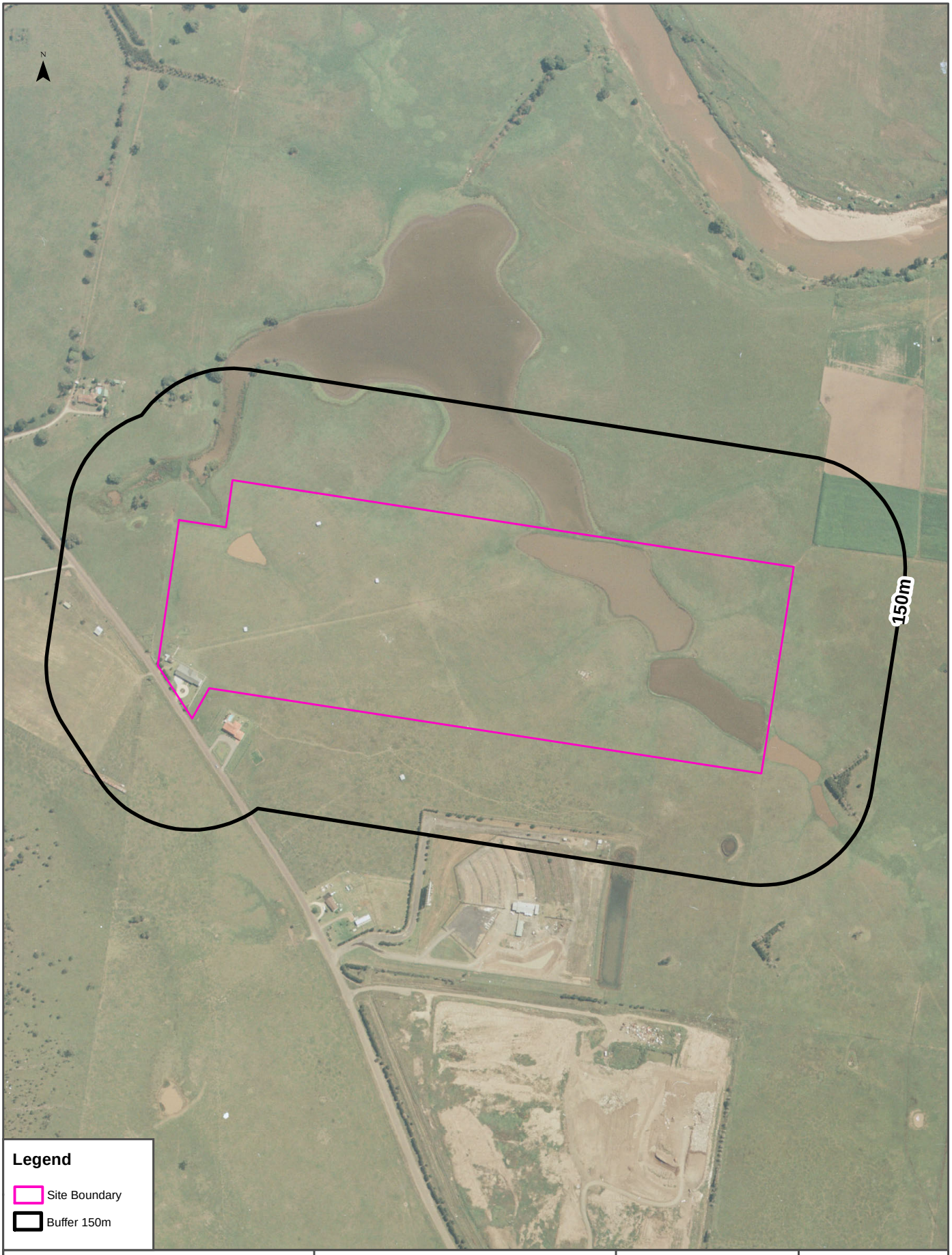
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Coordinate System:
GDA 1994 MGA Zone 56

Date: 10January, 2017

Aerial Imagery 1993

Anambah Road, Anambah, NSW 2320



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

Coordinate System: GDA 1994 MGA Zone 56

Date: 10January 2017

Aerial Imagery 1983

Anambah Road, Anambah, NSW 2320



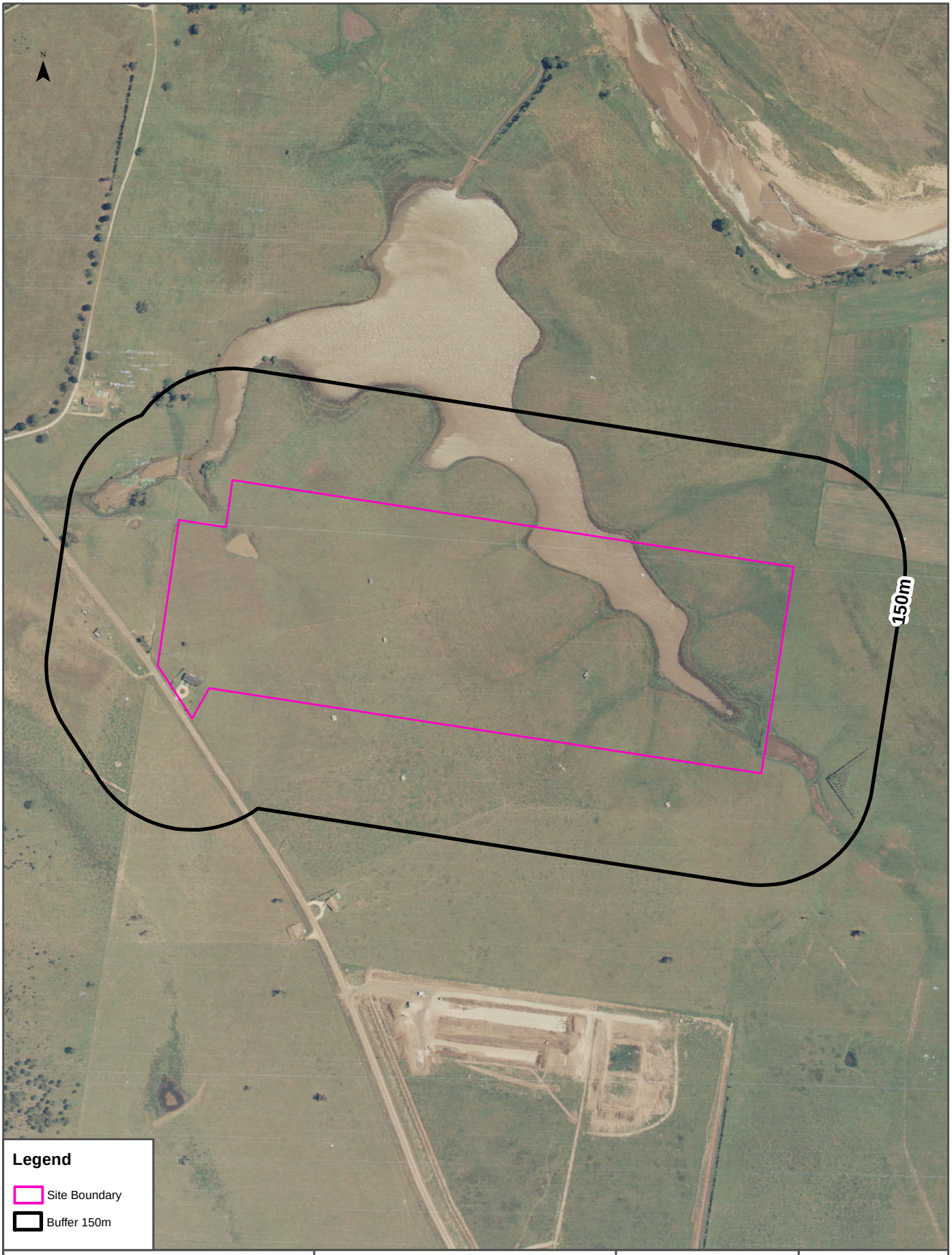
Data Sources: Historical Aerials: © Land and Property Information (a division of the Department of Finance and Services)

Coordinate System: GDA 1994 MGA Zone 56

Date: 10January 2017

Aerial Imagery 1976

Anambah Road, Anambah, NSW 2320



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

Coordinate System: GDA 1994 MGA Zone 56

Date: 10January 2017

Aerial Imagery 1965

Anambah Road, Anambah, NSW 2320



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

Coordinate System: GDA 1994 MGA Zone 56

Date: 10January 2017

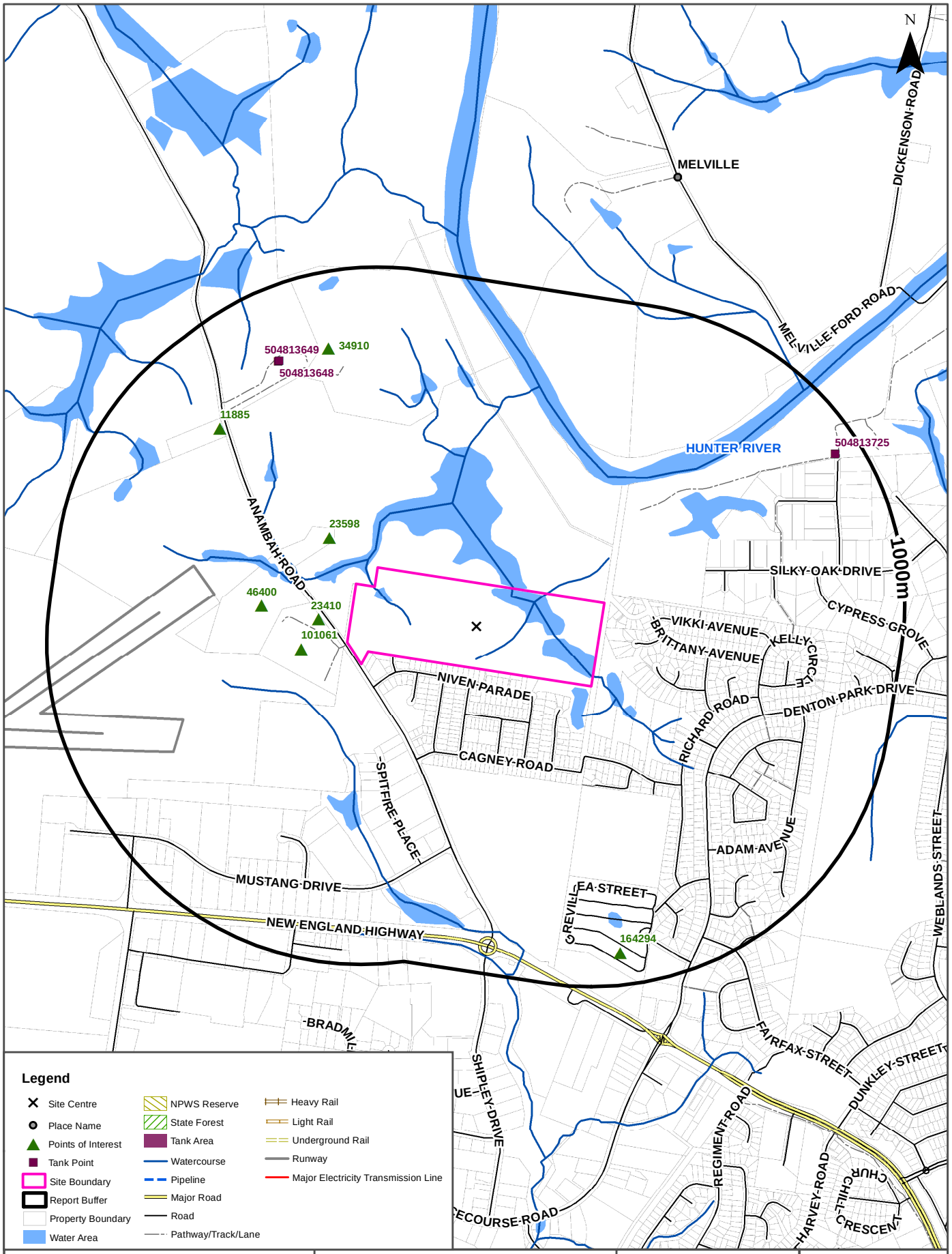
Aerial Imagery 1958

Anambah Road, Anambah, NSW 2320



Topographic Features

Anambah Road, Anambah, NSW 2320



Topographic Features

Anambah Road, Anambah, NSW 2320

Points of Interest

What Points of Interest exist within the report buffer?

Map Id	Feature Type	Label	Distance	Direction
23410	Homestead	BRADLEY PARK	106m	West
101061	Sports Field	MAITLAND POLOCROSSE GROUNDS	154m	West
23598	Homestead	CHERRIE HINTON	177m	North West
46400	Homestead	GLEN AYR	299m	West
11885	Homestead	WILLDELO	686m	North West
34910	Homestead	ANAMBAH	747m	North West
164294	Retirement Village	SIGNATURE GARDENS RETIREMENT RESORTS	892m	South East

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

Anambah Road, Anambah, NSW 2320

Tanks (Areas)

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

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

Tanks (Points)

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

Map Id	Tank Type	Status	Name	Capture Method	Feature Currency	Distance	Direction
504813649	Tank-RuralWater	Operational		Ortho Image Trace	2001-04-02	761m	North West
504813648	Tank-RuralWater	Operational		Ortho Image Trace	2001-04-02	762m	North West
504813725	Tank-RuralWater	Operational		Ortho Image Trace	2001-04-02	914m	North East

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

Anambah Road, Anambah, NSW 2320

State Forest

What State Forest exist within the report buffer?

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

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

National Parks and Wildlife Service Reserves

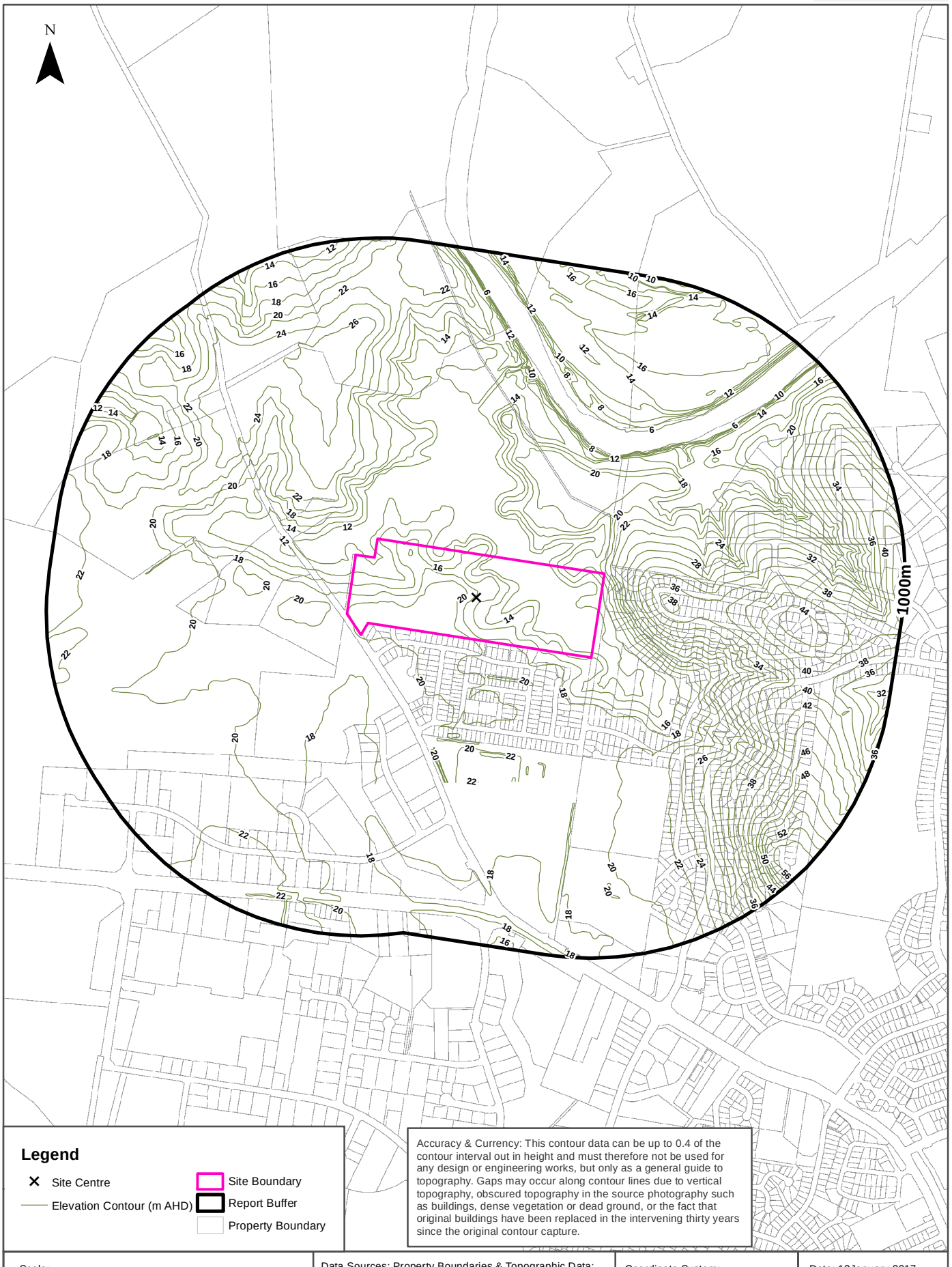
What NPWS Reserves exist within the report buffer?

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

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

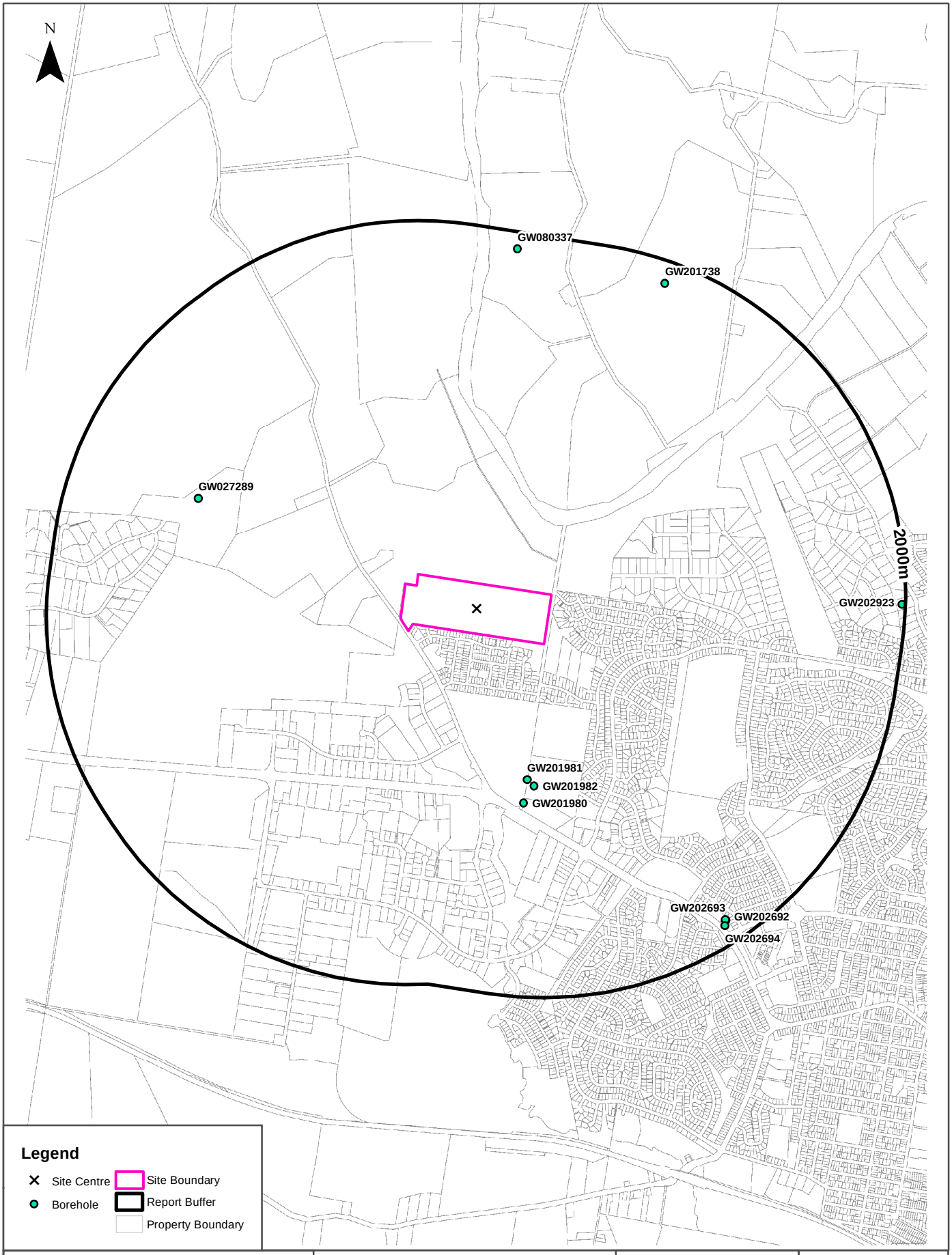
Elevation Contours (m AHD)

Anambah Road, Anambah, NSW 2320



Groundwater Boreholes

Anambah Road, Anambah, NSW 2320



Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 12January 2017

Hydrogeology & Groundwater

Anambah Road, Anambah, NSW 2320

Hydrogeology

Description of aquifers on-site:

Description
Porous, extensive highly productive aquifers

Description of aquifers within the report buffer:

Description
Porous, extensive highly productive aquifers

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 2km of the site:

GW No.	Licence No	Work Type	Owner Type	Purpose	Contractor	Complete Date	Final Depth	Drilled Depth	Salinity	SWL	Yield	Elev	Dist	Dir
GW201981	20BL172011	Bore	Private	Monitoring	Brian Atkins Drilling	07/10/2008	10.50	10.50		8.70			774m	South
GW201982	20BL172011	Bore	Private	Monitoring	Brian Atkins Drilling	07/10/2008	9.40	9.40		8.70			806m	South
GW201980	20BL172011	Bore	Private	Monitoring	Brian Atkins Drilling	07/10/2008	10.00	10.00		8.35			907m	South
GW027289	20BL015464, 20CA208161	Well	Private			01/01/1944	5.50	5.50					1265m	West
GW202693		Bore	Private	Monitoring	GroundTruth Pty Ltd	16/08/2011	7.50	7.50					1866m	South East
GW202692		Bore	Private	Monitoring	GroundTruth Pty Ltd	16/08/2011	9.00	9.00					1870m	South East
GW201738	20BL168120	Bore	Private	Domestic, Irrigation, Stock		01/07/2005	80.00	80.00		20.00	1.000		1875m	North East
GW202694		Bore	Private	Monitoring	GroundTruth Pty Ltd	16/08/2011	7.45	6.50					1894m	South East
GW080337	20BL168498	Bore	Private	Test Bore		07/11/2002							1903m	North
GW202923	20WA212682	Bore	Private	Domestic, Stock	Ace Drilling	05/02/2014	78.00	78.00		26.00	0.890		1983m	East

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

Hydrogeology & Groundwater

Anambah Road, Anambah, NSW 2320

Driller's Logs

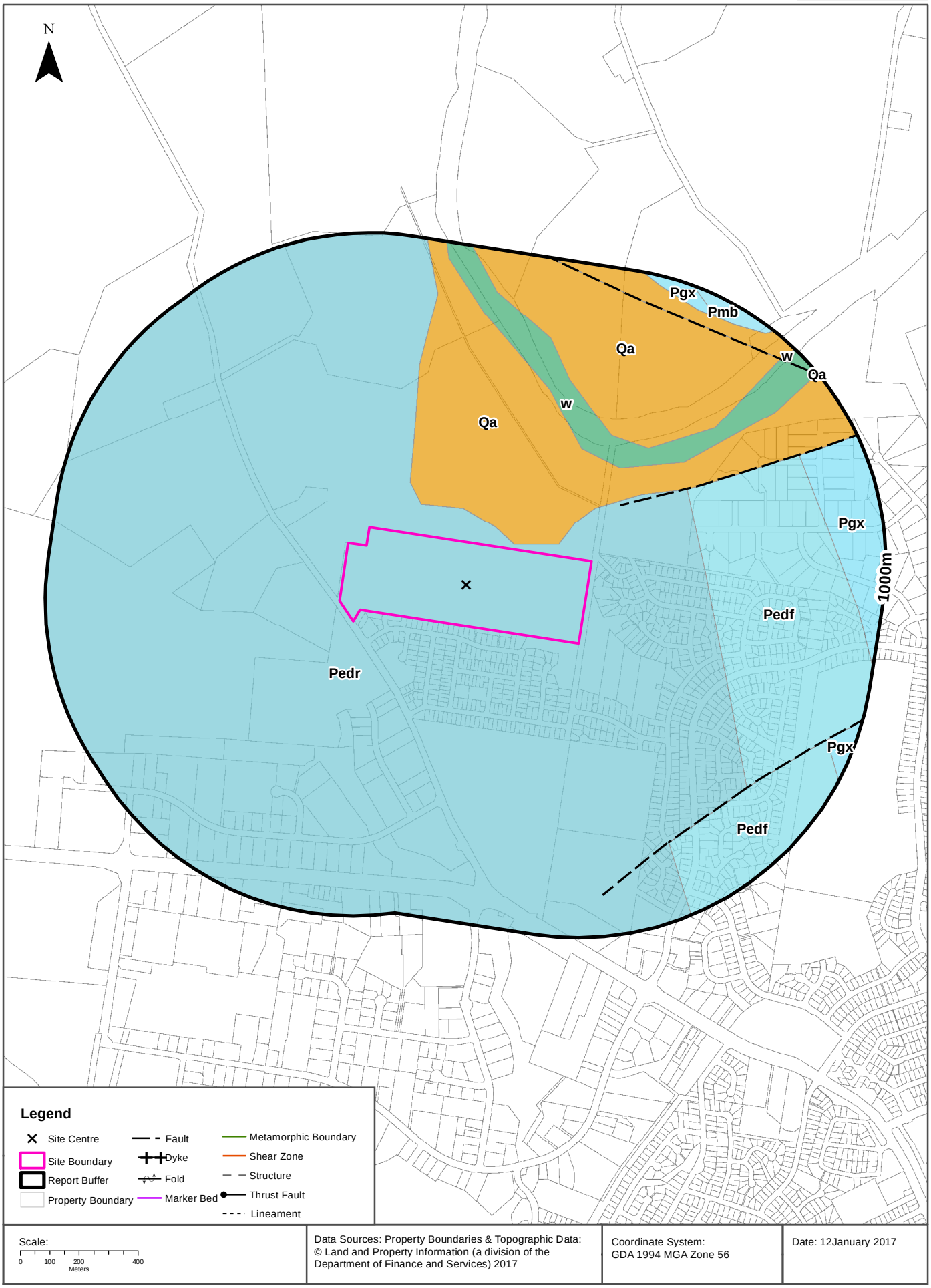
Drill log data relevant to the boreholes within 2km of the site:

Groundwater No	Drillers Log	Distance	Direction
GW201981	0.00m-0.20m Topsoil; Silty Clay, medium plasticity, brown 0.20m-10.50m Clay; medium to high plasticity	774m	South
GW201982	0.00m-0.20m Topsoil; Silty Clay, medium plasticity, brown 0.20m-9.40m Clay; medium to high plasticity, brown	806m	South
GW201980	0.00m-0.20m Topsoil; Silty Clay, medium plasticity, brown 0.20m-10.00m Clay; medium to high plasticity, brown, becomes brown & brown grey mottled @ 2.4m	907m	South
GW027289	0.00m-5.49m Loam Clay	1265m	West
GW202693	0.00m-1.00m Silt, Clayey; brown, dry, trace plasticity, @ 1m trace gravel 1.00m-7.50m Silty Clay; brown, dry, high plasticity, @ 3m brown-grey, @ 4.5m grey, mottled red, @ 5m grey, @ 6.5m brown, @ 7.5m refu	1866m	South East
GW202692	0.00m-0.50m Silty Clay; red, dry, low plasticity 0.50m-1.00m Silty Clay; brown, moist, very high plasticity 1.00m-2.00m Silty Clay; dark brown 2.00m-3.50m Silty Clay; light brown 3.50m-8.00m Silt, Clayey; red, dry, trace plasticity 8.00m-9.00m Silty Clay; grey, dry, high plasticity, @9m refusal	1870m	South East
GW202694	0.00m-0.50m Silty Clay; grey mottled red, dry, very high plasticity 0.50m-2.50m Silt, Sandy; trace sand, red, dry, low plasticity 2.50m-6.50m Silt, Clayey; red, dry, medium plasticity, @ 7m brown, @ 7.45m refusal	1894m	South East
GW202923	0.00m-1.00m Topsoil 1.00m-12.00m Sandstone, weathered 12.00m-15.00m Clay 15.00m-31.00m Shale 31.00m-35.00m Sandstone 35.00m-51.00m Conglomerate 51.00m-78.00m Conglomerate & Quartz	1983m	East

Drill Log Data Source: NSW Department of Primary Industries - Office of Water / Water Administration Ministerial Corp
Creative Commons 3.0 © Commonwealth of Australia http://creativecommons.org/licenses/by/3.0/au/deed.en

Geology 1:250,000

Anambah Road, Anambah, NSW 2320



Geology

Anambah Road, Anambah, NSW 2320

Geological Units

What are the Geological Units onsite?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Pedr	Siltstone, marl and minor sandstone	Rutherford Formation	Dalwood Group		Palaeozoic			1:250,000

What are the Geological Units within the report buffer?

Symbol	Description	Unit Name	Group	Sub Group	Age	Dom Lith	Map Sheet	Dataset
Pedf	Silty sandstone	Farley Formation	Dalwood Group		Palaeozoic			1:250,000
Pedr	Siltstone, marl and minor sandstone	Rutherford Formation	Dalwood Group		Palaeozoic			1:250,000
Pgx	Coal seams, siltstone, sandstone, conglomerate	Greta Coal Measures			Palaeozoic			1:250,000
Pmb	Conglomerate, sandstone, siltstone	Branxton Formation	Maitland Group		Palaeozoic			1:250,000
Qa	Undifferentiated alluvial deposits; sand, silt, clay and gravel; some residual and colluvial deposits. Includes some channel, levee, lacustrine, floodplain and swamp deposits. May include some higher level Tertiary terraces	undifferentiated			Cainozoic			1:250,000
w	Water				Cainozoic			1:250,000

Geological Structures

What are the Geological Structures onsite?

Feature	Name	Description	Map Sheet	Dataset
No features				1:250,000

What are the Geological Structures within the report buffer?

Feature	Name	Description	Map Sheet	Dataset
Fault		Fault, Accurate	Bohena	1:250,000
Fault		Fault, Accurate	Bohena	1:250,000
Fault		Fault, Accurate	Bohena	1:250,000
Fault		Fault, Concealed	Bohena	1:250,000
Fault		Fault, Concealed	Bohena	1:250,000
Fault		Fault, Accurate	Bohena	1:250,000
Fault		Fault, Concealed	Bohena	1:250,000
Fault		Fault, Approximate	Bohena	1:250,000
Fault		Fault, Approximate	Bohena	1:250,000

Feature	Name	Description	Map Sheet	Dataset
Fault		Fault, Accurate	Bohena	1:250,000

Geological Data Source : NSW Department of Industry, Resources & Energy
© State of New South Wales through the NSW Department of Industry, Resources & Energy

Naturally Occurring Asbestos Potential

Anambah Road, Anambah, NSW 2320

Naturally Occurring Asbestos Potential

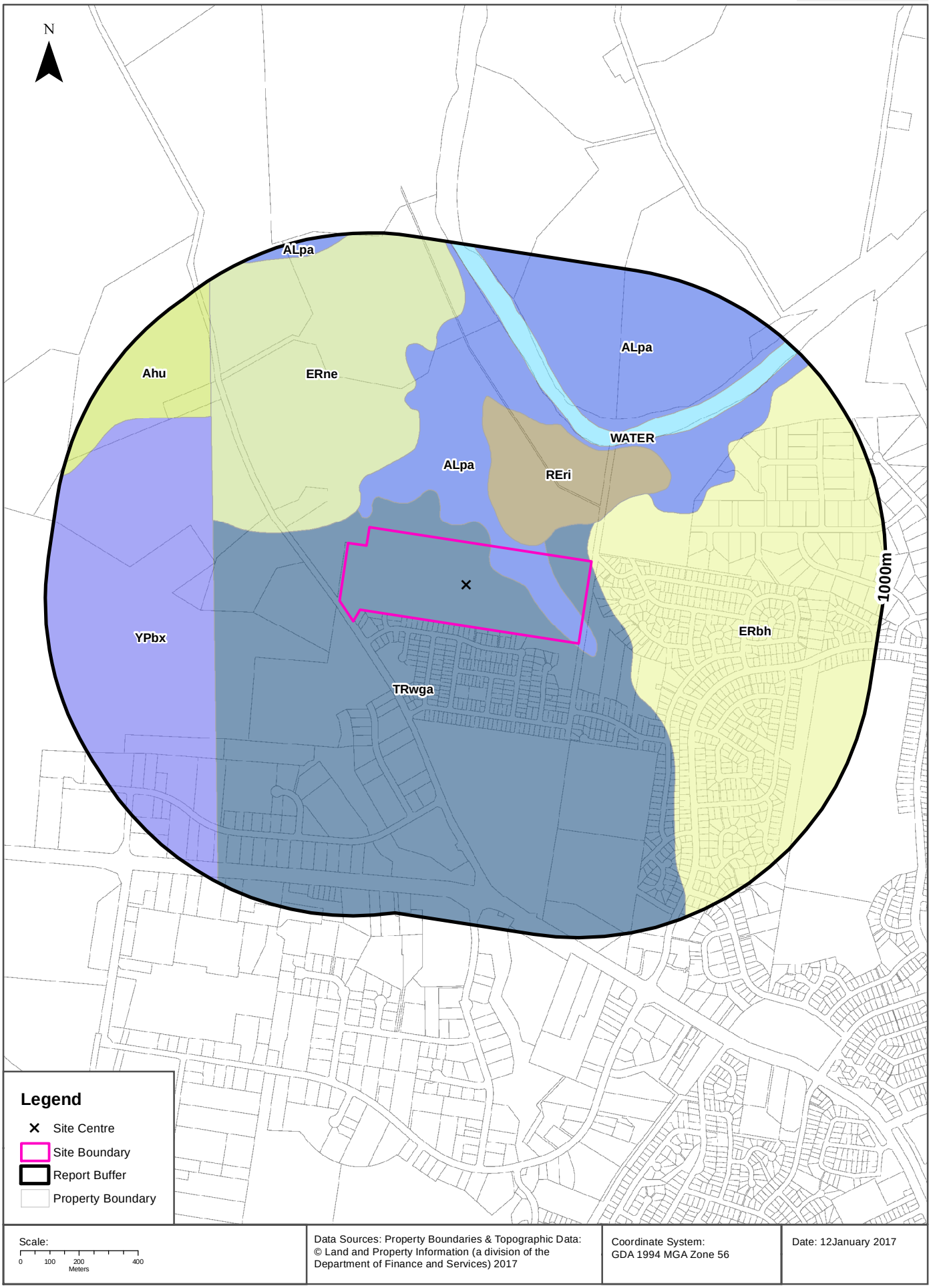
Naturally Occurring Asbestos Potential within the report buffer?

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

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

Soil Landscapes

Anambah Road, Anambah, NSW 2320



Data Sources: Property Boundaries & Topographic Data: © Land and Property Information (a division of the Department of Finance and Services) 2017

Coordinate System: GDA 1994 MGA Zone 56

Date: 12January 2017

Soils

Anambah Road, Anambah, NSW 2320

Soil Landscapes

What are the onsite Soil Landscapes?

Soil Code	Name	Group	Process	Map Sheet	Scale
ALpa	PATERSON RIVER		ALLUVIAL	Newcastle	1:100,000
ERbh	BOLWARRA HEIGHTS		EROSIONAL	Newcastle	1:100,000
TRwga	WALLALONG variant a		TRANSFERRAL	Newcastle	1:100,000

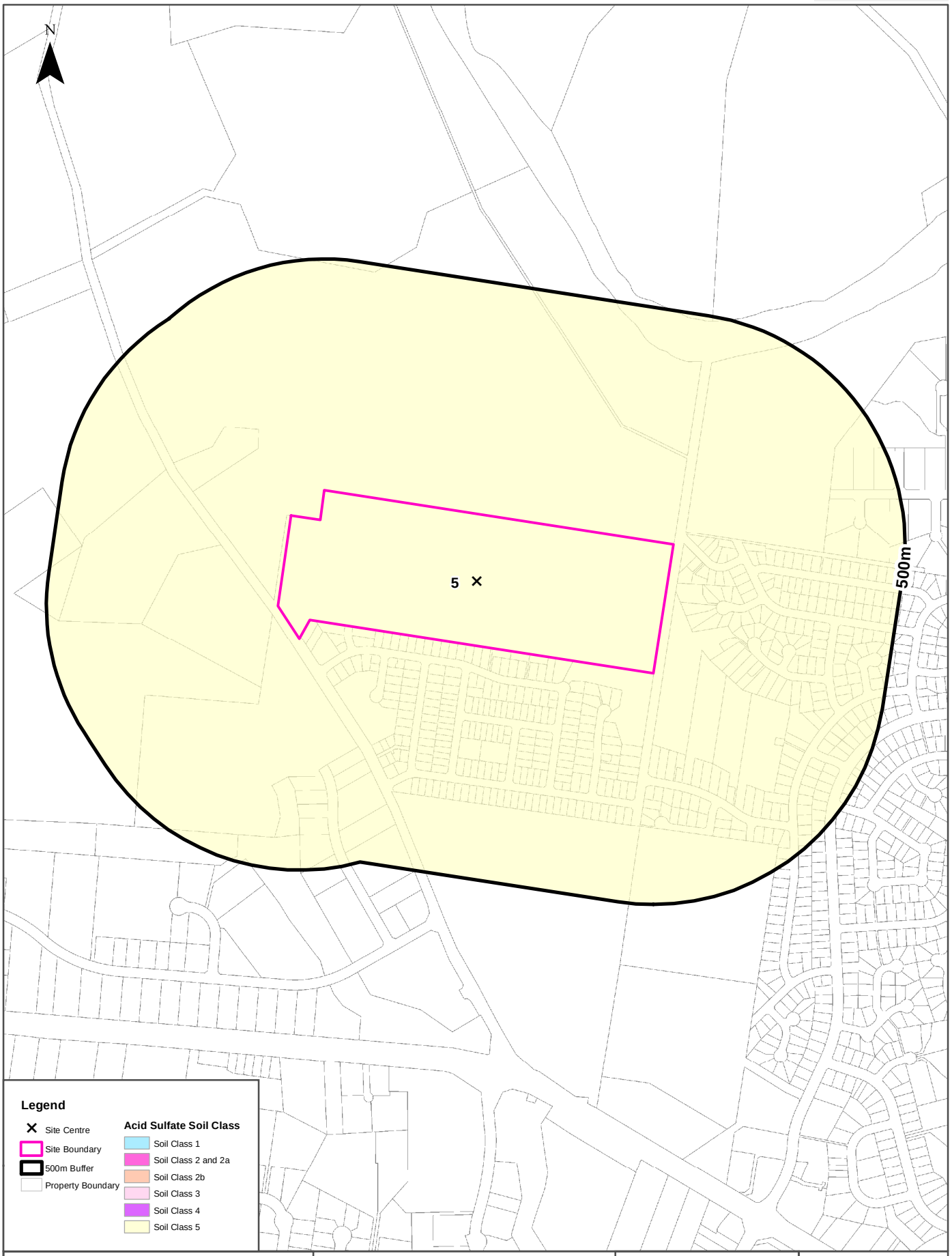
What are the Soil Landscapes within the report buffer?

Soil Code	Name	Group	Process	Map Sheet	Scale
Ahu	HUNTER	ALLUVIAL SOILS		Singleton	1:250,000
ALpa	PATERSON RIVER		ALLUVIAL	Newcastle	1:100,000
ERbh	BOLWARRA HEIGHTS		EROSIONAL	Newcastle	1:100,000
ERne	NORTH EELAH		EROSIONAL	Newcastle	1:100,000
REri	RIVERMEAD		RESIDUAL	Newcastle	1:100,000
TRwga	WALLALONG variant a		TRANSFERRAL	Newcastle	1:100,000
WATER	WATER		WATER	Newcastle	1:100,000
YPbx	BRANXTON	YELLOW PODZOLIC SOILS		Singleton	1:250,000

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

Anambah Road, Anambah, NSW 2320



Standard Local Environmental Plan Acid Sulfate Soils

Anambah Road, Anambah, NSW 2320

Standard Local Environmental Plan Acid Sulfate Soils

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

Soil Class	Description	LEP
5	Works within 500 metres of adjacent Class 1, 2, 3, or 4 land that is below 5 metres AHD and by which the watertable is likely to be lowered below 1 metre AHD on adjacent Class 1, 2, 3 or 4 land, present an environmental risk	Maitland Local Environmental Plan 2011

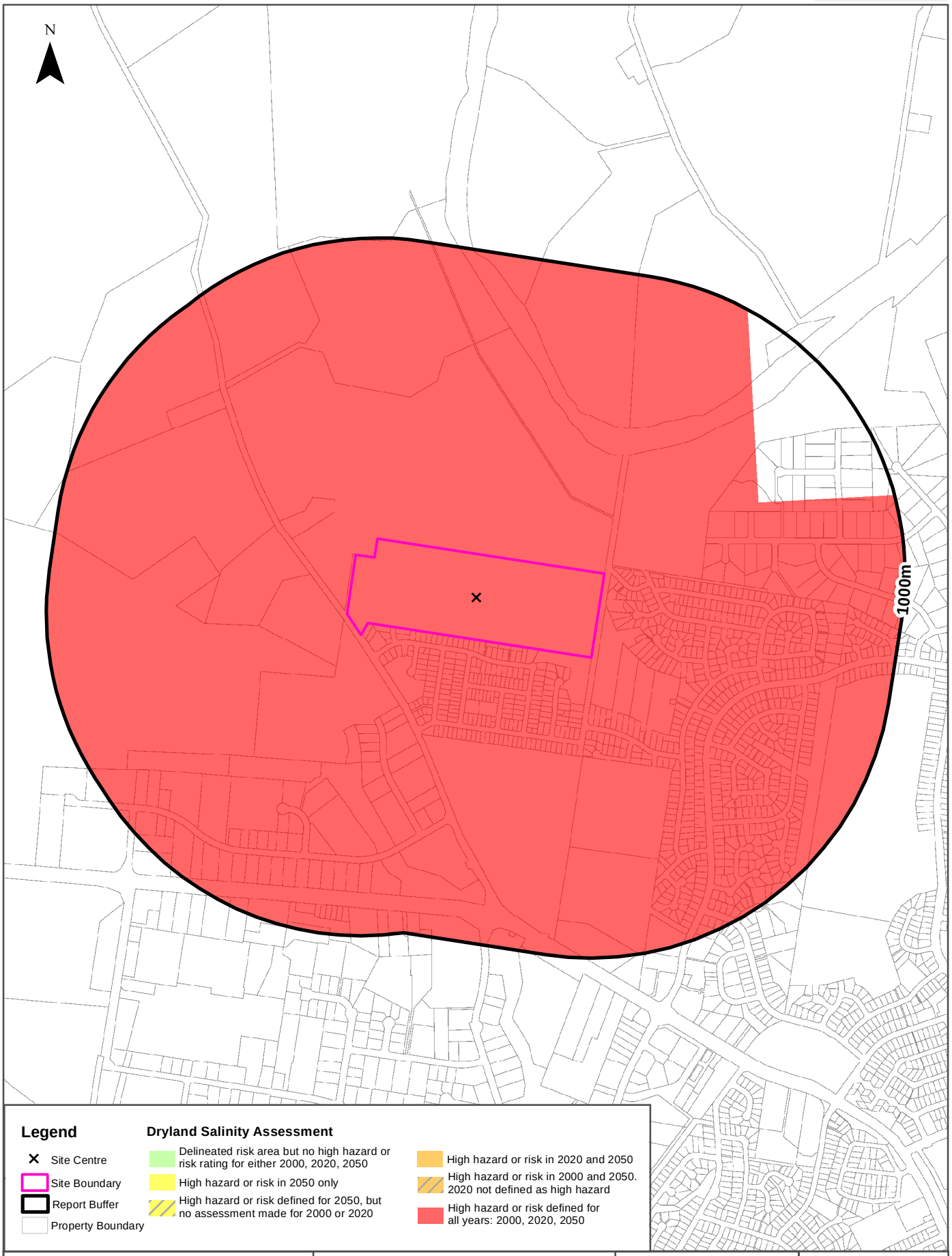
If the on-site Soil Class is 5, what other soil classes exist within 500m?

Soil Class	Description	LEP	Distance	Direction
None				

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

Anambah Road, Anambah, NSW 2320



Dryland Salinity

Anambah Road, Anambah, NSW 2320

Dryland Salinity

Is there Dryland Salinity data onsite?

Yes

Is there Dryland Salinity data within the report buffer?

Yes

What Dryland Salinity assessments are given?

Assessment 2000	Assessment 2020	Assessment 2050	Distance	Direction
High hazard or risk	High hazard or risk	High hazard or risk	0m	Onsite

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

Anambah Road, Anambah, NSW 2320

Mining Subsidence Districts

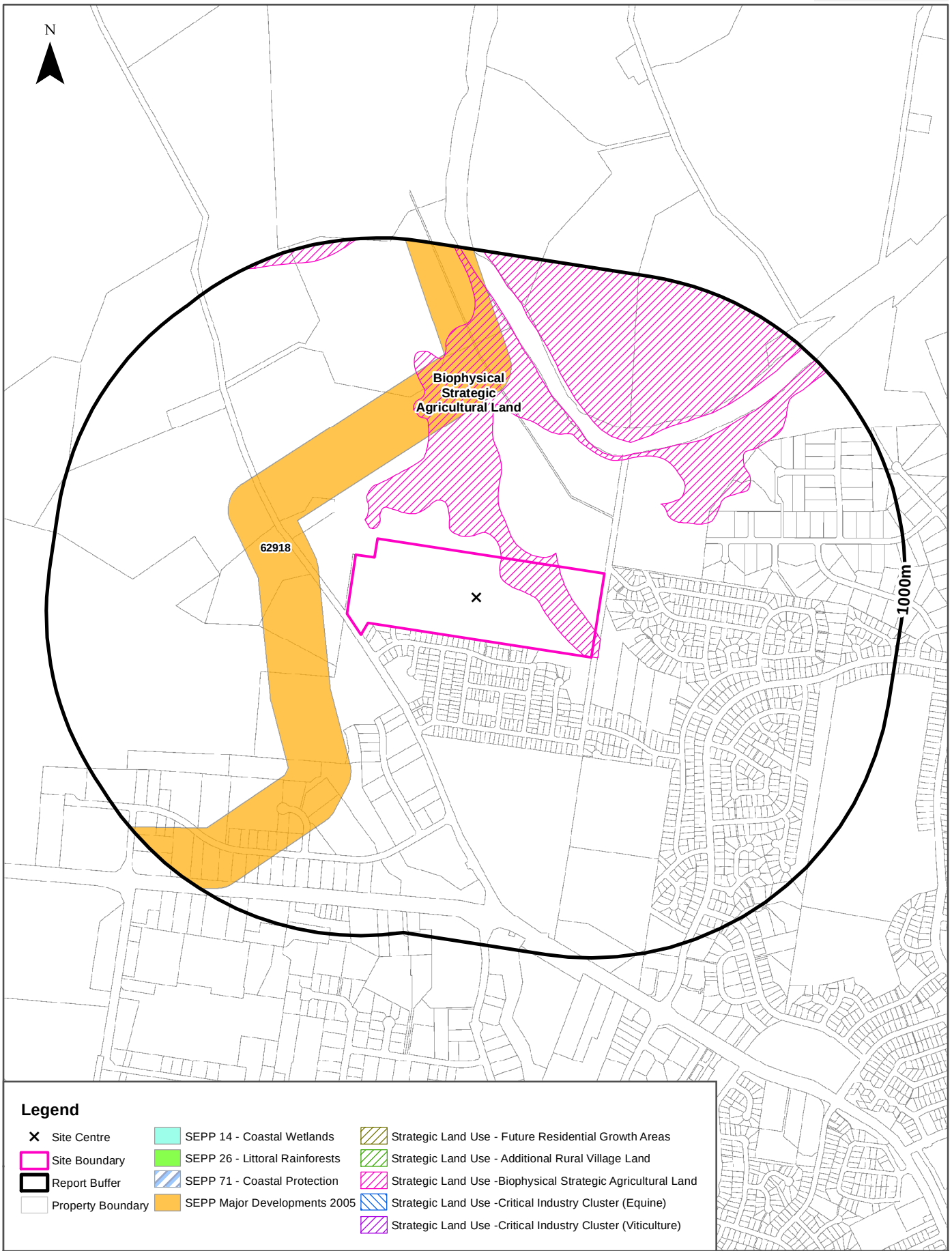
Mining Subsidence Districts within the report buffer?

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

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

Anambah Road, Anambah, NSW 2320



Environmental Zoning

Anambah Road, Anambah, NSW 2320

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
62918	Qld Hunter Gas Pipeline	13/06/2008	82m	North West

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

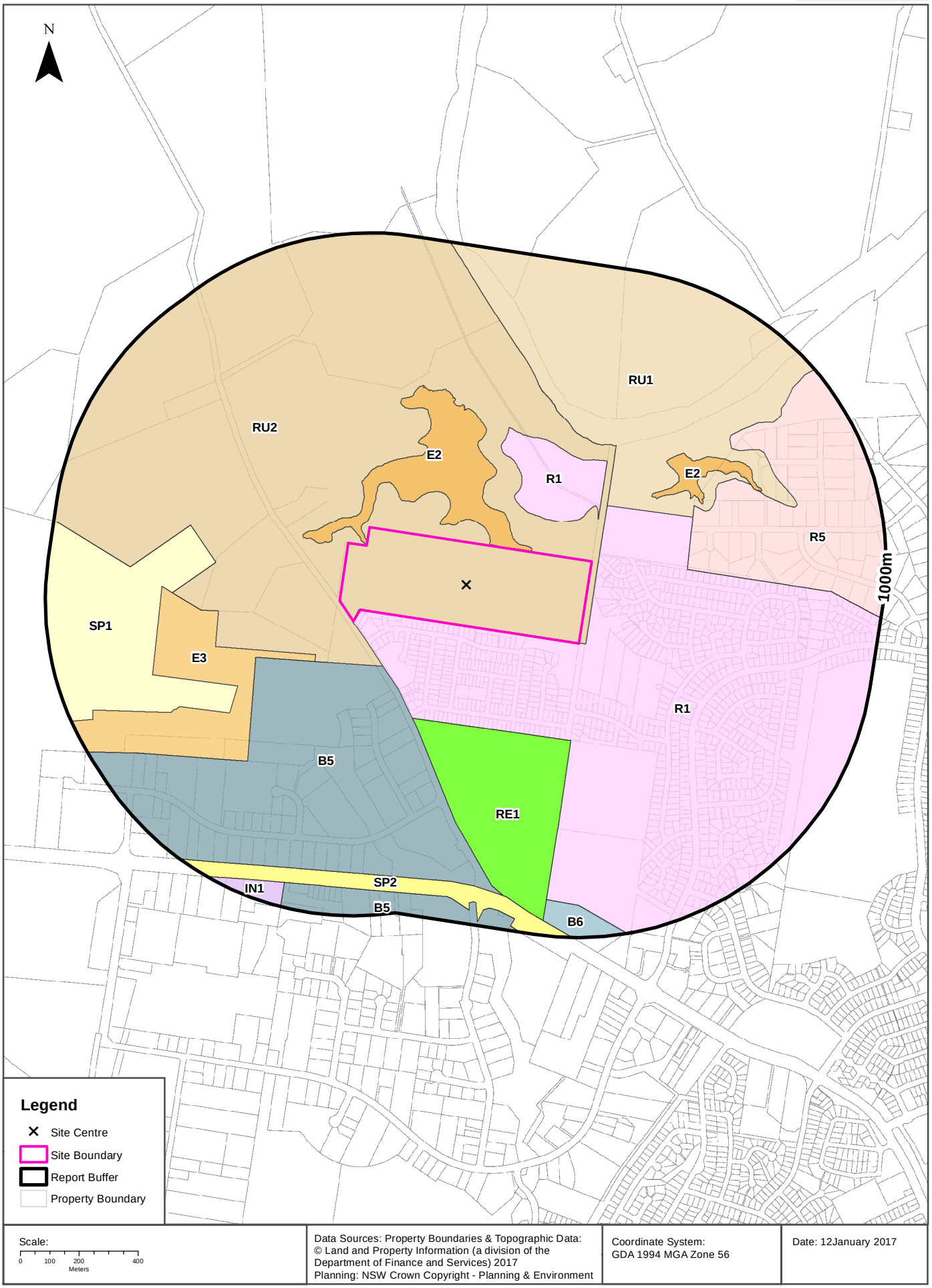
State Environmental Planning Policy Strategic Land Use Areas onsite or within the report buffer?

Strategic Land Use	SEPPNo	Effective Date	Amendment	Amendment Year	Distance	Direction
Biophysical Strategic Agricultural Land	2007	28/01/2014	Coal Seam Gas	2014	0m	Onsite

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

Anambah Road, Anambah, NSW 2320



Local Environmental Plan

Anambah Road, Anambah, NSW 2320

Land Zoning

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

Zone	Description	Purpose	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Distance	Direction
RU2	Rural Landscape		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		0m	Onsite
R1	General Residential		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		0m	East
E2	Environmental Conservation		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		0m	North
R1	General Residential		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		118m	North East
B5	Business Development		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		145m	South West
E3	Environmental Management		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		171m	West
RU1	Primary Production		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		198m	North West
E2	Environmental Conservation		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		301m	North East
R5	Large Lot Residential		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		325m	East
RE1	Public Recreation		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		331m	South
SP1	Special Activities	Aerodrome	Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		437m	West
SP2	Infrastructure	Classified Road	Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		851m	West
B6	Enterprise Corridor		Maitland Local Environmental Plan 2011	28/03/2013	28/03/2013	22/01/2016	Amendment No 2	877m	South
B5	Business Development		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		903m	South
IN1	General Industrial		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		916m	South West
B6	Enterprise Corridor		Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		992m	South East
E4	Environmental Living		Maitland Local Environmental Plan 2011	12/06/2015	12/06/2015	22/01/2016	Amendment No 15	997m	West

Local Environment Plan Data Source: NSW Crown Copyright - Planning & Environment
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Local Environmental Plan

Anambah Road, Anambah, NSW 2320

Minimum Subdivision Lot Size

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

Symbol	Minimum Lot Size	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
AB	40 ha	Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	22/01/2016		99.39

Maximum Height of Building

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

Symbol	Maximum Height of Building	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
No Data							

Floor Space Ratio

What are the onsite Local Environmental Plan Floor Space Ratios?

Symbol	Floor Space Ratio	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
No Data							

Land Application

What are the onsite Local Environmental Plan Land Applications?

Application Type	LEP or SEPP	Published Date	Commenced Date	Currency Date	Amendment	Percentage of Site Area
Included	Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	16/12/2011		100

Land Reservation Acquisition

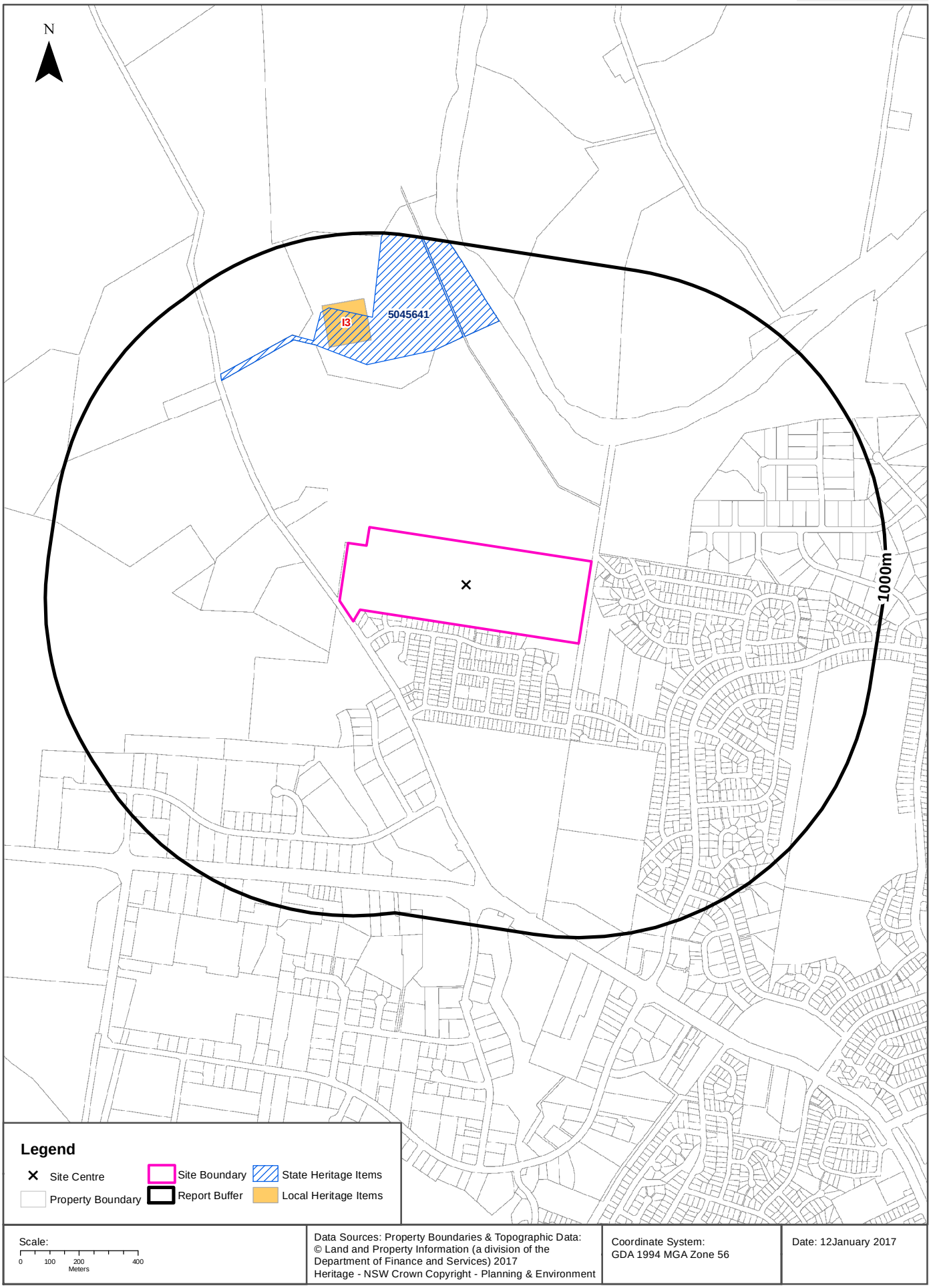
What are the onsite Local Environmental Plan Land Reservation Acquisitions?

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

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Heritage Items

Anambah Road, Anambah, NSW 2320



Heritage

Anambah Road, Anambah, NSW 2320

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
5045641	Anambah House		Maitland		00275	662	553m	North

Heritage Data Source: NSW Crown Copyright - Planning & Environment
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Local Heritage Items

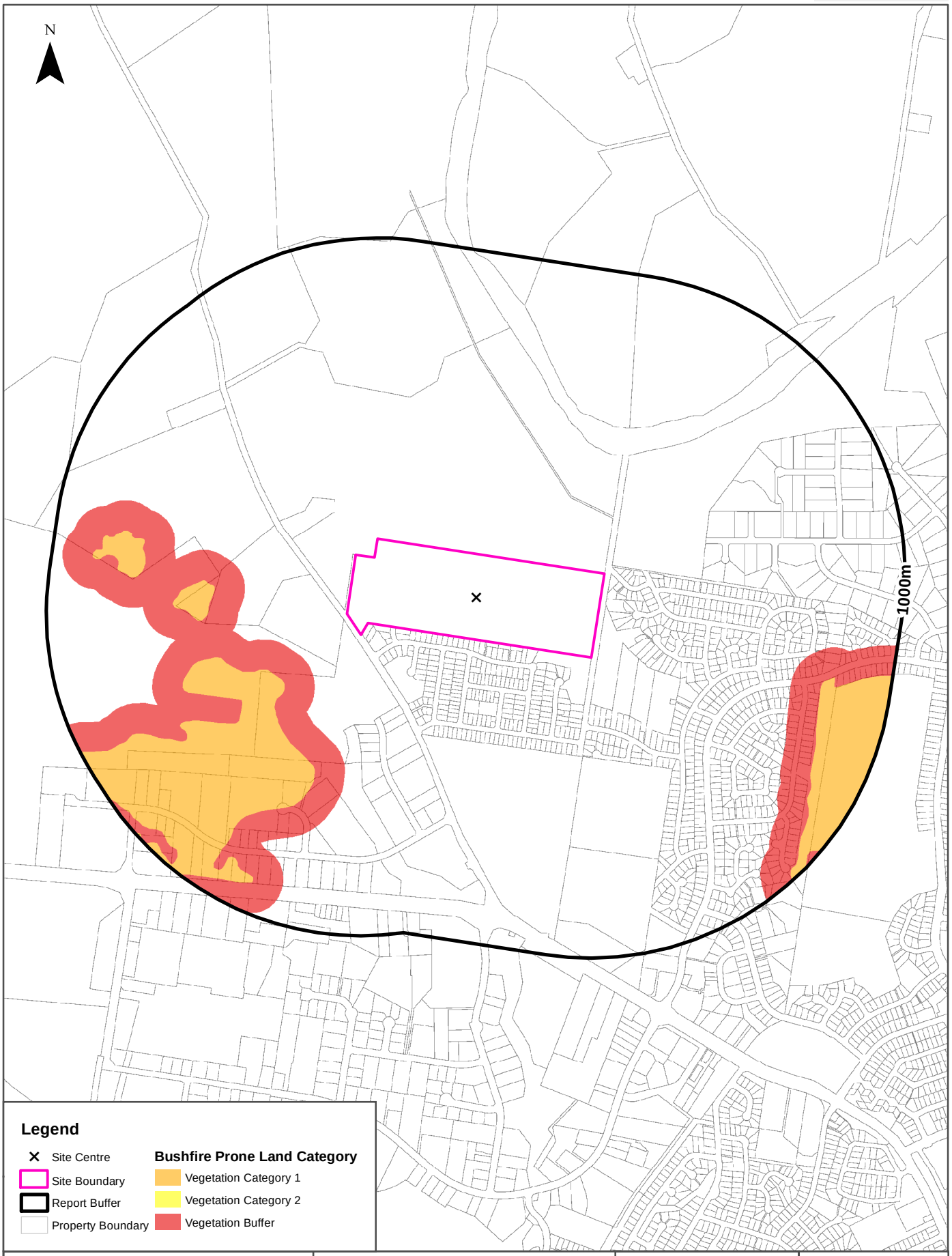
What are the Local Heritage Items located within the report buffer?

Map Id	Name	Classification	Significance	LEP or Act	Published Date	Commenced Date	Currency Date	Distance	Direction
I3	Anambah House	Item - General	State	Maitland Local Environmental Plan 2011	16/12/2011	16/12/2011	30/05/2014	626m	North West

Heritage Data Source: NSW Crown Copyright - Planning & Environment
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Natural Hazards - Bushfire Prone Land

Anambah Road, Anambah, NSW 2320



Data Sources: Property Boundaries:
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Coordinate System:
GDA 1994 MGA Zone 56

Date: 12January 2017

Natural Hazards

Anambah Road, Anambah, NSW 2320

Bushfire Prone Land

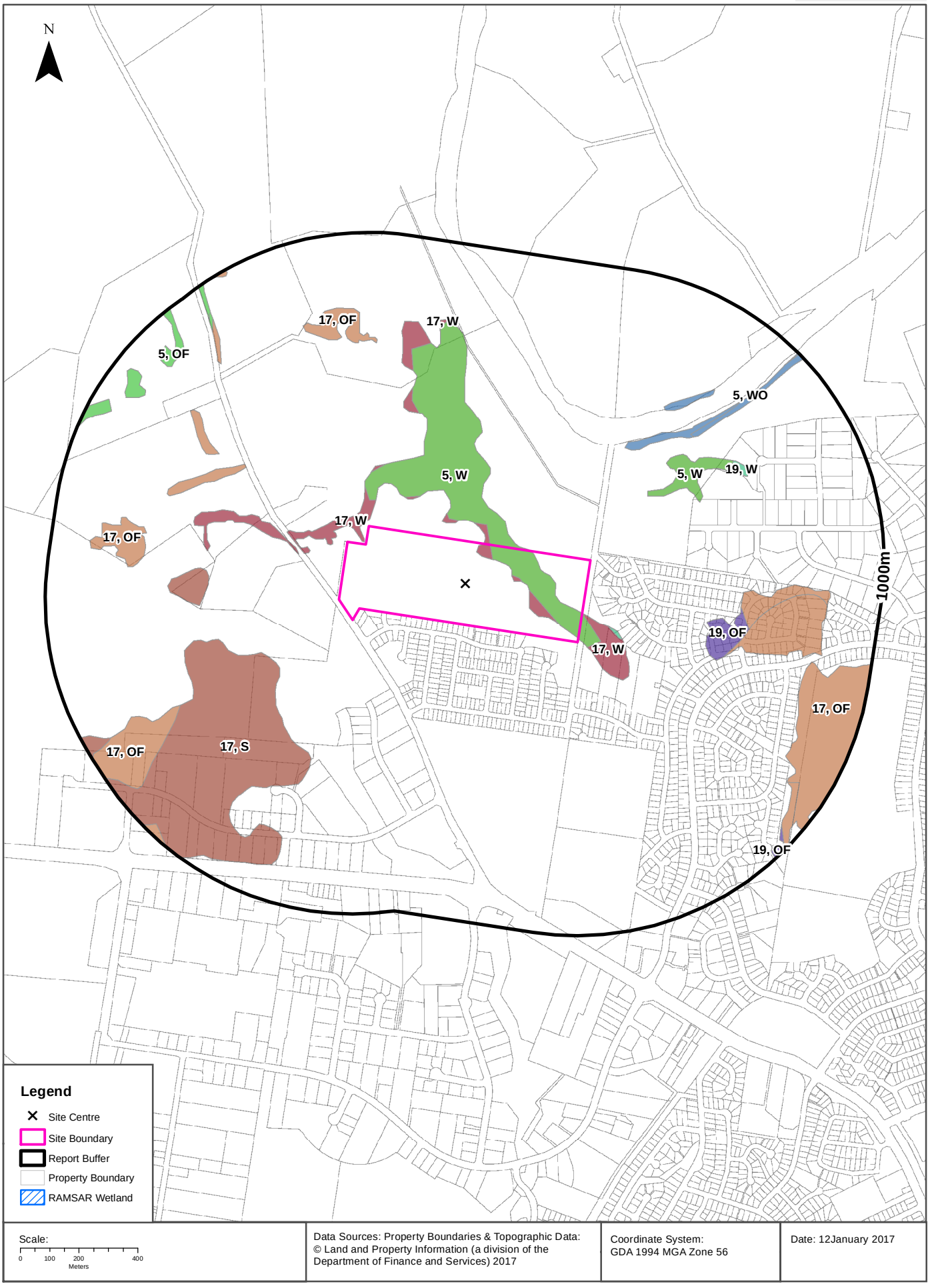
What are the nearest Bushfire Prone Land Categories that exist within the report buffer?

Bushfire Prone Land Category	Distance	Direction
Vegetation Buffer	200m	South
Vegetation Category 1	300m	South West

Bushfire Prone Land Data Reference - NSW RFS GIS Data Set

Ecological Constraints - Vegetation & RAMSAR Wetlands

Anambah Road, Anambah, NSW 2320



Ecological Constraints

Anambah Road, Anambah, NSW 2320

Lower Hunter and Central Coast Regional Vegetation Survey

What vegetation from the Lower Hunter and Central Coast Regional Survey exists within the report buffer?

Map id	Unit Desc	Canopy Code	Canopy Cover	Species	Distance	Direction
5	Alluvial Tall Moist Forest	W	Wetland	E. saligna / S. glomulifera / Glochidion ferdinandi	0m	Onsite
17	Lower Hunter Spotted Gum - Ironbark Forest	W	Wetland	C. maculata / E. fibrosa / E. punctata	0m	Onsite
19	Hunter Lowland Redgum Forest	W	Wetland	E. tereticornis / E. punctata / E. crebra / A. floribunda / C. maculata	89m	East
17	Lower Hunter Spotted Gum - Ironbark Forest	S	Scrub	C. maculata / E. fibrosa / E. punctata	297m	South West
5	Alluvial Tall Moist Forest	WO	Sparse (Woodland) 20-<50% cover	E. saligna / S. glomulifera / Glochidion ferdinandi	400m	North East
19	Hunter Lowland Redgum Forest	OF	Mid Dense (Open Forest) 50-<100% cover	E. tereticornis / E. punctata / E. crebra / A. floribunda / C. maculata	421m	East
17	Lower Hunter Spotted Gum - Ironbark Forest	OF	Mid Dense (Open Forest) 50-<100% cover	C. maculata / E. fibrosa / E. punctata	429m	West
5	Alluvial Tall Moist Forest	OF	Mid Dense (Open Forest) 50-<100% cover	E. saligna / S. glomulifera / Glochidion ferdinandi	689m	North West

Lower Hunter and Central Coast Regional Vegetation Survey: NSW Office of Environment and Heritage

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

Anambah Road, Anambah, NSW 2320

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
Amphibia	Hylidae	Litoria littlejohni	Littlejohn's Tree Frog	No	Vulnerable, Protected	Vulnerable
Aves	Acanthizidae	Chthonicola sagittata	Speckled Warbler	No	Vulnerable, Protected	
Aves	Accipitridae	Circus assimilis	Spotted Harrier	No	Vulnerable, Protected	
Aves	Accipitridae	Haliaeetus leucogaster	White-bellied Sea-Eagle	No	Vulnerable, Protected	CAMBA
Aves	Accipitridae	Lophoictinia isura	Square-tailed Kite	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Anatidae	Oxyura australis	Blue-billed Duck	No	Vulnerable, Protected	
Aves	Anseranatidae	Anseranas semipalmata	Magpie Goose	No	Vulnerable, Protected	
Aves	Ciconiidae	Ephippiorhynchus asiaticus	Black-necked Stork	No	Endangered, Protected	
Aves	Laridae	Sternula albifrons	Little Tern	No	Endangered, Protected	CAMBA, JAMBA, ROKAMBA
Aves	Meliphagidae	Anthochaera phrygia	Regent Honeyeater	No	Critically Endangered Species, Protected	Critically Endangered
Aves	Meliphagidae	Epthianura albifrons	White-fronted Chat	No	Vulnerable, Protected	
Aves	Neosittidae	Daphoenositta chrysoptera	Varied Sittella	No	Vulnerable, Protected	
Aves	Pomatostomidae	Pomatostomus temporalis temporalis	Grey-crowned Babbler (eastern subspecies)	No	Vulnerable, Protected	
Aves	Psittacidae	Glossopsitta pusilla	Little Lorikeet	No	Vulnerable, Protected	
Aves	Rostratulidae	Rostratula australis	Australian Painted Snipe	No	Endangered, Protected	Endangered
Aves	Strigidae	Ninox connivens	Barking Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Aves	Tytonidae	Tyto novaehollandiae	Masked Owl	No	Vulnerable, Protected, Category 3 Sensitive Species	
Mammalia	Dasyuridae	Dasyurus maculatus	Spotted-tailed Quoll	No	Vulnerable, Protected	Endangered
Mammalia	Dasyuridae	Phascogale tapoatafa	Brush-tailed Phascogale	No	Vulnerable, Protected	
Mammalia	Emballonuridae	Saccolaimus flaviventris	Yellow-bellied Sheathtail-bat	No	Vulnerable, Protected	
Mammalia	Molossidae	Mormopterus norfolkensis	Eastern Freetail-bat	No	Vulnerable, Protected	
Mammalia	Petauridae	Petaurus norfolcensis	Squirrel Glider	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	
Mammalia	Vespertilionidae	Scoteanax rueppellii	Greater Broad-nosed Bat	No	Vulnerable, Protected	

Class	Family	Scientific	Common	Exotic	NSW Status	Commonwealth Status
Mammalia	Vespertilionidae	Vespadelus troughtoni	Eastern Cave Bat	No	Vulnerable, Protected	
Flora	Asteraceae	Rutidosis heterogama	Heath Wrinklewort	No	Vulnerable, Protected	Vulnerable
Flora	Fabaceae (Mimosoideae)	Acacia bynoeana	Bynoe's Wattle	No	Endangered, Protected	Vulnerable
Flora	Myrtaceae	Callistemon linearifolius	Netted Bottle Brush	No	Vulnerable, Protected, Category 3 Sensitive Species	
Flora	Myrtaceae	Eucalyptus camaldulensis	Eucalyptus camaldulensis population in the Hunter catchment	No	Endangered Population	
Flora	Myrtaceae	Eucalyptus glaucina	Slaty Red Gum	No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Eucalyptus parramattensis subsp. decadens		No	Vulnerable, Protected	Vulnerable
Flora	Myrtaceae	Syzygium paniculatum	Magenta Lilly Pilly	No	Endangered, Protected	Vulnerable
Flora	Orchidaceae	Cymbidium canaliculatum	Cymbidium canaliculatum population in the Hunter Catchment	No	Endangered Population, Protected, Category 2 Sensitive Species	
Flora	Proteaceae	Grevillea parviflora subsp. parviflora	Small-flower Grevillea	No	Vulnerable, Protected	Vulnerable

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 12/01/2017

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Appendix C
HISTORICAL TITLE DEED SEARCH

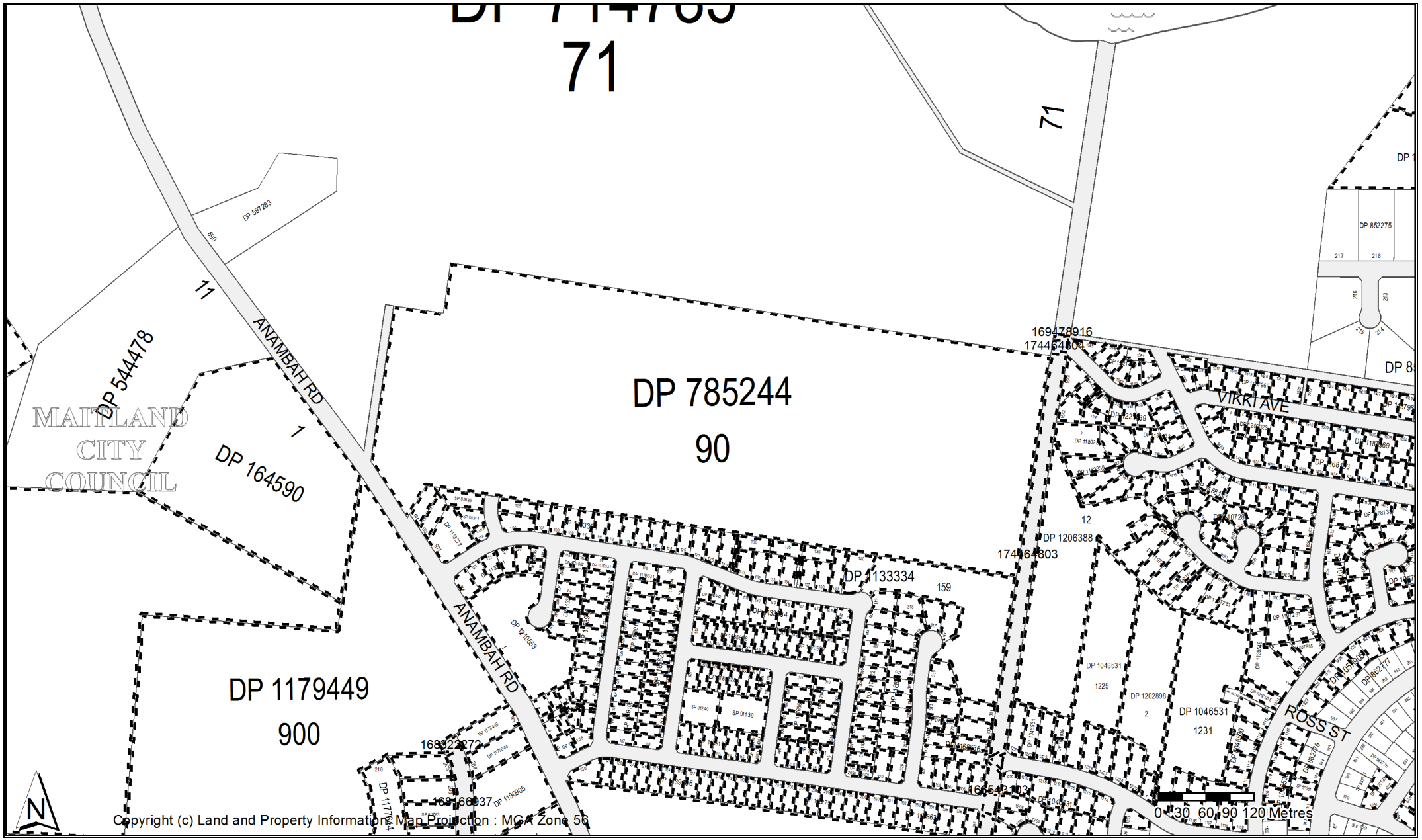
Land & Property Information

Cadastral Records Enquiry Report

Ref : EPRM - Ananbah

Requested Parcel : Lot 90 DP 785244 **Identified Parcel :** Lot 90 DP 785244

Locality : ANAMBAH **LGA :** MAITLAND **Parish :** GOSFORTH **County :** NORTHUMBERLAND



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This information is provided as a searching aid only. While every endeavour is made to ensure the current cadastral pattern is accurately reflected, the Registrar General cannot guarantee the information provided. For all ACTIVITY PRIOR to SEPT 2002 you must refer to the RGs Charting and Reference Maps.

	Status	Surv/Comp	Purpose
DP164590			
Lot(s): 1			
CA98035 - LOT 1 DP164590			
DP270764			
Lot(s): 1, 2, 3, 4, 5, 6, 7, 8, 9, 10			
DP270764	REGISTERED	SURVEY	COMMUNITY PLAN
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP785244			
Lot(s): 90			
DP1139464	REGISTERED	SURVEY	EASEMENT
DP862776			
Lot(s): 910, 911, 913			
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1027183			
Lot(s): 1028, 1029, 1030, 1031			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1046530			
Lot(s): 1105, 1106, 1107, 1108, 1109, 1110, 1111, 1112, 1113, 1114, 1115, 1116, 1117, 1118, 1119, 1120, 1121			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046531			
Lot(s): 1227, 1228, 1229			
DP1202898	REGISTERED	SURVEY	SUBDIVISION
Lot(s): 1231			
DP1192511	REGISTERED	SURVEY	EASEMENT
Lot(s): 1203, 1206, 1207, 1208, 1209, 1210, 1211, 1212, 1213, 1214, 1215, 1216, 1217, 1218, 1219, 1220, 1221, 1222, 1223, 1225, 1226, 1227, 1228, 1229, 1231			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1057750			
Lot(s): 1			
DP812143	HISTORICAL	SURVEY	OLD SYSTEM CONVERSION
DP1057905			
Lot(s): 1301, 1304, 1305, 1306, 1307, 1308, 1309, 1310, 1311, 1312, 1313, 1314, 1315, 1316, 1317, 1318, 1319, 1321, 1322, 1323, 1324, 1325, 1326, 1327, 1328, 1329			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1070192			
Lot(s): 10			
DP812143	HISTORICAL	SURVEY	OLD SYSTEM CONVERSION
DP1057750	REGISTERED	SURVEY	SUBDIVISION
DP1107281			
Lot(s): 1601, 1602, 1603, 1605, 1606, 1607, 1608, 1610, 1611, 1612, 1615, 1616, 1617, 1618, 1619, 1620, 1621, 1622, 1623, 1624, 1625, 1626, 1627, 1628, 1629, 1630, 1631, 1632, 1633, 1634, 1635, 1636			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1113277			
Lot(s): 911			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1133331			
Lot(s): 101, 102, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 120, 121, 122, 123, 124			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION

Caution: For all **ACTIVITY PRIOR to SEPT 2002** you must refer to the RGs Charting and Reference Maps.

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	Status	Surv/Comp	Purpose
DP1133334			
Lot(s): 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 145, 146, 147, 148, 149, 150, 151, 152, 154, 155, 156, 157, 159, 161			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1139106			
Lot(s): 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139549			
Lot(s): 2			
DP1074236	REGISTERED	COMPILATION	CONSOLIDATION
Lot(s): 1, 2			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1107281	REGISTERED	SURVEY	SUBDIVISION
DP1152751			
Lot(s): 201, 202, 203, 204, 205, 206, 207, 208, 210, 211, 212, 213, 214, 215, 216, 217, 218			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP1158918			
Lot(s): 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1133334	REGISTERED	SURVEY	SUBDIVISION
DP1158982			
Lot(s): 1531, 1532			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1133334	REGISTERED	SURVEY	SUBDIVISION
DP1163812			
Lot(s): 204, 205, 206, 207, 208			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1133334	REGISTERED	SURVEY	SUBDIVISION
DP1158918	REGISTERED	SURVEY	SUBDIVISION
DP1168133			
Lot(s): 1401, 1402, 1403, 1404, 1405, 1406, 1407, 1408, 1409, 1410, 1411, 1412, 1413, 1414, 1415, 1416, 1417, 1418, 1419, 1422, 1423, 1424, 1425, 1426, 1427, 1428, 1429, 1430, 1431, 1432, 1433, 1434, 1435, 1436, 1437, 1438, 1439, 1440, 1441			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1107281	REGISTERED	SURVEY	SUBDIVISION
DP1137216	REGISTERED	SURVEY	SUBDIVISION
DP1155570	REGISTERED	SURVEY	SUBDIVISION

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	Status	Surv/Comp	Purpose
DP1168636			
Lot(s): 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1133334	REGISTERED	SURVEY	SUBDIVISION
DP1173822			
Lot(s): 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP1152751	REGISTERED	SURVEY	SUBDIVISION
DP1173936			
Lot(s): 3, 4			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1176669			
Lot(s): 401, 402, 403, 404, 405			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP1152751	REGISTERED	SURVEY	SUBDIVISION
DP1173822	REGISTERED	SURVEY	SUBDIVISION
DP1176708			
Lot(s): 2			
DP658314	HISTORICAL	COMPILATION	DEPARTMENTAL
NSW GAZ. 23-12-2016 Folio : 3864 NOTIFICATION OF LAND AS PUBLIC RESERVE LOT 2 DP1176708			
DP1177644			
Lot(s): 204			
DP1190905	REGISTERED	SURVEY	CONSOLIDATION
Lot(s): 205, 206			
DP1179449	REGISTERED	SURVEY	SUBDIVISION
Lot(s): 201, 204, 205, 206, 208, 210			
DP655567	HISTORICAL	COMPILATION	DEPARTMENTAL
DP1018518	HISTORICAL	COMPILATION	LIMITED FOLIO CREATION
DP1103723	REGISTERED	SURVEY	SUBDIVISION
DP1113319	REGISTERED	SURVEY	SUBDIVISION
DP1133194	REGISTERED	SURVEY	SUBDIVISION
DP1146737	REGISTERED	SURVEY	SUBDIVISION
PA82788 - LOT 111 DP1133194 AND LOTS 1251-1255 DP1146737			
DP1177862			
Lot(s): 1181, 1182			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1179449			
Lot(s): 900, 901			
DP655567	HISTORICAL	COMPILATION	DEPARTMENTAL
DP1018518	HISTORICAL	COMPILATION	LIMITED FOLIO CREATION
DP1103723	REGISTERED	SURVEY	SUBDIVISION
DP1113319	REGISTERED	SURVEY	SUBDIVISION
DP1133194	REGISTERED	SURVEY	SUBDIVISION
DP1146737	REGISTERED	SURVEY	SUBDIVISION
DP1177644	REGISTERED	SURVEY	SUBDIVISION
PA82788 - LOT 111 DP1133194 AND LOTS 1251-1255 DP1146737			

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	Status	Surv/Comp	Purpose
DP1180286			
Lot(s): 1, 2			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1107281	REGISTERED	SURVEY	SUBDIVISION
DP1137216	REGISTERED	SURVEY	SUBDIVISION
DP1155570	REGISTERED	SURVEY	SUBDIVISION
DP1168133	REGISTERED	SURVEY	SUBDIVISION
DP1181032			
Lot(s): 1, 2			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1133334	REGISTERED	SURVEY	SUBDIVISION
DP1181745			
Lot(s): 1191, 1192			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1182211			
Lot(s): 815, 816			
DP544478	HISTORICAL	SURVEY	SUBDIVISION
DP1018518	HISTORICAL	COMPILATION	LIMITED FOLIO CREATION
DP1113319	REGISTERED	SURVEY	SUBDIVISION
DP1133194	REGISTERED	SURVEY	SUBDIVISION
DP1137872	REGISTERED	SURVEY	EASEMENT
DP1157392	REGISTERED	SURVEY	SUBDIVISION
DP1182355			
Lot(s): 421, 422			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1107281	REGISTERED	SURVEY	SUBDIVISION
DP1137216	REGISTERED	SURVEY	SUBDIVISION
DP1155570	REGISTERED	SURVEY	SUBDIVISION
DP1168133	REGISTERED	SURVEY	SUBDIVISION
DP1183784			
Lot(s): 1031			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1185628			
Lot(s): 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 521, 522, 523, 524, 525, 526, 527			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP1152751	REGISTERED	SURVEY	SUBDIVISION
DP1173822	REGISTERED	SURVEY	SUBDIVISION
DP1176669	REGISTERED	SURVEY	SUBDIVISION

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	Status	Surv/Comp	Purpose
DP1187969			
Lot(s): 1503, 1504, 1505, 1506, 1507, 1508, 1509, 1510, 1511, 1517, 1518, 1519, 1520, 1521, 1522, 1523, 1524, 1525, 1526, 1527, 1528, 1529, 1530			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1107281	REGISTERED	SURVEY	SUBDIVISION
DP1137216	REGISTERED	SURVEY	SUBDIVISION
DP1155570	REGISTERED	SURVEY	SUBDIVISION
DP1168133	REGISTERED	SURVEY	SUBDIVISION
DP1174060	REGISTERED	SURVEY	REDEFINITION
DP1188038			
Lot(s): 3121, 3122			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1133334	REGISTERED	SURVEY	SUBDIVISION
DP1168636	REGISTERED	SURVEY	SUBDIVISION
DP1189777			
Lot(s): 1, 2			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1107281	REGISTERED	SURVEY	SUBDIVISION
DP1190420			
Lot(s): 4060, 4061			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP1152751	REGISTERED	SURVEY	SUBDIVISION
DP1173822	REGISTERED	SURVEY	SUBDIVISION
DP1176669	REGISTERED	SURVEY	SUBDIVISION
DP1190575			
Lot(s): 2090, 2091			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP1152751	REGISTERED	SURVEY	SUBDIVISION
DP1190905			
Lot(s): 1			
DP655567	HISTORICAL	COMPILATION	DEPARTMENTAL
DP1018518	HISTORICAL	COMPILATION	LIMITED FOLIO CREATION
DP1103723	REGISTERED	SURVEY	SUBDIVISION
DP1113319	REGISTERED	SURVEY	SUBDIVISION
DP1133194	REGISTERED	SURVEY	SUBDIVISION
DP1146737	REGISTERED	SURVEY	SUBDIVISION
DP1177644	REGISTERED	SURVEY	SUBDIVISION
PA82788 - LOT 111 DP1133194 AND LOTS 1251-1255 DP1146737			
DP1194925			
Lot(s): 5201, 5202			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP1152751	REGISTERED	SURVEY	SUBDIVISION
DP1173822	REGISTERED	SURVEY	SUBDIVISION
DP1176669	REGISTERED	SURVEY	SUBDIVISION
DP1185628	REGISTERED	SURVEY	SUBDIVISION

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	Status	Surv/Comp	Purpose
DP1202898			
Lot(s): 1, 2			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1192511	REGISTERED	SURVEY	EASEMENT
DP1206388			
Lot(s): 11, 12			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1107281	REGISTERED	SURVEY	SUBDIVISION
DP1173936	REGISTERED	SURVEY	SUBDIVISION
DP1209323			
Lot(s): 1, 2, 3, 4, 5, 6, 7			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1107281	REGISTERED	SURVEY	SUBDIVISION
DP1137216	REGISTERED	SURVEY	SUBDIVISION
DP1155570	REGISTERED	SURVEY	SUBDIVISION
DP1168133	REGISTERED	SURVEY	SUBDIVISION
DP1174060	REGISTERED	SURVEY	REDEFINITION
DP1187969	REGISTERED	SURVEY	SUBDIVISION
DP1210553			
Lot(s): 1			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1133334	REGISTERED	SURVEY	SUBDIVISION
DP1158918	REGISTERED	SURVEY	SUBDIVISION
DP1163812	REGISTERED	SURVEY	SUBDIVISION
DP1221439			
Lot(s): 1536, 1537, 1538, 1539, 1540, 1541, 1542, 1543, 1544, 1545, 1546, 1547, 1548, 1549, 1550, 1551, 1552, 1553, 1554			
DP874384	HISTORICAL	SURVEY	SUBDIVISION
DP1027183	REGISTERED	SURVEY	SUBDIVISION
DP1046530	REGISTERED	SURVEY	SUBDIVISION
DP1046531	REGISTERED	SURVEY	SUBDIVISION
DP1057905	REGISTERED	SURVEY	SUBDIVISION
DP1079847	REGISTERED	SURVEY	SUBDIVISION
DP1107281	REGISTERED	SURVEY	SUBDIVISION
DP1137216	REGISTERED	SURVEY	SUBDIVISION
DP1155570	REGISTERED	SURVEY	SUBDIVISION
DP1168133	REGISTERED	SURVEY	SUBDIVISION
DP1174060	REGISTERED	SURVEY	REDEFINITION
DP1187969	REGISTERED	SURVEY	SUBDIVISION
SP57351			
DP1046530	REGISTERED	SURVEY	SUBDIVISION
SP85586			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION

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	Status	Surv/Comp	Purpose
SP88341			
DP785244	HISTORICAL	COMPILATION	SUBDIVISION
DP1113277	REGISTERED	SURVEY	SUBDIVISION
DP1133331	REGISTERED	SURVEY	SUBDIVISION
DP1183784	REGISTERED	SURVEY	SUBDIVISION
SP91139			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP1152751	REGISTERED	SURVEY	SUBDIVISION
DP1173822	REGISTERED	SURVEY	SUBDIVISION
DP1176669	REGISTERED	SURVEY	SUBDIVISION
DP1185628	REGISTERED	SURVEY	SUBDIVISION
DP1198200	REGISTERED	SURVEY	SUBDIVISION
SP91240			
DP591149	HISTORICAL	SURVEY	SUBDIVISION
DP1139106	REGISTERED	SURVEY	SUBDIVISION
DP1152751	REGISTERED	SURVEY	SUBDIVISION
DP1173822	REGISTERED	SURVEY	SUBDIVISION
DP1176669	REGISTERED	SURVEY	SUBDIVISION
DP1185628	REGISTERED	SURVEY	SUBDIVISION
DP1198200	REGISTERED	SURVEY	SUBDIVISION
SP91763			
DP655567	HISTORICAL	COMPILATION	DEPARTMENTAL
DP1018518	HISTORICAL	COMPILATION	LIMITED FOLIO CREATION
DP1103723	REGISTERED	SURVEY	SUBDIVISION
DP1113319	REGISTERED	SURVEY	SUBDIVISION
DP1133194	REGISTERED	SURVEY	SUBDIVISION
DP1146737	REGISTERED	SURVEY	SUBDIVISION
DP1177644	REGISTERED	SURVEY	SUBDIVISION
PA82788 - LOT 111 DP1133194 AND LOTS 1251-1255 DP1146737			

Intersection
Polygon Id(s): 105101352, 166543108, 169478916, 174464804

NSW GAZ. 18-07-2008 Folio : 7268
DEDICATED PUBLIC ROAD
AFFECTING THE LAND SHOWN IN THE DIAGRAM ACCOMPANYING THIS GAZETTE NOTIFICATION

Road
Polygon Id(s): 168166937, 168322272

PA82788 - LOT 111 DP1133194 AND LOTS 1251-1255 DP1146737

Polygon Id(s): 166543103, 166543109, 174464803

NSW GAZ. 18-07-2008 Folio : 7268
DEDICATED PUBLIC ROAD
AFFECTING THE LAND SHOWN IN THE DIAGRAM ACCOMPANYING THIS GAZETTE NOTIFICATION

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Plan	Surv/Comp	Purpose
DP164590	SURVEY	UNRESEARCHED
DP270764	SURVEY	COMMUNITY PLAN
DP544478	SURVEY	SUBDIVISION
DP597283	SURVEY	SUBDIVISION
DP622205	SURVEY	SUBDIVISION
DP714785	SURVEY	SUBDIVISION
DP785244	COMPILATION	SUBDIVISION
DP812143	SURVEY	OLD SYSTEM CONVERSION
DP852063	SURVEY	SUBDIVISION
DP852275	SURVEY	SUBDIVISION
DP862776	SURVEY	SUBDIVISION
DP862777	SURVEY	SUBDIVISION
DP1027183	SURVEY	SUBDIVISION
DP1046530	SURVEY	SUBDIVISION
DP1046531	SURVEY	SUBDIVISION
DP1057750	SURVEY	SUBDIVISION
DP1057905	SURVEY	SUBDIVISION
DP1070192	SURVEY	SUBDIVISION
DP1107281	SURVEY	SUBDIVISION
DP1113277	SURVEY	SUBDIVISION
DP1133331	SURVEY	SUBDIVISION
DP1133334	SURVEY	SUBDIVISION
DP1139106	SURVEY	SUBDIVISION
DP1139106	UNRESEARCHED	SUBDIVISION
DP1139549	SURVEY	SUBDIVISION
DP1152751	SURVEY	SUBDIVISION
DP1152751	UNRESEARCHED	SUBDIVISION
DP1158918	SURVEY	SUBDIVISION
DP1158982	SURVEY	SUBDIVISION
DP1163812	SURVEY	SUBDIVISION
DP1168133	SURVEY	SUBDIVISION
DP1168636	SURVEY	SUBDIVISION
DP1173822	SURVEY	SUBDIVISION
DP1173936	SURVEY	SUBDIVISION
DP1176669	SURVEY	SUBDIVISION
DP1176708	SURVEY	SUBDIVISION
DP1177644	SURVEY	SUBDIVISION
DP1177644	UNRESEARCHED	SUBDIVISION
DP1177862	SURVEY	SUBDIVISION
DP1179449	SURVEY	SUBDIVISION
DP1180286	SURVEY	SUBDIVISION
DP1181032	SURVEY	SUBDIVISION
DP1181745	SURVEY	SUBDIVISION
DP1182211	SURVEY	SUBDIVISION
DP1182355	SURVEY	SUBDIVISION
DP1183784	SURVEY	SUBDIVISION
DP1185628	SURVEY	SUBDIVISION
DP1187969	SURVEY	SUBDIVISION
DP1188038	SURVEY	SUBDIVISION
DP1189777	SURVEY	SUBDIVISION
DP1190420	SURVEY	SUBDIVISION
DP1190575	SURVEY	SUBDIVISION
DP1190905	SURVEY	CONSOLIDATION
DP1194925	SURVEY	SUBDIVISION
DP1202898	SURVEY	SUBDIVISION
DP1206388	SURVEY	SUBDIVISION
DP1209323	SURVEY	SUBDIVISION
DP1210553	COMPILATION	CONSOLIDATION
DP1210553	UNRESEARCHED	CONSOLIDATION
DP1221439	SURVEY	SUBDIVISION
DP1221439	UNRESEARCHED	SUBDIVISION
SP57351	COMPILATION	STRATA PLAN
SP85586	COMPILATION	STRATA PLAN
SP88341	COMPILATION	STRATA PLAN
SP91139	COMPILATION	STRATA PLAN
SP91240	COMPILATION	STRATA PLAN
SP91763	COMPILATION	STRATA PLAN

Copyright © Land and Property Information ABN: 84 104 377 806

Req:R020706 /Doc:CT 12157-212 CT /Rev:10-Jan-2011 /Sts:OK.SC /Pgs:ALL /Prt:12-Jan-2017 09:09 /Seq:1 of 2
Ref:als /Src:T

[redacted]ICATE OF TITLE

NEW SOUTH WALES

PROPERTY ACT, 1900

12157-212

Vol. 12157 Fol. 212

Appln. No. 7141

Prior Title Vol.8360 Fol.182

Edition issued 12-7-1973

CANCELLED

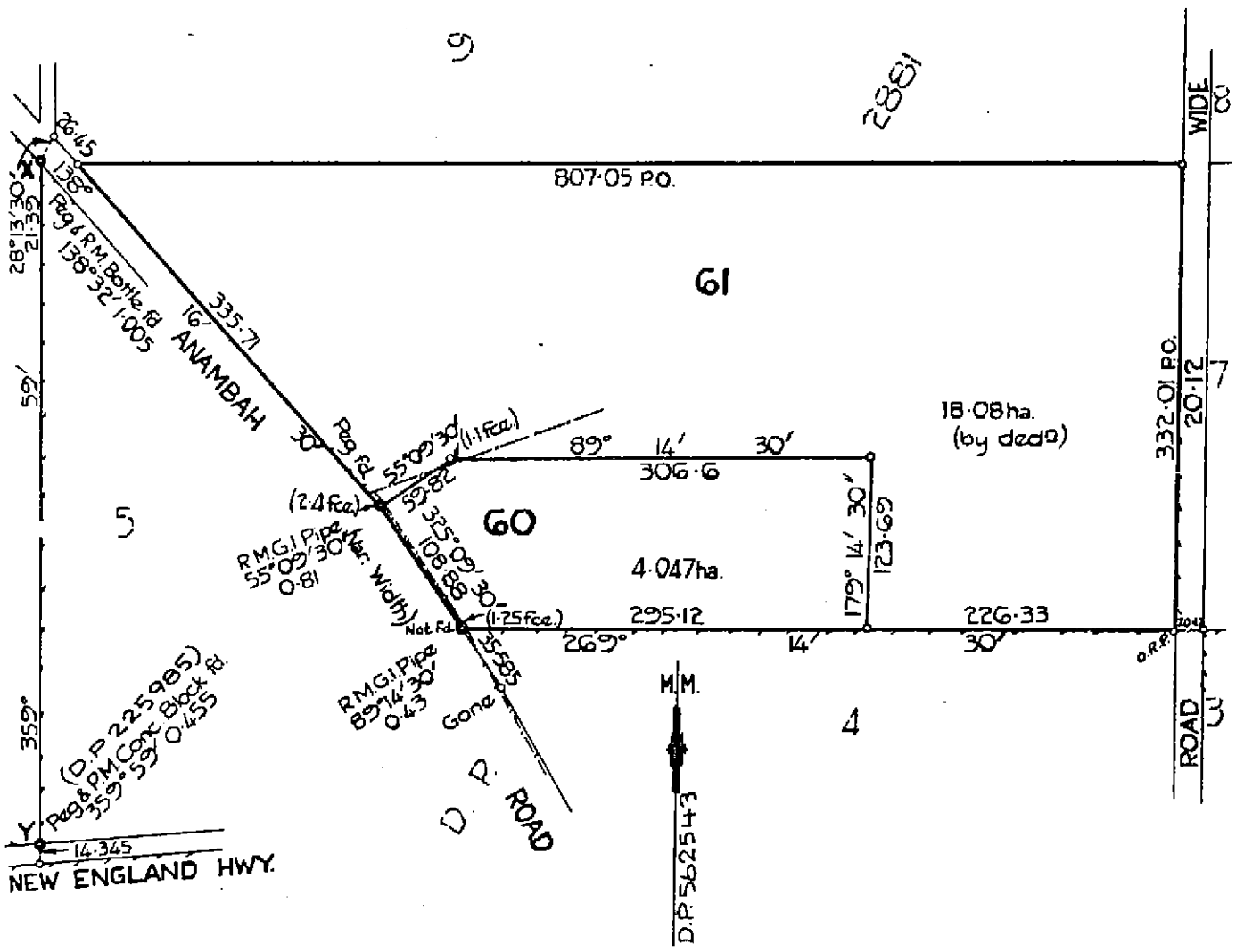
I certify that the person described in the First Schedule is the registered proprietor of the undermentioned estate in the land within described subject nevertheless to such exceptions encumbrances and interests as are shown in the Second Schedule.

Registrar General.

(Page 1) Vol. 12157 Fol. 212

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 61 in Deposited Plan 562543 at Gosforth in the City of Maitland Parish of Gosforth and County of Northumberland being part of Portion 70 granted to George Shaw Rutherford on 19-7-1841. EXCEPTING THEREOUT the mines and metals excepted by Transfer No. 214596.

FIRST SCHEDULE

LYAL LESLIE BARNES, of North Lambton, Truck Driver, and DOROTHY MAY BARNES, his wife, as Joint Tenants.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. Mortgage No.L374415 to Maitland Permanent Building Investment and Loan Society. Entered 28-3-1969.

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. 12157 Fol. 212

DP 591149
& 2?0 ?

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
This deed is cancelled as to the whole New certificates of title issued 3-11-1977. for lots in Deposited 591149 as follows:- Lots 600 to 602 : 13471 : 179 to 181 respectively.					

NEW CERTIFICATE(S) OF TITLE ISSUING ON DP 591149
NO DEALING TO BE REGISTERED WITHOUT REFERENCE TO SURVEY DRAFTING BRANCH.

SECOND SCHEDULE (continued)

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

(Page 2 of 2 pages)

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

Req:R020706 /Doc:CT 12157-212 CT /Rev:10-Jan-2011 /Sts:OK.SC /Pgs:ALL /Prt:12-Jan-2017 09:09 /Seq:2 of 2
Retials /Src:T

Req:R020696 /Doc:CT 13471-180 CT /Rev:25-Jan-2011 /Sts:OK.SC /Pgs:ALL /Prt:12-Jan-2017 09:08 /Seq:1 of 2
Ref:als /Src:T

[redacted]

CERTIFICATE OF TITLE

13471180

NEW SOUTH WALES

PROPERTY ACT, 1900

Appln. No.7141

Prior Title Vol.12157 Fol.212

Vol. 13471 Fol. 180

EDITION ISSUED

4 11 1977

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

CANCELLED

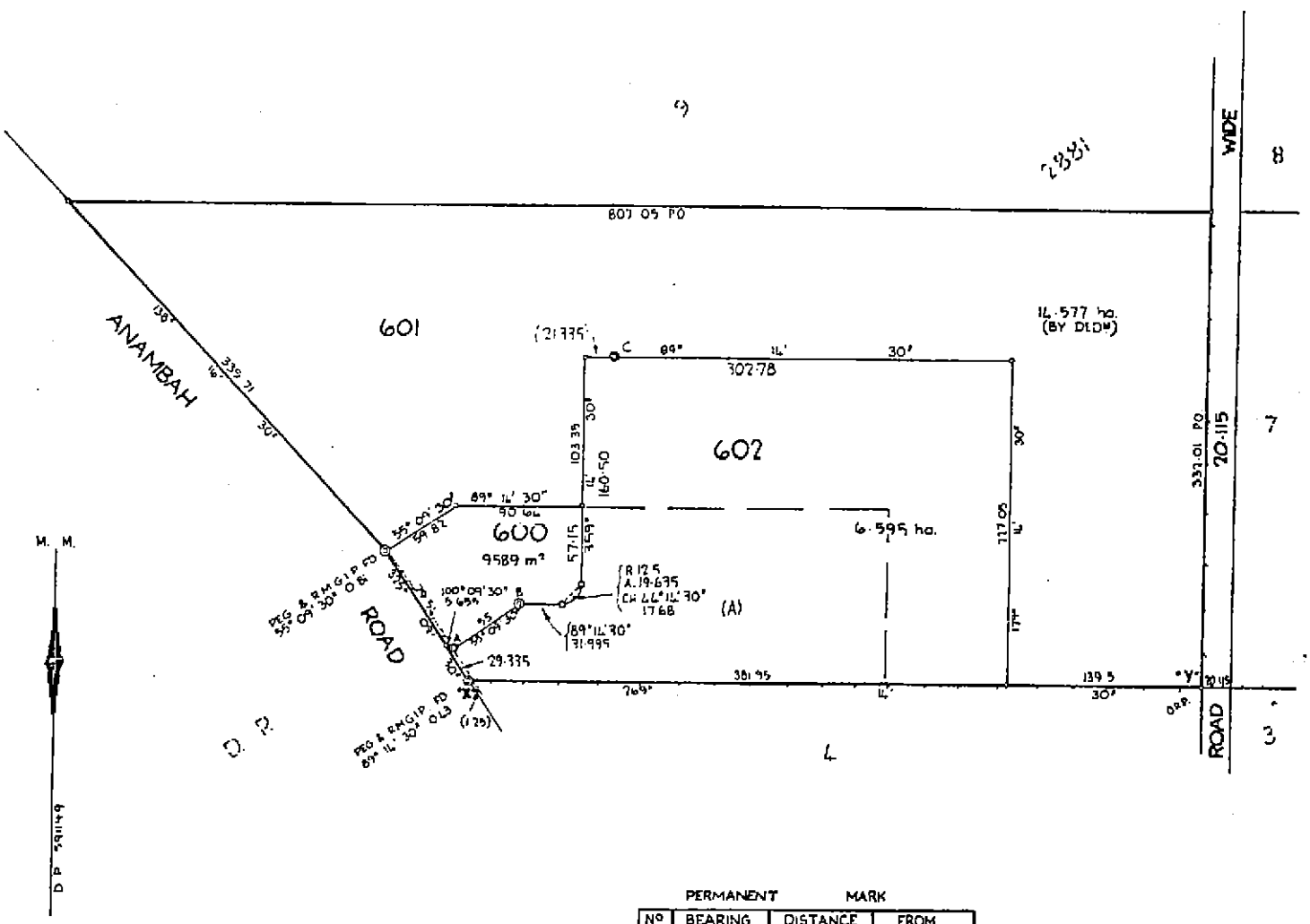
Registrar General.

(Page 1) Vol. 13471 Fol. 180

PLAN SHOWING LOCATION OF LAND

SEE AUTO FOLIO

LENGTHS ARE IN METRES



	PERMANENT MARK		
Nº	BEARING	DISTANCE	FROM
A	315° 09' 30"	0·5	CONC. BLOCK
B	34° 12'	0·525	CONC. BLOCK
C	44° 09' 30"	0·705	CONC. BLOCK

ESTATE AND LAND REFERRED TO

S

Estate in Fee Simple in Lot 601 in Deposited Plan 591149 at Gosforth in the City of Maitland Parish of Gosforth and County of Northumberland being part of Portion 70 granted to George Shaw Rutherford on 19-7-1841. EXCEPTING THEREOUT the mines and metals excepted by Transfer No.214596.

FIRST SCHEDULE

LYAL LESLIE BARNES of North Lambton, ~~Truck Driver~~ and DOROTHY MAY BARNES, ~~his wife, as Joint Tenants.~~

SECOND SCHEDULE

GRY

1. Reservations and conditions, if any, contained in the Crown Grants above referred to.
2. ~~L374415 Mortgage to Maitland Permanent Building Investment and Loan Society.~~ Discharged Q792528

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. 13471 Fol. 180

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	INSTRUMENT NATURE	INSTRUMENT NUMBER	INSTRUMENT DATE	ENTERED	Signature of Registrar General
~~Dorothy May Barnes by Notice of Death V97359. Registered 11-5-1984~~					
Christopher Harold Lucas and Verona Jean Lucas as joint tenants by Transfer V840093. Registered 24.7.1985.					

CANCELLED

SEE AUTO FOLIO

Q792528
V97359N
V840093
V936824
WRONG REF

SECOND SCHEDULE (continued)

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

(Page 2 of 2 pages)

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

Req:R020696 /Doc:CT 13471-180 CT /Rev:25-Jan-2011 /Sts:OK.SC /Pgs:ALL /Prt:12-Jan-2017 09:08 /Seq:2 of 2 /Dlv:Email /Fmt:PDF /Ref:als /Src:T

Req:R020700 /Doc:CT 14623-113 CT /Rev:23-Dec-2010 /Sts:OK.SC /Pgs:ALL /Prt:12-Jan-2017 09:08 /Seq:1 of 2
Ref:als /Src:T

[redacted]ICATE OF TITLE

NEW SOUTH WALES

[redacted]AL PROPERTY ACT, 1900

14623113

Vol. [redacted] Fol. [redacted]

Appln No 7141

Prior Title Vol. 8360 Fol. 182

CANCELLED W

EDITION ISSUED

11 12 1981

14623 Fol. 113

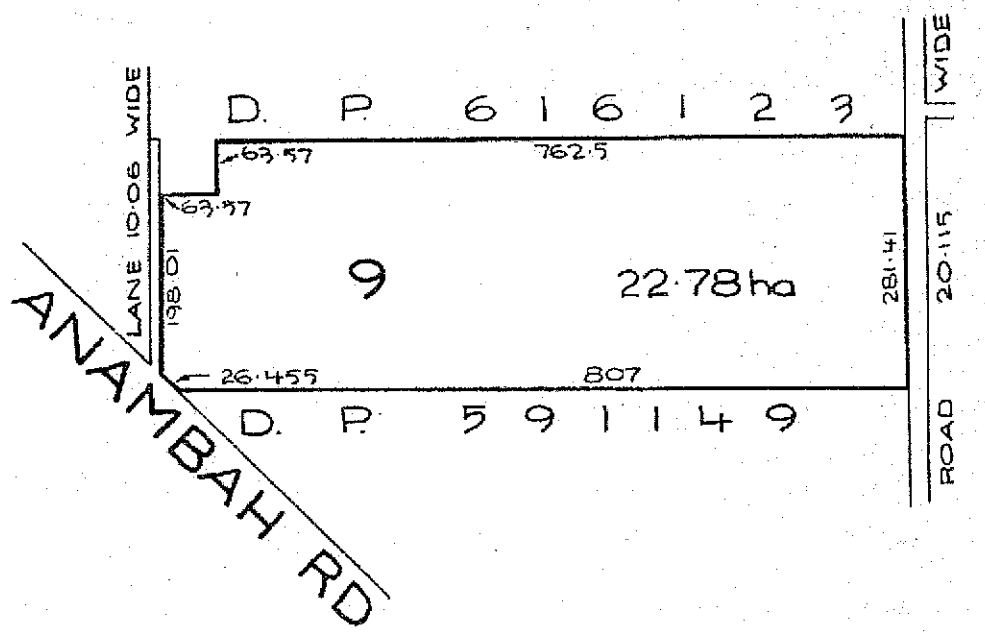
(Page 1) Vol. .....

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

Registrar General.

PLAN SHOWING LOCATION OF LAND

LENGTHS ARE IN METRES



1981M 1704

ESTATE AND LAND REFERRED TO

Estate in Fee Simple in Lot 9 in Deposited Plan 2881 in the City of Maitland Parish of Gosforth County of Northumberland being part of Portion 70 granted to George Shaw Rutherford on 19-7-1841. EXCEPTING THEREOUT the mines and metals reserved by Transfer 214596.

FIRST SCHEDULE

~~LYAL LESLIE BARNES and DOROTHY MAY BARNES as Joint Tenants~~.

SECOND SCHEDULE

1. Reservations and conditions, if any, contained in the Crown Grant above referred to.
2. ~~L374415 Mortgage to Maitland Mutual Building Society~~. Discharged S964790

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

WARNING: THIS DOCUMENT MAY NOT BE REPRODUCED EXCEPT WITH THE PERMISSION OF THE REGISTRAR GENERAL AND MAY BE SUBJECT TO THE RIGHTS OF OTHER PERSONS

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

RG 2/64

Vol. 14623 Fol. 113

94137C 4.81 D. West, Government Printer

FIRST SCHEDULE (continued)

REGISTERED PROPRIETOR	Registrar General
Dorothy May Barnes by Notice of Death V97359. Registered 11-5-1984. DP/SP 785244 Registered 17.11.1988 This folio is cancelled as to whole/~~part~~ upon creation of computer folios for lots 90, 91 in the ~~above~~ mentioned plan.	

SECOND SCHEDULE (continued)

PARTICULARS	Registrar General	CANCELLATION
~~V936882 Caveat by Cheryl Lewis, Malcolm Barnes and Terry Barnes. Registered 2-10-1985.~~		W167770

NOTATIONS AND UNREGISTERED DEALINGS

S964700MR
V97359NDR
V936882 ~~wx~~ Rel/d
W167770 ~~wx~~ R
DP 123944

Req:R02070O /Doc:CT 14623-113 CT /Rev:23-Dec-2010 /Sis:OK.SC /Pgs:ALL /Prt:12-Jan-2017 09:08 /Seq:2 of 2
Ref:als /Src:T
NOTE: ENTRIES RULED THROUGH AND AUTHENTICATED BY THE SEAL OF THE REGISTRAR GENERAL ARE CANCELLED

Req:R020708 /Doc:DL Y073275 /Rev:02-Sep-2010 /Sts:OK.SC /Pgs:ALL /Prt:12-Jan-2017 09:09 /Seq:1 of 1
Ref:EPRM - Anambah /Src:T

RP 13 STAMP DUTY

OFFICE OF STATE REVENUE (N.S.W. TREASURY)
1988/89 N1
STAMP DUTY
CHIEF COMMISSIONER

[redacted]

Y073275

TRANSFER

REAL PROPERTY ACT, 1900

T

CB 1 of 1

$ Nil

R1/1

Torrens Title Reference	If Part Only, Delete Whole and Give Details	Location
PART OF THE LAND CONTAINED IN VOLUME 13471 FOLIO 180 now Identifier 90/785244	~~WHOLE~~ BEING THAT PART OF LOT 90 IN DEPOSITED PLAN 785244 FORMERLY CONTAINED WITHIN LOT 601 DP 591149	AT RUTHERFORD

DESCRIPTION OF LAND Note (a)

TRANSFEROR Note (b)

CHRISTOPHER HAROLD LUCAS of Anambah Road Rutherford
and VERONA JEAN LUCAS his wife

ESTATE Note (c)

(the abovenamed TRANSFEROR) hereby acknowledges receipt of the consideration of $ 500.00
and transfers an estate in fee simple
in the land above described to the TRANSFEREE

TRANSFEREE Note (d)

DOROTHY MAY BARNES of Anambah Road Rutherford

OFFICE USE ONLY

S

TENANCY Note (e)

as joint tenants/tenants in common

PRIOR ENCUMBRANCES Note (f)

subject to the following PRIOR ENCUMBRANCES 1. ..... 2. ..... 3. .....

DATE 28th November 1988

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

EXECUTION Note (g)

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

..... Signature of Witness

WILLIAM THOMAS MORGAN
Name of Witness (BLOCK LETTERS)

9 CHURCH STREET
MAITLAND
SOLICITOR
Address and occupation of Witness

374

C. H. Lucas.
V. Lucas
Signature of Transferor

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

..... Signature of Witness

WILLIAM THOMAS MORGAN
9 CHURCH STREET
MAITLAND
SOLICITOR
Name of Witness (BLOCK LETTERS)
Address and occupation of Witness

D. M. Barnes
Signature of Transferee

Note (g) A

$4 V

TO BE COMPLETED BY LODGING PARTY Notes (h) and (i)

LODGED BY G. KENYON & SONS
LAW STATIONERS
CASTLEREAGH ST. SYDNEY 2000
DX 456 SYDNEY Phone 267-8644 FAX: (02) 267 3827
32K
Delivery Box Number

LOCATION OF DOCUMENTS

CT	OTHER	
		Herewith.
		In L.T.O. with Amendments Tester
		Produced by

OFFICE USE ONLY

Checked	Passed
CB 13/12	
Signed	Extra Fee

REGISTERED - -19

10 JAN 1989

Secondary Directions	
Delivery Directions	CT 32K

PLAN FORM 2

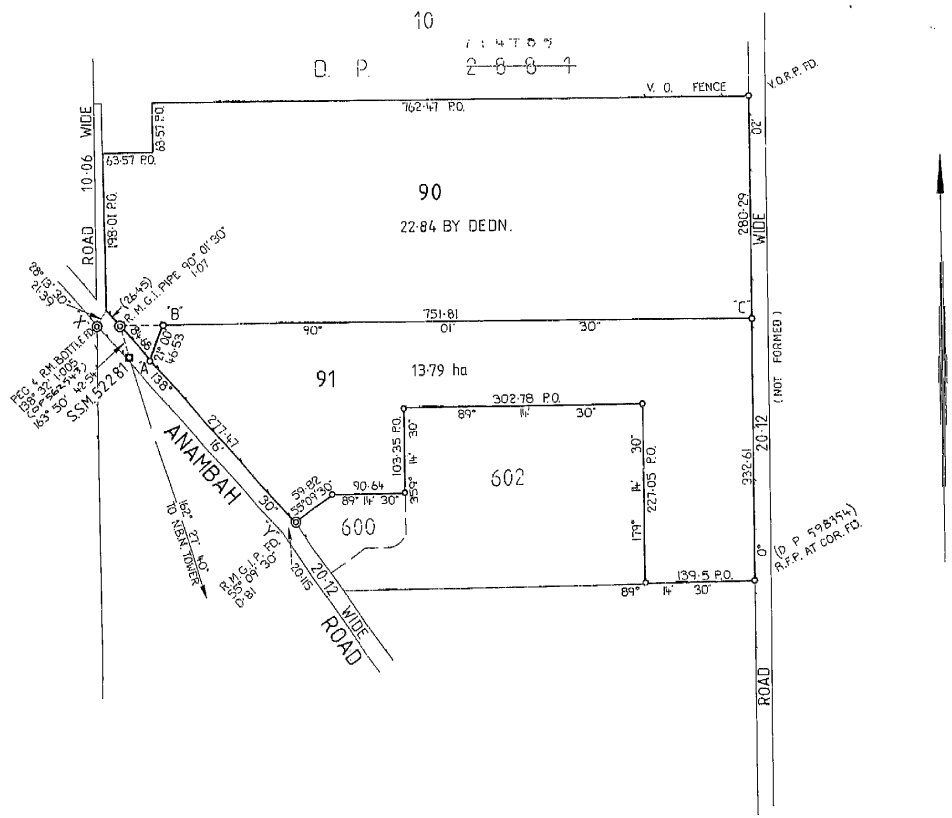
Plan Drawing only to appear in this space

*OFFICE USE ONLY

DP 785244

SIGNATURE AND SEALS ONLY.

D m B & D. M. Barnes
L. A. Lucas
N. Lucas



Crown Lands Office Approval

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

Council Clerk's Certificate

I hereby certify that –

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

*(b) the requirements of section 348 of the † ~~Metropolitan Water, Sewerage and Drainage Act, 1924, as amended~~, † Hunter District Water, Sewerage, and Drainage Act, 1938, as amended

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

Subdivision No. 88/038

Date 7th OCTOBER 1988

(Signature) ATC
Council Clerk

Council File No. 133/5/88038

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

† Delete if inapplicable.

SURVEYOR'S REFERENCE: GF/9 53409
M. P. D

Registered 17-11-1988

C.A: N° 88/038 OF 7-10-1988

Title System: TORRENS

Purpose: SUBDIVISION

Ref. Map: U4580-8

PARISH

Last Plan: D P 2881

PLAN OF SUBDIVISION OF LOT a D.P 2881 & LOT 601 D.P. 591149

Lengths are in metres. Reduction Ratio 1:4000

~~Mun./Shire~~ City: MAITLAND

Locality: GOSFORTH

Parish: GOSFORTH

County: NORTHUMBERLAND

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

I, RAYMOND PAUL DILLEY of SCOTT CRISP CASHMORE MAITLAND P/L 78 CHURCH STREET, MAITLAND 2320

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

the 27-9-88

Signature
Surveyor registered under Surveyors Act, 1929, as amended.
Datum Line of Azimuth: X - Y
*Insert date of survey

Plans used in preparation of survey/compilation.

D.P. 2881 D.P. 591149

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

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

WARNING: CREASING OR FOLDING WILL LEAD TO REJECTION

This negative is a photograph made as a permanent record of a document in the custody of the Registrar General this day. 18th November, 1988

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

Req:R235985 /Doc:DP 0785244 P /Rev:24-Oct-1992 /Sts:OK.OK /Prt:26-Jul-2012 16:10 /Pgs:ALL /Seq:1 of 1
Ref:1 /Src:T

Advance Legal Searchers Pty Ltd Phone: 02 9644 1679

Advance Legal Searchers Pty Ltd hereby certifies that the information contained in this document has been provided electronically by the Registrar General.

Information provided through Tri-Search an approved LPI*NSW* Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE
12/1/2017 9:06AM

FOLIO: 90/785244

First Title(s): OLD SYSTEM
Prior Title(s): 601/591149 VOL 14623 FOL 113

Recorded	Number	Type of Instrument	C.T. Issue
23/11/1988	DP785244	DEPOSITED PLAN	FOLIO CREATED EDITION 1
10/1/1989	Y73275	TRANSFER	EDITION 2
10/4/1989	Y264537	CAVEAT	
8/8/1989	Y535528	TRANSFER	EDITION 3
24/7/1991	Z803018	WITHDRAWAL OF CAVEAT	
24/7/1991	Z803019	MORTGAGE	EDITION 4
16/4/1993	I260091	MORTGAGE	EDITION 5
29/5/1997	3101742	DISCHARGE OF MORTGAGE	
29/5/1997	3101743	MORTGAGE	EDITION 6
15/6/2009	DP1139464	DEPOSITED PLAN	EDITION 7
9/6/2016	AK498207	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.

Advance Legal Searchers Pty Ltd Phone: 02 9644 1679

Advance Legal Searchers Pty Ltd hereby certifies that the information contained in this document has been provided electronically by the Registrar General.

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LAND AND PROPERTY INFORMATION NEW SOUTH WALES - HISTORICAL SEARCH

SEARCH DATE

12/1/2017 9:07AM

FOLIO: 601/591149

First Title(s): SEE PRIOR TITLE(S)
Prior Title(s): VOL 13471 FOL 180

Recorded	Number	Type of Instrument	C.T. Issue
28/3/1988		TITLE AUTOMATION PROJECT	LOT RECORDED FOLIO NOT CREATED
24/8/1988		CONVERTED TO COMPUTER FOLIO	FOLIO CREATED CT NOT ISSUED
18/11/1988	DP785244	DEPOSITED PLAN	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.

Advance Legal Searchers Pty Ltd Phone: 02 9644 1679

Advance Legal Searchers Pty Ltd hereby certifies that the information contained in this document has been provided electronically by the Registrar General in accordance with Section 96B(2) of the Real Property Act.

Information provided through Tri-Search an approved LPI*NSW* Information Broker

LAND AND PROPERTY INFORMATION NEW SOUTH WALES - TITLE SEARCH

FOLIO: 90/785244

SEARCH DATE	TIME	EDITION NO	DATE
12/1/2017	9:04 AM	7	15/6/2009

LAND

LOT 90 IN DEPOSITED PLAN 785244
AT GOSFORD
LOCAL GOVERNMENT AREA MAITLAND
PARISH OF GOSFORTH COUNTY OF NORTHUMBERLAND
TITLE DIAGRAM DP785244

FIRST SCHEDULE

KENNETH WILLIAM JOHN SAXBY
KARENNE DIANNE SAXBY
AS JOINT TENANTS (T Y535528)

SECOND SCHEDULE (5 NOTIFICATIONS)

1 RESERVATIONS AND CONDITIONS IN THE CROWN GRANT(S)
* 2 214596 LAND EXCLUDES MINERALS
3 Z803019 MORTGAGE TO WESTPAC BANKING CORPORATION
4 3101743 MORTGAGE TO WESTPAC BANKING CORPORATION
5 DP1139464 EASEMENT FOR SEWAGE PUMPING STATION VARIABLE WIDTH AFFECTING THE PART(S) SHOWN SO BURDENED IN DP1139464

NOTATIONS

UNREGISTERED DEALINGS: NIL

*** 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.***

Appendix D
SITE PHOTOGRAPHS

	**Photo 1 –** Photo of the Site, facing north showing the Hay shed.
	**Photo 2 –**Facing east towards neighbouring properties and the water bodies.
	**Photo 3 –** Facing south east to neighbouring residential Development.

	**Photo 4 –** Facing west towards the existing residential dwelling and Proposed Lot 34.
	**Photo 5 –** Stockpiles observed adjacent the eastern boundary of the Developable Portion.
	**Photo 6 -** Stockpile 1 (SP1) with anthropogenci materials.

		**Photo 7 -** Stockpile 2 (SP2).

Appendix E
PROPOSED SUBDIVISION PLAN



VERIFIER A.BROWN
JOB MANAGER A.BROWN
DESIGNED J.HOEY
DRAWN J.HOEY

NOT FOR CONSTRUCTION

REVISION	DESCRIPTION	ISSUED	VER'D	APP'D	DATE
1	ISSUED FOR INFORMATION	AG	JH	AB	02.11.16
2	ISSUED FOR INFORMATION	AG	JH	AB	11.11.16
3	ISSUED FOR INFORMATION	AG	JH	AB	30.11.16
4	ISSUED FOR INFORMATION	WC	JH	AB	12.12.16

CLIENT
STEVENS GROUP

DRAWING NOT TO BE USED FOR CONSTRUCTION UNLESS VERIFICATION SIGNATURE HAS BEEN ADDED

ARCHITECT

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ALL SETOUT TO ARCHITECT'S DRAWINGS. DIMENSIONS TO BE VERIFIED WITH THE ARCHITECT AND ON SITE BEFORE MAKING SHOP DRAWINGS OR COMMENCING WORK.
NORTHROP ACCEPTS NO RESPONSIBILITY FOR THE USABILITY, COMPLETENESS OR SCALE OF DRAWINGS TRANSFERRED ELECTRONICALLY.

PLANS 1:1250 0 12.5 25 37.5 50 62.5m

NORTHROP
Newcastle
Suite 4, 215 Pacific Hwy, Charlestown NSW 2290
P.O. Box 180, Charlestown NSW 2290
Ph (02) 4943 1777 Fax (02) 4943 1577
Email newcastle@northrop.com.au ABN 81 094 433 100

PROJECT
PROPOSED SUBDIVISION
MARLOWE AVENUE
ANAMBAH, NSW

DRAWING TITLE
PRELIM SUBDIVISION
PLAN - 2

JOB NUMBER **NL166237**
DRAWING NUMBER **CSK02**
REVISION **4**
DRAWING SHEET SIZE = A1

Appendix F
BORE LOGS

TESTPIT LOG TP01

PROJECT NUMBER EP0454
PROJECT NAME Anambah
CLIENT Stevens Holdings Pty Ltd
ADDRESS 106 Anambah Road, Anambah, NSW

DRILLING DATE 18/01/17
DRILLING COMPANY ARSK Civil
DRILLER Allan Robertson
DRILLING METHOD Excavator
TOTAL DEPTH 2.5 m

COORDINATES
COORD SYS
SURFACE ELEVATION
LOGGED BY PS
CHECKED BY JY

COMMENTS

Depth (m)	PID (ppm)	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, Brown, dry, dense, organic matter.		17
	0		TP01/0.2			ML	CLAYEY SILT with Gravel: non-plastic, hard to very stiff, dry, brown.		12
									11
0.5	0		TP01/0.5 Disturbed Sample 0.5 - 1.0						6
									7
									7
						CL	SILTY CLAY: Medium Plasticity, very stiff, moist, brown.		7
1	0		TP01/1 Undisturbed and Disturbed Sample 1.0 - 1.4 m						6
									-
									-
1.5									-
						CL	SILTY CLAY: Medium Plasticity, moist, brown. Mottled orange.		
2	0		TP01/2.0					Mottled Red Iron Staining	
			TP01/2.5						
2.5	0						Termination Depth at 2.5 m		

Disclaimer This log is intended for environmental and geotechnical purposes.
produced by ESlog.ESdat.net on 27 Feb 2017

TESTPIT LOG TP02

PROJECT NUMBER EP0454	**DRILLING DATE** 18/01/17	**COORDINATES**
PROJECT NAME Anambah	**DRILLING COMPANY** ARSK Civil	**COORD SYS**
CLIENT Stevens Holdings Pty Ltd	**DRILLER** Allan Robertson	**SURFACE ELEVATION**
ADDRESS 106 Anambah Road, Anambah, NSW	**DRILLING METHOD** Excavator	**LOGGED BY** PS
	TOTAL DEPTH 2.5 m	**CHECKED BY** JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, brown, dry, dense, organic matter.		11
	0		TP02/0.2			ML	CLAYEY SILT with Gravel: non-plastic, hard, dry, brown.		12
									8
0.5	0		TP02/0.5			CL	SILTY CLAY: Low plasticity, very stiff to stiff, dry, brown.		7
									4
							SILTY CLAY: Low plasticity, stiff to very stiff, moist, brown.		3
1	0		TP02/1 Undisturbed and Disturbed Sample 1.5 - 1.9 m						4
									3
									5
									7
1.5						CL	SILTY CLAY: Low plasticity, stiff to very stiff, dry, grey/ brown, mottled orange.		-
2	0		TP02/2.0					Mottled Red Iron Staining	
2.5	0		TP02/2.5				Termination Depth at 2.5 m		

TESTPIT LOG TP03

PROJECT NUMBER EP0454	**DRILLING DATE** 18/01/17	**COORDINATES**
PROJECT NAME Anambah	**DRILLING COMPANY** ARSK Civil	**COORD SYS**
CLIENT Stevens Holdings Pty Ltd	**DRILLER** Allan Robertson	**SURFACE ELEVATION**
ADDRESS 106 Anambah Road, Anambah, NSW	**DRILLING METHOD** Excavator	**LOGGED BY** PS
	TOTAL DEPTH 2.5 m	**CHECKED BY** JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows
						OL	TOPSOIL: Sandy Silt, brown, dry, very stiff, organic matter.		7
	0		TP03/0.2			ML	CLAYEY SILT with Gravel: non-plastic, very stiff, dry, brown.		7
									5
0.5	0		TP03/0.5 Undisturbed and Disturbed Sample 0.5 - 0.9 m			CL	SILTY CLAY with gravel: Low plasticity, stiff, dry, brown.		6
									3
									5
							SILTY CLAY: Medium plasticity, stiff, moist, brown, mottled orange.		3
1	0		TP03/1						3
									4
									6
1.5									-
			TP03/2.0						
2	0					CL	SILTY CLAY: Low plasticity, dry, grey/ brown, mottled orange.		
								Mottled Red Iron Staining	
			TP03/2.5						
2.5	0						Termination Depth at 2.5 m		

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TESTPIT LOG TP04

PROJECT NUMBER EP0454
PROJECT NAME Anambah
CLIENT Stevens Holdings Pty Ltd
ADDRESS 106 Anambah Road, Anambah, NSW

DRILLING DATE 18/01/17
DRILLING COMPANY ARSK Civil
DRILLER Allan Robertson
DRILLING METHOD Excavator
TOTAL DEPTH 2.5 m

COORDINATES
COORD SYS
SURFACE ELEVATION
LOGGED BY PS
CHECKED BY JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, dark brown, dry, hard, organic matter.		14
	0		TP04/0.2			ML	CLAYEY SILT with Gravel: non-plastic, hard, dry, brown.		20
									13
0.5	0		TP04/0.5 Undisturbed sampleand Disturbed Sample 0.5 - 0.9 m			CL	SILTY CLAY with gravel: Low plasticity, stiff to hard, dry, brown.		11
									7
									3
1	0		TP04/1				SILTY CLAY: Medium plasticity, stiff to very stiff, moist, brown, mottled orange.		3
									4
									3
1.5									6
									7
						CL	SILTY CLAY: Low plasticity, dry, grey/ brown, very stiff at 1.5 m, mottled red.		
2	0		TP04/2.0						
								Mottled Red Iron Staining	
2.5	0		TP04/2.5				Termination Depth at 2.5 m		

TESTPIT LOG TP05

PROJECT NUMBER EP0454
PROJECT NAME Anambah
CLIENT Stevens Holdings Pty Ltd
ADDRESS 106 Anambah Road, Anambah, NSW

DRILLING DATE 18/01/17
DRILLING COMPANY ARSK Civil
DRILLER Allan Robertson
DRILLING METHOD Excavator
TOTAL DEPTH 2.5 m

COORDINATES
COORD SYS
SURFACE ELEVATION
LOGGED BY PS
CHECKED BY JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, dark brown, dry, stiff, organic matter.		4
	0		TP05/0.2			ML	CLAYEY SILT with Gravel: non-plastic, stiff to very stiff, dry, brown.		7
									4
0.5	0		TP05/0.5 Undisturbed sampleand Disturbed Sample 0.5 - 0.9 m			CL	SILTY CLAY: Medium plasticity, firm to stiff, dry, dark brown.		3
									2
									2
1	0		TP05/1						4
							SILTY CLAY: Low plasticity, stiff to very stiff, grey/brown, mottled red.		5
									5
									7
1.5									
						CL			
2	0		TP05/2.0						
								Mottled Red Iron Staining	
2.5	0		TP05/2.5				Termination Depth at 2.5 m		

TESTPIT LOG TP06

PROJECT NUMBER EP0454
PROJECT NAME Anambah
CLIENT Stevens Holdings Pty Ltd
ADDRESS 106 Anambah Road, Anambah, NSW

DRILLING DATE 18/01/17
DRILLING COMPANY ARSK Civil
DRILLER Allan Robertson
DRILLING METHOD Excavator
TOTAL DEPTH 2.5 m

COORDINATES
COORD SYS
SURFACE ELEVATION
LOGGED BY PS
CHECKED BY JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, dark brown, dry, hard, organic matter		16
	0		TP06/0.2			ML	CLAYEY SILT with Gravel: non-plastic, very stiff to hard, dry, dark brown.		10
									7
0.5	0		TP06/0.5			CL	SILTY CLAY: Medium plasticity, stiff, dry, dark brown.		3
									3
									2
1	0		TP06/1 Undisturbed sampleand Disturbed Sample 1.0 - 1.4 m			CL	SILTY CLAY: Low plasticity, stiff to very stiff, grey/brown, mottled red.		3
									6
									6
									7
1.5									
2	0		TP06/2.0					Mottled Red Iron Staining	
2.5	0		TP06/2.5				Termination Depth at 2.5 m		

TESTPIT LOG TP07

PROJECT NUMBER EP0454
PROJECT NAME Anambah
CLIENT Stevens Holdings Pty Ltd
ADDRESS 106 Anambah Road, Anambah, NSW

DRILLING DATE 18/01/17
DRILLING COMPANY ARSK Civil
DRILLER Allan Robertson
DRILLING METHOD Excavator
TOTAL DEPTH 2.5 m

COORDINATES
COORD SYS
SURFACE ELEVATION
LOGGED BY PS
CHECKED BY JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, dark brown, dry, very stiff, organic matter		7
	0		TP07/0.2			ML	CLAYEY SILT with Gravel: Very stiff to hard, dry, medium plasticity, dark brown.		12
									14
0.5	0		TP07/0.5 Undisturbed sampleand Disturbed Sample 0.5 - 0.9 m			CL	SILTY CLAY with gravel: Low plasticity, stiff to very stiff, dry, dark brown.		8
									4
									6
1	0		TP07/1			CL	SILTY CLAY: Low plasticity, very stiff, brown, mottled red.		7
									7
									8
1.5									
2	0		TP07/2.0					Mottled Red Iron Staining	
2.5	0		TP07/2.5				Termination Depth at 2.5 m		

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TESTPIT LOGS TP08

PROJECT NUMBER EP0454	**DRILLING DATE** 18/01/17	**COORDINATES**
PROJECT NAME Anambah	**DRILLING COMPANY** ARSK Civil	**COORD SYS**
CLIENT Stevens Holdings Pty Ltd	**DRILLER** Allan Robertson	**SURFACE ELEVATION**
ADDRESS 106 Anambah Road, Anambah, NSW	**DRILLING METHOD** Excavator	**LOGGED BY** PS
	TOTAL DEPTH 2.5 m	**CHECKED BY** JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, dark brown, dry, hard, organic matter		13
	0		TP08/0.2			ML	CLAYEY SILT with Gravel: Very stiff to hard, dry, non-plastic, dark brown.		11
									6
0.5	0		TP08/0.5			CL	SILTY CLAY: Low plasticity, stiff to very stiff, dry, dark brown.		3
									2
									3
1	0		TP08/1 Undisturbed sampleand Disturbed Sample 1.0-1.4 m						6
									6
									7
1.5						CL	SILTY CLAY: Low plasticity, grey/brown, orange mottling.		
2	0		TP08/2.0					Mottled Red Iron Staining	
2.5	0		TP08/2.5				Termination Depth at:2.5 m		

TESTPIT LOG TP09

PROJECT NUMBER EP0454
PROJECT NAME Anambah
CLIENT Stevens Holdings Pty Ltd
ADDRESS 106 Anambah Road, Anambah, NSW

DRILLING DATE 18/01/17
DRILLING COMPANY ARSK Civil
DRILLER Allan Robertson
DRILLING METHOD Excavator
TOTAL DEPTH 2.5 m

COORDINATES
COORD SYS
SURFACE ELEVATION
LOGGED BY PS
CHECKED BY JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, dark brown, dry, hard, organic matter		11
	0		TP09/0.2			ML	CLAYEY SILT with Gravel: Hard, dry, non-plastic, dark brown.		16
									15
0.5	0		TP0890.5 Undisturbed sampleand Disturbed Sample 0.5 - 0.9 m			CL	SILTY CLAY with gravel: Low plasticity, hard at 0.5 m then stiff, dry, brown mottled red..		9
									4
									3
1	0		TP09/1						3
									3
									4
1.5									4
									5
						CL	SILTY CLAY: Low plasticity, very stiff, grey/brown, orange mottling.		
2	0		TP09/2.0						
2.5	0		TP09/2.5				Termination Depth at 2.5 m		

TESTPIT LOG TP10

PROJECT NUMBER EP0454
PROJECT NAME Anambah
CLIENT Stevens Holdings Pty Ltd
ADDRESS 106 Anambah Road, Anambah, NSW

DRILLING DATE 18/01/17
DRILLING COMPANY ARSK Civil
DRILLER Allan Robertson
DRILLING METHOD Excavator
TOTAL DEPTH 2.5 m

COORDINATES
COORD SYS
SURFACE ELEVATION
LOGGED BY PS
CHECKED BY JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, dark brown, dry, hard, organic matter		14
	0		TP10/0.2			CL	SILTY CLAY: Hard, dry, low plasticity, dry, dark brown.		12
									10
0.5	0		TP10/0.5 Disturbed Sample 0.5 - 1.0 m			CL	SILTY CLAY with gravel: Low plasticity, hard at 0.5 m then stiff, dry, brown mottled red..		8
									10
						CL	SILTY CLAY: low plasticity, hard, brown mottled orange.		8
1	0		TP010/1						10
									8
									8
1.5			Undisturbed sampleand Disturbed Sample 1.5 - 1.9 m			CL	SILTY CLAY: Low plasticity, brown, orange mottling.		
2	0		TP10/2.0						
2.5	0		TP10/2.5				Termination Depth at 2.5 m		

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TESTPIT LOG TP11

PROJECT NUMBER EP0454
PROJECT NAME Anambah
CLIENT Stevens Holdings Pty Ltd
ADDRESS 106 Anambah Road, Anambah, NSW

DRILLING DATE 18/01/17
DRILLING COMPANY ARSK Civil
DRILLER Allan Robertson
DRILLING METHOD Excavator
TOTAL DEPTH 2.5 m

COORDINATES
COORD SYS
SURFACE ELEVATION
LOGGED BY PS
CHECKED BY JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt with gravel, dark brown, dry, very stiff, organic matter.		7
	0		TP11/0.2			ML	CLAYEY SILT with gravel: Hard, dry, non-plastic, dry, dark brown.		11
									11
0.5	0		TP11/0.5			CL	SILTY CLAY: Low plasticity, dry, stiff to very stiff, reddy brown.		8
									5
									5
						CL	SILTY CLAY: Low plasticity, dry, very stiff brown, orange mottling.		6
1	0		TP11/1 Undisturbed sampleand Disturbed Sample 1.0 - 1.4 m						6
									7
									6
1.5									
2	0		TP11/2.0						
			TP11/2.5					Ironstone Gravel	
2.5	0						Termination Depth at 2.5 m		

TESTPIT LOG TP12

PROJECT NUMBER EP0454
PROJECT NAME Anambah
CLIENT Stevens Holdings Pty Ltd
ADDRESS 106 Anambah Road, Anambah, NSW

DRILLING DATE 18/01/17
DRILLING COMPANY ARSK Civil
DRILLER Allan Robertson
DRILLING METHOD Excavator
TOTAL DEPTH 3 m

COORDINATES
COORD SYS
SURFACE ELEVATION
LOGGED BY PS
CHECKED BY JY

COMMENTS

Depth (m)	PID	Penetration Resistance	Samples	Is Analysed?	Graphic Log	USCS	Material Description	Additional Observations	No. of Blows per 150 mm
						OL	TOPSOIL: Sandy Silt, dark brown, dry, hard, organic matter.		9
	0		TP12/0.2			ML	CLAYEY SILT with gravel: Hard, dry, non-plastic, dry, dark brown.		13
									12
0.5	0		TP12/0.5			CL	SILTY CLAY: Medium plasticity, dry, stiff until 1.4 m then very stiff to hard, brown, mottled orange.		6
									4
									3
1	0		TP12/1 Undisturbed Sample 0.4 - 0.7 m						6
									8
									9
									7
1.5						CL	SILTY CLAY with ironstone gravel: Low plasticity, dry, grey/brown, orange mottling.		
2	0		TP12/2						
2.5	0							Ironstone Gravel	
3	0		TP12/3				Termination Depth at 3.0 m		

Appendix G
NATA ACCREDITED LABORATORY REPORTS

QUALTEST Laboratory (NSW) Pty Ltd (20708)
8 Ironbark Close Warabrook NSW 2304
T: 02 4968 4468
F: 02 4960 9775
E: admin@qualtest.com.au
W: www.qualtest.com.au
ABN: 98 153 268 896

California Bearing Ratio Test Report

Report No: CBR:NEW17W-0349--S03
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

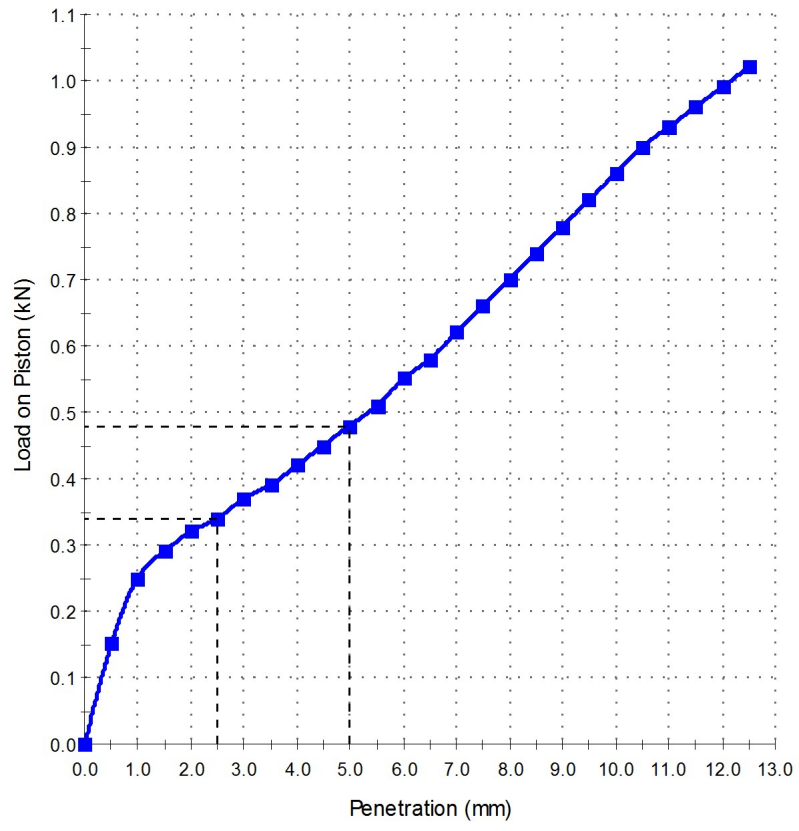
Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Approved Signatory: Dane Cullen
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 13/02/2017

Sample Details

Sample ID:	NEW17W-0349--S03	**Client ID:**	-
Lot No.:	90 in DP 785244	**Test Request No.:**	EP0454
Date Sampled:	19/01/2017		
Sampling Method:	Sampled by Client		
Specification:	No Specification	**Source:**	On-Site
Location:	TP3 - (0.5 - 0.9m)	**Material:**	Clay
Project Location:	Anambah, NSW		

Load vs Penetration



Test Results

AS 1289.6.1.1

CBR At 2.5mm (%):	**2.5**
Maximum Dry Density (t/m³):	1.46
Optimum Moisture Content (%):	27.9
Dry Density before Soaking (t/m³):	1.46
Density Ratio before Soaking (%):	100
Moisture Content before Soaking (%):	27.5
Moisture Ratio before Soaking (%):	98
Dry Density after Soaking (t/m³):	1.42
Density Ratio after Soaking (%):	97
Swell (%):	3.5
Moisture Content of Top 30mm (%):	41.9
Moisture Content of Remaining Depth (%):	29.0
Compactive Effort:	Standard
Surcharge Mass (kg):	9.00
Period of Soaking (Days):	4
Oversize Material (%):	0.0

Moisture Content

Field Moisture Content (%):	34.6

Comments

Moisture Content Method Performed as Per AS1289.2.1.1.
Laboratory Moisture Ratio (LMR): 98.5% Laboratory Density Ratio (LDR): 100.5%

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QUALTEST Laboratory (NSW) Pty Ltd (20708)
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ABN: 98 153 268 896

California Bearing Ratio Test Report

Report No: CBR:NEW17W-0349--S05
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

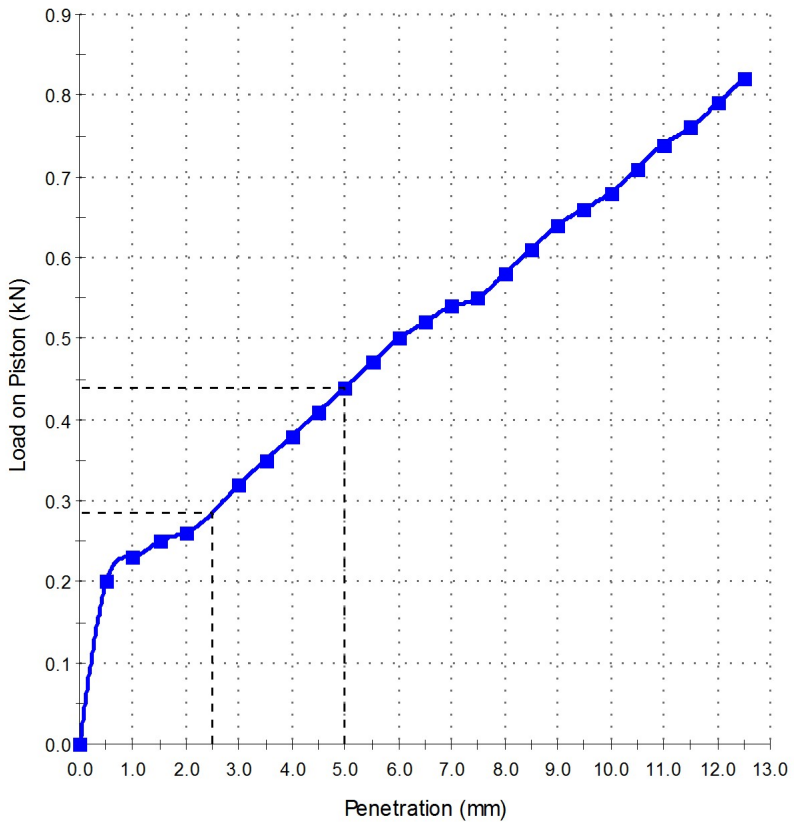
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The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Approved Signatory: Dane Cullen
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 13/02/2017

Sample Details

Sample ID:	NEW17W-0349--S05	**Client ID:**	-
Lot No.:	90 in DP 785244	**Test Request No.:**	EP0454
Date Sampled:	19/01/2017		
Sampling Method:	Sampled by Client		
Specification:	No Specification	**Source:**	On-Site
Location:	TP5 - (0.5 - 0.9m)	**Material:**	Clay
Project Location:	Anambah, NSW		

Load vs Penetration



Test Results

AS 1289.6.1.1

CBR At 5.0mm (%):	**2.0**
Maximum Dry Density (t/m³):	1.45
Optimum Moisture Content (%):	29.0
Dry Density before Soaking (t/m³):	1.45
Density Ratio before Soaking (%):	100
Moisture Content before Soaking (%):	28.5
Moisture Ratio before Soaking (%):	99
Dry Density after Soaking (t/m³):	1.42
Density Ratio after Soaking (%):	98
Swell (%):	2.5
Moisture Content of Top 30mm (%):	44.2
Moisture Content of Remaining Depth (%):	31.6
Compactive Effort:	Standard
Surcharge Mass (kg):	9.00
Period of Soaking (Days):	4
Oversize Material (%):	0.0
Moisture Content	
Field Moisture Content (%):	36.0

Comments

Moisture Content Method Performed as Per AS1289.2.1.1.
Laboratory Moisture Ratio (LMR): 98.5% Laboratory Density Ratio (LDR): 100.5%

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E: admin@qualtest.com.au
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ABN: 98 153 268 896

California Bearing Ratio Test Report

Report No: CBR:NEW17W-0349--S09
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

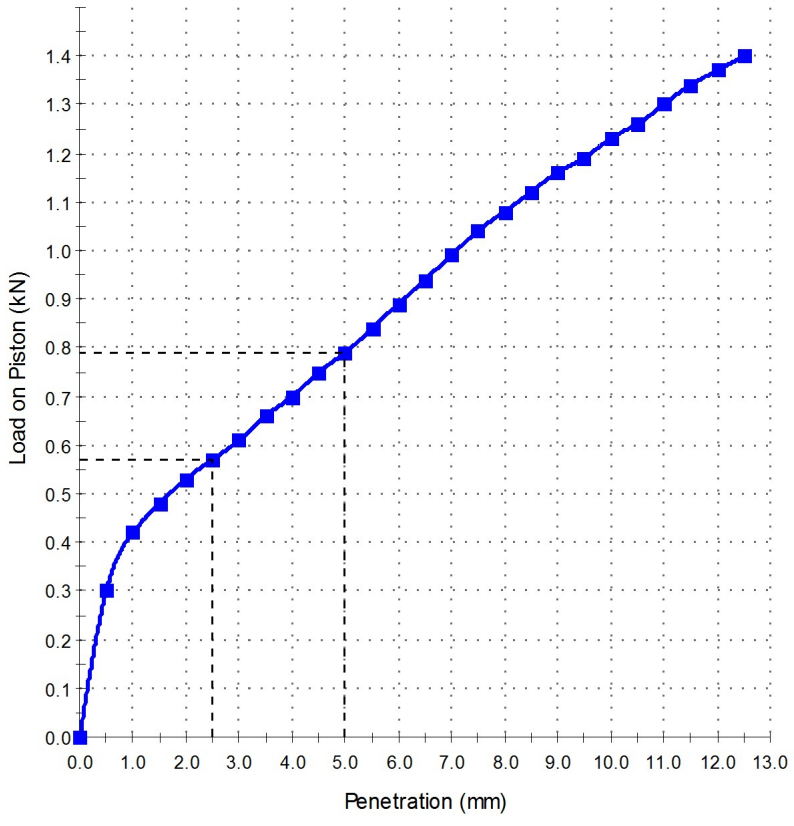
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The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Approved Signatory: Dane Cullen
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 13/02/2017

Sample Details

Sample ID:	NEW17W-0349--S09	**Client ID:**	-
Lot No.:	90 in DP 785244	**Test Request No.:**	EP0454
Date Sampled:	19/01/2017		
Sampling Method:	Sampled by Client		
Specification:	No Specification	**Source:**	On-Site
Location:	TP10 - (0.5 - 0.9m)	**Material:**	Clay
Project Location:	Anambah, NSW		

Load vs Penetration



Test Results

AS 1289.6.1.1

CBR At 2.5mm (%):	**4.5**
Maximum Dry Density (t/m³):	1.47
Optimum Moisture Content (%):	26.7
Dry Density before Soaking (t/m³):	1.47
Density Ratio before Soaking (%):	100
Moisture Content before Soaking (%):	27.0
Moisture Ratio before Soaking (%):	101
Dry Density after Soaking (t/m³):	1.43
Density Ratio after Soaking (%):	97
Swell (%):	2.5
Moisture Content of Top 30mm (%):	38.6
Moisture Content of Remaining Depth (%):	27.8
Compactive Effort:	Standard
Surcharge Mass (kg):	9.00
Period of Soaking (Days):	4
Oversize Material (%):	0.0

Moisture Content

Field Moisture Content (%):	23.8

Comments

Moisture Content Method Performed as Per AS1289.2.1.1.
Laboratory Moisture Ratio (LMR): 101.5% Laboratory Density Ratio (LDR): 100.0%

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ABN: 98 153 268 896

Material Test Report

Report No: MAT:NEW17W-0349--S03
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Approved Signatory: Dane Cullen
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 13/02/2017

Sample Details

Sample ID: NEW17W-0349--S03
Client Sample ID: -
Sampling Method: Sampled by Client
Date Sampled: 19/01/2017
Source: On-Site
Material: Clay
Specification: No Specification
Project Location: Anambah, NSW
Lot. No 90 in DP 785244
TRN EP0454
Sample Location: TP3 - (0.5 - 0.9m)

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	34.6	
Emerson Class Number	AS 1289.3.8.1	4	
Soil Description		Brown, CLAY	
Type of Water		Distilled	
Temperature of Water (°C)		24.0	
CBR At 2.5mm (%)	AS 1289.6.1.1	**2.5**	
Maximum Dry Density (t/m³)		1.46	
Optimum Moisture Content (%)		27.9	
Dry Density before Soaking (t/m³)		1.46	
Density Ratio before Soaking (%)		100	
Moisture Content before Soaking (%)		27.5	
Moisture Ratio before Soaking (%)		98	
Dry Density after Soaking (t/m³)		1.42	
Density Ratio after Soaking (%)		97	
Swell (%)		3.5	
Moisture Content of Top 30mm (%)		41.9	
Moisture Content of Remaining Depth (%)		29.0	
Compactive Effort		Standard	
Surcharge Mass (kg)		9.00	
Period of Soaking (Days)		4	
Oversize Material (%)		0.0	

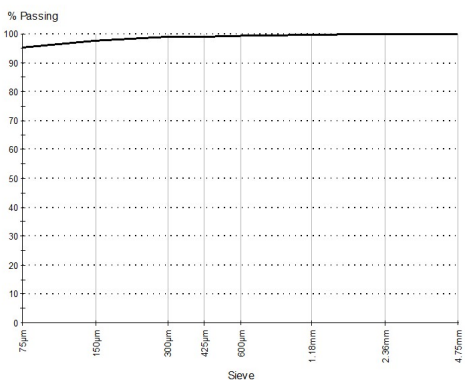
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven

Note: Sample Washed

Sieve Size	% Passing	Limits
4.75mm	100	
2.36mm	100	
1.18mm	100	
600µm	99	
425µm	99	
300µm	99	
150µm	98	
75µm	95	

Chart



Comments

N/A

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W: www.qualtest.com.au
ABN: 98 153 268 896

Material Test Report

Report No: MAT:NEW17W-0349--S09
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

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The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Approved Signatory: Dane Cullen
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 13/02/2017

Sample Details

Sample ID: NEW17W-0349--S09
Client Sample ID: -
Sampling Method: Sampled by Client
Date Sampled: 19/01/2017
Source: On-Site
Material: Clay
Specification: No Specification
Project Location: Anambah, NSW
Lot. No 90 in DP 785244
TRN EP0454
Sample Location: TP10 - (0.5 - 0.9m)

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	23.8	
Emerson Class Number	AS 1289.3.8.1	4	
Soil Description		Brown, CLAY	
Type of Water		Distilled	
Temperature of Water (°C)		24.0	
CBR At 2.5mm (%)	AS 1289.6.1.1	**4.5**	
Maximum Dry Density (t/m³)		1.47	
Optimum Moisture Content (%)		26.7	
Dry Density before Soaking (t/m³)		1.47	
Density Ratio before Soaking (%)		100	
Moisture Content before Soaking (%)		27.0	
Moisture Ratio before Soaking (%)		101	
Dry Density after Soaking (t/m³)		1.43	
Density Ratio after Soaking (%)		97	
Swell (%)		2.5	
Moisture Content of Top 30mm (%)		38.6	
Moisture Content of Remaining Depth (%)		27.8	
Compactive Effort		Standard	
Surcharge Mass (kg)		9.00	
Period of Soaking (Days)		4	
Oversize Material (%)		0.0	

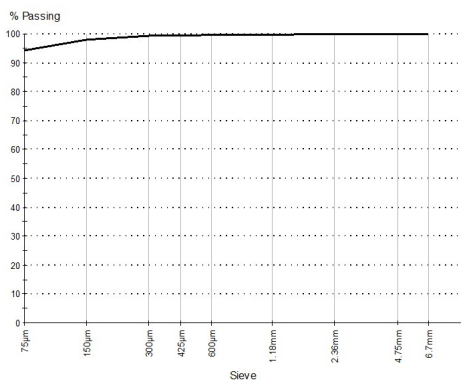
Particle Size Distribution

Method: AS 1289.3.6.1
Drying by: Oven

Note: Sample Washed

Sieve Size	% Passing	Limits
6.7mm	100	
4.75mm	100	
2.36mm	100	
1.18mm	100	
600µm	100	
425µm	99	
300µm	99	
150µm	98	
75µm	94	

Chart



Comments

N/A

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Shrink Swell Index Report

Report No: SSI:NEW17W-0349--S01
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Approved Signatory: Adam Dwyer
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 2/02/2017

Sample Details

Sample ID:	NEW17W-0349--S01	**Client Sample ID:**	-
Test Request No.:	EP0454	**Sampling Method:**	Sampled by Client
Material:	CLAY	**Date Sampled:**	19/01/2017
Source:	On-Site	**Date Submitted:**	24/01/2017
Specification:	No Specification		
Project Location:	Anambah, NSW		
Sample Location:	TP1 - (1.0 - 1.4m)		
Borehole Number:	TP1		
Borehole Depth (m):	1.0 - 1.4m		

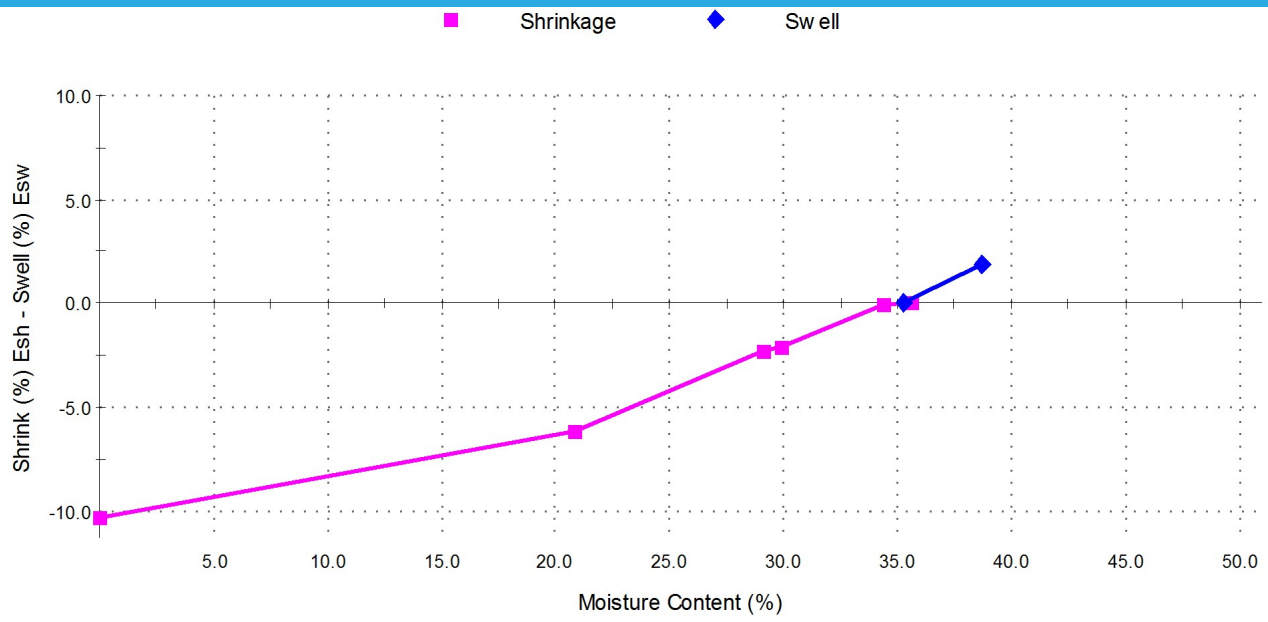
Swell Test AS 1289.7.1.1

Swell on Saturation (%):	1.8
Moisture Content before (%):	35.3
Moisture Content after (%):	38.7
Est. Unc. Comp. Strength before (kPa):	170
Est. Unc. Comp. Strength after (kPa):	160

Shrink Test AS 1289.7.1.1

Shrink on drying (%):	10.3
Shrinkage Moisture Content (%):	35.6
Est. inert material (%):	0
Crumbling during shrinkage:	Nil
Cracking during shrinkage:	Minor

Shrink Swell



Shrink Swell Index - Iss (%): 6.2

Comments

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Shrink Swell Index Report

Report No: SSI:NEW17W-0349--S02
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Approved Signatory: Adam Dwyer
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 2/02/2017

Sample Details

Sample ID:	NEW17W-0349--S02	**Client Sample ID:**	-
Test Request No.:	EP0454	**Sampling Method:**	Sampled by Client
Material:	Sandy CLAY	**Date Sampled:**	19/01/2017
Source:	On-Site	**Date Submitted:**	24/01/2017
Specification:	No Specification		
Project Location:	Anambah, NSW		
Sample Location:	TP2 - (1.5 - 1.9m)		
Borehole Number:	TP2		
Borehole Depth (m):	1.5 - 1.9m		

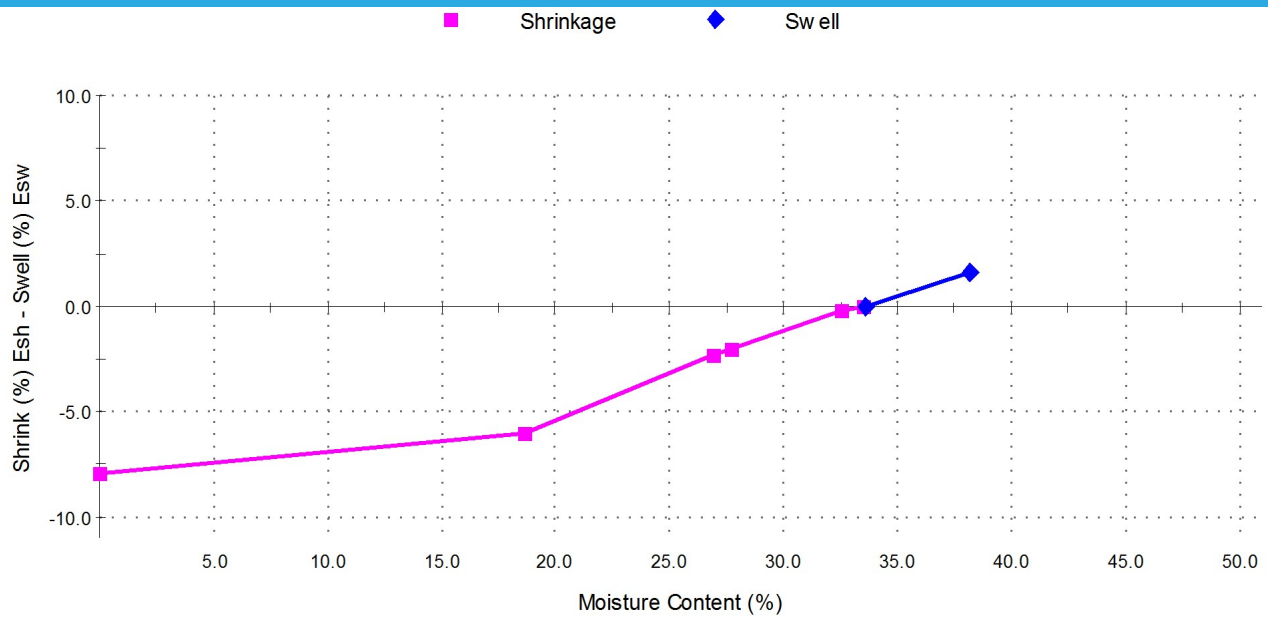
Swell Test AS 1289.7.1.1

Swell on Saturation (%):	1.6
Moisture Content before (%):	33.6
Moisture Content after (%):	38.1
Est. Unc. Comp. Strength before (kPa):	270
Est. Unc. Comp. Strength after (kPa):	230

Shrink Test AS 1289.7.1.1

Shrink on drying (%):	7.9
Shrinkage Moisture Content (%):	33.5
Est. inert material (%):	2
Crumbling during shrinkage:	Nil
Cracking during shrinkage:	Minor

Shrink Swell



Shrink Swell Index - Iss (%): 4.8

Comments

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Shrink Swell Index Report

Report No: SSI:NEW17W-0349--S04
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Approved Signatory: Adam Dwyer
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 2/02/2017

Sample Details

Sample ID:	NEW17W-0349--S04	**Client Sample ID:**	-
Test Request No.:	EP0454	**Sampling Method:**	Sampled by Client
Material:	CLAY	**Date Sampled:**	19/01/2017
Source:	On-Site	**Date Submitted:**	24/01/2017
Specification:	No Specification		
Project Location:	Anambah, NSW		
Sample Location:	TP4 - (0.4 - 0.9m)		
Borehole Number:	TP4		
Borehole Depth (m):	0.4 - 0.9m		

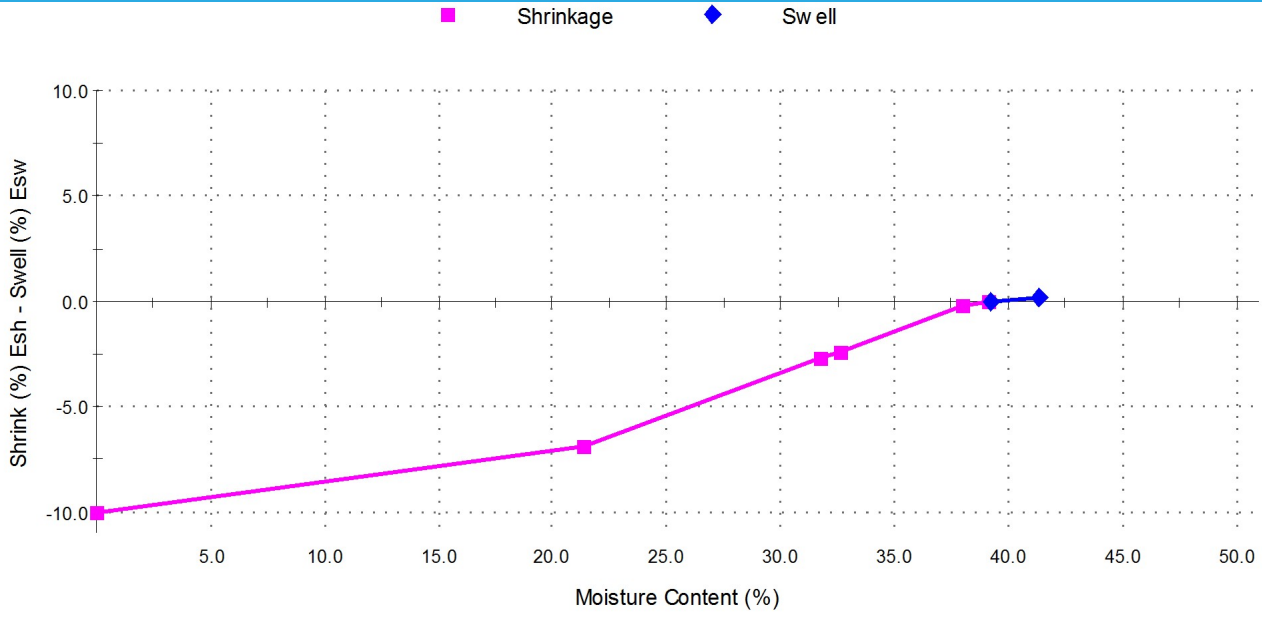
Swell Test AS 1289.7.1.1

Swell on Saturation (%):	0.2
Moisture Content before (%):	39.2
Moisture Content after (%):	41.3
Est. Unc. Comp. Strength before (kPa):	160
Est. Unc. Comp. Strength after (kPa):	100

Shrink Test AS 1289.7.1.1

Shrink on drying (%):	10.0
Shrinkage Moisture Content (%):	39.2
Est. inert material (%):	0
Crumbling during shrinkage:	Nil
Cracking during shrinkage:	Major

Shrink Swell



Shrink Swell Index - Iss (%): 5.6

Comments

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Shrink Swell Index Report

Report No: SSI:NEW17W-0349--S06
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

Accredited for compliance with ISO/IEC 17025
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Approved Signatory: Adam Dwyer
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 2/02/2017

Sample Details

Sample ID:	NEW17W-0349--S06	**Client Sample ID:**	-
Test Request No.:	EP0454	**Sampling Method:**	Sampled by Client
Material:	CLAY	**Date Sampled:**	19/01/2017
Source:	On-Site	**Date Submitted:**	24/01/2017
Specification:	No Specification		
Project Location:	Anambah, NSW		
Sample Location:	TP6 - (1.0 - 1.4m)		
Borehole Number:	TP6		
Borehole Depth (m):	1.0 - 1.4m		

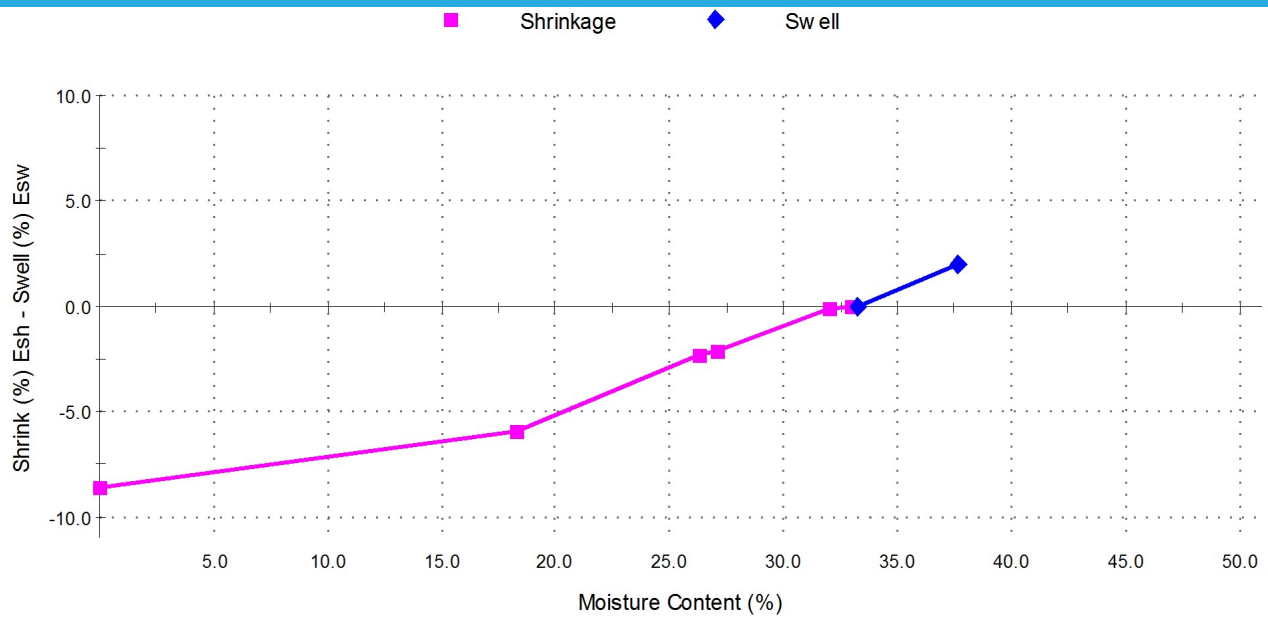
Swell Test AS 1289.7.1.1

Swell on Saturation (%):	2.0
Moisture Content before (%):	33.2
Moisture Content after (%):	37.6
Est. Unc. Comp. Strength before (kPa):	260
Est. Unc. Comp. Strength after (kPa):	150

Shrink Test AS 1289.7.1.1

Shrink on drying (%):	8.6
Shrinkage Moisture Content (%):	32.9
Est. inert material (%):	2
Crumbling during shrinkage:	Nil
Cracking during shrinkage:	Minor

Shrink Swell



Shrink Swell Index - Iss (%): 5.3

Comments

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Shrink Swell Index Report

Report No: SSI:NEW17W-0349--S07
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

Accredited for compliance with ISO/IEC 17025
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Approved Signatory: Adam Dwyer
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 2/02/2017

Sample Details

Sample ID:	NEW17W-0349--S07	**Client Sample ID:**	-
Test Request No.:	EP0454	**Sampling Method:**	Sampled by Client
Material:	CLAY	**Date Sampled:**	19/01/2017
Source:	On-Site	**Date Submitted:**	24/01/2017
Specification:	No Specification		
Project Location:	Anambah, NSW		
Sample Location:	TP7 - (0.5 - 0.9m)		
Borehole Number:	TP7		
Borehole Depth (m):	0.5 - 0.9m		

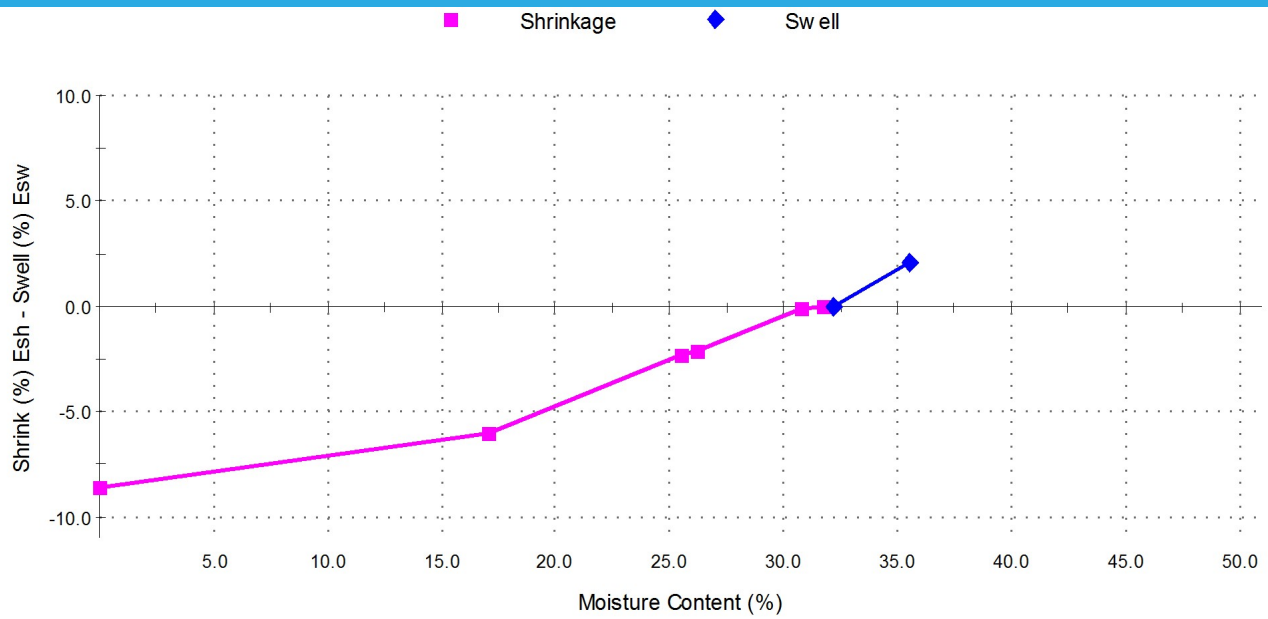
Swell Test AS 1289.7.1.1

Swell on Saturation (%):	2.1
Moisture Content before (%):	32.1
Moisture Content after (%):	35.5
Est. Unc. Comp. Strength before (kPa):	320
Est. Unc. Comp. Strength after (kPa):	130

Shrink Test AS 1289.7.1.1

Shrink on drying (%):	8.6
Shrinkage Moisture Content (%):	31.8
Est. inert material (%):	0
Crumbling during shrinkage:	Nil
Cracking during shrinkage:	Minor

Shrink Swell



Shrink Swell Index - Iss (%): 5.4

Comments

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Shrink Swell Index Report

Report No: SSI:NEW17W-0349--S08
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

Accredited for compliance with ISO/IEC 17025
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Approved Signatory: Adam Dwyer
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 2/02/2017

Sample Details

Sample ID:	NEW17W-0349--S08	**Client Sample ID:**	-
Test Request No.:	EP0454	**Sampling Method:**	Sampled by Client
Material:	Sandy Clay	**Date Sampled:**	19/01/2017
Source:	On-Site	**Date Submitted:**	24/01/2017
Specification:	No Specification		
Project Location:	Anambah, NSW		
Sample Location:	TP8 - (1.0 - 1.4m)		
Borehole Number:	TP8		
Borehole Depth (m):	1.0 - 1.4m		

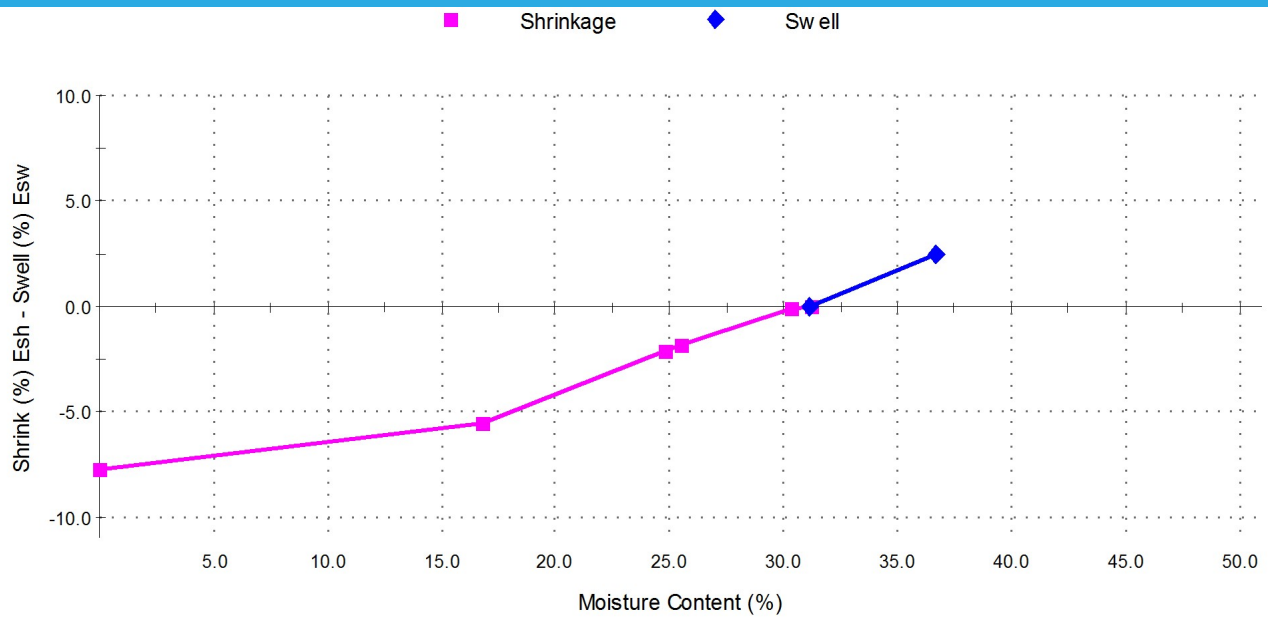
Swell Test AS 1289.7.1.1

Swell on Saturation (%):	2.5
Moisture Content before (%):	31.1
Moisture Content after (%):	36.7
Est. Unc. Comp. Strength before (kPa):	450
Est. Unc. Comp. Strength after (kPa):	170

Shrink Test AS 1289.7.1.1

Shrink on drying (%):	7.8
Shrinkage Moisture Content (%):	31.2
Est. inert material (%):	2
Crumbling during shrinkage:	Nil
Cracking during shrinkage:	Minor

Shrink Swell



Shrink Swell Index - Iss (%): 5.0

Comments

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Shrink Swell Index Report

Report No: SSI:NEW17W-0349--S10
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

Accredited for compliance with ISO/IEC 17025
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Approved Signatory: Adam Dwyer
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 2/02/2017

Sample Details

Sample ID:	NEW17W-0349--S10	**Client Sample ID:**	-
Test Request No.:	EP0454	**Sampling Method:**	Sampled by Client
Material:	Sandy Clay	**Date Sampled:**	19/01/2017
Source:	On-Site	**Date Submitted:**	24/01/2017
Specification:	No Specification		
Project Location:	Anambah, NSW		
Sample Location:	TP11 - (1.0 - 1.4m)		
Borehole Number:	TP11		
Borehole Depth (m):	1.0 - 1.4m		

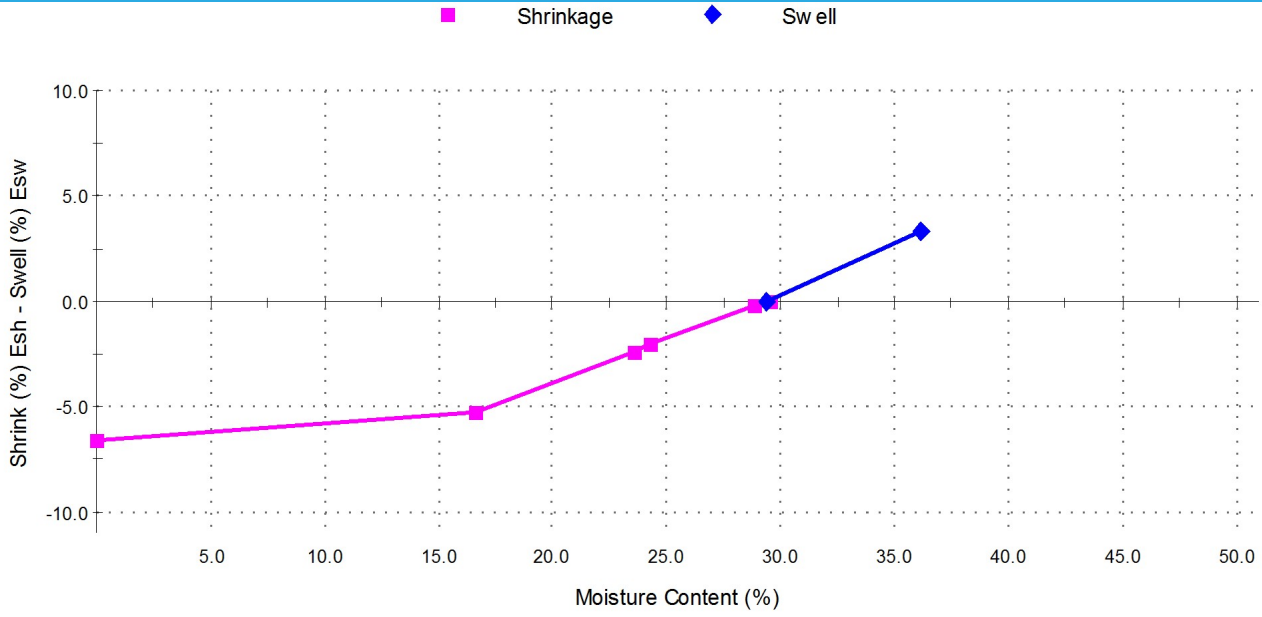
Swell Test AS 1289.7.1.1

Swell on Saturation (%):	3.3
Moisture Content before (%):	29.4
Moisture Content after (%):	36.2
Est. Unc. Comp. Strength before (kPa):	570
Est. Unc. Comp. Strength after (kPa):	160

Shrink Test AS 1289.7.1.1

Shrink on drying (%):	6.6
Shrinkage Moisture Content (%):	29.6
Est. inert material (%):	2
Crumbling during shrinkage:	Nil
Cracking during shrinkage:	Minor

Shrink Swell



Shrink Swell Index - Iss (%): 4.6

Comments

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Shrink Swell Index Report

Report No: SSI:NEW17W-0349--S11
Issue No: 1

Client: EP Risk Management Pty Ltd
3/19 Bolton Street
Newcastle NSW 2300

Principal:
Project No.: NEW16P-0152
Project Name: Material Testing

Accredited for compliance with ISO/IEC 17025
The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards

Approved Signatory: Adam Dwyer
(Senior Geotechnician)
NATA Accredited Laboratory Number: 18686
Date of Issue: 3/02/2017

Sample Details

Sample ID:	NEW17W-0349--S11	**Client Sample ID:**	-
Test Request No.:	EP0454	**Sampling Method:**	Sampled by Client
Material:	Sandy Clay	**Date Sampled:**	19/01/2017
Source:	On-Site	**Date Submitted:**	24/01/2017
Specification:	No Specification		
Project Location:	Anambah, NSW		
Sample Location:	TP12 - (0.4 - 0.7m)		
Borehole Number:	TP12		
Borehole Depth (m):	0.4 - 0.7m		

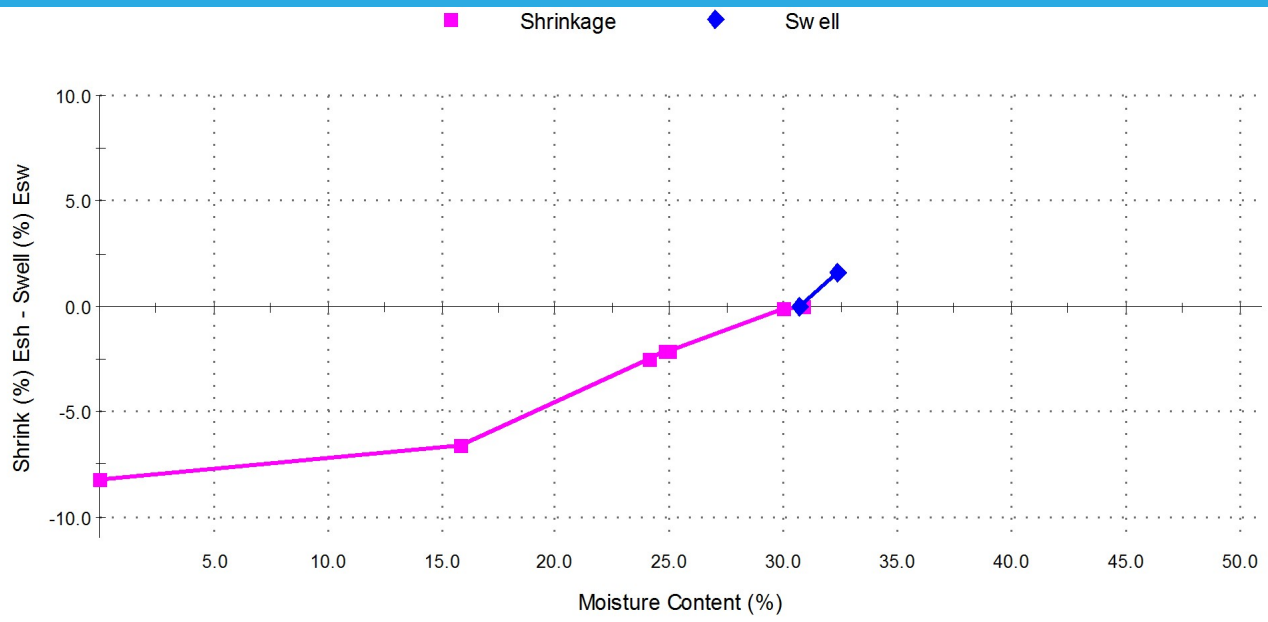
Swell Test AS 1289.7.1.1

Swell on Saturation (%):	1.6
Moisture Content before (%):	30.7
Moisture Content after (%):	32.4
Est. Unc. Comp. Strength before (kPa):	430
Est. Unc. Comp. Strength after (kPa):	130

Shrink Test AS 1289.7.1.1

Shrink on drying (%):	8.2
Shrinkage Moisture Content (%):	30.8
Est. inert material (%):	2
Crumbling during shrinkage:	Nil
Cracking during shrinkage:	Nil

Shrink Swell



Shrink Swell Index - Iss (%): 5.0

Comments

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ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1701176**	Page	: 1 of 43
Client	: **EP Risk Management**	Laboratory	: Environmental Division Sydney
Contact	: PAUL SIMPSON	Contact	: Sepan Mahamad
Address	: Suite 3 / 19 Bolton Street Newcastle NSW 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 8324 7508	Telephone	: +61-2-8784 8555
Project	: Stevens Anambah	Date Samples Received	: 19-Jan-2017 16:45
Order number	: EP0454	Date Analysis Commenced	: 23-Jan-2017
C-O-C number	: ----	Issue Date	: 30-Jan-2017 14:32
Sampler	: Nathan McGuire		
Site	: ----		
Quote number	: SYBQ/210/16		
No. of samples received	: 69		
No. of samples analysed	: 33		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics, Smithfield, NSW
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos, Mayfield West, NSW
Dian Dao		Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Raymond Commodore	Instrument Chemist	Sydney Inorganics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW
Sarah Axisa	Microbiologist	WRG Subcontracting, Smithfield, NSW

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 moisture content, insufficient sample (reduced weight employed) or matrix interference.

When no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : 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
^ = This result is computed from individual analyte detections at or above the level of reporting
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- EP080: The trip spike and its control have been analysed for volatile TPH and BTEX only. The trip spike and control were prepared in the lab using reagent grade sand spiked with petrol. The spike was dispatched from the lab and the control retained.
- **EA200: As only one sample container was submitted for multiple tests, at the client's request, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.**
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres ("Free Fibres") detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200 Legend
- EA200 'Ch' Chrysotile (white asbestos)
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- Faecal Coliforms by MPN (MM616) is conducted by ALS Scoresby NATA accreditation no. 992, site no. 989. NATA accreditation does not cover performance of this method.
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EA200: For samples larger than 30g, the <2mm fraction may be sub-sampled prior to trace analysis as outlined in ISO23909:2008(E) Sect 6.3.2-2
- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero.
- ED007 and ED008: When Exchangeable Al is reported from these methods, it should be noted that Rayment & Lyons (2011) suggests Exchange Acidity by 1M KCl - Method 15G1 (ED005) is a more suitable method for the determination of exchange acidity (H+ + Al3+).
- EA200: 'Yes' - Asbestos detected by polarised light microscopy including dispersion staining.
- EA200: 'No*' - No asbestos found, at the reporting limit of 0.1g/kg, by polarised light microscopy including dispersion staining. Asbestos material was detected and positively identified at concentrations estimated to be below 0.1g/kg.
- EA200: 'No' - No asbestos found at the reporting limit 0.1g/kg, by polarised light microscopy including dispersion staining.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP1/0.2	TP1/1	TP1/2	TP2/0.2	TP2/0.5
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-001	ES1701176-003	ES1701176-004	ES1701176-006	ES1701176-007
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	4.9	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	76	----	----	----	385
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	27.2	----	----	22.8	40.5
EA080: Resistivity								
Resistivity at 25°C	----	1	ohm cm	13200	----	----	----	2600
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	----
Asbestos Type	1332-21-4	-	--	----	----	----	----	----
Sample weight (dry)	----	0.01	g	----	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	5.6	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	8.2	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	0.6	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	1.3	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	15.7	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	2.1	1.4
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	13.7	15.4
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	0.2	0.2
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	5.0	6.3
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	22.4	25.0
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	70	----	----	----	340
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	130	----	----	----	530
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	<5	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	----	----	44	----
Copper	7440-50-8	5	mg/kg	----	----	----	10	----
Lead	7439-92-1	5	mg/kg	----	----	----	14	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1/0.2	TP1/1	TP1/2	TP2/0.2	TP2/0.5
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-001	ES1701176-003	ES1701176-004	ES1701176-006	ES1701176-007
					Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued									
Nickel	7440-02-0	2	mg/kg		----	----	----	9	----
Zinc	7440-66-6	5	mg/kg		----	----	----	7	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	----	----	<0.1	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	----	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg		----	----	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg		----	----	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		----	----	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		----	----	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP1/0.2	TP1/1	TP1/2	TP2/0.2	TP2/0.5
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-001	ES1701176-003	ES1701176-004	ES1701176-006	ES1701176-007
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	<0.05	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP1/0.2	TP1/1	TP1/2	TP2/0.2	TP2/0.5
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-001	ES1701176-003	ES1701176-004	ES1701176-006	ES1701176-007
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP1/0.2	TP1/1	TP1/2	TP2/0.2	TP2/0.5
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-001	ES1701176-003	ES1701176-004	ES1701176-006	ES1701176-007
					Result	Result	Result	Result	Result
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		----	----	----	----	----
^ **Total Xylenes**	1330-20-7	0.5	mg/kg		----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		----	----	----	----	----
MM616: Coliforms MPN									
Escherichia coli	----	2	orgs/g		----	<3	<3	----	----
Faecal Coliforms	----	2	orgs/g		----	<3	<3	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	**105**	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	**71.3**	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP3/0.2	TP3/1	TP4/0.2	TP4/2	TP5/0.2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-011	ES1701176-013	ES1701176-016	ES1701176-019	ES1701176-021
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	886	----	913	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	14.2	30.2	32.2	27.4	20.7
EA080: Resistivity								
Resistivity at 25°C	----	1	ohm cm	----	1130	----	1100	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	----
Asbestos Type	1332-21-4	-	--	----	----	----	----	----
Sample weight (dry)	----	0.01	g	----	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	1.2	----	0.8	----
Exchangeable Magnesium	----	0.1	meq/100g	----	15.9	----	16.5	----
Exchangeable Potassium	----	0.1	meq/100g	----	0.2	----	0.1	----
Exchangeable Sodium	----	0.1	meq/100g	----	12.6	----	13.4	----
Cation Exchange Capacity	----	0.1	meq/100g	----	31.8	----	32.4	----
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	----	360	----	460	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	13800	----	1800	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	<5
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	<1
Chromium	7440-47-3	2	mg/kg	31	----	----	----	37
Copper	7440-50-8	5	mg/kg	9	----	----	----	8
Lead	7439-92-1	5	mg/kg	11	----	----	----	11

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP3/0.2	TP3/1	TP4/0.2	TP4/2	TP5/0.2
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-011	ES1701176-013	ES1701176-016	ES1701176-019	ES1701176-021
					Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued									
Nickel	7440-02-0	2	mg/kg		8	----	----	----	6
Zinc	7440-66-6	5	mg/kg		5	----	----	----	5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	<0.1	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	<0.2	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	<0.2	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	<0.05	----	<0.05
EP068B: Organophosphorus Pesticides (OP)									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP3/0.2	TP3/1	TP4/0.2	TP4/2	TP5/0.2
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-011	ES1701176-013	ES1701176-016	ES1701176-019	ES1701176-021
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	<0.05
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	<0.5	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	<0.5	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	<0.5	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	<1	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	<0.5	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	<0.5	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	<0.5	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	<0.5	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	<0.5	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	<0.5	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	<0.5	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	<2	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	<0.5	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP3/0.2	TP3/1	TP4/0.2	TP4/2	TP5/0.2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-011	ES1701176-013	ES1701176-016	ES1701176-019	ES1701176-021
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	**0.6**	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	**1.2**	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	<50	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP3/0.2	TP3/1	TP4/0.2	TP4/2	TP5/0.2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-011	ES1701176-013	ES1701176-016	ES1701176-019	ES1701176-021
				Result	Result	Result	Result	Result
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	<1	----	----
MM616: Coliforms MPN								
Escherichia coli	----	2	orgs/g	----	----	----	----	----
Faecal Coliforms	----	2	orgs/g	----	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	**90.4**	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	**103**	----	**88.0**	----	**80.9**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	**73.3**	----	**62.7**	----	**69.3**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	**85.8**	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	**88.2**	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	**91.8**	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	**99.0**	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	**104**	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	**94.3**	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	**97.2**	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	**98.9**	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	**90.9**	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP5/2.5	TP6/0.2	TP7/0.2	TP7/0.5	TP8/0.2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-025	ES1701176-026	ES1701176-031	ES1701176-032	ES1701176-036
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	975	189	----	685	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	23.6	17.5	13.4	25.6	17.6
EA080: Resistivity								
Resistivity at 25°C	----	1	ohm cm	1020	5290	----	1460	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	----
Asbestos Type	1332-21-4	-	--	----	----	----	----	----
Sample weight (dry)	----	0.01	g	----	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	0.7	3.6	----	4.1	----
Exchangeable Magnesium	----	0.1	meq/100g	15.2	13.6	----	16.6	----
Exchangeable Potassium	----	0.1	meq/100g	0.1	0.3	----	0.2	----
Exchangeable Sodium	----	0.1	meq/100g	13.0	2.9	----	8.6	----
Cation Exchange Capacity	----	0.1	meq/100g	30.6	22.8	----	29.6	----
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	400	100	----	230	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	2020	350	----	1360	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	<5	----	<5
Cadmium	7440-43-9	1	mg/kg	----	<1	<1	----	<1
Chromium	7440-47-3	2	mg/kg	----	30	47	----	32
Copper	7440-50-8	5	mg/kg	----	9	9	----	8
Lead	7439-92-1	5	mg/kg	----	8	12	----	10

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP5/2.5	TP6/0.2	TP7/0.2	TP7/0.5	TP8/0.2
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-025	ES1701176-026	ES1701176-031	ES1701176-032	ES1701176-036
					Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued									
Nickel	7440-02-0	2	mg/kg		----	7	10	----	7
Zinc	7440-66-6	5	mg/kg		----	8	9	----	5
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	<0.1	----	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
beta-BHC	319-85-7	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Endrin	72-20-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
EP068B: Organophosphorus Pesticides (OP)									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP5/2.5	TP6/0.2	TP7/0.2	TP7/0.5	TP8/0.2
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-025	ES1701176-026	ES1701176-031	ES1701176-032	ES1701176-036
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Dichlorvos	62-73-7	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
Dimethoate	60-51-5	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Diazinon	333-41-5	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
Malathion	121-75-5	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Fenthion	55-38-9	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Parathion	56-38-2	0.2	mg/kg		----	<0.2	<0.2	----	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Ethion	563-12-2	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		----	<0.05	<0.05	----	<0.05
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg		----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP5/2.5	TP6/0.2	TP7/0.2	TP7/0.5	TP8/0.2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-025	ES1701176-026	ES1701176-031	ES1701176-032	ES1701176-036
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP5/2.5	TP6/0.2	TP7/0.2	TP7/0.5	TP8/0.2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-025	ES1701176-026	ES1701176-031	ES1701176-032	ES1701176-036
				Result	Result	Result	Result	Result
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
MM616: Coliforms MPN								
Escherichia coli	----	2	orgs/g	----	----	----	----	----
Faecal Coliforms	----	2	orgs/g	----	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	**128**	**93.6**	----	**108**
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	**92.8**	**68.5**	----	**65.6**
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP8/1	TP9/0.2	TP9/2	TP10/0.2	TP10/2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-038	ES1701176-041	ES1701176-044	ES1701176-046	ES1701176-049
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	967	----	894	----	1060
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	24.1	12.4	20.6	42.2	24.0
EA080: Resistivity								
Resistivity at 25°C	----	1	ohm cm	1030	----	1120	----	943
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	----
Asbestos Type	1332-21-4	-	--	----	----	----	----	----
Sample weight (dry)	----	0.01	g	----	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	2.0	----	1.8	----	2.0
Exchangeable Magnesium	----	0.1	meq/100g	19.4	----	15.8	----	18.0
Exchangeable Potassium	----	0.1	meq/100g	0.2	----	0.2	----	0.2
Exchangeable Sodium	----	0.1	meq/100g	12.7	----	10.3	----	13.8
Cation Exchange Capacity	----	0.1	meq/100g	34.3	----	28.5	----	34.4
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	540	----	170	----	590
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	1830	----	1880	----	2110
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	<5	----	<5	----
Cadmium	7440-43-9	1	mg/kg	----	<1	----	<1	----
Chromium	7440-47-3	2	mg/kg	----	45	----	65	----
Copper	7440-50-8	5	mg/kg	----	9	----	7	----
Lead	7439-92-1	5	mg/kg	----	14	----	18	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP8/1	TP9/0.2	TP9/2	TP10/0.2	TP10/2
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-038	ES1701176-041	ES1701176-044	ES1701176-046	ES1701176-049
					Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued									
Nickel	7440-02-0	2	mg/kg		----	12	----	23	----
Zinc	7440-66-6	5	mg/kg		----	11	----	7	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	<0.1	----	<0.1	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	<0.05	----	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	<0.05	----	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg		----	<0.05	----	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg		----	<0.05	----	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		----	<0.05	----	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	<0.05	----	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	<0.05	----	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	<0.05	----	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	<0.05	----	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	<0.05	----	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		----	<0.05	----	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	<0.05	----	<0.05	----
Endrin	72-20-8	0.05	mg/kg		----	<0.05	----	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	<0.05	----	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	<0.05	----	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	<0.05	----	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	<0.05	----	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	<0.05	----	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	<0.2	----	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	<0.05	----	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		----	<0.2	----	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	<0.05	----	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	<0.05	----	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP8/1	TP9/0.2	TP9/2	TP10/0.2	TP10/2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-038	ES1701176-041	ES1701176-044	ES1701176-046	ES1701176-049
				Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued								
Dichlorvos	62-73-7	0.05	mg/kg	----	<0.05	----	<0.05	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	<0.05	----	<0.05	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	<0.2	----	<0.2	----
Dimethoate	60-51-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Diazinon	333-41-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	<0.05	----	<0.05	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	<0.2	----	<0.2	----
Malathion	121-75-5	0.05	mg/kg	----	<0.05	----	<0.05	----
Fenthion	55-38-9	0.05	mg/kg	----	<0.05	----	<0.05	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	<0.05	----	<0.05	----
Parathion	56-38-2	0.2	mg/kg	----	<0.2	----	<0.2	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	<0.05	----	<0.05	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Prothiofos	34643-46-4	0.05	mg/kg	----	<0.05	----	<0.05	----
Ethion	563-12-2	0.05	mg/kg	----	<0.05	----	<0.05	----
Carbophenothion	786-19-6	0.05	mg/kg	----	<0.05	----	<0.05	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	<0.05	----	<0.05	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP8/1	TP9/0.2	TP9/2	TP10/0.2	TP10/2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-038	ES1701176-041	ES1701176-044	ES1701176-046	ES1701176-049
				Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP8/1	TP9/0.2	TP9/2	TP10/0.2	TP10/2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-038	ES1701176-041	ES1701176-044	ES1701176-046	ES1701176-049
				Result	Result	Result	Result	Result
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	----	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	----	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	----	----	----	----	----
MM616: Coliforms MPN								
Escherichia coli	----	2	orgs/g	----	----	----	----	----
Faecal Coliforms	----	2	orgs/g	----	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	----	**99.0**	----	**102**	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	----	**71.7**	----	**61.4**	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%	----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%	----	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%	----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%	----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	----	----	----	----	----
Toluene-D8	2037-26-5	0.2	%	----	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP11/0.2	TP12/0.2	TP12/3	SP1	SP2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-051	ES1701176-056	ES1701176-060	ES1701176-062	ES1701176-063
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	484	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	16.1	44.6	41.3	4.8	4.6
EA080: Resistivity								
Resistivity at 25°C	----	1	ohm cm	----	----	2070	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	No	No
Asbestos Type	1332-21-4	-	--	----	----	----	-	-
Sample weight (dry)	----	0.01	g	----	----	----	34.2	40.3
APPROVED IDENTIFIER:	----	-	--	----	----	----	C.OWLER	C.OWLER
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	2.3	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	17.0	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	0.1	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	7.2	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	26.6	----	----
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	----	----	200	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	1130	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	<1	----	----	----
Chromium	7440-47-3	2	mg/kg	48	47	----	----	----
Copper	7440-50-8	5	mg/kg	11	12	----	----	----
Lead	7439-92-1	5	mg/kg	12	9	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TP11/0.2	TP12/0.2	TP12/3	SP1	SP2
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-051	ES1701176-056	ES1701176-060	ES1701176-062	ES1701176-063
				Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued								
Nickel	7440-02-0	2	mg/kg	13	12	----	----	----
Zinc	7440-66-6	5	mg/kg	10	11	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	0.1	mg/kg	----	----	----	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	----	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg	<0.05	<0.05	----	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP11/0.2	TP12/0.2	TP12/3	SP1	SP2
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-051	ES1701176-056	ES1701176-060	ES1701176-062	ES1701176-063
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		----	----	----	<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg		----	----	----	<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		----	----	----	<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg		----	----	----	<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg		----	----	----	<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		----	----	----	<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		----	----	----	<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		----	----	----	<0.5	<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		----	----	----	<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		----	----	----	<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		----	----	----	<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg		----	----	----	<2	<2
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		----	----	----	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP11/0.2	TP12/0.2	TP12/3	SP1	SP2
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-051	ES1701176-056	ES1701176-060	ES1701176-062	ES1701176-063
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthylene	208-96-8	0.5	mg/kg		----	----	----	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		----	----	----	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		----	----	----	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		----	----	----	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		----	----	----	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		----	----	----	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		----	----	----	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		----	----	----	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		----	----	----	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		----	----	----	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		----	----	----	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		----	----	----	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		----	----	----	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		----	----	----	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		----	----	----	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		----	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		----	----	----	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		----	----	----	**0.6**	**0.6**
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		----	----	----	**1.2**	**1.2**
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		----	----	----	<10	<10
C10 - C14 Fraction	----	50	mg/kg		----	----	----	<50	<50
C15 - C28 Fraction	----	100	mg/kg		----	----	----	<100	<100
C29 - C36 Fraction	----	100	mg/kg		----	----	----	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		----	----	----	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		----	----	----	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		----	----	----	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		----	----	----	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		----	----	----	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		----	----	----	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		----	----	----	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		----	----	----	<50	<50

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TP11/0.2	TP12/0.2	TP12/3	SP1	SP2
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-051	ES1701176-056	ES1701176-060	ES1701176-062	ES1701176-063
					Result	Result	Result	Result	Result
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		----	----	----	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		----	----	----	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		----	----	----	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		----	----	----	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		----	----	----	<0.5	<0.5
^ **Sum of BTEX**	----	0.2	mg/kg		----	----	----	<0.2	<0.2
^ **Total Xylenes**	1330-20-7	0.5	mg/kg		----	----	----	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		----	----	----	<1	<1
MM616: Coliforms MPN									
Escherichia coli	----	2	orgs/g		----	----	----	----	----
Faecal Coliforms	----	2	orgs/g		----	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	**118**	**97.1**
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**85.0**	**95.7**	----	**126**	**92.3**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**63.8**	**66.4**	----	**118**	**73.8**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	**83.4**	**84.3**
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	**85.4**	**81.4**
2.4.6-Tribromophenol	118-79-6	0.5	%		----	----	----	**101**	**88.5**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	**94.8**	**88.8**
Anthracene-d10	1719-06-8	0.5	%		----	----	----	**93.5**	**89.1**
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	**98.4**	**91.4**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		----	----	----	**107**	**110**
Toluene-D8	2037-26-5	0.2	%		----	----	----	**107**	**118**
4-Bromofluorobenzene	460-00-4	0.2	%		----	----	----	**99.4**	**105**

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SP3	SS1	SS2	QS1	TRIP SPIKE
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	13-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-064	ES1701176-065	ES1701176-066	ES1701176-067	ES1701176-069
				Result	Result	Result	Result	Result
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	**4.6**	----	**5.0**	**34.8**	----
EA080: Resistivity								
Resistivity at 25°C	----	1	ohm cm	----	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	**No**	----	----	----	----
Asbestos Type	1332-21-4	-	--	**-**	----	----	----	----
Sample weight (dry)	----	0.01	g	**26.4**	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	**C.OWLER**	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	**0.6**	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	**5.3**	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	**0.4**	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	**2.4**	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	**8.7**	----	----	----	----
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP3	SS1	SS2	QS1	TRIP SPIKE
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	13-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-064	ES1701176-065	ES1701176-066	ES1701176-067	ES1701176-069
					Result	Result	Result	Result	Result
EG005T: Total Metals by ICP-AES - Continued									
Nickel	7440-02-0	2	mg/kg		----	----	----	----	----
Zinc	7440-66-6	5	mg/kg		----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	<0.1	<0.1	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	<0.2	<0.2	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	<0.05	<0.05	----
EP068B: Organophosphorus Pesticides (OP)									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP3	SS1	SS2	QS1	TRIP SPIKE
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	13-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-064	ES1701176-065	ES1701176-066	ES1701176-067	ES1701176-069
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Dichlorvos	62-73-7	0.05	mg/kg		----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		----	----	----	----	----
EP075(SIM)A: Phenolic Compounds									
Phenol	108-95-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	----	<1	<1	----
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Pentachlorophenol	87-86-5	2	mg/kg		<2	----	<2	<2	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	SP3	SS1	SS2	QS1	TRIP SPIKE
				Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	13-Jan-2017 00:00
Compound	CAS Number	LOR	Unit		ES1701176-064	ES1701176-065	ES1701176-066	ES1701176-067	ES1701176-069
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	<0.5	<0.5	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	**0.6**	**0.6**	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	**1.2**	**1.2**	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	<10	<10	**24**
C10 - C14 Fraction	----	50	mg/kg		<50	----	<50	<50	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	<100	<100	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	<100	<100	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	<10	<10	**29**
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	----	<50	<50	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	<100	<100	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	<50	<50	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	<50	<50	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	SP3	SS1	SS2	QS1	TRIP SPIKE
			Client sampling date / time	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	18-Jan-2017 00:00	13-Jan-2017 00:00
Compound	CAS Number	LOR	Unit	ES1701176-064	ES1701176-065	ES1701176-066	ES1701176-067	ES1701176-069
				Result	Result	Result	Result	Result
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	9.2
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	<0.5	<0.5	1.1
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	<0.5	<0.5	7.1
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	<0.5	<0.5	2.7
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	<0.2	<0.2	20.1
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	<0.5	<0.5	9.8
Naphthalene	91-20-3	1	mg/kg	<1	----	<1	<1	<1
MM616: Coliforms MPN								
Escherichia coli	----	2	orgs/g	----	480	----	----	----
Faecal Coliforms	----	2	orgs/g	----	700	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	89.7	----	70.0	114	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.05	%	85.7	----	95.5	122	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.05	%	61.5	----	98.1	80.8	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.5	%	82.7	----	88.5	89.1	----
2-Chlorophenol-D4	93951-73-6	0.5	%	86.6	----	88.8	88.6	----
2.4.6-Tribromophenol	118-79-6	0.5	%	89.7	----	88.0	101	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.5	%	92.9	----	92.4	91.9	----
Anthracene-d10	1719-06-8	0.5	%	95.3	----	95.8	101	----
4-Terphenyl-d14	1718-51-0	0.5	%	88.3	----	93.1	90.4	----
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.2	%	106	----	101	109	104
Toluene-D8	2037-26-5	0.2	%	103	----	99.4	112	105
4-Bromofluorobenzene	460-00-4	0.2	%	91.0	----	89.7	94.8	106

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TRIP BLANK	TSC	----	----	----
			Client sampling date / time	12-Jan-2017 00:00	13-Jan-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1701176-070	ES1701176-071	--------	--------	--------
				Result	Result	----	----	----
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	----
EA010: Conductivity								
Electrical Conductivity @ 25°C	----	1	µS/cm	----	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1	%	----	----	----	----	----
EA080: Resistivity								
Resistivity at 25°C	----	1	ohm cm	----	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in Soils								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	----	----	----
Asbestos Type	1332-21-4	-	--	----	----	----	----	----
Sample weight (dry)	----	0.01	g	----	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	----	----	----
ED007: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	----
ED040S : Soluble Sulfate by ICPAES								
Sulfate as SO4 2-	14808-79-8	10	mg/kg	----	----	----	----	----
ED045G: Chloride by Discrete Analyser								
Chloride	16887-00-6	10	mg/kg	----	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	----	----	----	----	----
Chromium	7440-47-3	2	mg/kg	----	----	----	----	----
Copper	7440-50-8	5	mg/kg	----	----	----	----	----
Lead	7439-92-1	5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TRIP BLANK	TSC	----	----	----
				Client sampling date / time	12-Jan-2017 00:00	13-Jan-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1701176-070	ES1701176-071	--------	--------	--------
					Result	Result	----	----	----
EG005T: Total Metals by ICP-AES - Continued									
Nickel	7440-02-0	2	mg/kg		----	----	----	----	----
Zinc	7440-66-6	5	mg/kg		----	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		----	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		----	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		----	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		----	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg		----	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg		----	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		----	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		----	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		----	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		----	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg		----	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		----	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		----	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		----	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		----	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		----	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		----	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		----	----	----	----	----
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		----	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		----	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		----	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		----	----	----	----	----
4.4`-DDT	50-29-3	0.2	mg/kg		----	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		----	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		----	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		----	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		----	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TRIP BLANK	TSC	----	----	----
			Client sampling date / time	12-Jan-2017 00:00	13-Jan-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1701176-070	ES1701176-071	--------	--------	--------
				Result	Result	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	----	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	----	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	----	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	----	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	----	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	----	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	----	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	----	----	----	----	----
2-Chlorophenol	95-57-8	0.5	mg/kg	----	----	----	----	----
2-Methylphenol	95-48-7	0.5	mg/kg	----	----	----	----	----
3- & 4-Methylphenol	1319-77-3	1	mg/kg	----	----	----	----	----
2-Nitrophenol	88-75-5	0.5	mg/kg	----	----	----	----	----
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	----	----	----	----	----
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	----	----	----	----	----
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	----	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	----	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	----	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	----	----	----	----	----
Pentachlorophenol	87-86-5	2	mg/kg	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)			Client sample ID	TRIP BLANK	TSC	----	----	----
			Client sampling date / time	12-Jan-2017 00:00	13-Jan-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit	ES1701176-070	ES1701176-071	--------	--------	--------
				Result	Result	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	----	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	----	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	----	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	**41**	----	----	----
C10 - C14 Fraction	----	50	mg/kg	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	**49**	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	**22**	----	----	----
>C10 - C16 Fraction	----	50	mg/kg	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	TRIP BLANK	TSC	----	----	----
				Client sampling date / time	12-Jan-2017 00:00	13-Jan-2017 00:00	----	----	----
Compound	CAS Number	LOR	Unit		ES1701176-070	ES1701176-071	--------	--------	--------
					Result	Result	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	**11.2**	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	**1.8**	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	**9.9**	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	**4.3**	----	----	----
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	**27.2**	----	----	----
^ **Total Xylenes**	1330-20-7	0.5	mg/kg		<0.5	**14.2**	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	<1	----	----	----
MM616: Coliforms MPN									
Escherichia coli	----	2	orgs/g		----	----	----	----	----
Faecal Coliforms	----	2	orgs/g		----	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		----	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		----	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		----	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		----	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		----	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		----	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		----	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		----	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**103**	**107**	----	----	----
Toluene-D8	2037-26-5	0.2	%		**106**	**120**	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**93.2**	**110**	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Client sample ID	RW1	----	----	----	----
			Client sampling date / time	18-Jan-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1701176-061	--------	--------	--------	--------
				Result	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----
4.4`-DDT	50-29-3	2	µg/L	<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----
Methoxychlor	72-43-5	2	µg/L	<2.0	----	----	----	----
^ **Total Chlordane (sum)**	----	0.5	µg/L	<0.5	----	----	----	----
^ **Sum of DDD + DDE + DDT**	72-54-8/72-55-9/50-2	0.5	µg/L	<0.5	----	----	----	----
^ **Sum of Aldrin + Dieldrin**	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	1	µg/L	<1.0	----	----	----	----
2-Chlorophenol	95-57-8	1	µg/L	<1.0	----	----	----	----
2-Methylphenol	95-48-7	1	µg/L	<1.0	----	----	----	----
3- & 4-Methylphenol	1319-77-3	2	µg/L	<2.0	----	----	----	----
2-Nitrophenol	88-75-5	1	µg/L	<1.0	----	----	----	----
2.4-Dimethylphenol	105-67-9	1	µg/L	<1.0	----	----	----	----
2.4-Dichlorophenol	120-83-2	1	µg/L	<1.0	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RW1	----	----	----	----
				Client sampling date / time	18-Jan-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1701176-061	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)A: Phenolic Compounds - Continued									
2.6-Dichlorophenol	87-65-0	1	µg/L		<1.0	----	----	----	----
4-Chloro-3-methylphenol	59-50-7	1	µg/L		<1.0	----	----	----	----
2.4.6-Trichlorophenol	88-06-2	1	µg/L		<1.0	----	----	----	----
2.4.5-Trichlorophenol	95-95-4	1	µg/L		<1.0	----	----	----	----
Pentachlorophenol	87-86-5	2	µg/L		<2.0	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	1	µg/L		<1.0	----	----	----	----
Acenaphthylene	208-96-8	1	µg/L		<1.0	----	----	----	----
Acenaphthene	83-32-9	1	µg/L		<1.0	----	----	----	----
Fluorene	86-73-7	1	µg/L		<1.0	----	----	----	----
Phenanthrene	85-01-8	1	µg/L		<1.0	----	----	----	----
Anthracene	120-12-7	1	µg/L		<1.0	----	----	----	----
Fluoranthene	206-44-0	1	µg/L		<1.0	----	----	----	----
Pyrene	129-00-0	1	µg/L		<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1	µg/L		<1.0	----	----	----	----
Chrysene	218-01-9	1	µg/L		<1.0	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	1	µg/L		<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1	µg/L		<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1	µg/L		<1.0	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	1	µg/L		<1.0	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	1	µg/L		<1.0	----	----	----	----
^ **Sum of polycyclic aromatic hydrocarbons**	----	0.5	µg/L		<0.5	----	----	----	----
^ **Benzo(a)pyrene TEQ (zero)**	----	0.5	µg/L		<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L		<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L		<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L		<50	----	----	----	----
^ **C10 - C36 Fraction (sum)**	----	50	µg/L		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	----	----	----	----
^ **C6 - C10 Fraction minus BTEX (F1)**	C6_C10-BTEX	20	µg/L		<20	----	----	----	----

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	RW1	----	----	----	----
				Client sampling date / time	18-Jan-2017 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1701176-061	--------	--------	--------	--------
					Result	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions - Continued									
>C10 - C16 Fraction	----	100	µg/L		<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L		<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C40 Fraction (sum)**	----	100	µg/L		<100	----	----	----	----
^ **>C10 - C16 Fraction minus Naphthalene (F2)**	----	100	µg/L		<100	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	----	----	----	----
Toluene	108-88-3	2	µg/L		<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L		<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L		<2	----	----	----	----
^ **Total Xylenes**	1330-20-7	2	µg/L		<2	----	----	----	----
^ **Sum of BTEX**	----	1	µg/L		<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L		<5	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	1	%		**90.0**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		**97.0**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		**65.5**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	1	%		**16.8**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	1	%		**47.8**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	1	%		**40.0**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	1	%		**77.0**	----	----	----	----
Anthracene-d10	1719-06-8	1	%		**55.3**	----	----	----	----
4-Terphenyl-d14	1718-51-0	1	%		**70.7**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	2	%		**113**	----	----	----	----
Toluene-D8	2037-26-5	2	%		**115**	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		**111**	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in Soils		
EA200: Description	SP1 - 18-Jan-2017 00:00	Pale brown sandy soil
EA200: Description	SP2 - 18-Jan-2017 00:00	Pale brown sandy soil
EA200: Description	SP3 - 18-Jan-2017 00:00	Pale brown sandy soil

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	29	129
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	30	120
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	27	129
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10	44
2-Chlorophenol-D4	93951-73-6	14	94
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

Sub-Matrix: **WATER**		Recovery Limits (%)	
Compound	*CAS Number*	***Low***	***High***
EP080S: TPH(V)/BTEX Surrogates - Continued			

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES1701176**	Page	: 1 of 12
Client	: **EP Risk Management**	Laboratory	: Environmental Division Sydney
Contact	: PAUL SIMPSON	Telephone	: +61-2-8784 8555
Project	: Stevens Anambah	Date Samples Received	: 19-Jan-2017
Site	: ----	Issue Date	: 30-Jan-2017
Sampler	: Nathan McGuire	No. of samples received	: 69
Order number	: EP0454	No. of samples analysed	: 33

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

- **Quality Control Sample Frequency Outliers exist - please see following pages for full details.**

Outliers : Frequency of Quality Control Samples

Matrix: **WATER**

Quality Control Sample Type / Method	Count		Rate (%)		Quality Control Specification
	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	1	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	3	0.00	10.00	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)					
PAH/Phenols (GC/MS - SIM)	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	0	2	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	0	1	0.00	5.00	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	0	3	0.00	5.00	NEPM 2013 B3 & ALS QC Standard

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

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*
EA002 : pH (Soils)							
Soil Glass Jar - Unpreserved (EA002)							
TP2/0.2	**18-Jan-2017**	**24-Jan-2017**	25-Jan-2017	✓	**24-Jan-2017**	24-Jan-2017	✓
EA010: Conductivity							
Soil Glass Jar - Unpreserved (EA010)							
TP1/0.2, TP2/0.5, TP3/1, TP4/2, TP5/2.5, TP6/0.2, TP7/0.5, TP8/1, TP9/2, TP10/2, TP12/3	**18-Jan-2017**	**24-Jan-2017**	25-Jan-2017	✓	**24-Jan-2017**	21-Feb-2017	✓

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)							
TP1/0.2, TP2/0.2, TP2/0.5, TP3/0.2, TP3/1, TP4/0.2, TP4/2, TP5/0.2, TP5/2.5, TP6/0.2, TP7/0.2, TP7/0.5, TP8/0.2, TP8/1, TP9/0.2, TP9/2, TP10/0.2, TP10/2, TP11/0.2, TP12/0.2, TP12/3, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**----**	----	----	**23-Jan-2017**	01-Feb-2017	✓
EA200: AS 4964 - 2004 Identification of Asbestos in Soils							
Snap Lock Bag - Subsampled by ALS (EA200)							
SP1, SP2, SP3	**18-Jan-2017**	**----**	----	----	**24-Jan-2017**	17-Jul-2017	✓
ED007: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED007)							
TP1/0.2	**18-Jan-2017**	**25-Jan-2017**	15-Feb-2017	✓	**25-Jan-2017**	15-Feb-2017	✓
ED008: Exchangeable Cations							
Soil Glass Jar - Unpreserved (ED008)							
TP2/0.2, TP2/0.5, TP3/1, TP4/2, TP5/2.5, TP6/0.2, TP7/0.5, TP8/1, TP9/2, TP10/2, TP12/3, SP3	**18-Jan-2017**	**24-Jan-2017**	15-Feb-2017	✓	**24-Jan-2017**	15-Feb-2017	✓
ED040S : Soluble Sulfate by ICPAES							
Soil Glass Jar - Unpreserved (ED040S)							
TP1/0.2, TP2/0.5, TP3/1, TP4/2, TP5/2.5, TP6/0.2, TP7/0.5, TP8/1, TP9/2, TP10/2, TP12/3	**18-Jan-2017**	**24-Jan-2017**	15-Feb-2017	✓	**24-Jan-2017**	21-Feb-2017	✓

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
ED045G: Chloride by Discrete Analyser							
Soil Glass Jar - Unpreserved (ED045G)							
TP1/0.2, TP2/0.5, TP3/1, TP4/2, TP5/2.5, TP6/0.2, TP7/0.5, TP8/1, TP9/2, TP10/2, TP12/3	**18-Jan-2017**	**24-Jan-2017**	15-Feb-2017	✓	**24-Jan-2017**	21-Feb-2017	✓
EG005T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
TP2/0.2, TP3/0.2, TP5/0.2, TP6/0.2, TP7/0.2, TP8/0.2, TP9/0.2, TP10/0.2, TP11/0.2, TP12/0.2	**18-Jan-2017**	**24-Jan-2017**	17-Jul-2017	✓	**24-Jan-2017**	17-Jul-2017	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
TP2/0.2, TP3/0.2, TP5/0.2, TP6/0.2, TP7/0.2, TP8/0.2, TP9/0.2, TP10/0.2, TP11/0.2, TP12/0.2	**18-Jan-2017**	**24-Jan-2017**	15-Feb-2017	✓	**24-Jan-2017**	15-Feb-2017	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
TP4/0.2, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	04-Mar-2017	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
TP2/0.2, TP3/0.2, TP4/0.2, TP5/0.2, TP6/0.2, TP7/0.2, TP8/0.2, TP9/0.2, TP10/0.2, TP11/0.2, TP12/0.2, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	04-Mar-2017	✓

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
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
TP2/0.2, TP3/0.2, TP5/0.2, TP6/0.2, TP7/0.2, TP8/0.2, TP9/0.2, TP10/0.2, TP11/0.2, TP12/0.2	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	04-Mar-2017	✓
EP075(SIM)A: Phenolic Compounds							
Soil Glass Jar - Unpreserved (EP075(SIM))							
TP4/0.2, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	04-Mar-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
TP4/0.2, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	04-Mar-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
TRIP BLANK	**12-Jan-2017**	**23-Jan-2017**	26-Jan-2017	✓	**23-Jan-2017**	26-Jan-2017	✓
Soil Glass Jar - Unpreserved (EP080)							
TRIP SPIKE, TSC	**13-Jan-2017**	**23-Jan-2017**	27-Jan-2017	✓	**23-Jan-2017**	27-Jan-2017	✓
Soil Glass Jar - Unpreserved (EP080)							
TP4/0.2, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**23-Jan-2017**	01-Feb-2017	✓
Soil Glass Jar - Unpreserved (EP071)							
TP4/0.2, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	04-Mar-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
TRIP BLANK	**12-Jan-2017**	**23-Jan-2017**	26-Jan-2017	✓	**23-Jan-2017**	26-Jan-2017	✓
Soil Glass Jar - Unpreserved (EP080)							
TRIP SPIKE, TSC	**13-Jan-2017**	**23-Jan-2017**	27-Jan-2017	✓	**23-Jan-2017**	27-Jan-2017	✓
Soil Glass Jar - Unpreserved (EP080)							
TP4/0.2, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**23-Jan-2017**	01-Feb-2017	✓
Soil Glass Jar - Unpreserved (EP071)							
TP4/0.2, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	04-Mar-2017	✓

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
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
TRIP BLANK	**12-Jan-2017**	**23-Jan-2017**	26-Jan-2017	✓	**23-Jan-2017**	26-Jan-2017	✓
Soil Glass Jar - Unpreserved (EP080)							
TRIP SPIKE, TSC	**13-Jan-2017**	**23-Jan-2017**	27-Jan-2017	✓	**23-Jan-2017**	27-Jan-2017	✓
Soil Glass Jar - Unpreserved (EP080)							
TP4/0.2, SP1, SP2, SP3, SS2, QS1	**18-Jan-2017**	**23-Jan-2017**	01-Feb-2017	✓	**23-Jan-2017**	01-Feb-2017	✓

Matrix: **WATER**

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
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066)							
RW1	**18-Jan-2017**	**24-Jan-2017**	25-Jan-2017	✓	**24-Jan-2017**	05-Mar-2017	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068)							
RW1	**18-Jan-2017**	**24-Jan-2017**	25-Jan-2017	✓	**24-Jan-2017**	05-Mar-2017	✓
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
RW1	**18-Jan-2017**	**24-Jan-2017**	25-Jan-2017	✓	**24-Jan-2017**	05-Mar-2017	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM))							
RW1	**18-Jan-2017**	**24-Jan-2017**	25-Jan-2017	✓	**24-Jan-2017**	05-Mar-2017	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071)							
RW1	**18-Jan-2017**	**24-Jan-2017**	25-Jan-2017	✓	**24-Jan-2017**	05-Mar-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
RW1	**18-Jan-2017**	**24-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	01-Feb-2017	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071)							
RW1	**18-Jan-2017**	**24-Jan-2017**	25-Jan-2017	✓	**24-Jan-2017**	05-Mar-2017	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
RW1	**18-Jan-2017**	**24-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	01-Feb-2017	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080)							
RW1	**18-Jan-2017**	**24-Jan-2017**	01-Feb-2017	✓	**24-Jan-2017**	01-Feb-2017	✓

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)							
Chloride Soluble By Discrete Analyser	ED045G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Anions - Soluble	ED040S	2	18	**11.11**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Moisture Content	EA055-103	4	40	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	2	16	**12.50**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
pH (1:5)	EA002	2	17	**11.76**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	13	**15.38**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Chloride Soluble By Discrete Analyser	ED045G	2	20	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Anions - Soluble	ED040S	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Chloride Soluble By Discrete Analyser	ED045G	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Electrical Conductivity (1:5)	EA010	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations	ED007	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Exchangeable Cations with pre-treatment	ED008	1	13	**7.69**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Major Anions - Soluble	ED040S	1	18	**5.56**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	16	**6.25**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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	
Method Blanks (MB) - Continued							
Total Mercury by FIMS	EG035T	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Chloride Soluble By Discrete Analyser	ED045G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	14	7.14	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	13	7.69	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	16.67	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	1	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	0.00	10.00	×	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	2	50.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	3	33.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	0	2	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	2	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	0	1	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	3	0.00	5.00	×	NEPM 2013 B3 & ALS QC Standard

Matrix: **WATER**

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*	
Matrix Spikes (MS) - Continued							
TRH Volatiles/BTEX	EP080	1	20	**5.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard

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
pH (1:5)	EA002	SOIL	In house: Referenced to APHA 4500H+. pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Electrical Conductivity (1:5)	EA010	SOIL	In house: Referenced to APHA 2510. Conductivity is determined on soil samples using a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 104)
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).
Resistivity (1:5)	EA080	SOIL	In house: Calculated from Electrical Conductivity
Asbestos Identification in Soils	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples Analysis by Polarised Light Microscopy including dispersion staining
Exchangeable Cations	ED007	SOIL	In house: Referenced to Rayment & Lyons (2011) Method 15A1. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Exchangeable Cations with pre-treatment	ED008	SOIL	In house: Referenced to Rayment & Higginson (2011) Method 15A2. Soluble salts are removed from the sample prior to analysis. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Major Anions - Soluble	ED040S	SOIL	In house: Soluble Anions are determined off a 1:5 soil / water extract by ICPAES.
Chloride Soluble By Discrete Analyser	ED045G	SOIL	In house: Referenced to APHA 4500-Cl- E. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride.in the presence of ferric ions the librated thiocynate forms highly-coloured ferric thiocynate which is measured at 480 nm. Analysis is performed on a 1:5 soil / water leachate.
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)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 504)
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270D Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)

Analytical Methods	Method	Matrix	Method Descriptions
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to 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	In house: Referenced to USEPA SW 846 - 8270D 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	In house: Referenced to 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.
Faecal Coliforms by MPN	MM616	SOIL	Microbiological analysis subcontracted to ALS Scoresby. NATA accreditation does not cover performance of this service.
Polychlorinated Biphenyls (PCB)	EP066	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	In house: Referenced to USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method	ED007PR	SOIL	In house: Referenced to Rayment & Higginson (1992) method 15A1. A 1M NH4Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	In house: Referenced to 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.

Preparation Methods	Method	Matrix	Method Descriptions
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for sparging.

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES1701176**

Client	: **EP Risk Management**	Laboratory	: Environmental Division Sydney
Contact	: PAUL SIMPSON	Contact	: Sepan Mahamad
Address	: Suite 3 / 19 Bolton Street Newcastle NSW 2300	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: paul.simpson@eprisk.com.au	E-mail	: sepan.mahamad@alsglobal.com
Telephone	: +61 02 8324 7508	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: Stevens Anambah	Page	: 1 of 5
Order number	: EP0454	Quote number	: ES2016EPRISK0001 (SYBQ/210/16)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	: Nathan McGuire		

Dates

Date Samples Received	: 19-Jan-2017 16:45	Issue Date	: 23-Jan-2017
Client Requested Due Date	: 30-Jan-2017	Scheduled Reporting Date	: **30-Jan-2017**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not intact.
No. of coolers/boxes	: 3	Temperature	: 7'c - Ice present
Receipt Detail	:	No. of samples received / analysed	: 69 / 33

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **Sample TP12/0.5 was not received**
- **Sample QS2 will be sent to Envirolab as per Nathan 20/1**
- **Insufficient volume provided for Clay content analysis; therefore analysis has been cancelled.**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- **Asbestos analysis will be conducted by ALS Newcastle.**
- **Faecal Coliforms and E.Coli analysis will be conducted by ALS Scoresby.**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal - Aqueous (14 days), Solid (60 days) from date of completion of work order.
- **EA200: As only one sample container was submitted for multiple tests, at the client's request, sub sampling was conducted prior to Asbestos analysis. As this has the potential to understate detection, results should be scrutinised accordingly.**

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
Asbestos Identification in Soils : EA200		
SP1	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
SP2	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag
SP3	- Snap Lock Bag - Subsampled by ALS	- Snap Lock Bag - ACM/Asbestos Grab Bag

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process necessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.
If no sampling time is provided, the sampling time will default 00:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory and displayed in brackets without a time component

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA010 (solids): Electrical Conductivity (1:5)	SOIL - EA055-103 Moisture Content	SOIL - EA080 Resistivity (1:5)	SOIL - ED008 Def Exchangeable Cations with pre-treatment Default	SOIL - MM616 (FC & EC) (Subcontracted) Faecal Coliforms & E.Coli MPN in Soil	SOIL - NT-2S Major Anions (Cl, SO4)
ES1701176-001	18-Jan-2017 00:00	TP1/0.2		✓	✓	✓	✓		✓
ES1701176-002	18-Jan-2017 00:00	TP1/0.5	✓						
ES1701176-003	18-Jan-2017 00:00	TP1/1						✓	
ES1701176-004	18-Jan-2017 00:00	TP1/2						✓	
ES1701176-005	18-Jan-2017 00:00	TP1/2.5	✓						
ES1701176-006	18-Jan-2017 00:00	TP2/0.2			✓		✓		
ES1701176-007	18-Jan-2017 00:00	TP2/0.5		✓	✓	✓	✓		✓
ES1701176-008	18-Jan-2017 00:00	TP2/1	✓						
ES1701176-009	18-Jan-2017 00:00	TP2/2	✓						
ES1701176-010	18-Jan-2017 00:00	TP2/2.5	✓						
ES1701176-011	18-Jan-2017 00:00	TP3/0.2			✓				
ES1701176-012	18-Jan-2017 00:00	TP3/0.5	✓						
ES1701176-013	18-Jan-2017 00:00	TP3/1		✓	✓	✓	✓		✓
ES1701176-014	18-Jan-2017 00:00	TP3/2	✓						
ES1701176-015	18-Jan-2017 00:00	TP3/2.5	✓						
ES1701176-016	18-Jan-2017 00:00	TP4/0.2			✓				
ES1701176-017	18-Jan-2017 00:00	TP4/0.5	✓						
ES1701176-018	18-Jan-2017 00:00	TP4/1	✓						
ES1701176-019	18-Jan-2017 00:00	TP4/2		✓	✓	✓	✓		✓
ES1701176-020	18-Jan-2017 00:00	TP4/2.5	✓						
ES1701176-021	18-Jan-2017 00:00	TP5/0.2			✓				
ES1701176-022	18-Jan-2017 00:00	TP5/0.5	✓						
ES1701176-023	18-Jan-2017 00:00	TP5/1	✓						
ES1701176-024	18-Jan-2017 00:00	TP5/2	✓						
ES1701176-025	18-Jan-2017 00:00	TP5/2.5		✓	✓	✓	✓		✓
ES1701176-026	18-Jan-2017 00:00	TP6/0.2		✓	✓	✓	✓		✓
ES1701176-027	18-Jan-2017 00:00	TP6/0.5	✓						
ES1701176-028	18-Jan-2017 00:00	TP6/1	✓						
ES1701176-029	18-Jan-2017 00:00	TP6/2	✓						

			(On Hold) SOIL No analysis requested	SOIL - EA010 (solids): Electrical Conductivity (1:5)	SOIL - EA055-103 Moisture Content	SOIL - EA080 Resistivity (1:5)	SOIL - ED008 Def Exchangeable Cations with pre-treatment Default	SOIL - MM616 (FC & EC) (Subcontracted) Faecal Coliforms & E.Coli MPN in Soil	SOIL - NT-2S Major Anions (Cl, SO4)
ES1701176-030	18-Jan-2017 00:00	TP6/2.5	✓						
ES1701176-031	18-Jan-2017 00:00	TP7/0.2			✓				
ES1701176-032	18-Jan-2017 00:00	TP7/0.5		✓	✓	✓	✓		✓
ES1701176-033	18-Jan-2017 00:00	TP7/1	✓						
ES1701176-034	18-Jan-2017 00:00	TP7/2	✓						
ES1701176-035	18-Jan-2017 00:00	TP7/2.5	✓						
ES1701176-036	18-Jan-2017 00:00	TP8/0.2			✓				
ES1701176-037	18-Jan-2017 00:00	TP8/0.5	✓						
ES1701176-038	18-Jan-2017 00:00	TP8/1		✓	✓	✓	✓		✓
ES1701176-039	18-Jan-2017 00:00	TP8/2	✓						
ES1701176-040	18-Jan-2017 00:00	TP8/2.5	✓						
ES1701176-041	18-Jan-2017 00:00	TP9/0.2			✓				
ES1701176-042	18-Jan-2017 00:00	TP9/0.5	✓						
ES1701176-043	18-Jan-2017 00:00	TP9/1	✓						
ES1701176-044	18-Jan-2017 00:00	TP9/2		✓	✓	✓	✓		✓
ES1701176-045	18-Jan-2017 00:00	TP9/2.5	✓						
ES1701176-046	18-Jan-2017 00:00	TP10/0.2			✓				
ES1701176-047	18-Jan-2017 00:00	TP10/0.5	✓						
ES1701176-048	18-Jan-2017 00:00	TP10/1	✓						
ES1701176-049	18-Jan-2017 00:00	TP10/2		✓	✓	✓	✓		✓
ES1701176-050	18-Jan-2017 00:00	TP10/2.5	✓						
ES1701176-051	18-Jan-2017 00:00	TP11/0.2			✓				
ES1701176-052	18-Jan-2017 00:00	TP11/0.5	✓						
ES1701176-053	18-Jan-2017 00:00	TP11/1	✓						
ES1701176-054	18-Jan-2017 00:00	TP11/2	✓						
ES1701176-055	18-Jan-2017 00:00	TP11/2.5	✓						
ES1701176-056	18-Jan-2017 00:00	TP12/0.2			✓				
ES1701176-058	18-Jan-2017 00:00	TP12/1	✓						
ES1701176-059	18-Jan-2017 00:00	TP12/2	✓						
ES1701176-060	18-Jan-2017 00:00	TP12/3		✓	✓	✓	✓		✓
ES1701176-062	18-Jan-2017 00:00	SP1			✓				
ES1701176-063	18-Jan-2017 00:00	SP2			✓				
ES1701176-064	18-Jan-2017 00:00	SP3			✓		✓		
ES1701176-065	18-Jan-2017 00:00	SS1						✓	
ES1701176-066	18-Jan-2017 00:00	SS2			✓				
ES1701176-067	18-Jan-2017 00:00	QS1			✓				

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA002 pH (1:5)	SOIL - S-02 8 Metals (incl. Digestion)	SOIL - S-11 OC/PCB	SOIL - S-12 OC/OP Pesticides	SOIL - S-24 TRH/BTEXN/PAH + Phenols
ES1701176-006	18-Jan-2017 00:00	TP2/0.2	✓	✓		✓	
ES1701176-011	18-Jan-2017 00:00	TP3/0.2		✓		✓	
ES1701176-016	18-Jan-2017 00:00	TP4/0.2			✓		✓
ES1701176-021	18-Jan-2017 00:00	TP5/0.2		✓		✓	
ES1701176-026	18-Jan-2017 00:00	TP6/0.2		✓		✓	
ES1701176-031	18-Jan-2017 00:00	TP7/0.2		✓		✓	
ES1701176-036	18-Jan-2017 00:00	TP8/0.2		✓		✓	
ES1701176-041	18-Jan-2017 00:00	TP9/0.2		✓		✓	
ES1701176-046	18-Jan-2017 00:00	TP10/0.2		✓		✓	
ES1701176-051	18-Jan-2017 00:00	TP11/0.2		✓		✓	
ES1701176-056	18-Jan-2017 00:00	TP12/0.2		✓		✓	
ES1701176-062	18-Jan-2017 00:00	SP1			✓		✓
ES1701176-063	18-Jan-2017 00:00	SP2			✓		✓
ES1701176-064	18-Jan-2017 00:00	SP3			✓		✓
ES1701176-066	18-Jan-2017 00:00	SS2			✓		✓
ES1701176-067	18-Jan-2017 00:00	QS1			✓		✓

Matrix: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA200 Asbestos Identification in Soils -	SOIL - S-18 (NO MOIST) TRH(C6-C9)/BTEXN with No Moisture for TBs
ES1701176-062	18-Jan-2017 00:00	SP1	✓	
ES1701176-063	18-Jan-2017 00:00	SP2	✓	
ES1701176-064	18-Jan-2017 00:00	SP3	✓	
ES1701176-069	13-Jan-2017 00:00	TRIP SPIKE		✓
ES1701176-070	12-Jan-2017 00:00	TRIP BLANK		✓
ES1701176-071	13-Jan-2017 00:00	TSC		✓

Matrix: **WATER**

Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - W-11 OC/PCB	WATER - W-24 TRH/BTEXN/PAH/Phenols
ES1701176-061	18-Jan-2017 00:00	RW1	✓	✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

Requested Deliverables

ACCOUNTS PAYABLE

- A4 - AU Tax Invoice (INV)	Email	linda.dubois@eprisk.com.au

PAUL SIMPSON

- *AU Certificate of Analysis - NATA (COA)	Email	paul.simpson@eprisk.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	paul.simpson@eprisk.com.au
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	paul.simpson@eprisk.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	paul.simpson@eprisk.com.au
- A4 - AU Tax Invoice (INV)	Email	paul.simpson@eprisk.com.au
- Chain of Custody (CoC) (COC)	Email	paul.simpson@eprisk.com.au
- EDI Format - ENMRG (ENMRG)	Email	paul.simpson@eprisk.com.au
- EDI Format - ESDAT (ESDAT)	Email	paul.simpson@eprisk.com.au

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com

☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com

☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com

☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com

☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com

☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com

☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Newcastle		☐ Non Standard or urgent TAT **(List due date):**	Custody Seal Intact? Yes / No / N/A
PROJECT: Stevens Anambah	**ALS QUOTE NO.:** SBYQ/210/16	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
ORDER NUMBER: EP0454		COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt: 7 °C
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624	OF: (1) 2 3 4 5 6 7	Other comment:

SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410	**RELINQUISHED BY:**	**RECEIVED BY:** DB 4:45pm	**RELINQUISHED BY:**
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**			
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		DATE/TIME:	DATE/TIME: 19/1/17	DATE/TIME: 19/1/17 17:00
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au				

RECEIVED BY:
Rani
DATE/TIME: 19/01/17 19:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity (CEC) / % clay / pH	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TP1/0.2	18/01/2017	S		1						X	X		
2	TP1/0.5	18/01/2017	S		1									
3	TP1/1	18/01/2017	S		1								X	
4	TP1/2	18/01/2017	S		1								X	
5	TP1/2.5	18/01/2017	S		1									
6	TP2/0.2	18/01/2017	S		1		X	X						
7	TP2/0.5	18/01/2017	S		1						X	X		
8	TP2/1	18/01/2017	S		1									
9	TP2/2	18/01/2017	S		1									
10	TP2/2.5	18/01/2017	S		1									
11	TP3/0.2	18/01/2017	S		1		X							
12	TP3/0.5	18/01/2017	S		1									
				TOTAL	12									

EMAILED

LAB OF ORIGIN: NEWCASTLE

Environmental Division Sydney
Work Order Reference
ES1701176

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com
☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
☐GLADSTONE 46 Callemondah Drive Clinton QLD 4680 Ph: 07 7471 5600 E: gladstone@alsglobal.com
☐MACKAY 78 Harbour Road Mackay QLD 4740 Ph: 07 4944 0177 E: mackay@alsglobal.com
☐MELBOURNE 2-4 Westall Road Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
☐MUDGEE 27 Sydney Road Mudgee NSW 2850 Ph: 02 6372 6735 E: mudgee.mail@alsglobal.com
☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com
☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Newcastle		☐ Non Standard or urgent TAT **(List due date):**	Custody Seal Intact? Yes No N/A
PROJECT:EP0454	**ALS QUOTE NO.:** SBYQ/210/16	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt °C
PROJECT MANAGER:Paul Simpson	**CONTACT PH:0434 141 624**	OF: 1 (2) 3 4 5 6 7	Other comment:
SAMPLER:Nathan McGuire	**SAMPLER MOBILE:0422 937 410**	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**		
Email Reports to (will default to PM if no other addresses are listed):Paul.simpson@eprisk.com.au		DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed):Paul.simpson@eprisk.com.au			

RELINQUISHED BY:	**RECEIVED BY:**
DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 1930

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	TP3/1	18/01/2017	S		1						X	X		
14	TP3/2	18/01/2017	S		1									
15	TP3/2.5	18/01/2017	S		1									
16	TP4/0.2	18/01/2017	S		1	X								
17	TP4/0.5	18/01/2017	S		1									
18	TP4/1	18/01/2017	S		1									
19	TP4/2	18/01/2017	S		1						X	X		
20	TP4/2.5	18/01/2017	S		1									
21	TP5/0.2	18/01/2017	S		1		X							
22	TP5/0.5	18/01/2017	S		1									
23	TP5/1	18/01/2017	S		1									
24	TP5/2	18/01/2017	S		1									
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

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☐NEWCASTLE 5/585 Maitland Rd Mayfield West NSW 2304 Ph: 02 4014 2500 E: samples.newcastle@alsglobal.com

☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT **(List due date):**	**FOR LABORATORY USE ONLY: (Circle)**
OFFICE: Newcastle		☐ Non Standard or urgent TAT **(List due date):**	Custody Seal Intact? Yes / No / N/A
PROJECT: EP0454	**ALS QUOTE NO.:** SBYQ/210/16	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
ORDER NUMBER:		COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624	OF: 1 2 (3) 4 5 6 7	Other comment:

SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410	**RELINQUISHED BY:**	**RECEIVED BY:**	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**				
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		DATE/TIME:	DATE/TIME:	DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 19:30
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au					

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	TP5/2.5	18/01/2017	S		1						X	X		
26	TP6/0.2	18/01/2017	S		1		X				X	X		
27	TP6/0.5	18/01/2017	S		1									
28	TP6/1	18/01/2017	S		1									
29	TP6/2	18/01/2017	S		1									
30	TP6/2.5	18/01/2017	S		1									
31	TP7/0.2	18/01/2017	S		1		X							
32	TP7/0.5	18/01/2017	S		1						X	X		
33	TP7/1	18/01/2017	S		1									
34	TP7/2	18/01/2017	S		1									
35	TP7/2.5	18/01/2017	S		1									
36	TP8/0.2	18/01/2017	S		1		X							
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Newcastle		☐ Non Standard or urgent TAT **(List due date):**	Custody Seal Intact? Yes No N/A
PROJECT: EP0454	**ALS QUOTE NO.:** SBYQ/210/16	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:		COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624	OF: 1 2 3 (4) 5 6 7	Other comment:
SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**		
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au			

RELINQUISHED BY:	**RECEIVED BY:**
DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 1930

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	TP8/0.5	18/01/2017	S		1									
38	TP8/1	18/01/2017	S		1						X	X		
39	TP8/2	18/01/2017	S		1									
40	TP8/2.5	18/01/2017	S		1									
41	TP9/0.2	18/01/2017	S		1		X							
42	TP9/0.5	18/01/2017	S		1									
43	TP9/1	18/01/2017	S		1									
44	TP9/2	18/01/2017	S		1						X	X		
45	TP9/2.5	18/01/2017	S		1									
46	TP10/0.2	18/01/2017	S		1		X							
47	TP10/0.5	18/01/2017	S		1									
48	TP10/1	18/01/2017	S		1									
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Newcastle		☐ Non Standard or urgent TAT **(List due date):**	Custody Seal Intact? Yes / No / N/A
PROJECT: EP0454	**ALS QUOTE NO.:** SBYQ/210/16	**COC SEQUENCE NUMBER (Circle)**	Free Ice / frozen ice bricks present upon receipt? Yes / No / N/A
ORDER NUMBER:		COC: (1) 2 3 4 (5) 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624	OF: 1 2 3 4 (5) 6 7	Other comment:
SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**		
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au			

RELINQUISHED BY:	**RECEIVED BY:**
DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 19:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
49	TP10/2	18/01/2017	S		1						X	X		
50	TP10/2.5	18/01/2017	S		1									
51	TP11/0.2	18/01/2017	S		1		X							
52	TP11/0.5	18/01/2017	S		1									
53	TP11/1	18/01/2017	S		1									
54	TP11/2.5	18/01/2017	S		1									
55	TP11/2.5	18/01/2017	S		1									
56	TP12/0.2	18/01/2017	S		1		X							
57	TP12/0.5	19/01/2017	S		1						X	X		
58	TP12/1	20/01/2017	S		2									
59	TP12/2	21/01/2017	S		1									
60	TP12/3	18/01/2017	S		1						X	X		
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** ☐ Standard TAT (List due date):	**FOR LABORATORY USE ONLY (Circle)**	
OFFICE: NEWCASTLE	(Standard TAT may be longer for some tests e.g. Ultra Trace Organics) ☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact?	Yes No N/A
PROJECT: EP0454	**ALS QUOTE NO.:** SBYQ/210/16	Free ice / frozen ice bricks present upon receipt?	Yes No N/A
ORDER NUMBER:	COC SEQUENCE NUMBER (Circle) COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt:	°C
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624 OF: 1 2 3 4 5 (6) 7	Other comment:	
SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410		
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**		
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au			
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME:	DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 1923

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	TRH (F1) / BTEXN	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
61	RW1	18/01/2017	W		5	X								
62	SP1	18/01/2017	S		1	X			X					
63	SP2	18/01/2017	S		1	X			X					
64	SP3	18/01/2017	S		1	X		X	X					
65	SS1	18/01/2017	S		1								X	
66	SS2	18/01/2017	S		1	X								
67	QS1	18/01/2017	S		1	X								
68	QS2	18/01/2017	S		1	X								
69	TRIP SPIKE	18/01/2017	S		1					X				
70	TRIP BLANK	18/01/2017	S		1					X				
71	TSC													
					TOTAL									

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V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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CLIENT: EP Risk Management	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Newcastle		☐ Non Standard or urgent TAT (List due date):	Custody Seal Intact? Yes No N/A
PROJECT:Stevens Anambah	ALS QUOTE NO.: SBYQ/210/16	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No N/A
ORDER NUMBER:EP0454		COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt: 7 °C
PROJECT MANAGER:Paul Simpson	CONTACT PH:0434 141 624	OF: (1) 2 3 4 5 6 7	Other comment:
SAMPLER:Nathan McGuire	SAMPLER MOBILE:0422 937 410		
COC emailed to ALS? (YES / NO)	EDD FORMAT (or default):		
Email Reports to (will default to PM if no other addresses are listed):Paul.simpson@eprisk.com.au			
Email Invoice to (will default to PM if no other addresses are listed):Paul.simpson@eprisk.com.au			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DB 4:45pm DATE/TIME: 19/1/17	DATE/TIME: 19/1/17 17:00	Rani DATE/TIME: 19/01/17 19:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity (CEC) / % clay / pH	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	TP1/0.2	18/01/2017	S		1						X	X		
2	TP1/0.5	18/01/2017	S		1									
3	TP1/1	18/01/2017	S		1								X	
4	TP1/2	18/01/2017	S		1								X	
5	TP1/2.5	18/01/2017	S		1									
6	TP2/0.2	18/01/2017	S		1		X	X						
7	TP2/0.5	18/01/2017	S		1						X	X		
8	TP2/1	18/01/2017	S		1									
9	TP2/2	18/01/2017	S		1									
10	TP2/2.5	18/01/2017	S		1									
11	TP3/0.2	18/01/2017	S		1		X							
12	TP3/0.5	18/01/2017	S		1									
				TOTAL	12									



E-MAILED

LAB OF ORIGIN: NEWCASTLE

Environmental Division Sydney
Work Order Reference
ES1701176

Telephone : + 61-2-8784 8555

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

ALS Laboratory: please tick →

ADELAIDE 21 Burma Road Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsglobal.com

BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com

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PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com

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TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com

WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Newcastle		☐ Non Standard or urgent TAT **(List due date):**	Custody Seal Intact? Yes / No / N/A
PROJECT: EP0454	**ALS QUOTE NO.:** SBYQ/210/16	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
ORDER NUMBER:		COC: (1) 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624	OF: 1 (2) 3 4 5 6 7	Other comment:
SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**		
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		DATE/TIME:	DATE/TIME:
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au			

RELINQUISHED BY:	**RECEIVED BY:**
DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 19:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
13	TP3/1	18/01/2017	S		1						X	X		
14	TP3/2	18/01/2017	S		1									
15	TP3/2.5	18/01/2017	S		1									
16	TP4/0.2	18/01/2017	S		1	X								
17	TP4/0.5	18/01/2017	S		1									
18	TP4/1	18/01/2017	S		1									
19	TP4/2	18/01/2017	S		1						X	X		
20	TP4/2.5	18/01/2017	S		1									
21	TP5/0.2	18/01/2017	S		1		X							
22	TP5/0.5	18/01/2017	S		1									
23	TP5/1	18/01/2017	S		1									
24	TP5/2	18/01/2017	S		1									
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

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☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT **(List due date):**
OFFICE: Newcastle		☐ Non Standard or urgent TAT **(List due date):**
PROJECT: EP0454	**ALS QUOTE NO.:** SBYQ/210/16	
ORDER NUMBER:		
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624	
SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410	
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**	
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		

COC SEQUENCE NUMBER (Circle)

COC: (1) 2 3 4 5 6 7

OF: 1 2 (3) 4 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME:	DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 19:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where **Metals** are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
25	TP5/2.5	18/01/2017	S		1						X	X		
26	TP6/0.2	18/01/2017	S		1		X				X	X		
27	TP6/0.5	18/01/2017	S		1									
28	TP6/1	18/01/2017	S		1									
29	TP6/2	18/01/2017	S		1									
30	TP6/2.5	18/01/2017	S		1									
31	TP7/0.2	18/01/2017	S		1		X							
32	TP7/0.5	18/01/2017	S		1						X	X		
33	TP7/1	18/01/2017	S		1									
34	TP7/2	18/01/2017	S		1									
35	TP7/2.5	18/01/2017	S		1									
36	TP8/0.2	18/01/2017	S		1		X							
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

CHAIN OF CUSTODY

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CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT **(List due date):**
OFFICE: Newcastle		☐ Non Standard or urgent TAT **(List due date):**
PROJECT: EP0454	**ALS QUOTE NO.:** SBYQ/210/16	
ORDER NUMBER:		
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624	
SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410	
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**	
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		

COC SEQUENCE NUMBER (Circle)

COC: (1) 2 3 4 5 6 7

OF: 1 2 3 (4) 5 6 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME:	DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 19:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
37	TP8/0.5	18/01/2017	S		1									
38	TP8/1	18/01/2017	S		1						X	X		
39	TP8/2	18/01/2017	S		1									
40	TP8/2.5	18/01/2017	S		1									
41	TP9/0.2	18/01/2017	S		1		X							
42	TP9/0.5	18/01/2017	S		1									
43	TP9/1	18/01/2017	S		1									
44	TP9/2	18/01/2017	S		1						X	X		
45	TP9/2.5	18/01/2017	S		1									
46	TP10/0.2	18/01/2017	S		1		X							
47	TP10/0.5	18/01/2017	S		1									
48	TP10/1	18/01/2017	S		1									
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☐ Standard TAT **(List due date):**	**FOR LABORATORY USE ONLY (Circle)**
OFFICE: Newcastle		☐ Non Standard or urgent TAT **(List due date):**	Custody Seal Intact? Yes / No / N/A
PROJECT: EP0454	**ALS QUOTE NO.:** SBYQ/210/16	**COC SEQUENCE NUMBER (Circle)**	Free ice / frozen ice bricks present upon receipt? Yes / No / N/A
ORDER NUMBER:		COC: (1) 2 3 4 (5) 6 7	Random Sample Temperature on Receipt: °C
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624	OF: 1 2 3 4 (5) 6 7	Other comment:
SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410	**RELINQUISHED BY:**	**RECEIVED BY:**
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**	DATE/TIME:	DATE/TIME:
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		**RELINQUISHED BY:**	**RECEIVED BY:**
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 19:30

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify **Total** (unfiltered bottle required) or **Dissolved** (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE *(refer to codes below)*	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	sPOCAS	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
49	TP10/2	18/01/2017	S		1						X	X		
50	TP10/2.5	18/01/2017	S		1									
51	TP11/0.2	18/01/2017	S		1		X							
52	TP11/0.5	18/01/2017	S		1									
53	TP11/1	18/01/2017	S		1									
54	TP11/2.5	18/01/2017	S		1									
55	TP11/2.5	18/01/2017	S		1									
56	TP12/0.2	18/01/2017	S		1		X							
SNR 57	TP12/0.5	19/01/2017	S		1						X	X		
58	TP12/1	20/01/2017	S		2									
59	TP12/2	21/01/2017	S		1									
60	TP12/3	18/01/2017	S		1						X	X		
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
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WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g. Ultra Trace Organics)	☐ Standard TAT (List due date):
OFFICE: Newcastle		☐ Non Standard or urgent TAT (List due date):
PROJECT: EP0454	**ALS QUOTE NO.:** SBYQ/210/16	
ORDER NUMBER:		
PROJECT MANAGER: Paul Simpson	**CONTACT PH:** 0434 141 624	
SAMPLER: Nathan McGuire	**SAMPLER MOBILE:** 0422 937 410	
COC emailed to ALS? (YES / NO)	**EDD FORMAT (or default):**	
Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		
Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au		

COC SEQUENCE NUMBER (Circle)

COC: (1) 2 3 4 5 6 7

OF: 1 2 3 4 5 (6) 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME:	DATE/TIME: 19/1/17 17:00	DATE/TIME: 19/01/17 1923

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	TRH (F1) / BTEXN	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
61	RW1	18/01/2017	W		5	X								
62	SP1	18/01/2017	S		1	X			X					
63	SP2	18/01/2017	S		1	X			X					
64	SP3	18/01/2017	S		1	X		X	X					
65	SS1	18/01/2017	S		1								X	
66	SS2	18/01/2017	S		1	X								
67	QS1	18/01/2017	S		1	X								
68	QS2	18/01/2017	S		1	X								
69	TRIP SPIKE	18/01/2017	S		1					X				
70	TRIP BLANK	18/01/2017	S		1					X				
71	TSC													
				TOTAL										

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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Envirolab Services Pty Ltd - Sydney | ABN 37 112 535 645

CERTIFICATE OF ANALYSIS 160645

Client:

EP Risk Management Pty Ltd (Maitland)
282 High St
Maitland
NSW 2320

Attention: Paul Simpson

Sample log in details:

Your Reference:	**EP0454**		
No. of samples:	1 soil		
Date samples received / completed instructions received	23/01/17	/	23/01/17

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:	31/01/17	/	30/01/17
Date of Preliminary Report:	Not Issued		

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

Results Approved By:

David Springer
General Manager

vTRH(C6-C10)/BTEXN in Soil		
Our Reference:	UNITS	160645-1
Your Reference	---------- -	QS2
Date Sampled	----------	18/01/2017
Type of sample		Soil
Date extracted	-	24/01/2017
Date analysed	-	25/01/2017
TRHC$_6$ - C$_9$	mg/kg	<25
TRHC$_6$ - C$_{10}$	mg/kg	<25
vTPHC$_6$ - C$_{10}$ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
Total +ve Xylenes	mg/kg	<1
naphthalene	mg/kg	<1
Surrogate aaa-Trifluorotoluene	%	97

svTRH (C10-C40) in Soil		
Our Reference:	UNITS	160645-1
Your Reference	----------	QS2
	-	
Date Sampled	----------	18/01/2017
Type of sample		Soil
Date extracted	-	24/01/2017
Date analysed	-	25/01/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	<50
TRHC$_{15}$ - C$_{28}$	mg/kg	<100
TRHC$_{29}$ - C$_{36}$	mg/kg	<100
TRH>C$_{10}$-C$_{16}$	mg/kg	<50
TRH>C$_{10}$ - C$_{16}$ less Naphthalene (F2)	mg/kg	<50
TRH>C$_{16}$-C$_{34}$	mg/kg	<100
TRH>C$_{34}$-C$_{40}$	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	85

PAHs in Soil		
Our Reference:	UNITS	160645-1
Your Reference	----------	QS2
	-	
Date Sampled	----------	18/01/2017
Type of sample		Soil
Date extracted	-	24/01/2017
Date analysed	-	24/01/2017
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Total +ve PAH's	mg/kg	<0.05
Surrogate p-Terphenyl-d14	%	95

Organochlorine Pesticides in soil		
Our Reference:	UNITS	160645-1
Your Reference	----------	QS2
	-	
Date Sampled	----------	18/01/2017
Type of sample		Soil
Date extracted	-	24/01/2017
Date analysed	-	25/01/2017
HCB	mg/kg	<0.1
alpha-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	96

PCBs in Soil		
Our Reference:	UNITS	160645-1
Your Reference	----------	QS2
	-	
Date Sampled	----------	18/01/2017
Type of sample		Soil
Date extracted	-	24/01/2017
Date analysed	-	25/01/2017
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCLMX	%	96

Total Phenolics in Soil		
Our Reference:	UNITS	160645-1
Your Reference	----------	QS2
	-	
Date Sampled	----------	18/01/2017
Type of sample		Soil
Date extracted	-	24/01/2017
Date analysed	-	24/01/2017
Total Phenolics (as Phenol)	mg/kg	<5

Moisture		
Our Reference:	UNITS	160645-1
Your Reference	----------	QS2
	-	
Date Sampled	----------	18/01/2017
Type of sample		Soil
Date prepared	-	24/01/2017
Date analysed	-	25/01/2017
Moisture	%	31

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-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.
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-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-012	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. '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-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-006	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore" Total +ve PCBs" is simply a sum of the positive individual PCBs.
Inorg-031	Total Phenolics by segmented flow analyser (in line distillation with colourimetric finish). Solids are extracted in a caustic media prior to analysis.

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

QUALITY CONTROL vTRH(C6-C10)/BTEXN in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/01/2017	[NT]	[NT]	LCS-2	24/01/2017
Date analysed	-			25/01/2017	[NT]	[NT]	LCS-2	25/01/2017
TRHC$_6$ - C$_9$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-2	98%
TRHC$_6$ - C$_{10}$	mg/kg	25	Org-016	<25	[NT]	[NT]	LCS-2	98%
Benzene	mg/kg	0.2	Org-016	<0.2	[NT]	[NT]	LCS-2	108%
Toluene	mg/kg	0.5	Org-016	<0.5	[NT]	[NT]	LCS-2	105%
Ethylbenzene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-2	90%
m+p-xylene	mg/kg	2	Org-016	<2	[NT]	[NT]	LCS-2	94%
o-Xylene	mg/kg	1	Org-016	<1	[NT]	[NT]	LCS-2	93%
naphthalene	mg/kg	1	Org-014	<1	[NT]	[NT]	[NR]	[NR]
Surrogate aaa-Trifluorotoluene	%		Org-016	111	[NT]	[NT]	LCS-2	106%

QUALITY CONTROL svTRH (C10-C40) in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/01/2017	[NT]	[NT]	LCS-2	24/01/2017
Date analysed	-			24/01/2017	[NT]	[NT]	LCS-2	24/01/2017
TRHC$_{10}$ - C$_{14}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-2	112%
TRHC$_{15}$ - C$_{28}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	114%
TRHC$_{29}$ - C$_{36}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	121%
TRH>C$_{10}$-C$_{16}$	mg/kg	50	Org-003	<50	[NT]	[NT]	LCS-2	112%
TRH>C$_{16}$-C$_{34}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	114%
TRH>C$_{34}$-C$_{40}$	mg/kg	100	Org-003	<100	[NT]	[NT]	LCS-2	121%
Surrogate o-Terphenyl	%		Org-003	92	[NT]	[NT]	LCS-2	99%

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/01/2017	[NT]	[NT]	LCS-2	24/01/2017
Date analysed	-			24/01/2017	[NT]	[NT]	LCS-2	24/01/2017
Naphthalene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-2	80%
Acenaphthylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-2	90%
Phenanthrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-2	90%
Anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-2	93%
Pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-2	94%
Benzo(a)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	LCS-2	86%
Benzo(b,j +k)fluoranthene	mg/kg	0.2	Org-012	<0.2	[NT]	[NT]	[NR]	[NR]

QUALITY CONTROL PAHs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Benzo(a)pyrene	mg/kg	0.05	Org-012	<0.05	[NT]	[NT]	LCS-2	86%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate p-Terphenyl-d14	%		Org-012	99	[NT]	[NT]	LCS-2	128%
QUALITY CONTROL Organochlorine Pesticides in soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/01/2017	[NT]	[NT]	LCS-2	24/01/2017
Date analysed	-			24/01/2017	[NT]	[NT]	LCS-2	24/01/2017
HCB	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	94%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	102%
Heptachlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	101%
delta-BHC	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	95%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	99%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	99%
Dieldrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	104%
Endrin	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	126%
pp-DDD	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	88%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
pp-DDT	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endrin Aldehyde	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Endosulfan Sulphate	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	LCS-2	102%
Methoxychlor	mg/kg	0.1	Org-005	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCMX	%		Org-005	93	[NT]	[NT]	LCS-2	94%

QUALITY CONTROL PCBs in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/01/2017	[NT]	[NT]	LCS-2	24/01/2017
Date analysed	-			24/01/2017	[NT]	[NT]	LCS-2	24/01/2017
Aroclor 1016	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1221	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1232	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1242	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1248	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Aroclor 1254	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	LCS-2	115%
Aroclor 1260	mg/kg	0.1	Org-006	<0.1	[NT]	[NT]	[NR]	[NR]
Surrogate TCLMX	%		Org-006	93	[NT]	[NT]	LCS-2	96%
QUALITY CONTROL Total Phenolics in Soil	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results Base II Duplicate II %RPD	Spike Sm#	Spike % Recovery
Date extracted	-			24/01/2017	[NT]	[NT]	LCS-1	24/01/2017
Date analysed	-			24/01/2017	[NT]	[NT]	LCS-1	24/01/2017
Total Phenolics (as Phenol)	mg/kg	5	Inorg-031	<5	[NT]	[NT]	LCS-1	101%

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
NR: 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.

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

Measurement Uncertainty estimates are available for most tests upon request.

CHAIN OF CUSTODY

ALS Environmental

ALS Laboratory: please tick →

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☐BRISBANE 32 Shand Street Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
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☐NOWRA 4/13 Geary Place North Nowra NSW 2541 Ph: 024423 2063 E: nowra@alsglobal.com
☐PERTH 10 Hod Way Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsglobal.com
☐SYDNEY 277-289 Woodpark Road Smithfield NSW 2164 Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
☐TOWNSVILLE 14-15 Desma Court Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsglobal.com
☐WOLLONGONG 99 Kenny Street Wollongong NSW 2500 Ph: 02 4225 3125 E: portkembla@alsglobal.com

CLIENT: EP Risk Management

OFFICE: Newcastle

PROJECT: EP045

ORDER NUMBER:

PROJECT MANAGER: Paul Simpson — **CONTACT PH:** 0434 141 624

SAMPLER: Nathan McGuire — **SAMPLER MOBILE:** 0422 937 410

COC emailed to ALS? (YES / NO) — **EDD FORMAT (or default):**

Email Reports to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au

Email Invoice to (will default to PM if no other addresses are listed): Paul.simpson@eprisk.com.au

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)

☐ Standard TAT (List due date):

☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NO.: SBYQ/210/16

COC SEQUENCE NUMBER (Circle)

COC: (1) 2 3 4 5 6 7

OF: 1 2 3 4 5 (6) 7

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comment:			

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY: JE ELS

DATE/TIME: 23.01.17 14.45

RELINQUISHED BY:

DATE/TIME: 19/1/17 17:00

RECEIVED BY: Ran

DATE/TIME: 19/01/17 1923

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE	SAMPLE DETAILS MATRIX: SOLID (S) WATER (W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Total Recoverable Hydrocarbons (TRH), BTEXN, PAH, OCP, PCB's and Phenols	OCC/OPP/Heavy Metals	Cation Exchange Capacity	Asbestos w/w %	TRH (F1) / BTEXN	Electrical Conductivity, Resistivity	Exchangeable cations/Sulfate/ Chloride	Faecal Coliforms and E. coli	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
61	RW1	18/01/2017	W		5	X								
62	SP1	18/01/2017	S		1	X			X					
63	SP2	18/01/2017	S		1	X			X					
64	SP3	18/01/2017	S		1	X		X	X					
65	SS1	18/01/2017	S		1								X	
66	SS2	18/01/2017	S		1	X								
67	QS1	18/01/2017	S		1	X								
68	QS2 FWD TO ENVIROLAB	18/01/2017	S		1	X								
69	TRIP SPIKE	18/01/2017	S		1					X				
70	TRIP BLANK	18/01/2017	S		1					X				
71	TSC													
				TOTAL										

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

Job No: 160645

Date Received: 23.01.17

Time Received: 14.45

Received by: JE

Temp: Cool/Ambient 12.4°C

Cooling: Ice/Icepack

Security: Intact/Broken/None

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

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

SAMPLE RECEIPT ADVICE

Client Details	
Client	EP Risk Management Pty Ltd (Maitland)
Attention	Paul Simpson

Sample Login Details	
Your Reference	EP0454
Envirolab Reference	**160645**
Date Sample Received	23/01/2017
Date Instructions Received	23/01/2017
Date Results Expected to be Reported	**31/01/2017**

Sample Condition	
Samples received in appropriate condition for analysis	YES
No. of Samples Provided	1 soil
Turnaround Time Requested	Standard
Temperature on receipt (°C)	12
Cooling Method	Ice
Sampling Date Provided	YES

Comments
Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples

Please direct any queries to:

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

Sample and Testing Details on following page

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

Sample Id	*vTRH(C6-C10)/BTEXN in Soil*	*svTRH (C10-C40) in Soil*	*PAHs in Soil*	*Organochlorine Pesticides in soil*	*PCBs in Soil*	*Total Phenolics in Soil*
QS2	✓	✓	✓	✓	✓	✓

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

Appendix H
CALIBRATION CERTIFICATES

ThermoFisher SCIENTIFIC

The world leader in serving science

RENTALS

Equipment Report - MiniRAE 3000 PID

This Gas Meter has been performance checked and calibrated as follows:

Lamp	Compound	Concentration	Zero	Span	Traceability Lot #	Pass?
10.6 eV	Isobutylene	100 ppm	0.0 ppm	100.0 ppm	Lot 389261 Cyl 3	☑

Alarm Limits

High	100 ppm
Low	50 ppm

Bump Test

Date	Target Gas	Reading	Pass?
12/01/2017	100 ppm	100.1 ppm	☑

- ☑ Battery Status 100%
- ☑ 10 minutes test complete
- ☑ Spare battery status (Min 5.5 volts)
- ☑ Electrical Safety Tag attached (AS/NZS 3760)

Tag No: 000943

Valid to: 07/02/2017

- ☑ Performance check (pump, lamp, sensor)
- ☑ Data cleared
- ☑ Filters checked

Date: 12/01/2017

Signed: Milenko

Please check that the following items are received and that all items are cleaned and decontaminated before return. A minimum $30 cleaning / service / repair charge may be applied to any unclean or damaged items. Items not returned will be billed for at the full replacement cost.

Sent	Returned	Item
☑	☐	MiniRAE 2000 PID / Operational Check / Battery Status 100%
☑	☐	Lamp 10.6 eV, Compound Set to: Isobutylene C/factor: 1
☑	☐	Protective yellow rubber boot
☑	☐	Inlet probe (attached to PID)
☑	☐	Spare water trap filter(s) Qty 1
☑	☐	Charger 240V to 12V1250mA
☑	☐	Cradle and Travel Charger
☑	☐	Instruction Manual behind foam on the lid of case "
☑	☐	Quick Guide Sheet behind foam on the lid of case "
☑	☐	Spare Alkaline Battery Compartment with batteries
☑	☐	Inline Moisture trap Filter Guide Laminated
☒	☐	Calibration regulator & tubing (optional)
☒	☐	Data cable and Software CD (optional)
☑	☐	Carry Case
☑	☐	Check to confirm electrical safety (tag must be valid)

Date: 12/01/2016

Signed: Milenko

TFS Reference	CS00 6115	Return Date:	/ /
Customer Reference		Return Time:	
Equipment ID	PID3000-3	Condition on return:	
Equipment Serial No.	592 911 940		

Appendix I
GROUNDWATER DATA REPORTS

NSW Office of Water
Work Summary

GW027289

Licence: 20BL015464 **Licence Status:** CONVERTED

Authorised Purpose(s): IRRIGATION
Intended Purpose(s): NOT KNOWN

Work Type: Well
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 01/01/1944
Final Depth: 5.50 m
Drilled Depth: 5.50 m

Contractor Name:
Driller:
Assistant Driller:

Property: BENDEMIER ANAMBAH ROAD VIA MAITLAND 2320 NSW
GWMA: 017 - HUNTER
GW Zone: -
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.025	69
Licensed:	NORTHUMBERLAND	GOSFORTH	Whole Lot 74//622205

Region: 20 - Hunter
River Basin: 210 - HUNTER RIVER
Area/District:
CMA Map: 9132-1S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6381789.0
Easting: 358789.0
Latitude: 32°41'33.3"S
Longitude: 151°29'37.1"E

GS Map: -
MGA Zone: 0
Coordinate Source: GD.,ACC.MAP

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1	1	Casing	Timber	-0.50	5.00	1524			

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	5.49	5.49	Loam Clay	Loam	

Remarks

***** End of GW027289 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW080337

Licence: 20BL168498 **Licence Status:** ACTIVE

Authorised Purpose(s): TEST BORE
Intended Purpose(s): TEST BORE

Work Type: Bore
Work Status:
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 07/11/2002
Final Depth:
Drilled Depth:

Contractor Name:
Driller:
Assistant Driller:

Property: MELVILLE STUD 202 MELVILLE FORD ROAD MELVILLE 2320 NSW
GWMA: -
GW Zone: -
Standing Water Level (m):
Salinity Description:
Yield (L/s):

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	DURHA	DURHA.035	LTPT3 DP210081
Licensed:	DURHAM	MIDDLEHOPE	Whole Lot PT3//210081

Region: 20 - Hunter
River Basin: 210 - HUNTER RIVER
Area/District:
CMA Map: 9232-4S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: (Unknown)
Northing: 6383200.0
Easting: 360593.0
Latitude: 32°40'48.3"S
Longitude: 151°30'47.1"E

GS Map: -
MGA Zone: 0
Coordinate Source: Unknown

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/12/2009: Reviewed data - nothing to update.

***** End of GW080337 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW201738

Licence: 20BL168120 **Licence Status:** CONVERTED

Authorised Purpose(s): STOCK,DOMESTIC,IRRIGATION
Intended Purpose(s): STOCK, DOMESTIC, IRRIGATION

Work Type: Bore
Work Status: Supply Obtained
Construct.Method:
Owner Type: Private

Commenced Date:
Completion Date: 01/07/2005
Final Depth: 80.00 m
Drilled Depth: 80.00 m

Contractor Name:
Driller: Unkown Unknown
Assistant Driller:

Property: N/A 195 MELVILLE FORD ROAD MELVILLE 2320
GWMA:
GW Zone:
Standing Water Level: 20.000
Salinity:
Yield: 1.000

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	DURHA	DURHA.35	60//864279
Licensed:			

Region: 20 - Hunter
River Basin: 210 - HUNTER RIVER
Area/District:
CMA Map: 9232-4S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6383007.0
Easting: 361426.0
Latitude: 32°40'55.0"S
Longitude: 151°31'19.0"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	80.00	0			(Unknown)
1	1	Casing	P.V.C.	0.00	0.00				

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

Remarks

01/07/2005: Form A Remarks:

Nat Carling, 7-May-2012; All details were provided by current owner, bore pre existing when property purchased, completion date was based on 'pre existing approx 2005'. SWL & DDL are approx only. No location was provided, based in the centre of the authorised land. Map sent to owner for true location.

19/06/2012: Nat Carling, 19-June-2012; Updated coordinates with GPS provided by owner.

***** End of GW201738 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW201980

Licence: 20BL172011 **Licence Status:** ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date:
Completion Date: 07/10/2008
Final Depth: 10.00 m
Drilled Depth: 10.00 m

Contractor Name: BRIAN ATKINS DRILLING
Driller: Brian Richard Atkins
Assistant Driller:

Property: N/A 372 NEW ENGLAND HIGHWAY RUTHERFORD 2320
GWMA:
GW Zone:
Standing Water Level: 8.350
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.25	611//867202
Licensed:			

Region: 20 - Hunter
River Basin: 210 - HUNTER RIVER
Area/District:
CMA Map: 9232-4S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6380067.0
Easting: 360628.0
Latitude: 32°42'30.1"S
Longitude: 151°30'46.8"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	10.00	100			Auger - Solid Flight
1		Annulus	Waterworn/Rounded	0.00	4.80	100	60		Graded, PL:Poured/Shovelled
1		Annulus	Bentonite	4.80	4.90	100	60		PL:Poured/Shovelled
1		Annulus	Waterworn/Rounded	5.90	10.00	100	60		Graded, PL:Poured/Shovelled
1	1	Casing	Pvc Class 18	0.00	7.00	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots	7.00	10.00	60		1	Mechanically Slotted, PVC Class 18, Screwed

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
8.00	8.20	0.20	Unknown	8.35					

Geologists Log

Drillers Log

From	To	Thickness	Drillers Description	Geological Material	Comments

(m)	(m)	(m)			
0.00	0.20	0.20	Topsoil; Silty Clay, medium plasticity, brown	Topsoil	
0.20	10.00	9.80	Clay; medium to high plasticity, brown, becomes brown & brown grey mottled @ 2.4m	Clay	

Remarks

07/10/2008: Form A Remarks:
Nat Carling, 17-May-2012; GPS provided by driller/client.

***** End of GW201980 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW201981

Licence: 20BL172011 **Licence Status:** ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date:
Completion Date: 07/10/2008
Final Depth: 10.50 m
Drilled Depth: 10.50 m

Contractor Name: BRIAN ATKINS DRILLING
Driller: Brian Richard Atkins
Assistant Driller: D Dudley

Property: N/A 372 NEW ENGLAND HIGHWAY RUTHERFORD 2320
GWMA:
GW Zone:
Standing Water Level: 8.700
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.25	611//867202
Licensed:			

Region: 20 - Hunter
River Basin: 210 - HUNTER RIVER
Area/District:
CMA Map: 9232-4S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6380198.0
Easting: 360648.0
Latitude: 32°42'25.8"S
Longitude: 151°30'47.6"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	10.50	100			Auger - Solid Flight
1		Annulus	Waterworn/Rounded	0.00	6.50	100	60		Graded, PL:Poured/Shovelled
1		Annulus	Bentonite	6.50	7.00	100	60		PL:Poured/Shovelled
1		Annulus	Waterworn/Rounded	7.00	10.50	100	60		Graded, PL:Poured/Shovelled
1	1	Casing	Pvc Class 18	0.00	7.50	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots	7.50	10.50	60		1	Mechanically Slotted, PVC Class 18, Screwed

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
8.00	8.20	0.20	Unknown	8.70					

Geologists Log

Drillers Log

From	To	Thickness	Drillers Description	Geological Material	Comments

(m)	(m)	(m)			
0.00	0.20	0.20	Topsoil; Silty Clay, medium plasticity, brown	Topsoil	
0.20	10.50	10.30	Clay; medium to high plasticity	Clay	

Remarks

07/10/2008: Form A Remarks:
Nat Carling, 17-May-2012; GPS provided by driller/client.

***** End of GW201981 *****

Warning To Clients: This raw data has been supplied to the NSW Office of Water by drillers, licensees and other sources. The NOW does not verify the accuracy of this data. The data is presented for use by you at your own risk. You should consider verifying this data before relying on it. Professional hydrogeological advice should be sought in interpreting and using this data.

NSW Office of Water
Work Summary

GW201982

Licence: 20BL172011 **Licence Status:** ACTIVE

Authorised Purpose(s): MONITORING BORE
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date:
Completion Date: 07/10/2008
Final Depth: 9.40 m
Drilled Depth: 9.40 m

Contractor Name: BRIAN ATKINS DRILLING
Driller: Brian Richard Atkins
Assistant Driller: D Dudley

Property: N/A 372 NEW ENGLAND HIGHWAY RUTHERFORD 2320
GWMA:
GW Zone:
Standing Water Level: 8.700
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.25	611//867202
Licensed:			

Region: 20 - Hunter
River Basin: 210 - HUNTER RIVER
Area/District:
CMA Map: 9232-4S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6380163.0
Easting: 360688.0
Latitude: 32°42'27.0"S
Longitude: 151°30'49.1"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	9.40	100			Auger - Solid Flight
1		Annulus	Waterworn/Rounded	1.00	5.20	100	60		Graded, PL:Poured/Shovelled
1		Annulus	Bentonite	5.20	5.70	100	60		PL:Poured/Shovelled
1		Annulus	Waterworn/Rounded	5.70	9.40	100	60		Graded, PL:Poured/Shovelled
1	1	Casing	Pvc Class 18	0.00	6.40	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots	6.40	9.40	60		1	Mechanically Slotted, PVC Class 18, Screwed

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
8.00	8.20	0.20	Unknown	9.70					

Geologists Log

Drillers Log

From	To	Thickness	Drillers Description	Geological Material	Comments

(m)	(m)	(m)			
0.00	0.20	0.20	Topsoil; Silty Clay, medium plasticity, brown	Topsoil	
0.20	9.40	9.20	Clay; medium to high plasticity, brown	Clay	

Remarks

07/10/2008: Form A Remarks:
Nat Carling, 17-May-2012; GPS provided by driller/client.

***** End of GW201982 *****

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NSW Office of Water
Work Summary

GW202692

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date:
Completion Date: 16/08/2011
Final Depth: 9.00 m
Drilled Depth: 9.00 m

Contractor Name: Groundtruth Pty Ltd
Driller: Simon Carl Lott
Assistant Driller: Hayden Hopley

Property:
GWMA:
GW Zone:
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.25	2//517903
Licensed:			

Region: 20 - Hunter
River Basin: 210 - HUNTER RIVER
Area/District:
CMA Map: 9232-4S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6379405.0
Easting: 361770.0
Latitude: 32°42'52.1"S
Longitude: 151°31'30.3"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	9.00	114			Auger - Solid Flight
1		Annulus	Cement	0.00	0.20	114	60		PL:Poured/Shovelled
1		Annulus	Bentonite	0.20	5.50	114	60		PL:Poured/Shovelled
1		Annulus	Waterworn/Rounded	5.50	9.00	114	60		Graded, PL:Poured/Shovelled
1	1	Casing	Pvc Class 18	0.00	6.00	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	6.00	9.00	60		1	Mechanically Slotted, PVC Class 18, Screwed, SL: 40.0mm, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.50	0.50	Silty Clay; red, dry, low plasticity	Silty Clay	

0.50	1.00	0.50	Silty Clay; brown, moist, very high plasticity	Silty Clay	
1.00	2.00	1.00	Silty Clay; dark brown	Silty Clay	
2.00	3.50	1.50	Silty Clay; light brown	Silty Clay	
3.50	8.00	4.50	Silt, Clayey; red, dry, trace plasticity	Silt	
8.00	9.00	1.00	Silty Clay; grey, dry, high plasticity, @ 9m refusal	Silty Clay	

Remarks

16/08/2011: Form A Remarks:
Nat Carling, 4-Nov-2013; GPS provided by the drillers.

***** End of GW202692 *****

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NSW Office of Water
Work Summary

GW202693

Licence: **Licence Status:**

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date: **Final Depth:** 7.50 m
Completion Date: 16/08/2011 **Drilled Depth:** 7.50 m

Contractor Name: Groundtruth Pty Ltd
Driller: Simon Carl Lott
Assistant Driller: Hayden Hopley

Property: **Standing Water Level:**
GWMA: **Salinity:**
GW Zone: **Yield:**

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.25	2//517903
Licensed:			

Region: 20 - Hunter **CMA Map:** 9232-4S
River Basin: 210 - HUNTER RIVER **Grid Zone:** **Scale:**
Area/District:

Elevation: 0.00 m (A.H.D.) **Northing:** 6379408.0 **Latitude:** 32°42'52.0"S
Elevation Source: Unknown **Easting:** 361767.0 **Longitude:** 151°31'30.1"E

GS Map: - **MGA Zone:** 0 **Coordinate Source:** GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	7.50	114			Auger - Solid Flight
1		Annulus	Cement	0.00	0.20	114	60		PL:Poured/Shovelled
1		Annulus	Bentonite	0.20	4.00	114	60		PL:Poured/Shovelled
1		Annulus	Waterworn/Rounded	4.00	7.50	114	60		Graded, PL:Poured/Shovelled
1	1	Casing	Pvc Class 18	0.00	4.50	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	4.50	7.50	60		1	Mechanically Slotted, PVC Class 18, Screwed, SL: 40.0mm, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	1.00	1.00	Silt, Clayey; brown, dry, trace plasticity, @	Silt	

			1m trace gravel		
1.00	7.50	6.50	Silty Clay; brown, dry, high plasticity, @ 3m brown-grey, @ 4.5m grey, mottled red, @ 5m grey, @ 6.5m brown, @ 7.5m refu	Silty Clay	

Remarks

16/08/2011: Form A Remarks:
Nat Carling, 4-Nov-2013; GPS provided by the drillers.

***** End of GW202693 *****

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NSW Office of Water
Work Summary

GW202694

Licence:
Licence Status:

Authorised Purpose(s):
Intended Purpose(s): MONITORING BORE

Work Type: Bore
Work Status: Equipped
Construct.Method: Auger - Solid Flight
Owner Type: Private

Commenced Date:
Completion Date: 16/08/2011
Final Depth: 7.45 m
Drilled Depth: 6.50 m

Contractor Name: Groundtruth Pty Ltd
Driller: Simon Carl Lott
Assistant Driller: Hayden Hopley

Property:
GWMA:
GW Zone:
Standing Water Level:
Salinity:
Yield:

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.25	1//517903
Licensed:			

Region: 20 - Hunter
River Basin: 210 - HUNTER RIVER
Area/District:
CMA Map: 9232-4S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6379372.0
Easting: 361764.0
Latitude: 32°42'53.1"S
Longitude: 151°31'30.0"E

GS Map: -
MGA Zone: 0
Coordinate Source: GPS - Global Positioning System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	7.45	114			Auger - Solid Flight
1		Annulus	Cement	0.00	0.20	114	60		PL:Poured/Shovelled
1		Annulus	Bentonite	0.20	4.00	114	60		PL:Poured/Shovelled
1		Annulus	Waterworn/Rounded	4.00	7.45	114	60		Graded, PL:Poured/Shovelled
1	1	Casing	Pvc Class 18	0.00	4.45	60	50		Seated on Bottom, Screwed
1	1	Opening	Slots - Horizontal	4.45	7.45	60		1	Mechanically Slotted, PVC Class 18, Screwed, SL: 40.0mm, A: 0.50mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.50	0.50	Silty Clay; grey mottled red, dry, very high	Silty Clay	

			plasticity		
0.50	2.50	2.00	Silt, Sandy; trace sand, red, dry, low plasticity	Silt	
2.50	6.50	4.00	Silt, Clayey; red, dry, medium plasticity, @ 7m brown, @ 7.45m refusal	Silt	

Remarks

16/08/2011: Form A Remarks:
Nat Carling, 4-Nov-2013; GPS provided by the drillers.

***** End of GW202694 *****

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NSW Office of Water
Work Summary

GW202923

Licence: 20WA212682 **Licence Status:** CURRENT

Authorised Purpose(s): DOMESTIC
Intended Purpose(s): STOCK, DOMESTIC

Work Type: Bore
Work Status: Supply Obtained
Construct.Method: Down Hole Hammer
Owner Type: Private

Commenced Date:
Completion Date: 05/02/2014
Final Depth: 78.00 m
Drilled Depth: 78.00 m

Contractor Name: Ace Drilling
Driller: Michael Patrick O'neill
Assistant Driller: Scott Thompson

Property: N/A 253 Aberglasslyn Road Aberglasslyn 2320
GWMA:
GW Zone:
Standing Water Level: 26.000
Salinity:
Yield: 0.890

Site Details

Site Chosen By:

	County	Parish	Cadastre
Form A:	NORTH	NORTH.25	1012//1195152
Licensed:			

Region: 20 - Hunter
River Basin: 210 - HUNTER RIVER
Area/District:
CMA Map: 9232-4S
Grid Zone:
Scale:

Elevation: 0.00 m (A.H.D.)
Elevation Source: Unknown
Northing: 6381188.0
Easting: 362767.0
Latitude: 32°41'54.6"S
Longitude: 151°32'09.5"E

GS Map: -
MGA Zone: 0
Coordinate Source: GIS - Geographic Information System

Construction

Negative depths indicate Above Ground Level; C-Cemented; SL-Slot Length; A-Aperture; GS-Grain Size; Q-Quantity; PL-Placement of Gravel Pack; PC-Pressure Cemented; S-Sump; CE-Centralisers

Hole	Pipe	Component	Type	From (m)	To (m)	Outside Diameter (mm)	Inside Diameter (mm)	Interval	Details
1		Hole	Hole	0.00	78.00	200			Down Hole Hammer
1	1	Casing	Pvc Class 9	-1.00	78.00	166	152		Seated on Bottom, Riveted and Glued, S: 67.00-78.00m
1	1	Opening	Slots - Vertical	-1.00	78.00	166		1	Sawn, PVC Class 9, Riveted and Glued, SL: 200.0mm, A: 2.00mm

Water Bearing Zones

From (m)	To (m)	Thickness (m)	WBZ Type	S.W.L. (m)	D.D.L. (m)	Yield (L/s)	Hole Depth (m)	Duration (hr)	Salinity (mg/L)
43.00	44.00	1.00	Unknown	26.00		0.51			
66.00	67.00	1.00	Unknown			0.38			

Geologists Log
Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments

0.00	1.00	1.00	Topsoil	Topsoil	
1.00	12.00	11.00	Sandstone, weathered	Sandstone	
12.00	15.00	3.00	Clay	Clay	
15.00	31.00	16.00	Shale	Shale	
31.00	35.00	4.00	Sandstone	Sandstone	
35.00	51.00	16.00	Conglomerate	Conglomerate	
51.00	78.00	27.00	Conglomerate & Quartz	Conglomerate	

Remarks

05/02/2014: Form A Remarks:
Nat Carling, 28-Mar-2014; No location was provided, based in the centre of the authorised land. Map sent to owner for true location.
24/06/2014: Nat Carling, 24-June-2014; Updated coordinates & cadastre, based on location map received from the owner.

***** End of GW202923 *****

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