



**ENVIRONMENTAL EARTH
SCIENCES**
CONTAMINATION RESOLVED

**PRELIMINARY ENVIRONMENTAL
SITE ASSESSMENT
4 – 18 DONCASTER AVENUE,
KENSINGTON NSW
BLUE SKY COMMERCIAL ASSET
MANAGERS PTY LTD**

6 SEPTEMBER 2018
118090
VERSION 1

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Blue Sky Commercial Asset Managers Pty Ltd
Level 22, Australia Square
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Sydney NSW 2000

Attention: **Edan Norris**

**Preliminary Environmental Site Assessment –
4 – 18 Doncaster Avenue, Kensington NSW**

Please find enclosed a copy of our report entitled as above. Thank you for the opportunity to undertake this work. If there are any comments or queries, please do not hesitate to contact either of the undersigned on (02) 9922 1777.

For and on behalf of
Environmental Earth Sciences NSW

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EXECUTIVE SUMMARY

Introduction and objective

Environmental Earth Sciences NSW was engaged by Blue Sky Commercial Asset Managers Pty Ltd to conduct a PESA for 10 adjacent lots located at 4-18 Doncaster Avenue, Kensington NSW (the “site”). The objective of this due diligence PESA was to provide information on the contamination status of the site and allow development of the initial CSM for contamination.

At the time of the inspection, access to properties 14 and 16 Doncaster Avenue was restricted, and access to 4 and 18 Doncaster Avenue not possible even for a limited inspection. As a result, detailed inspection was limited to 10 and 12 Doncaster Avenue and immediate surrounds.

Findings of the assessment were used to ascertain actual or potential liabilities associated with residual contamination such that informed decisions can be made by Blue Sky on the potential acquisition of the site for possible residential development.

Findings

Based upon findings of this assessment no property was used for contaminating industry. The only other land use other than residential was for a horse stable and riding school at 10 and 12 Doncaster Avenue, which was associated with the Sydney Jockey Club around the beginning of the 1900s.

Some potential filling of the site may have occurred during construction of original dwellings, however the likelihood of significant contamination to subsurface soils is considered low.

From detailed inspection of 10 and 12 Doncaster Avenue, ACM was noted in some existing structures, along with lead paint on exterior surfaces noted to be flaking in areas. The risk posed by these hazardous materials is low pending appropriate management.

It is likely that in properties 14 and 16 Doncaster Avenue which were only subjected to limited inspection, and possibly 4 Doncaster Avenue, lead paint and asbestos may also exist which would require management accordingly. Similar to findings of the detailed inspection of 10 and 12 Doncaster Avenue, risk posed by these hazardous materials would be low pending appropriate management.

Any sources of contamination risk posed from the adjacent property to the east (former tram yard, then depot used by Randwick Racecourse) are likely to have been appropriately management as part of preliminary works for construction of the new light rail stabling yard facility. Any ongoing industrial process and/or storage of dangerous goods in this offsite facility would also be regulated by the NSW EPA under the POEO Act.

Conclusion

Based on findings of this PESA it is considered that no further detailed assessment is required to investigate / delineate potential soil contamination.

As all properties are likely to undergo redevelopment into a town houses with underground basement car parking, it is envisaged that all soils potentially impacted with heavy metals, ACM and/or other contaminants of concern would undergo requisite chemical assessment for offsite waste classification purposes.

Recommendations

It is considered that management of identified contamination and asbestos impact can be appropriately undertaken during construction, and as such potential risks posed to future site users can be ensured by means of general construction management. The following two main management recommendations were made to support management of contamination and asbestos during any proposed construction, which would generally be required by Council as part of the development consent process:

- Preparation of a Construction Environmental Management Plan (CEMP).
- Preparation of an Asbestos Management Plan (AMP)

Cost implications for management

Based upon the findings of this PSEA, Environmental Earth Sciences has anticipated various stages of contamination / asbestos management associated with potential development and provided high-level, indicative costings associated with management of soil material and preparation of the abovementioned CEMP and AMP documents. These are reported herein.

TABLE OF CONTENTS

1	INTRODUCTION & BACKGROUND.....	1
2	OBJECTIVE	2
3	WORKS UNDERTAKEN	2
4	SITE IDENTIFICATION & SETTING	3
4.1	LOCATION AND PROPERTY DESCRIPTION	3
4.2	SITE SURROUNDS	3
4.3	TOPOGRAPHY & VEGETATION	4
4.4	GEOLOGY	4
4.5	ACID SULFATE SOILS	4
4.6	HYDROGEOLOGY AND DRAINAGE	4
4.7	GROUNDWATER DEPENDANT ECOSYSTEMS	5
5	HISTORICAL REVIEW	5
5.1	HISTORICAL AERIAL PHOTOGRAPH REVIEW	6
5.2	REVIEW OF SBA (2015) HERITAGE ASSESSMENT REPORT	7
5.3	NSW EPA REGISTERS	7
6	SITE OBSERVATIONS.....	8
6.1	SITE INSPECTION	8
7	CONCEPTUAL SITE MODEL	10
7.1	SOURCES OF CONTAMINATION	10
7.1.1	Onsite	10
7.1.2	Offsite	10
7.1	CHEMICALS OF POTENTIAL CONCERN	11
7.1.1	Asbestos	11
7.1.2	Heavy metals	11
7.2	POTENTIAL RECEPTORS	11
7.3	PATHWAYS	11
7.4	PRELIMINARY RISK EVALUATION	12
8	CONCLUSION	12
9	RECOMMENDATIONS.....	13
9.1	CEMP	14
9.2	ASBESTOS MANAGEMENT PLAN	14

10	COSTING IMPLICATIONS	15
10.1	MANAGEMENT OF SOIL MATERIAL	15
10.2	PREPARATION OF CEMP	16
10.3	PREPARATION OF AMP	16
10.4	SPECIFIC ASSUMPTIONS	16
11	LIMITATIONS	17
12	REFERENCES	18

Tables

Table 1: Site identification

Table 2: Registered bore information

Table 3: Review of aerial photography

Table 4: Key site features

Table of Figures

Figure 1: Site location

Figure 2: Site Details

Appendices

APPENDIX A: Council zoning map

APPENDIX B: pass risk map

APPENDIX C: Registered bore information

APPENDIX D: Site photographs

1 INTRODUCTION & BACKGROUND

Environmental Earth Sciences NSW were engaged by Blue Sky Commercial Asset Managers Pty Ltd (Blue Sky) to undertake a preliminary environmental site assessment (PESA) of 10 adjacent lots located at 4-18 Doncaster Avenue, Kensington NSW (the “site”). The site currently comprises 10 adjacent lots formally identified as:

- Lots 2 - 3 in Deposited Plan (DP) 5549.
- Lot 1 in DP1094702.
- Lot 1 in DP981704.
- Lot 1 in DP1033442.
- Lot 1 in DP974821.
- Lot 51 in DP2905.
- Lots 52A – 52B in DP400051.
- Lot 53 in Deposited Plan (DP) 2905.

The investigation was required to inform a pre-purchase due diligence assessment prior to a proposed acquisition. With reference to the National Environment Protection Council (NEPC) 2013, National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (ASC NEPM, 2013), this PESA aims to identify potential:

- Sources of contamination, historical contaminating uses or impacted areas.
- Contaminants of concern associated with identified sources of impact or contaminated areas.
- Affected media (soil, sediment, groundwater, surface water).
- Human and ecological receptors.

The purpose of collecting basic site information is to formulate a conceptual site model (CSM) for contamination, which following assessment, review of site history, physical setting and site conditions will ascertain any risk linkages. The assessment will inform recommendations for further detailed (intrusive) assessment and/or remediation (if required).

This report should be read in conjunction with the limitations and appendices contained within the proposal (ref: PO118151, 16 August 2018) and the limitations detailed at the end of this report.

2 OBJECTIVE

The objective of this due diligence PESA was to provide information on the contamination status of the site and allow development of the initial CSM for contamination. Findings of the assessment will inform any actual or potential liabilities associated with residual contamination such that informed decisions can be made by Blue Sky on the potential acquisition of the site.

3 WORKS UNDERTAKEN

Works undertaken to prepare this PESA included:

- Preliminary works:
 - Preparation of a safe work method statement (SWMS) to document work health and safety (WH&S) procedures and the use of appropriate personal protection equipment (PPE).
 - Review of Graham Brooks & Associates (2015) – Statement of Heritage Impact (Issue B; 9 December 2015)
 - Review of Douglas Partners (2015) – *Supplementary Geotechnical Investigation, 4 – 18 Doncaster Road, Kensington NSW*. Report for Built (NSW) Pty Ltd (ref: 73965.02; 22 December 2015).
 - Review of JBS&G (2013) – *Limited Preliminary Environmental Site Assessment for Due Diligence Purposes, 4 – 12 Doncaster Avenue, Kensington NSW*. Report for Built (NSW) Pty Ltd (ref: 42706-55113).
- Desktop assessment:
 - Geology, soil, hydrology and meteorology maps and databases.
 - NSW Groundwater works data base for registered bore information.
 - Available historic aerial photography.
 - NSW Environment Protection Authority (EPA) search of register of notified properties under the Contaminated Land Management act 1997 (CLM Act) subject to investigation / remediation orders.
- Site inspection including but not limited to:
 - Document current conditions, noting features relating residual contamination or and contamination sources.
 - Ascertain potential sources of contamination from offsite sources.

4 SITE IDENTIFICATION & SETTING

4.1 Location and property description

The site is located on adjacent lots at 4-18 Doncaster Avenue, Kensington, NSW on 10 adjacent lots. Refer to Table 1 for more details. Refer to Figure 1 for site location, and Figure 2 for site details.

Table 1: Site identification

Item	Details
Address	4-18 Doncaster Avenue, Kensington NSW 2033
Lot & Plan number	<ul style="list-style-type: none"> • Lots 2 - 3 in Deposited Plan (DP) 5549 • Lot 1 in DP1094702 • Lot 1 in DP981704 • Lot 1 in DP1033442 • Lot 1 in DP974821 • Lot 51 in DP2905 • Lots 52A – 52B in DP400051 • Lot 53 in Deposited Plan (DP) 2905
Size of investigation area	Approx. 4,200 m ²
Zoning	R3 - Medium Density Residential
Propose land use	Underground Carpark
Local Government Authority	City of Randwick Council
Site Location and Layout	Figure 1 and Figure 2

The site is situated in a medium density residential area approximately five kilometres south east of the Sydney central business district. Refer to Appendix A for the council LEP zoning and land use map.

4.2 Site surrounds

The following adjacent land uses were observed at the time of the site inspection:

- North – immediately adjacent is property Lot 72 in DP1062908 which is currently used for construction staging for the new light rail stabling yard. Beyond this is the vehicular thoroughfare of Alison Road. Immediately across Alison Road is the recreation area of Centennial Parklands.
- South - immediately adjacent is the residential property of Lot 1 in DP935265. Beyond are more residential properties along Doncaster Avenue.

- West – vehicular thoroughfare of Doncaster Avenue immediately adjacent, with medium density residential properties across and further beyond. BP and Mobil service stations are located approximately 300 m northwest and 200 m southwest of the site respectively.
- East – construction staging for the new light rail stabling yard immediately adjacent, with Australian Jockey Club / Royal Randwick Racecourse beyond. Caltex service station located approximately 450 m east of the site along Alison Road.

The nearest surface water body to site is the chain-of-ponds freshwater system within Centennial Parklands, located approximately 200 metres north of site.

4.3 Topography & vegetation

The topography at and in the vicinity of site consists of gently undulating plains of the relict Botany Lowlands. These comprise of gentle inclines, swales and dune systems. Local relief is low with elevation generally <20 metres above Australian Height Datum (mAHD). A slight fall to the southwest is experienced.

As this site and surrounds have been modified for urban and recreational use since at least circa 1930, no natural vegetation from original communities would be extant. Original vegetation would have likely consisted of completely of dry sclerophyll eucalypt woodland (NSW Office of Environment and Heritage, 2018).

4.4 Geology

As described in the Sydney 1:100,000 Geological series sheet 9130 (Herbert, 1983), the site immediately overlies Quaternary-aged (Holocene and Pleistocene epoch) medium to fine-grained 'marine' sand deposits with podzols. These deposits are situated within the northern extent of the Botany Lowlands.

When exposed, these soils are subject to wind erosion, and are characterised by non-cohesive, highly permeability, low soil fertility and localised flooding (NSW Office of Environment and Heritage, 2018).

4.5 Acid sulfate soils

Both the Council LEP (2012) and Acid Sulfate Risk Mapping (NSW Government SEED, 2018) tool do not classify the site as being in an acid sulfate soil management zone. Although the risk of acid sulfate soils occurrence is low, consideration of acid sulfate soils assessment is recommended if major excavation works are planned. Refer to see Appendix B for the Council acid sulfate soils risk planning map and other information.

4.6 Hydrogeology and drainage

A search on the NSW Department of Primary Industries Office of Water website indicated that there are 13 registered groundwater wells or monitoring bores within a 500-metre radius of the site. A summary of the available information for active bores is presented for two bores in Table 2, with more information included within the available groundwater works summaries (Appendix C).

All active bores within 500 m of the site are said to be used for monitoring purposes with GW112792 located at a Caltex service station and GW104525 located on a commercial premises.

Table 2: Registered bore information

Registered Bore ID	Direction from site	Distance from site (m)	Depth of bore (mBGL)	Water bearing zone (m)	Aquifer lithology	Status
GW104525	South West	192	17.65	4.90- 16.80	> 0.5 m Fill: s/s cement < 0.5 m Natural: brown, sand/ sandy peat	Active
GW112792	East	487	----	----	----	Active

Notes:

10 additional wells exist within 500 m of the site, however there was no available information regarding their geology and water bearing zones.

The site is predominately covered over by dwellings and paved surfaces, likely resulting in limited and/or unevenly distributed infiltration into underlying soils. Any precipitation would flow toward the stormwater drainage infrastructure on the roof of the current building, prior to it being diverted through downpipes into the stormwater system that is likely connected to the surface waterbodies situated within Randwick Racecourse, Royal Australian Golf Club or the Botany Dams system further south.

4.7 Groundwater dependant ecosystems

An assessment of the map of groundwater dependent ecosystems indicates that the study area has no known terrestrial, aquatic or subterranean groundwater dependant ecosystems that are reliant upon the site.

5 HISTORICAL REVIEW

This section includes a review of:

- Available historic aerial photography.
- Review of SBA (2015) heritage assessment report.
- NSW Environment Protection Authority (EPA) search of register of notified properties under the Contaminated Land Management Act 1997 (CLM Act) subject to investigation / remediation orders.

5.1 Historical aerial photograph review

A review of current and historical aerial photographs was undertaken, with a summary of findings presented in Table 3.

Table 3: Review of aerial photography

Year	Notes
1930	<p>The site area and surrounds are largely covered in residential buildings and streets, with mixed land use comprising residential and commercial style properties.</p> <p>It is evident from the 1930 photograph that there were stables and outbuildings associated with 4-8 and 10-12 Doncaster Avenue as reported in GBA (2015).</p> <p>The stables buildings to the east of 10 and 12 Doncaster Avenue are visible in this image, as is the observatory building to the south of 12 Doncaster Avenue. The larger scale block at the rear of 18 Doncaster Avenue is clearly visible, as is a small w.c. in the rear of 14 Doncaster Avenue.</p> <p>Centennial Parklands and Randwick racecourse are visible to the north and east of site respectively.</p> <p>Multiple tram lines exist to the north and east of site as part of Sydney's original tram network.</p>
1943 *	<p>The stables buildings to the east of 10 and 12 Doncaster Avenue are visible in this image, as is the observatory building to the south of 12 Doncaster Avenue. The larger scale block at the rear of 18 Doncaster Avenue is clearly visible, as is a small w.c. in the rear of 14 Doncaster Avenue. 18 Doncaster Avenue was demolished after this date.</p>
1951	No noticeable change to site or surrounds.
1965	No noticeable change to site or surrounds.
1978	No noticeable change to site. The offsite tram system is no longer evident, however no other significant change to the surrounding area visible.
1982	No noticeable change to site or surrounds. Area to the east of site used by Racecourse seemingly used as a depot / workshop.
2000 **	No noticeable change to site or surrounds.
2002**	No significant change to site or surrounds.
2005 **	No significant change to site or surrounds.
2009 **	No significant change to site or surrounds.
2016 **	No significant change to site or surrounds.
2018 **	The depot / workshop buildings to the east of the site have been removed as part of the new light rail stabling yard construction.

Notes:

* Derived from Six Maps (1943) Historical Imagery.

** Derived from Google Earth (2000-2018) Satellite Imagery.

5.2 Review of SBA (2015) heritage assessment report

Review of this report noted the following key features:

- The lots upon which 10-18 Doncaster Avenue are located were created as part of the first subdivision of the Kensington Estate in 1893.
- Two Victorian Filigree semi-detached terraces were constructed on 10 and 12 Doncaster Avenue, with No.10 being used as stables for a riding school.
- The lots upon which 4 – 8 Doncaster Avenue are located were created as part of a subdivision from the Centennial Parklands in 1904. These properties were owned and operated by the Australian Jockey Club, where a single-storey Federation Arts and Crafts style house was erected by course staff.
- The lots upon which 14 – 16 Doncaster Avenue are located were purchased from the Australian Cities Investment Corporation Limited in 1896. A Water Board survey from 1904 indicated that these properties were completely developed by 'temporary dwellings'. None of the owners were reportedly associated with the racecourse.
- The lot upon which 18 Doncaster Avenue is located was purchased from the Australian Cities Investment Corporation Limited in 1895. A Water Board survey from 1904 indicated that this property had a single storey timber and brick residence constructed upon it.

5.3 NSW EPA registers

A search of the NSW EPA contaminated land public record database showed no notices or records for the site relating to contaminated land management or remediation. There is no record of the site ever having been included on the following list of NSW EPA notices issued in accordance with Contaminated Land Management Act 1997 (CLM Act):

- Declaration of an investigation area (under Section 15 of the CLM Act);
- Declaration of a remediation site (under Section 21 of the CLM Act);
- Investigation order (under Section 17 of the CLM Act);
- Remediation order (under Section 23 of the CLM Act);
- Voluntary investigation proposal (under Section 19 of the CLM Act);
- Voluntary remediation proposal (under Section 26 of the CLM Act); and
- Site Audit Statement (SAS) with (under Section 53B of the CLM Act).

6 SITE OBSERVATIONS

6.1 Site inspection

A site walkover was undertaken on 28 August 2018 by Environmental Earth Sciences. At the time of the inspection, access to properties 4, 8, 14 and 16 Doncaster Avenue was restricted, with the vacant block at 18 Doncaster Avenue inaccessible. As a result, the inspection was limited to 10 and 12 Doncaster Avenue and immediate surrounds, with a limited visual inspection conducted for the inaccessible areas.

Key findings of the site inspection are presented in Table 4, with photographs of pertinent site features included in Appendix D.

Table 4: Key site features

Address	Lot and DP Identification	Access	Observations
4-8 Doncaster Avenue	Lots 2 - 3 DP5549	Restricted to limited visual inspection	Single storey residential dwelling located in the southern portion of the property, with grass yard area in the north of the property. No evidence of contamination sources noted from limited inspection.
4A Doncaster Avenue	Lot 1 DP1094702 Lot 1 DP981704	Restricted to limited visual inspection	Vacant block, almost entirely covered in hardstand with limited vegetation present along the boundaries and rubbish present throughout the site. No evidence of contamination sources noted from limited inspection.
10 Doncaster Avenue	Lot 1 DP1033442; Lot 1 DP1094702; Lot 1 DP974821 Lot 1 DP981704	Site inspection/ HAZMAT Survey	Two storey brick semi-detached house (adjoining 12 Doncaster Avenue), with the remainder of the property comprising a driveway and garden area(s). No evidence of contamination sources noted from detailed inspection.
12 Doncaster Avenue	Lot 51 DP2905	Site inspection/ HAZMAT Survey	Two storey brick semi-detached house (adjoining 10 Doncaster Avenue), with the remainder of the property comprising a driveway and garden area(s). No evidence of contamination sources noted from detailed inspection.
14 Doncaster Avenue	Lot 52A DP400051	Restricted to limited visual inspection	Single storey brick semi-detached house, with a sealed driveway and front/back gardens (adjoining 16 Doncaster Avenue). No evidence of contamination sources noted from limited inspection.
16 Doncaster Avenue	Lot 52B DP400051	Restricted to limited visual inspection	Single storey brick semi-detached house brick semi-detached house, sealed driveway and front yard, with eastern passageway and back garden (adjoining 14 Doncaster Avenue) No evidence of contamination sources noted from limited inspection.
18 Doncaster Avenue	Lot 53 DP2905	Restricted to limited visual inspection	Vacant block containing asphaltic concrete paved access road. No evidence of contamination sources noted from limited inspection.

7 CONCEPTUAL SITE MODEL

A CSM of the site can be formed by considering the geophysical characteristics at play at the site, the contaminant source, potential receptors and the pathways to the receptors. The CSM, as required by the ASC NEPM (2013), is an iterative process constantly being updated during the investigation process as more information becomes available.

7.1 Sources of contamination

7.1.1 Onsite

Based upon the findings of this desktop search there were no indications of past industrial use at the site which may have resulted in contamination to underlying soils or groundwater. Historical aerial photographic evidence indicated that the site had been used for residential purposes since at least circa 1930.

Detailed site inspection of the 10 and 12 Doncaster Avenue premises identified hazardous building materials (namely asbestos containing materials (ACM) and lead paintwork) within existing structures which would require specific management upon redevelopment. Refer to Environmental Earth Sciences (2018) – *Hazardous Materials Assessment, 4 – 18 Doncaster Avenue NSW* (ref: 118090_HAZMAT_V1; 5 September 2018) for more detail.

Application of pest/weed control chemicals to the site of may also have occurred over time since initial residential development. However, the risk of any impacts to underlying soils or groundwater from use of domestic quantities of chemicals used in the garden is considered low.

The overall risk of any impacts to underlying soils or groundwater originating from site is considered low given the non-contaminating use of the site and associated long-term residential land use.

7.1.2 Offsite

The former workshop and maintenance area used by Randwick Racecourse to the east (and prior to this the former tram yards) was identified to a potential source of contamination (JBS&G, 2013). Given the proximity and up-hydraulic gradient nature of the area from the site there may be a possibility that storage of oils, fuels, pesticides, paints and other potentially hazardous chemicals and other chemicals may occurred, that albeit unlikely, could have impacted soil / groundwater.

This area has since been the subject of redevelopment into the new light rail stabilising yard, where any former industrial contamination might have been managed as a development requirement, and any ensuing operations will be controlled by way of the NSW POEO Act.

The service stations noted in the site surrounds are not considered potential off-site contamination sources given their sizeable distance from the site.

The review of the surrounding land uses did not identify any additional obvious or significant potential offsite contamination sources located in the properties immediately surrounding the

site. This was however confined to a limited inspection. Any industrial process or storage of dangerous goods / chemicals involved in the new light rail stabilising yards should be appropriately regulated by the NSW EPA under the POET Act.

The overall risk of any impacts to underlying soils or groundwater originating from offsite is considered low, given that development of the new tram stabilising yard would have seen a requirement for management of contamination prior to redevelopment in accordance with guidelines enforced by the NSW EPA under the CLM Act.

7.1 Chemicals of potential concern

Chemical of Potential Concern (CoPC) and associated potential contamination sources and areas of environmental concern are presented in the following subsections.

7.1.1 Asbestos

ACM was identified in the exterior of 10 Doncaster Avenue, with further potential ACM noted in limited inspections of the exteriors at 14 and 16 Doncaster Avenue. As such, ACM impact may be present in the underlying soils as a result of domestic construction or maintenance.

7.1.2 Heavy metals

Exposed lead paintwork in a poor/flaking condition was identified on the external surfaces to the western side of the main dwellings at 10 and 12 Doncaster Avenue. Further potential lead paintwork was identified in limited inspection of the exterior to the dwellings at 14 and 16 Doncaster Avenue.

As the site is in a relatively old urban area, and near two main vehicular thoroughfares (Alison Road and Anzac Parade), the site would have been subject to fallout from vehicle exhausts over a relatively long period, especially prior to mid-1980s whereby lead was an additive in petrol. As a result, surface soils at the site are expected to contain elevated lead concentrations typical of this setting.

7.2 Potential receptors

Potential receptors at the site are considered to be the following:

- Human – current / future onsite residents / visitors, future construction workers, current / future maintenance workers.
- Ecological – underlying groundwater and surface water of the chain-of-ponds in Centennial Parklands.

7.3 Pathways

Pathways for asbestos impact the surface and near-surface soils may be created during historical maintenance works to old or current structures that indeed do contain ACM. Lead paint upon degradation does flake and can potentially settle to subsequently impact surface or near-surface soil layers.

Upon breaking of ground and exposure to underlying soils the following potential exposure pathways include:

- Dermal contact and/or ingestion of potentially contaminated soil by site workers and visitors during construction.
- Potential inhalation of airborne ACM fibres and lead dust during demolition.

7.4 Preliminary risk evaluation

The risk to humans and the environment from the potential chemicals of concern is considered low due to the following reasons:

- Primary line of evidence indicates that the site has never been used for industrial purposes or contaminating uses, and during inspection no primary sources of contamination were identified.
- Entire ground floor onsite at each property is built upon hardstanding whereby the seal would block any spills of domestically used chemicals / fuels which could adversely impact underlying soils and/or groundwater.
- As the site is surrounded by residential properties on three sides the likelihood for contamination to be migrating onto site from those aspects is considered low.
- Some potential impact from flaking lead paint might have impacted surface and near-surface soils.
- Some asbestos impact to surface and near-surface soils may have occurred during any maintenance of these structures and/or through weathering over time.
- Some potential filling of the site may have occurred during original development, however the likelihood of significant amounts of material to be present is considered to be low.
- The site would have been subjected to a relatively long period of vehicle exhaust fallout, where prior to the mid-1908s lead was used in petrol.

8 CONCLUSION

The objective of this due diligence was to provide information on the contamination status of the site and allow development of the initial CSM for contamination. Findings of the assessment informed any actual or potential liabilities associated with residual contamination such that informed decisions can be made by Blue Sky on the potential acquisition of the site.

A site walkover was undertaken on 28 August 2018 by Environmental Earth Sciences. At the time of the inspection, access to properties 14 and 16 Doncaster Avenue was restricted, and access to properties 4 and 8 Doncaster Avenue was not possible.

As a result, the inspection was limited to 10 and 12 Doncaster Avenue and immediate surrounds, with a limited visual inspection conducted for the inaccessible areas where allowable from off-premises.

Based upon findings of this assessment no property was used for contaminating industry. The only other land use other than residential was for a horse stable and riding school at 10 and 12 Doncaster Avenue, which was associated with the Sydney Jockey Club around the beginning of the 1900s.

Some potential filling of the site may have occurred during construction of original dwellings, however the likelihood of significant contamination to subsurface soils is considered low.

From detailed inspection of 10 and 12 Doncaster Avenue, ACM was noted in some existing structures, along with lead paint on exterior surfaces noted to be flaking in areas. The risk posed by these hazardous materials is low pending appropriate management.

It is likely that in properties with dwelling that were only subject to limited inspection, lead paint and asbestos may also require management. Similar to findings of the detailed inspection of 10 and 12 Doncaster Avenue, risk posed by these hazardous materials is low pending appropriate management.

Based on findings of this PESA it is considered that no further detailed assessment is required to investigate / delineate potential soil contamination at 10 and 12 Doncaster Avenue. Detailed inspections are recommended to be conducted at 8, 14 and 16 Doncaster Avenues, however the limited information gained thus far may be enough to make predictions of the likely nature and extent of impact to inform planning.

Any sources of contamination risk posed from the adjacent property to the east (former tram yard, then depot used by Randwick Racecourse) are likely to have been appropriately management as part of preliminary works for construction of the new light rail stabling yard facility.

As all properties are likely to undergo redevelopment into a town houses with underground basement car parking, it is envisaged that all soils potentially impacted with heavy metals, ACM and/or other contaminants of concern will need to undergo requisite assessment and testing for offsite waste classification purposes. Refer to Section 9 for associated management recommendations.

9 RECOMMENDATIONS

It is considered that management of identified contamination and asbestos impact can be appropriately undertaken during construction, and as such potential risks posed to future site users can be ensured by means of general construction management. The following two subsections outline the main management recommendations.

9.1 CEMP

Prior to any proposed construction works it is recommended that a Construction Environmental Management Plan (CEMP) or similar management document be prepared to include (but not limit) procedures for:

- Management of soil including environmental controls for mitigation of erosion, sedimentation, dust generation.
- Management of lead paint abatement works.
- Excavation management.
- Onsite / off-site soil material tracking.
- Soil / spoil stockpile management.
- Waste classification and soil disposal in accordance with NSW EPA (2014) - *Waste Classification Guidelines*.
- Unexpected Findings Protocol (UFP) procedure for managing instances where newly discovered gross contamination and/or hazardous materials are encountered, with appropriate consideration of work health and safety (WH&S) controls for mitigating risk to construction workers.

9.2 Asbestos management plan

Prior to any proposed construction works it is recommended that an Asbestos Management Plan (AMP) be prepared to include (but not limit) procedures for:

- Providing guidance on the control and management of ACM that has been identified in structures and/or within soil during proposed construction.
- Procedures on how ACM is to be managed.
- Requirements for supervision of removal works, asbestos air monitoring and clearance by a third-party SafeWork NSW accredited Licensed Asbestos Assessor (LAA).
- Requirements for licensed asbestos removalist, commissioning the correct class of licence, and preparation of Asbestos Removal Control Plan (ARCP).
- Safety precautions required whilst handling asbestos materials.
- Setting framework for ensuring the effectiveness of environmental controls, reporting of environmental incidents and response procedure, responsible persons and emergency contact information.
- Actions to be employed if unexpected asbestos is identified and/or suspected.
- Verification / certification of remediation works.

The following legislation and documentation should be referenced for the preparation of the AMP:

- Safe Work Australia (2016) How to Manage and Control Asbestos in the Workplace.
- Safe Work Australia (2016) How to Safely Remove Asbestos Code of Practice.
- WorkCover NSW (2014) Managing Asbestos in or on Soil.
- National Occupational Health and Safety Commission (NOHSC. 2005) Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Dust [NOHSC:3003(2005)] 2nd Edition.
- NSW Work Health and Safety Act 2011.
- NSW Work Health and Safety Regulation 2017.
- NSW EPA Protection of the Environment (Operations) 1997 (POEO Act).
- NSW EPA Contaminated Land Management Act 1997 (CLM Act).

10 COSTING IMPLICATIONS

Environmental Earth Sciences has provided the following details for anticipated management of contaminated soil material to aid planning and decision making.

10.1 Management of soil material

Rough estimates and assumptions for fill material are based upon the assumption that the site will be fully demolished of all will requiring offsite management are as follows (all costs are exclusive of GST):

- Site area is ~ 4,200 m².
- Average depth of fill material across might be ~ 0.50 metres depth.
- Average depth per basement car park level might be ~3.00 metres.
- Fill material volumes:
 - Estimated volume of *in situ* fill material requiring offsite management will be ~ 2,100 m³.
 - Based upon specific gravity for gravelly sand (1.6x) this will be ~ 3,360 tonnes.
- Natural material volumes:

- Estimated volume of *in situ* fill material requiring offsite management per basement car park level of 3.00 metres will be ~ 12,600 m³.
- Based upon specific gravity for sand (1.6x) this will be ~ 20,160 tonnes.

Broad cost estimates for management of fill material are detailed below:

- Waste classification and offsite management for ~ 2,800 tonnes of fill material will likely be:
 - Laboratory testing ~ \$3,000
 - Sampling and consulting labour ~ \$1,350
 - Waste classification reporting (one report) ~ \$2,000
 - Disposal as GSW @ ~\$160 / tonne = ~ \$537 K
- Natural material certification for two-basement levels of underlying natural material ~ 20,160 m³ will likely be:
 - Laboratory testing ~ \$32,000
 - Sampling and consulting labour ~ \$3,400
 - Beneficial reuse letter (one report) ~ \$4,000
 - Offsite management through beneficial reuse could only incur the fee of transportation if there was a site material could be loaded-out to.
- Fees as per above bullet are anticipated to be considered for management of natural material for each basement car park level proposed.

10.2 Preparation of CEMP

The cost for preparing plans of this nature are in the order of ~ \$5,000.

10.3 Preparation of AMP

The cost for preparing plans of this nature are in the order of ~ \$5,000.

10.4 Specific assumptions

The costings presented in Section 10.1 take into account the following specific assumptions:

- All costs are to be used as a guide only for planning purposes only based upon Environmental Earth Sciences experience in recent similar projects.
- Scope and fees for demolition of structures, and/or management of any asbestos or lead paint abatement works are not included.

- All fill material will be of a quality to be disposed as GSW. Should a higher waste classification be derived for all or part of the material, the following general offsite disposal fees might apply:
 - Restricted Solid Waste (RSW) = ~ \$400 – 600 per tonne.
 - Hazardous waste (HAZ) = ~ \$600 – 1,200 per tonne.
- Fill material is envisaged to be on average ~ 0.50 m in thickness across the entire site.
- Two basement car park levels might be proposed for excavation, and associated management of underlying natural material will be required.
- A NSW EPA accredited site auditor is not anticipated to be required as per SJB (2015). If Council need a site auditor appointed, additional fees might be in the order of about \$35K - \$75K.
- Estimated disposal fees are inclusive of NSW EPA waste levy, but do not include material transportation.
- It is assumed natural material can be loaded-out to a receiving site upon appropriate certification without the need to disposal as waste.
- Costs for physical management of water from dewatering of excavation as part of any sub-grade construction works has not been considered.

11 LIMITATIONS

This report has been prepared by Environmental Earth Sciences NSW ACN 109 404 006 in response to and subject to the following limitations:

1. The specific instructions received from Blue Sky Private Real Estate;
2. The specific scope of works set out in PO118151 issued by Environmental Earth Sciences NSW for and on behalf of Blue Sky Private Real Estate, is included in Section 3 (Scope of Work) of this report;
3. Detailed inspections only undertaken for 10 and 12 Doncaster Avenue, and limited inspections undertaken from offsite for 14 and 16 Doncaster Avenue. It was not possible to access or view 4 Doncaster Avenue at all.
4. May not be relied upon by any third party not named in this report for any purpose except with the prior written consent of Environmental Earth Sciences NSW (which consent may or may not be given at the discretion of Environmental Earth Sciences NSW);
5. This report comprises the formal report, documentation sections, tables, figures and appendices as referred to in the index to this report and must not be released to any third party or copied in part without all the material included in this report for any reason;

6. The report only relates to the site referred to in the scope of works being located at 4 – 18 Doncaster Avenue, Kensington NSW (the “site”);
7. The report relates to the site as at the date of the report as conditions may change thereafter due to natural processes and/or site activities;
8. No warranty or guarantee is made in regard to any other use than as specified in the scope of works and only applies to the depth tested and reported in this report;
9. Fill, soil, groundwater and rock to the depth tested on the site may be fit for the use specified in this report. Unless it is expressly stated in this report, the fill, soil and/or rock may not be suitable for classification as clean fill, excavated natural material (ENM) or virgin excavated natural material (VENM) if deposited off site;
10. This report is not a geotechnical or planning report suitable for planning or zoning purposes; and
11. Our General Limitations set out at the back of the body of this report.

12 REFERENCES

- Douglas Partners (2015) – *Supplementary Geotechnical Investigation, 4 – 18 Doncaster Road, Kensington NSW*. Report for Built (NSW) Pty Ltd (ref: 73965.02; 22 December 2015)
- Environmental Earth Sciences (2018) – *Hazardous Materials Assessment, 4 – 18 Doncaster Avenue NSW* (ref: 118090_HAZMAT_V1; 5 September 2018)
- Herbert (1983) - *Sydney 1:100,000 Geological series sheet 9130*
- JBS&G (2013) – *Limited Preliminary Environmental Site Assessment for Due Diligence Purposes, 4 – 12 Doncaster Avenue, Kensington NSW*. Report for Built (NSW) Pty Ltd (ref: 42706-55113)
- National Environment Protection Council (NEPC) (2013) - *National Environment Protection (Assessment of Site Contamination) Amendment Measure No.1 2013* (ASC NEPM, 2013)
- National Occupational Health and Safety Commission (NOHSC. 2005) - *Guidance Note on the Membrane Filter Method for Estimating Airborne Asbestos Dust* [NOHSC:3003(2005)] 2nd Edition
- NSW EPA (2014) - *Waste Classification Guidelines*
- Safe Work Australia (2016) - *How to Manage and Control Asbestos in the Workplace*
- Safe Work Australia (2016) - *How to Safely Remove Asbestos Code of Practice*
- WorkCover NSW (2014) - *Managing Asbestos in or on Soil*

ENVIRONMENTAL EARTH SCIENCES GENERAL LIMITATIONS

Scope of services

The work presented in this report is Environmental Earth Sciences response to the specific scope of works requested by, planned with and approved by the client. It cannot be relied on by any other third party for any purpose except with our prior written consent. Client may distribute this report to other parties and in doing so warrants that the report is suitable for the purpose it was intended for. However, any party wishing to rely on this report should contact us to determine the suitability of this report for their specific purpose.

Data should not be separated from the report

A report is provided inclusive of all documentation sections, limitations, tables, figures and appendices and should not be provided or copied in part without all supporting documentation for any reason, because misinterpretation may occur.

Subsurface conditions change

Understanding an environmental study will reduce exposure to the risk of the presence of contaminated soil and or groundwater. However, contaminants may be present in areas that were not investigated, or may migrate to other areas. Analysis cannot cover every type of contaminant that could possibly be present. When combined with field observations, field measurements and professional judgement, this approach increases the probability of identifying contaminated soil and or groundwater. Under no circumstances can it be considered that these findings represent the actual condition of the site at all points.

Environmental studies identify actual sub-surface conditions only at those points where samples are taken, when they are taken. Actual conditions between sampling locations differ from those inferred because no professional, no matter how qualified, and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden below the ground surface. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from that predicted. Nothing can be done to prevent the unanticipated. However, steps can be taken to help minimize the impact. For this reason, site owners should retain our services.

Problems with interpretation by others

Advice and interpretation is provided on the basis that subsequent work will be undertaken by Environmental Earth Sciences NSW. This will identify variances, maintain consistency in how data is interpreted, conduct additional tests that may be necessary and recommend solutions to problems encountered on site. Other parties may misinterpret our work and we cannot be responsible for how the information in this report is used. If further data is collected or comes to light we reserve the right to alter their conclusions.

Obtain regulatory approval

The investigation and remediation of contaminated sites is a field in which legislation and interpretation of legislation is changing rapidly. Our interpretation of the investigation findings should not be taken to be that of any other party. When approval from a statutory authority is required for a project, that approval should be directly sought by the client.

Limit of liability

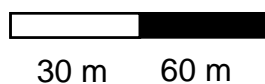
This study has been carried out to a particular scope of works at a specified site and should not be used for any other purpose. This report is provided on the condition that Environmental Earth Sciences NSW disclaims all liability to any person or entity other than the client in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done by any such person in reliance, whether in whole or in part, on the contents of this report. Furthermore, Environmental Earth Sciences NSW disclaims all liability in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done by the client, or any such person in reliance, whether in whole or any part of the contents of this report of all matters not stated in the brief outlined in Environmental Earth Sciences NSW's proposal number and according to Environmental Earth Sciences general terms and conditions and special terms and conditions for contaminated sites.

To the maximum extent permitted by law, we exclude all liability of whatever nature, whether in contract, tort or otherwise, for the acts, omissions or default, whether negligent or otherwise for any loss or damage whatsoever that may arise in any way in connection with the supply of services. Under circumstances where liability cannot be excluded, such liability is limited to the value of the purchased service.

FIGURES



- = Site Investigation Area
- = Location of larger image
- = HAZMAT inspection Area



Title: Site location		
Location: 4-18 Doncaster Av, Kensington NSW 2033		
Client: Blue Sky	Job No: 118090	
Drawn By: Tsi	Scale: As shown	Source: Google Earth Pro
Proj Man: Cn	Date: September 2018	Figure 1



Legend:

- Approximate site boundary
- Hardstand surfaces



Title: **Site Layout and Features Map**

Location: **4-18 Doncaster Avenue
Kensington NSW 2033**

Client: **Blue Sky**

Job No: **118090**

Drawn By: **TS**

Scale: **NTS**

Source: **Six Maps**

Proj Man: **CN**

Date: **Sept 2018**

Figure 2

APPENDIX A: Council zoning map

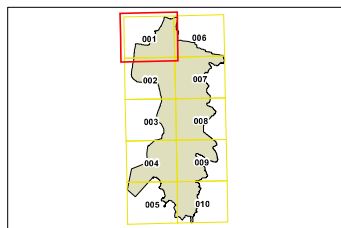
Land Zoning Map - Sheet LZN_001

Zone

- B1 Neighbourhood Centre
- B2 Local Centre
- E1 National Parks and Nature Reserves
- E2 Environmental Conservation
- IN2 Light Industrial
- R1 General Residential
- R2 Low Density Residential
- R3 Medium Density Residential
- RE1 Public Recreation
- RE2 Private Recreation
- RU4 Primary Production Small Lots
- SP1 Special Activities
- SP2 Infrastructure
- MD SEPP (Major Development) 2005

Cadastre

- Base data 01/01/2008 © Land and Property Information (LPI) Addendum data 15/06/2012 © Randwick City Council

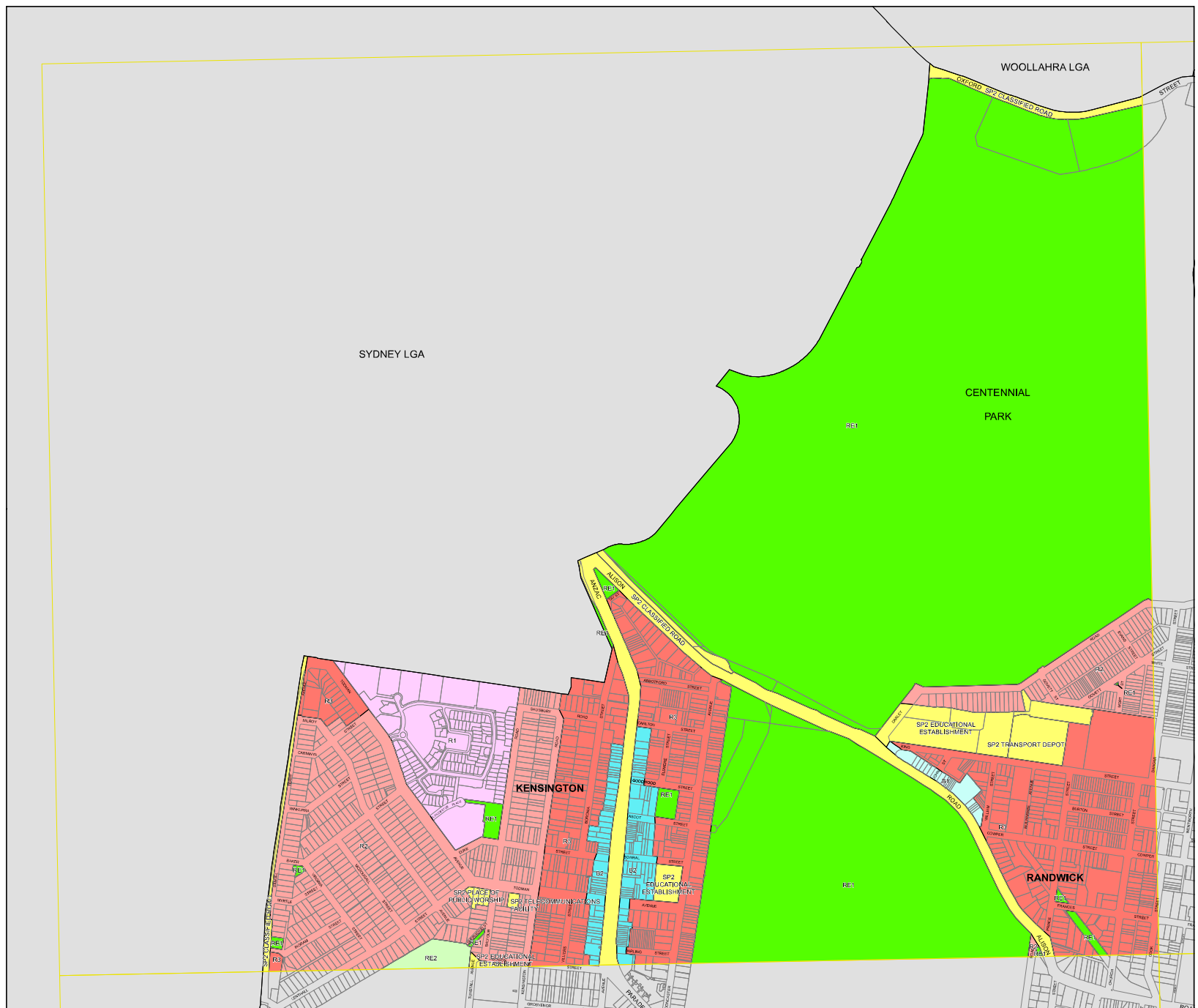


0 200 Metres

Projection: GDA 1994
MGA Zone 56

Scale: 1:10,000 @ A3

Map identification number: 6550_COM_LZN_001_010_20120615



APPENDIX B: PASS risk map

What are Acid Sulfate Soils?

Acid sulfate soils (ASS) are natural soils that form in seawater or brackish water environments. These soils contain iron sulphides that are stable and do not cause a problem when waterlogged. However when they are exposed to air, after drainage or excavation, the soils rapidly form sulphuric acid.

This acid can leach into the surrounding area acidifying neighbouring drains, wetlands, creeks, estuaries and bays, causing severe environmental damage. It can affect industries such as fishing and tourism, and can impact on public and private infrastructure by causing serious damage to steel and concrete structures. Polluted water may also have health impacts.

Where do Acid Sulfate Soils occur?

ASS occur in low-lying coastal areas less than 5 metres above the high tide level.

In NSW ASS have been found on every coastal estuary and embayment.

Maps Indicating ASS

The NSW Government's ASS planning maps show areas that may be affected by the presence of ASS. These maps identify 5 classes of land, with Class 1 being the highest risk of ASS.

According to the NSW ASS Maps, ASS occur in the following areas in Randwick City:

- Class 1 – in Port Botany
- Class 2 – in Port Botany, Matraville and Phillip Bay.
- Class 3 - **Nil** in Randwick City.
- Class 4 – mostly in Coogee, Maroubra, Malabar, Matraville and Philip Bay.
- Class 5 – mostly in Coogee, Maroubra, Malabar and Matraville, Chifley, Phillip Bay, Little Bay and La Perouse.

Areas affected by these ASS classes in Randwick City have also been identified on the Randwick Local Environmental Plan 2012 (RLEP) – Acid Sulfate Soils Map (refer to the RLEP Map for details).

What if I want to develop land identified as being Acid Sulfate Soil?

Acid sulfate soils are manageable.

Development proposals do, however, need to recognise and plan for any constraints that these soils are likely to pose for development.

The NSW ASS Manual and ASS Guidelines prepared by the State Government provide advice on best practice in planning, assessment and management of activities in areas containing acid sulfate soils. The Manual and Guidelines can be found on the NSW Planning and Environment website www.planning.nsw.gov.au

The Randwick Local Environmental Plan 2012 (RLEP) also contains provisions (Clause 6.1 – Acid Sulfate Soils) for development on land that is affected by ASS, in line with the NSW ASS Manual and Guidelines. The RLEP provisions aim to ensure that development does not disturb, expose or drain ASS and cause environmental damage.

The RLEP identify the types of work (in each ASS class) that are likely to present an environmental risk and require development consent. The RLEP further requires the submission of an ASS management plan (prepared in accordance with the ASS Manual) to the consent authority before development consent can be granted. However, development consent is not required if a preliminary assessment of the proposed works (prepared in accordance with the NSW ASS Manual) indicates that a management plan is not required.

The RLEP (including the RLEP Maps) can be viewed on the NSW Legislation website at www.legislation.nsw.gov.au or Council's website at www.randwick.nsw.gov.au

Further information can also be obtained from the NSW Office of Environment and Heritage website at www.environment.nsw.gov.au

S149 CERTIFICATE ATTACHMENT

Acid Sulfate Soils

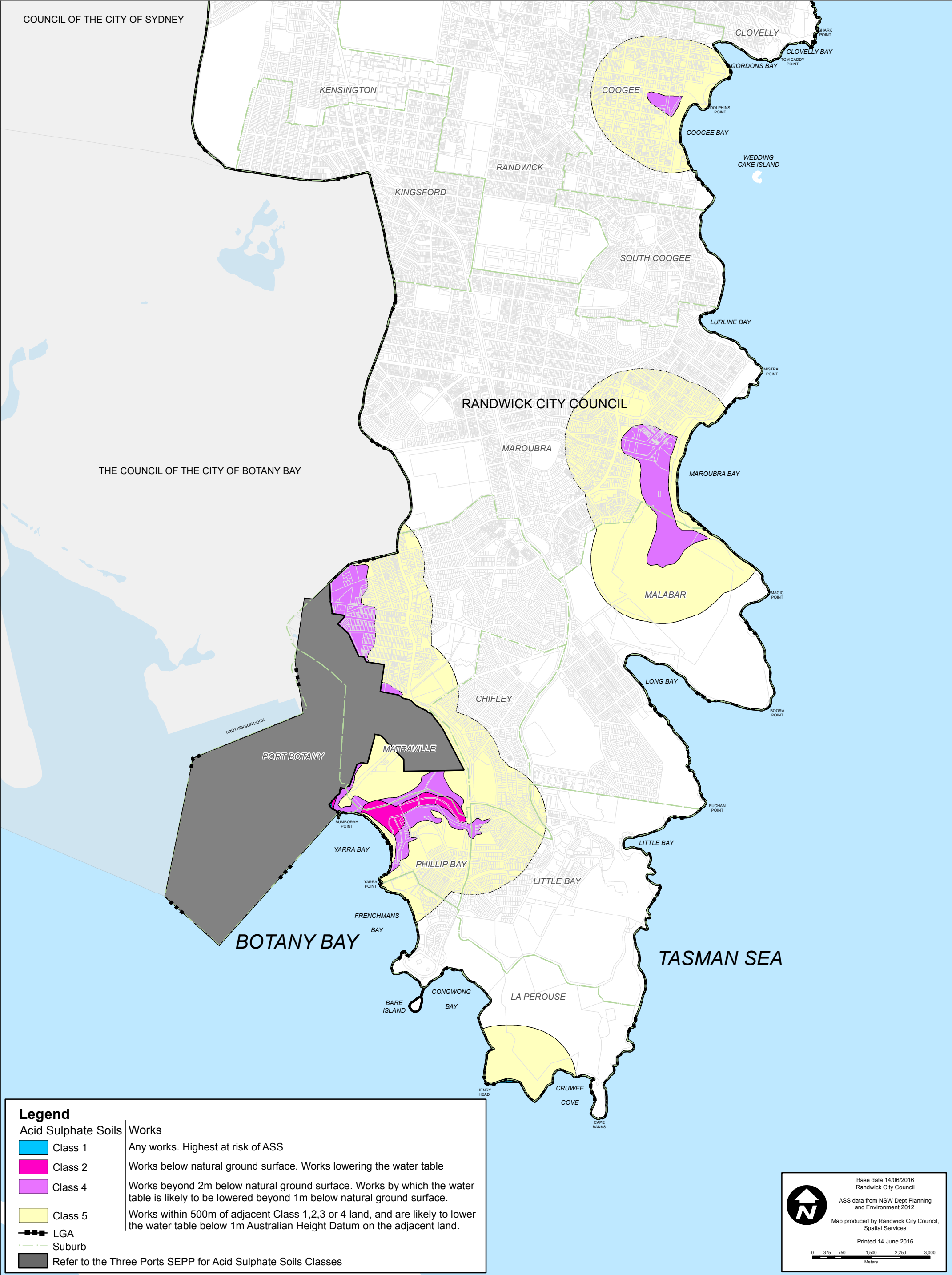


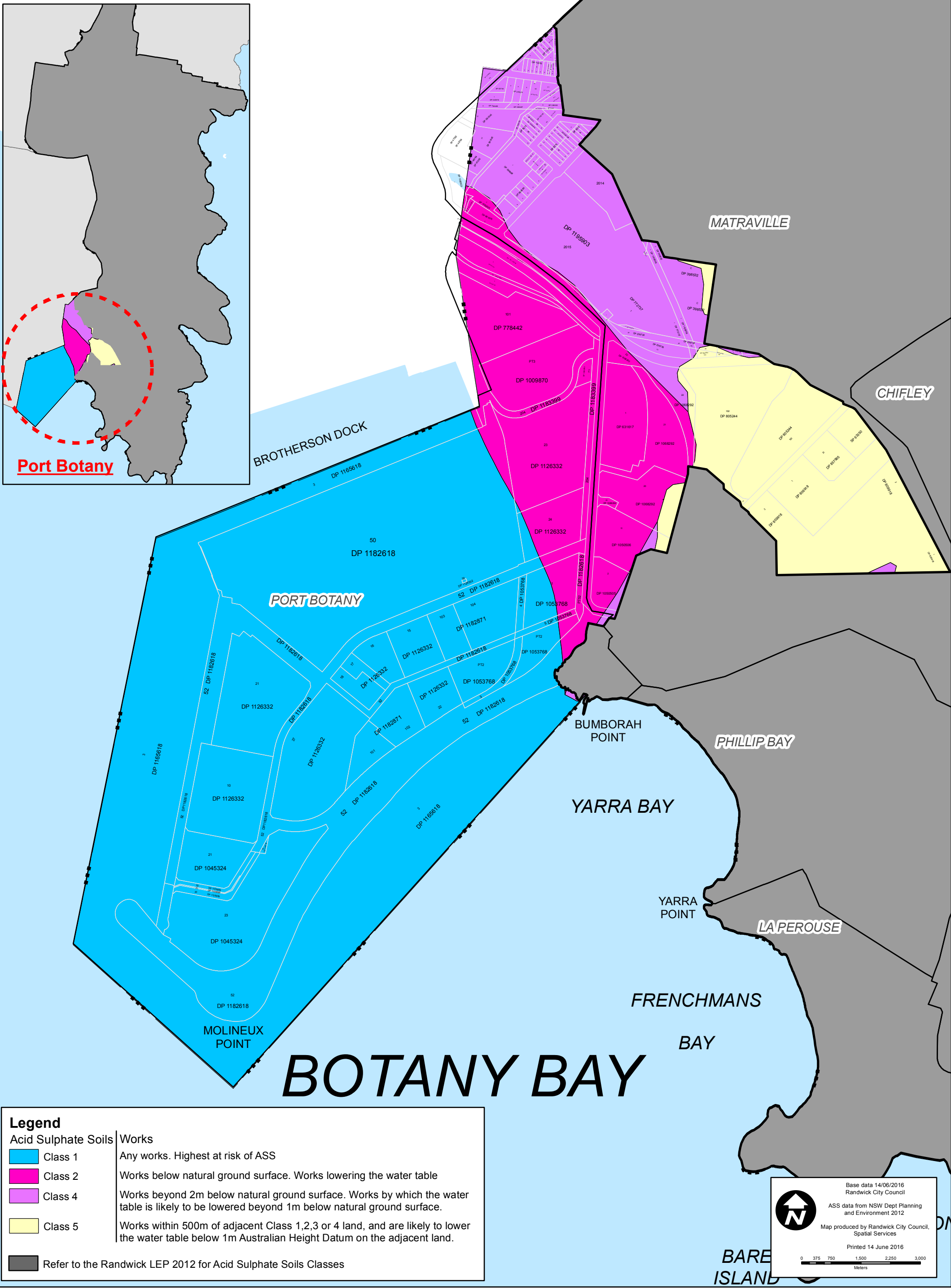
Enquires

If you have further enquires about the RLEP provisions on ASS, contact Council's Strategic Planning Department on 9399 0992.

For enquires regarding the NSW ASS Manual and associated Guidelines, contact the NSW Planning and Environment on 9228 6333.

Last Updated, 22 August 2014





APPENDIX C: Registered bore information

NSW Office of Water

Work Summary

GW104525

Licence: 10BL160923	Licence Status: ACTIVE
Authorised Purpose(s): MONITORING BORE Intended Purpose(s): MONITORING BORE	
Work Type: Bore	
Work Status: Supply Obtained	
Construct.Method: Rotary	
Owner Type: Private	
Commenced Date:	Final Depth: 17.65 m
Completion Date: 13/11/2002	Drilled Depth: 17.65 m
Contractor Name: INTERTEC DRILLING SERVICES	
Driller: Colin Leslie Barden	
Assistant Driller:	
Property: CARLTON 76 - 82 ANZAC PDE KENSINGTON 2033	Standing Water Level: 2.000
GWMA: -	Salinity: Good
GW Zone: -	Yield: 7.000

Site Details

Site Chosen By:			
	County	Parish	Cadastre
	Form A: CUMBE	CUMBE.001	LT11 DP2905
	Licensed: CUMBERLAND	ALEXANDRIA	Whole Lot 11//2905
Region: 10 - Sydney South Coast	CMA Map: 9130-3S		
River Basin: 213 - SYDNEY COAST - GEORGES RIVER	Grid Zone:	Scale:	
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6246855.0	Latitude: 33°54'21.3"S	
Elevation Source: (Unknown)	Easting: 335821.0	Longitude: 151°13'27.2"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
1		Hole	Hole	0.00	17.65	380			Rotary Air/Mud
1		Annulus	Waterworn/Rounded	0.00	17.65				Graded
1	1	Casing	Pvc Class 9	-0.50	10.15	225	206		Seated on Bottom, Glued
1	1	Opening	Screen - Wire Wound	10.15	16.40	218		1	A: 0.80mm

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)
4.90	16.80	11.90	Unknown	2.00		7.00			

Geologists Log

Drillers Log

From (m)	To (m)	Thickness (m)	Drillers Description	Geological Material	Comments
0.00	0.50	0.50	FILL S/S CEMENT	Fill	
0.50	4.50	4.00	SAND/ GREY TO BROWN	Sand	

4.50	4.90	0.40	SANDY PEAT / D/BROWN	Invalid Code	
4.90	16.80	11.90	SAND:YELLOW BROWN	Sand	
16.80	17.65	0.85	PEAT D/ BROWN WITH CEMENTED SAND	Peat	

Remarks

*** End of GW104525 ***

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

GW112792

Licence: 10BL602685	Licence Status: ACTIVE
Authorised Purpose(s): MONITORING BORE Intended Purpose(s): MONITORING BORE	
Work Type: Bore	
Work Status: Equipped	
Construct.Method:	
Owner Type: Private	
Commenced Date:	Final Depth:
Completion Date: 03/09/2013	Drilled Depth:
Contractor Name: ABILITY PLUS ENVIRONMENTAL AND GEOTECHNICAL DRILLI	
Driller: Geoff Trippett	
Assistant Driller:	
Property: AMPOL PROPERTY (HOLDINGS) P/L 2 ALISON ROAD RANDWICK 2031 NSW	Standing Water Level:
GWMA:	Salinity:
GW Zone:	Yield:

Site Details

Site Chosen By:			
County Form A: CUMBE Licensed:		Parish CUMBE.1	Cadastre 1 813837
Region: 10 - Sydney South Coast		CMA Map:	
River Basin: - Unknown		Grid Zone:	Scale:
Area/District:			
Elevation: 0.00 m (A.H.D.)	Northing: 6246808.0	Latitude: 33°54'23.3"S	
Elevation Source: Unknown	Easting: 336532.0	Longitude: 151°13'54.9"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

23/07/2014: Nat Carling, 23-July-2014; Added status, drill method & depth, updated work type.

***** End of GW112792 *****

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.

APPENDIX D: Site photographs



Photo 1

18 Doncaster Ave – Entrance to property being uses for storage



Photo 2

18 Doncaster Ave – Two waste skip bins present



Photo 3

14 Doncaster Ave – front of property

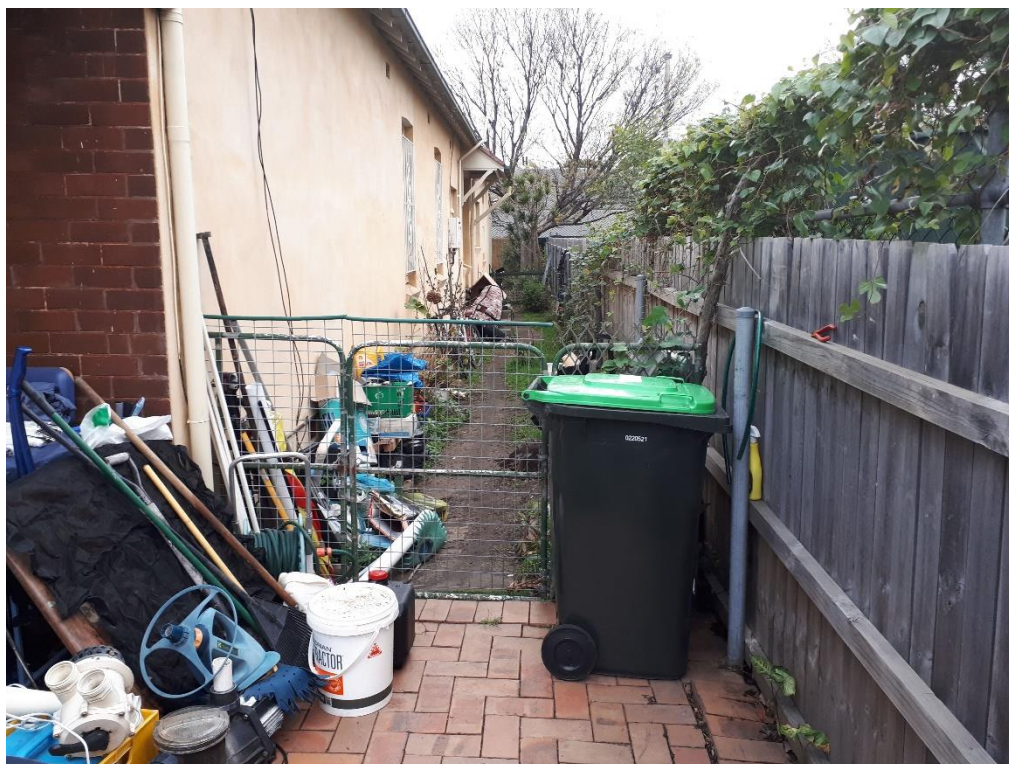


Photo 4

16 Doncaster Ave – southern side of property



Photo 5

10 Doncaster Ave – front of property



Photo 6

12 Doncaster Ave – front of property



Photo 7

12 Doncaster Ave – adjacent driveway entrance



Photo 8

14 Doncaster Ave – rear yard of property



Photo 9

16 Doncaster Ave – rear yard of property



Photo 10

12 Doncaster Ave – fibre-cement shed at rear of property



Photo 11

10 Doncaster Ave – rear yard of property



Photo 12

Easement at rear of site. Part of new light rail staging yard.