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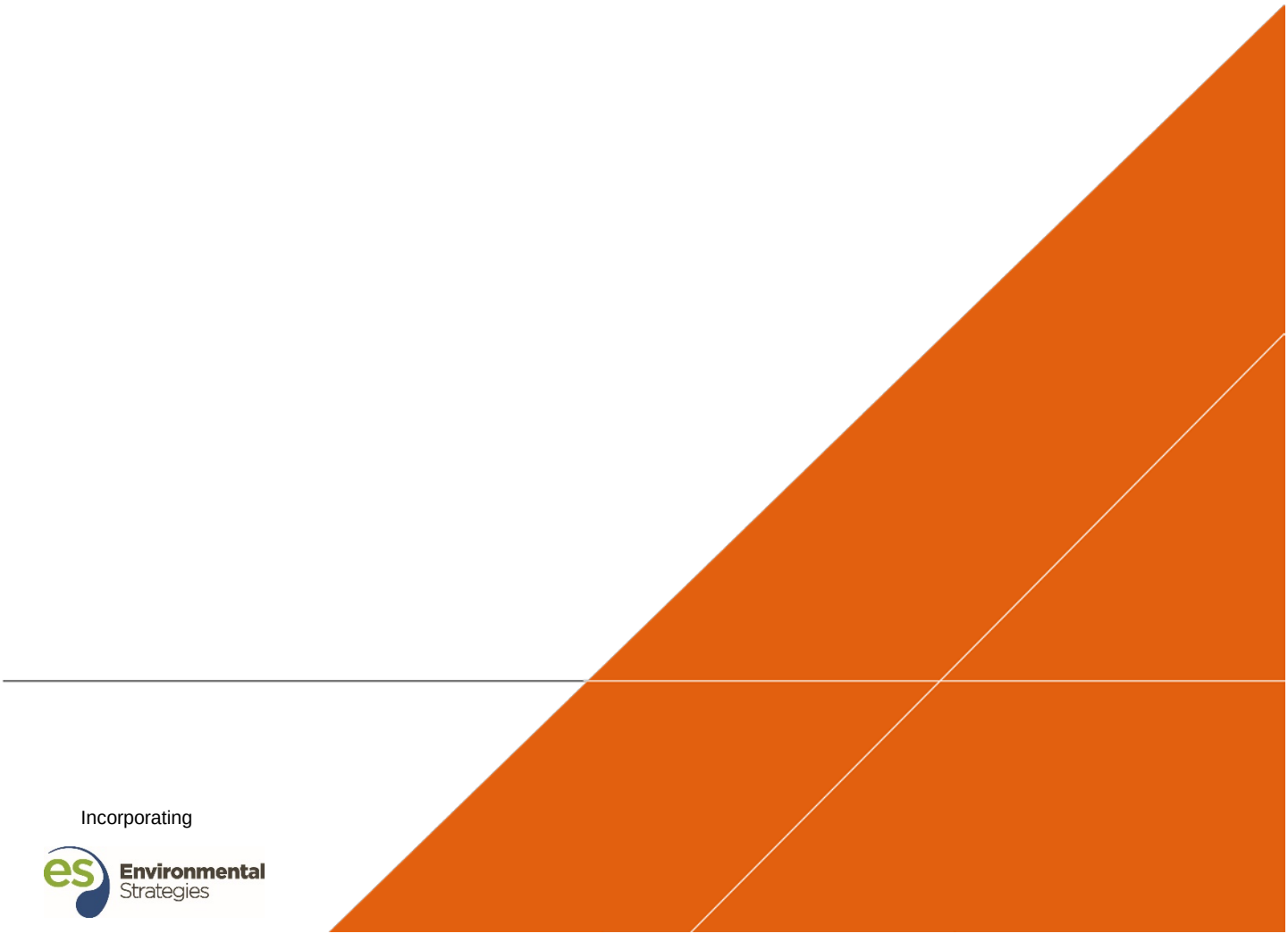
PRELIMINARY SITE INVESTIGATION AND LIMITED SOIL SAMPLING

Prospect South Rezoning Project

16 FEBRUARY 2018



Incorporating

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DEPARTMENT OF PLANNING AND ENVIRONMENT
17260

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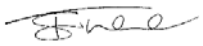
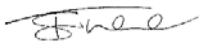
Prospect South Rezoning Project

Author	Natasha Pasley	
Checker	Toby Scrivener	
Approver	Toby Scrivener	

Report No	17260RP01
Date	20/02/2018
Revision Text	03

This report has been prepared for Department of Planning and Environment in accordance with the terms and conditions of appointment for 17260 dated 31 August 2017. Arcadis Australia Pacific Pty Limited (ABN 76 104 485 289), incorporating Environmental Strategies Pty Ltd (ABN 91 104 512 816) cannot accept any responsibility for any use of or reliance on the contents of this report by any third party.

REVISIONS

Revision	Date	Description	Prepared by	Approved by
01	21.11.17	Draft for comment	NP	TS
02	15.02.18	Revision based on comments from Client	NP	TS
03	20.02.18	Revision based on comments from Client	NP	TS

CONTENTS

APPENDICES

1 INTRODUCTION

The Department of Planning and Environment (the client) engaged Arcadis Australia Pacific Pty Ltd (Arcadis) to complete a Phase 1 Contamination Assessment and limited Salinity Investigation of the site located at Reservoir Road, Prospect NSW. The location of the subject site is shown on Figure 1, Appendix A.

1.1 Background

The site is located adjoining the M4 Motorway, between the extension of the Prospect Highway to the West and runs along the M4. The land is accessed directly from the Motorway via the Blacktown turn-off, Prospect Highway and Reservoir Road.

The site comprises approximately 12.2 hectares plus roads and is owned by the Minister for Planning (11ha), private land holding, RMS land and local roads owned by Blacktown City Council.

It is understood that the client is seeking to rezone the entire land area for commercial/industrial purposes. Contact has been made with Blacktown City Council who have provided an advice (via a letter of advice on 17th March 2017) on the studies to be carried out to meet the needs of the planning proposal. This report has therefore been prepared to address the information required by Council relative to contamination and salinity.

The proposed final site layout in provided in Appendix B.

1.2 Objectives of the Investigation

The overall objective of the assessment is to prepare a Planning Proposal to meet the needs of the Blacktown City Council and to submit that proposal to seek the rezoning of the subject lands for industrial use.

The Phase 1 Contamination Assessment and limited Salinity Investigation will form part of the Planning Proposal. The objective of the Phase 1 Contamination assessment was to identify the potential for issues, concerns or environmental risks or liabilities associated with the present and historical uses of the site.

1.3 Scope of Work

To meet the project objectives Arcadis has completed the following scope of works:

- A review of WSP (2007) Phase 1 Environmental Audit Report;
- A review of available zoning plans and council documents (S149 Certificate) to determine whether there have been potentially contaminating activities that may have occurred on the site;
- An evaluation of aerial photographs to assist in assessing historical land uses and conditions on and adjacent to the site;
- A review of the environmental setting with regards to geology, topography, hydrology and hydrogeology;
- Site visit and walkover to characterise the property setting, including inspection of the site surface for obvious signs of potential contamination and / or contaminant sources (i.e. underground tanks);

- A visual evaluation of surrounding land uses to identify any neighbouring activities which may have affected or present a potential risk to the environmental quality of the site;
- Develop a preliminary conceptual site model;
- Preparation of an OHS plan and job hazard analysis (JHA) to cover the site intrusive works;
- Dial-before-you-dig search and underground service location;
- Excavation of six (6) test pits;
- Two (2) soil samples were collected from each test pit. Samples were submitted to Envirolab Services, which is National Association of Testing Authorities (NATA) accredited, for the analysis of:
  - pH; and
  - Electrical conductivity.
- Preparation of separate Phase 1 (with soil sampling) reports in accordance with the NSW OEH (2011) *Guidelines for Consultants Reporting on Contaminated Sites*.

2 LIMITATIONS

The findings of this report are based on the scope of work outlined in Section 1.3. Arcadis performed its services in a manner consistent with the normal level of care and expertise exercised by members of the environmental assessment profession. No warranties, expressed or implied are made.

Subject to the scope of work, Arcadis' assessment was limited strictly to identifying the environmental conditions associated with the subject property and does not include evaluation of any other issues. The absence of any identified hazardous or toxic materials should not be interpreted as a guarantee that such materials do not exist on the subject property.

Additionally, unless otherwise stated Arcadis did not conduct soil, air, wastewater or other matrix analyses including asbestos or perform contaminated sampling of any kind. Nor did Arcadis investigate any waste material from the property that may have been disposed of at the site, or undertake an assessment or review of related site waste management practices.

The results of this assessment are based upon (if undertaken as part of the scope work) a site inspection conducted by Arcadis personnel and/or information from interviews with people who have knowledge of site conditions and/or information provided by regulatory agencies. All conclusions and recommendations regarding the property are the professional opinions of the Arcadis personnel involved with the project, subject to the qualifications made above.

All conclusions and recommendations regarding the property are the professional opinions of the Arcadis personnel involved with the project, subject to the qualifications made above. While normal assessments of data reliability have been made, Arcadis assumes no responsibility or liability for errors in any data obtained from regulatory agencies, statements or sources outside of Arcadis, or developments resulting from situations outside the scope of this project.

Arcadis is not engaged in environmental assessment and reporting for the purpose of advertising sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The client acknowledges that this report is for the exclusive use of the client.

3 SITE CHARACTERISTICS

3.1 Site Location

The site is located in the suburb of Prospect, NSW, in the City of Blacktown. The site is bounded by the M4 Motorway to the north and Prospect Highway to the west. The site location including the site boundary (as provided by Cardno, drawing reference 11849201001 Rev02) is provided in Figure 2, Appendix A.

The site comprises the following:

- Lots 10, 11, 12 and 15 DP448744;
- Lots 10 and 11 DP801209;
- Lots 24, 25 and 26 DP801210;
- Lots A and C DP374323;
- Lot D DP374324;
- Lot 10 DP374325;
- Lot 18 DP802753;
- Lot 3 DP1192514; and
- Lot 17 DP802753 (Roads and Maritime Services (RMS) land).

The site comprises a mixture of predominantly rural grazing land with occasional residential dwellings and one associated small haulage business, set in a light industrial and commercial area. Historically, the site uses have comprised a mixture of rural, residential, grazing, farmland and market gardening.

The site location and current site layout are presented as Figures 1 and 2 respectively in Appendix A.

3.2 Zoning

The site is currently zoned as ‘RU4’ Primary Production Small Lots, under the Blacktown Local Environmental Plan 2015.

3.3 Site Description

The following is based on the condition of the site observed during a site visit conducted on the 31st of October 2017 by Caitlain Regena an environmental scientist from Arcadis.

At the time of the visit, the majority of the site comprised vacant farming and agricultural land. The remainder of the site comprised land uses relating to commercial/industrial storage. The majority of the site surface contained gentle undulations and appeared to slope gently towards the south and southeast. The site sloped steeply to the south and southeast immediately south of the Western Motorway.

The boundary of the separate land parcels comprising the site were marked by steel fencing and/or thick vegetation corridors.

The land parcels located west of Thornley Road contained vacant farming and agricultural land. Land use at the northern-most parcel of land located between Thornley Road and Reservoir Road included the storage of industrial goods including trucks and shipping container. South of this location, land parcels contained thick vegetation and vacant farming agricultural land, and a limited section of land also contained further industrial storage areas where trucks and containers were stored. A truck depot was located to the east of the middle section of Reservoir Road which also contained four old buildings that appeared to have been converted from residential buildings to commercial/industrial premises. Vacant farming and agricultural land uses were located west and north of the truck depot.

Farming and agricultural land contained healthy long grasses and overgrown vegetation corridors.

The boundaries of both Thornley Road and Reservoir Road contained large amounts of dumped rubbish comprising mostly wooden frames and offcuts, plastic waste, cardboard, old car tyres, green waste, gyprock and old furniture.

Numerous pieces of bonded fibre cement sheeting asbestos containing material (ACM) had been dumped on the eastern boundary of the middle section of Thornley Road. The eastern boundary of Thornley Road also contained dumped waste in the middle section of the road that appeared to have been burnt after dumping. An empty intermediate bulk container (IBC) had been dumped on the eastern side of Reservoir Road towards the north.

Oil staining and a slight hydrocarbon odours were noted in the vicinity of the truck depot located off Reservoir Road.

3.4 Surrounding Land Uses

The site is located in a mainly industrial and commercial area, surrounded by the following land uses:

- **North:** The M4 Western Motorway runs along the northern boundary of the site, beyond which is a strip of land associated with service access to the Great Western Highway.
- **South:** Commercial/industrial properties such as Americold (refrigerated transport) and Boral. Former settlement ponds are present outside the south-eastern corner of the site.
- **West:** Prospect Highway runs along the western boundary of the site beyond which is open grassed area with a church and radio mast.
- **East:** Grassed area with Girraween Creek running from north to south and commercial/industrial properties associated with a Masonry Business.

3.5 Sensitive Environments

The nearest sensitive environments are as follows:

- The nearest low density residential properties are located 500m east of the site beyond Clunies Ross Street;
- Two ponds associated with tributaries of Girraween Creek are present beyond the southern and south eastern boundaries of the property respectively; and

- Prospect Reservoir is present approximately 1km beyond the south-western site boundary.

3.6 Proposed Land Use

Arcadis understands that the client is seeking to rezone the total land area for industrial uses to match adjoining land zoning.

4 SITE HISTORY

4.1 Title Search and Historical Aerial Photographs

A review of historical title deeds and aerial photographs was performed by WSP in 2007. Based on a review of recent aerial photography by Arcadis the use of the site does not appear to have changed significantly since 2007. As such the historical title information provided below has been sourced from the WSP (2007) Phase 1 Contamination Review. It is noted that the area of the site proposed for rezoning is less than the area reviewed by WSP (2007). The following sections are a review of those Lots relevant to the current study area only.

Date	Title Holder Lot 10 DP448744
1914 – 1936	Thomas William Todd, labourer Joseph Todd, blacksmith
1936 – 1937	Joseph Todd, labourer The Public Trustee
1937 – 1956	Joseph Todd, labourer
1957 – 1963	Herbert Lynes, omnibus driver
1963 – 1968	Earl & Foley Transport Co Pty Limited (formerly A L Earl Pty Limited)
1968 – 1968	William Harris Thornley, company director
1968 – 1987	Western Road Bus Services Pty Limited
1987 – 1994	R P & I Baxter Pty Limited
1994 – 2007	Minister Administering the Environmental Planning and Assessment Act, 1979
Aerial Photograph Review	
Date	Description of Lot 10 DP448744
1930	The lot appears to be part of a larger rural/residential property. The majority of the lot has been cleared and several small structures are visible.
1943	No significant changes observed
1951	Some of the lot has been reclaimed by grass and shrubs. No other significant changes observed
1970	No significant changes observed
1994	No site structures are visible. The majority if the lot is covered with trees and shrubs
2006	No significant changes observed
2017	No significant changes observed

Date	Title Holder Lot 11 DP448744
1914 – 1936	Thomas William Todd, labourer Joseph Todd, blacksmith
1936 – 1937	Joseph Todd, labourer The Public Trustee
1937 – 1956	Joseph Todd, labourer
1957 – 1963	Herbert Lynes, omnibus driver
1963 – 1968	Earl & Foley Transport Co Pty Limited (formerly A L Earl Pty Limited)
1968 – 1968	William Harris Thornley, company director
1968 – 1987	Western Road Bus Services Pty Limited
1987 – 1994	R P & I Baxter Pty Limited
1994 – 2007	Minister Administering the Environmental Planning and Assessment Act, 1979

Aerial Photograph Review	
Date	Description of Lot 11 DP448744
1930	The lot appears to be part of a larger rural/residential property. The majority of the lot has been cleared and several structures are visible.
1943	No significant changes observed
1951	Some of the lot has been reclaimed by grass and shrubs. No other significant changes observed
1970	No significant changes observed
1994	No site structures are visible. The majority of the lot is covered with grass
2006	No significant changes observed
2017	No significant changes observed

Date	Title Holder Lot 12 DP448744
1915 – 1951	Rebecca Eliza Innes, wife of quarry man
1951 – 1962	Albert Norman Innes, master builder Harold Charles Innes, master builder
1962 – 1993	George Kolyn, radio technician
1993 – 2007	Minister Administering the Environmental Planning and Assessment Act, 1979

Aerial Photograph Review	
Date	Description of Lot 12 DP448744
1930	The lot appears to be developed for rural/residential land use. No other observations can be made due to the poor quality of the image.
1943	Several structures are visible. The lot appears to be used for rural/residential purposes.

Date	Title Holder Lot 12 DP448744
1951	Some of the lot has been reclaimed by grass and shrubs. Several sheds are no longer visible. No other significant changes observed
1970	None of the structures visible in the 1943 image remain. One new structure is visible. The majority of the lot has been reclaimed by grass and shrubs.
1994	A portion of the lot has been redeveloped for rural/residential land use. A house and outbuilding with associated landscaped areas are visible.
2006	No significant changes observed
2017	No significant changes observed

Date	Title Holder Lot 15 DP448744
1883 – 1926	George Pond, farmer
1926 – 1941	Hilda Shearin, married woman
1941 – 1955	Harold Joseph Todd, labourer
1955 – 1985	Leslie George Clarke, bricklayer Dorothy Therese Clarke
1985 – present	Minister Administering the Environmental Planning and Assessment Act, 1979
Aerial Photograph Review	
Date	Description of Lot 15 DP448744
1930	The majority of the lot is undeveloped rural farmland. A structure is visible on the southern boundary
1943	No significant changes observed
1951	A shed is visible on the northern boundary. No other significant changes observed
1970	The structures observed on the 1951 image are no longer visible. A residential property has been constructed on the northern boundary.
1994	The residential property observed on the 1970 image is still visible. Several additional structures have been constructed.
2006	No structures are visible. The majority of the site has been reclaimed by grass and shrubs
2017	No significant changes observed

Date	Title Holder Lot 24 DP801210
1872 – 1897	William Goodin, gentleman / grantee
1897 – 1905	Standish George Goodin, timber merchant
1905 – 1905	Percy Frank Goodin, estate agent
1905 – 1925	George Henry Watts, freeholder

Date	Title Holder Lot 24 DP801210
1925 – 1925	Herbert George Watts, ice works proprietor Gordon Watts, clerk
1925 – 1926	Mona Maria Todhunter, wife of solicitor
1926 - 1967	William Oliver Steward, farmer
1967 - 1973	Douglass Maxwell Steward, work supervisor Bruce Gordon Steward, milk vendor Donald Clive Steward, wholesale confectioner
1973 - 1990	The State Planning Authority of New South Wales
1990 - 2007	Minister Administering the Environmental Planning and Assessment Act, 1979
Aerial Photograph Review	
Date	Description of Lot 24 DP801210
1930	Lot appears to be undeveloped rural farmland
1943	No significant changes observed. The surrounding area has been cleared for farming purposes. A small water course appears to run through centre of Lot.
1951	No significant changes observed
1970	No significant changes observed
1994	No significant changes observed. Western motorway off-ramp is visible adjacent to the northern boundary of the lot.
2006	No significant changes observed.
2017	No significant changes observed

Date	Title Holder Lot 25 DP801210
1990 – todate	Roads and Traffic Authority of New South Wales
(Lot 4 DP 617846)	
1990 – 1990	Roads and Traffic Authority of New South Wales
1988 – 1990	Wesgo Communications Pty. Ltd
(Lot 4 DP 617846 – CTVol 14554 Fol 34)	
1986 – 1988	Wesgo Communications Pty. Ltd
(1982 – 1988)	(lease to West Sydney Radio Pty. Limited shown on CTVol 14554 Fol 34)
1981 – 1986	Donald Clive Steward, wholesale confectioner Douglas Maxwell Steward, works supervisor Bruce Gordon Steward, milk vendor
(Part Portion 20 Parish Prospect – Area 18 Acres 0 Roods 31 ¼ Perches – CTVol 6531 Fol 249)	
1967 – 1981	Douglas Maxwell Steward, works supervisor

Date	Title Holder Lot 25 DP801210
	Bruce Gordon Steward, milk vendor Donald Clive Steward, wholesale confectioner
1952 – 1967	William Oliver Steward, farmer
(Part Portion 20 Parish Prospect – Area 25 Acres 2 Roods 31 ¼ Perches – CTVol 5960 Fol 15)	
1949 – 1952	William Oliver Steward, farmer
(Part Portion 20 Parish Prospect – Area 26 Acres 1 Rood 4 ½ Perches – CTVol 3393 Fol 160)	
1926 – 1949	William Oliver Steward, boot repairer
1925 – 1926	Mona Marie Todhunter, wife of Frederick William Todhunter, solicitor
1925 – 1925	Herbert George Watts, ice works proprietor Gordon Watts, clerk
1922 – 1925	George Henry Watts, freeholder
(Portion 20 Parish Prospect – Area 32 Acres 2 Roods 15 Perches – CTVol 142 Fol 152)	
1905 – 1922	George Henry Watts, freeholder
1905 – 1905	Percy Frank Goodin, estate agent
1897 – 1905	Handish George Goodin, timber merchant
1872 – 1897	William Goodin, gentleman, grantee
Aerial Photograph Review	
Date	Description of Lot 25 DP801210
1930	Lot appears to be undeveloped rural farmland
1943	Lot has been cleared for farming purposes
1951	No significant changes observed
1970	No significant changes observed
1994	Lot appears to be redeveloped for grazing purposes. Prospect Highway is visible on the western boundary of the lot.
2006	No significant changes observed
2017	No significant changes observed

Date	Title Holder Lot 26 DP801210
1872 – 1897	William Goodin, gentleman / grantee
1897 – 1905	Standish George Goodin, timber merchant
1905 – 1905	Percy Frank Goodin, estate agent
1905 – 1918	George Henry Watts, freeholder
1918 – 1956	Ethel Caprari, wife of gardener
1956 – 1959	Kevin Bede Urquhart, mechanic

Date	Title Holder Lot 26 DP801210
1959 – 1977	Michael Haber, labourer
1977 – 1988	New South Wales Planning and Environment Commission
1988 – 2007	Minister Administering the Environmental Planning and Assessment Act, 1979
Aerial Photograph Review	
Date	Description of Lot 26 DP801210
1930	Lot appears to be cleared for rural/farming land use.
1943	No significant changes observed
1951	No significant changes observed
1970	A structure that appears to be a residential homestead is visible. A second smaller structure is visible on the western boundary of the lot and a potential market garden is visible to the north of the residential homestead.
1994	The lot has been cleared and the structures are no longer visible. Prospect Highway is visible on the western boundary of the lot.
2006	No significant changes observed
2017	No significant changes observed

Date	Title Holder Lot 17 DP802753
1924 – 1953	Percy Sidney Alfred Williams, gardener Grace Louisa Williams
1953 – 1963	Percy Sidney Alfred Williams, gardener
1963 – 1963	Anthony Yelavich, market gardener Pearl Neda Yelavich, married woman
1963-1969	Pearl Neda Yelavich, married woman
1969 – 1984	George William Behn, contractor Kathleen May Behn
1984 – 1986	Public Trustee
1986 – 1990	Minister Administering the Environmental Planning and Assessment Act, 1979
1990-present	Roads and Traffic Authority of New South Wales
Aerial Photograph Review	
Date	Description of Lot 17 DP802753
1930	The lot appears to be undeveloped rural farmland
1943	A portion of the lot has been redeveloped for residential land use. A structure that appears to be a residential homestead is visible.
1951	No significant changes observed. The lot adjacent to the northern boundary has been redeveloped for residential land use.

Date	Title Holder Lot 17 DP802753
1970	The lot is beyond the extent of the available image from the 1970 Series of the Cumberland Region
2004	The site is undeveloped and is vegetated with grass.
2017	No significant changes observed

Date	Title Holder Lot 18 DP802753
1890 – 1936	Reverend Patrick Francis Moran Reverend Joseph Higgins Reverend John Joseph Carroll Reverend John Rigney Thomas Downey Edward Collins
1936 – 1977	Trustees of the Roman Catholic Church for the Archdiocese of Sydney
1977 – 1995	New South Wales Planning and Environment Commission
1955 – 2007	Minister Administering the Environmental Planning and Assessment Act, 1979
Aerial Photograph Review	
Date	Description of Lot 18 DP802753
1930	The lot appears to be undeveloped rural/farmland
1943	No significant changes observed
1951	No significant changes observed
1970	No significant changes observed
1994	No significant changes observed
2006	Unsealed vehicular access tracks are visible. No other significant changes observed.
2017	No significant changes observed

Date	Title Holder Lot 3 DP1192514 (Formerly Lot 19 DP802753)
1907 – 1917	Luke Hyland, gentleman
1917 – 1921	Charles Ernest Bynes, solicitor; Adelaide Amanda Hyland, widow
1921 – 1922	Adelaide Amanda Hyland, widow; Harold Joseph Saunders, real estate agent
1922 – 1941	Joseph Hicks, farmer
1941 – 1948	Theo James Hicks, farmer; Norman Kenneth Hicks, farmer Leslie Gordon Hicks, farmer
1948 – 1962	Theo James Hicks, dairy farmer; Norman Kenneth Hicks, dairy farmer

Date	Title Holder Lot 3 DP1192514 (Formerly Lot 19 DP802753)
1962 – 1970	Theo James Hicks, dairy farmer; Norman Kenneth Hicks, dairy farmer James Simpson, estate agent
1970 – 1982	Theo James Hicks, dairy farmer; Alice Mona Hicks, widow James Simpson, estate agent
1982 – 1983	Theo James Hicks, dairy farmer; Norman William Hicks Patience Bruce
1983 – 2007	Minister Administering the Environmental Planning and Assessment Act, 1979
Aerial Photograph Review	
Date	Description of Lot 3 DP1192514 (Formerly Lot 19 DP802753)
1930	The majority of the site is undeveloped rural/farmland. Three structures are visible on the south west boundary and a water course appears to run through the centre of the lot. An area to the south west of the lot, adjacent to the observed structures, has been cleared for farming purposes.
1943	No significant changes observed
1951	No significant changes observed
1970	The lot is beyond the extent of the available image from the 1970 Series of the Cumberland Region
1994	Some of the original site structures on the south west boundary have been removed whilst others are still visible. The area to the south west adjacent to the site structures that was cleared for farming purposes no longer appears to be used. The flow and path of the water course has been altered.
2006	Several vehicles and heavy haulage trucks are visible in the south west of the site. No other significant changes observed
2017	No significant changes observed

The following title deeds were obtained by Arcadis for the purpose of this investigation as they were not captured during the WSP (2007) assessment.

Date	Title Holder Lot 10 DP374325
(Part Portion 29 and other land Parish Prospect – Area 167 Acres 19 Perches – CTVol 6002 Fol's 31 & 32)	
1949 – 1952	Theo James Hicks, dairy farmer Norman Kenneth Hicks, dairy farmer
(Part Portion 29 and other land Parish Prospect – Area 159 Acres 3 Roods 29 Perches – CTVol 5280 Fol's 145, 146 & 147)	
1941 – 1949	Norman Kenneth Hicks, farmer Leslie Gordon Hicks, farmer Theo James Hicks, farmer
1949 – 1949	Theo James Hicks, dairy farmer Norman Kenneth Hicks, dairy farmer

Date	Title Holder Lot 10 DP374325
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches – CTVol 4441 Fol 3)	
1930 – 1941	Joseph Hicks, dairy farmer, grantee
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches)	
Prior – 1930	Crown Road
(Part Portion 29 and other land Parish Prospect – Area 85 Acres 3 Roods 8 ¾ Perches – CTVol 3508 Fol 232)	
1923 – 1941	Joseph Hicks, dairy farmer
(Part Portion 29 and other land Parish Prospect – Area 234 Acres 3 Roods 24 Perches – CTVol 1959 Fol 92)	
1909 – 1923	The Emu and Prospect Gravel and Road Metal Company Limited
(Lots A & B DP 374323 – Area 20 ½ Perches – CTVol 6407 Fol 130 & 131)	
1951 – 1952	Norman Kenneth Hicks, dairy farmer Theo James Hicks, dairy farmer
(Lot 4 DP 19302 – Area 1 Rood 15 Perches – CTVol 5261 Fol 195)	
1941 – 1951	Theo James Hicks, farmer
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches – CTVol 4441 Fol 3)	
1930 – 1941	Joseph Hicks, dairy farmer, grantee
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches)	
Prior – 1930	Crown Road
Lot 10 DP374325	
1989 – 2004	Frederick James Hicks, farmer
2004 – 2008	Frederick James Hicks, farmer Mary Gladys Hicks, his wife
2008 – 2009	Mary Gladys Hicks, widow
2009 – 2016	Kaye Nell Lee-Ann Suryn Graeme Frederick Hicks
2016 – to date	Reservoir Developments Pty Ltd
Aerial Photograph Review	
Date	Description of Lot 10 DP374325
1930	The lots appear to be undeveloped rural land
1943	The lots appear to be developed however the image resolution is not of sufficient quality to make out the land use
1970	The lots are residential dwellings
1994	No significant changes observed
2006	No significant changes observed

Date	Title Holder Lot 10 DP374325
2017	No significant changes observed

Date	Title Holder Lot 10 DP801209
(Lots A & B DP 374323 – Area 20 ½ Perches – CTVol 6407 Fol 130 & 131)	
1951 – 1952	Norman Kenneth Hicks, dairy farmer Theo James Hicks, dairy farmer
(Lot 4 DP 19302 – Area 1 Rood 15 Perches – CTVol 5261 Fol 195)	
1941 – 1951	Theo James Hicks, farmer
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches – CTVol 4441 Fol 3)	
1930 – 1941	Joseph Hicks, dairy farmer, grantee
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches)	
Prior – 1930	Crown Road
(Lots A & B DP 374323 – Area 20 ½ Perches – CTVol 6407 Fol 130 & 131)	
1951 – 1952	Norman Kenneth Hicks, dairy farmer Theo James Hicks, dairy farmer
(Lot 4 DP 19302 – Area 1 Rood 15 Perches – CTVol 5261 Fol 195)	
1941 – 1951	Theo James Hicks, farmer
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches – CTVol 4441 Fol 3)	
1930 – 1941	Joseph Hicks, dairy farmer, grantee
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches)	
Prior – 1930	Crown Road
(Lots A & B DP 374323 – Area 20 ½ Perches – CTVol 6407 Fol 130 & 131)	
1951 – 1952	Norman Kenneth Hicks, dairy farmer Theo James Hicks, dairy farmer
Aerial Photograph Review	
Date	Description of Lot 10 DP801209
1930	The lot is cleared, undeveloped rural land with some trees and shrubs
1943	No significant changes observed
1951	No significant changes observed
1970	No significant changes observed
1994	No significant changes observed
2006	The lot has been cleared of vegetation. Several stockpiles of material are visible.
2017	No significant changes observed

Date	Title Holder Lot 11 DP801209
1990 – 2009	Stephen Robert Pausey, representative Sheridan Kate Pausey, his wife
2009 – 2013	Sheridan Kate Pausey, widow
2013 – 2013	Lynette Joyce Hanley Henry Craft
2013 – todate	Sajid Siddique Mehreen Zafar
(Lots 8, 9, 16 & 17 DP 448744 – CTVol 8633 Fol 183)	
1990 – 1990	Stephen Robert Pausey, representative Sheridan Kate Pausey, his wife
(Lot 2 DP 75528 & Lot 4 DP 62929 – Area 3 Acres 0 Roods 38 Perches – CTVol 8488 Fol 64)	
1964 – 1990	Stephen Robert Pausey, representative Sheridan Kate Pausey, his wife
(Lots 8, 9, 16 & 17 of Tarlintons subdivision – Area 3 Acres 0 Roods 38 Perches – CTVol 7304 Fol's 28 & 29)	
1957 – 1964	Kenneth Bardwell, painter John Bardwell, painter
(Lots 8 & 9 of Tarlintons subdivision – Area 1 Acre 3 Roods 34 Perches – CTVol 3522 Fol 199)	
1923 – 1951	Percy Sidney Alfred Williams, gardener
1951 – 1953	Waclaw Sawicki, water board employee
1953 – 1957	John Adrian Gerahty, nurseryman
(Lots 8 & 9 of Tarlintons subdivision and other land – Area 10 Acres 2 Roods 35 Perches – CTVol 1502 Fol 161)	
1903 – 1915	Ellen Jane Rawlinson, spinster
1915 – 1923	Ellen Jane Wilkie, wife of Robert Alexander Wilkie
Aerial Photograph Review	
Date	Description of Lot 11 DP801209
1930	The lot is cleared, undeveloped rural land
1943	No significant changes observed
1951	No significant changes observed
1970	The lot is beyond the extent of the available image from the 1970 Series of the Cumberland Region
1994	Several structures are visible. No other significant changes observed
2006	A portion of the lot has been cleared and several stockpiles of material (presumably wood) are visible. No other significant changes observed.

Date	Title Holder Lot 11 DP801209
2017	No significant changes observed

Date	Title Holder Lot A DP374323
2001 – 2001	Ronald William Hicks Frederick James Hicks Patience Bruce Audrey Caroline Hicks
2001 – todate	Peter Robert Evenden Beverly Kaye Evenden
(Lot A DP 374323 – CTVol 8655 Fol 181 & CTVol 8657 Fol 21)	
1999 – 2001	Ronald William Hicks Frederick James Hicks Patience Bruce Audrey Caroline Hicks
(Lots A & B DP 374323 – Area 20 ½ Perches – CTVol 6407 Fol 130 & 131)	
1951 – 1999	Norman Kenneth Hicks, dairy farmer Theo James Hicks, dairy farmer
(Lot 4 DP 19302 – Area 1 Rood 15 Perches – CTVol 5261 Fol 195)	
1941 – 1951	Theo James Hicks, farmer
(Part Portion 29 Parish Prospect and other land – Area 38 Acres 1 Rood 29 Perches – CTVol 3686 Fol 43)	
1925 – 1941	Joseph Hicks, farmer
(Part Portion 29 Parish Prospect – Acknowledgment Bk 741 No. 591)	
1903 – 1925	Joseph Hicks, farmer James Hicks, estate
(Prospect County Cumberland – Conv Bk 293 No. 343)	
1884 – 1903	James Hicks, farmer
Aerial Photograph Review	
Date	Description of Lot A DP374323
1930	The lot appears to be undeveloped rural land
1943	The lot has been developed into a garden / vegetable patch that is part of a larger residential property.
1951	No significant changes observed
1970	No significant changes observed
1994	The site has been reclaimed by grass and shrubs.
2006	A small shed is visible. No other changes observed.

Date	Title Holder Lot A DP374323
2017	No significant changes observed

Date	Title Holder Lot C & D DP374324
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches – CTVol 4441 Fol 3)	
1930 – 1941	Joseph Hicks, dairy farmer, grantee
(Road Parish Prospect – Area 3 Acres 2 Roods 16 Perches)	
Prior – 1930	Crown Road
(Part Portion 29 Parish Prospect and other land – Area 38 Acres 1 Rood 29 Perches – CTVol 3686 Fol 43)	
1925 – 1941	Joseph Hicks, farmer
(Part Portion 29 Parish Prospect – Acknowledgment Bk 741 No. 591)	
1903 – 1925	Joseph Hicks, farmer James Hicks, estate
(Prospect County Cumberland – Conv Bk 293 No. 343)	
1884 – 1903	James Hicks, farmer
Lot C & D DP374324	
1993 – todate	Peter Robert Evenden Beverley Kaye Evenden
(Lot C DP 374323 & Lot D DP 374324 – Area 1 Rood 6 ¼ Perches – CTVol 6407 Fol 132)	
1951 – 1986	Theo James Hicks, dairy farmer
1986 – 1988	Gladys Joyce Nutter
1988 – 1993	Peter Robert Evenden Beverley Kaye Evenden
(Part Portion 29 Parish Prospect and other land – Area 167 Acres 0 Roods 19 Perches – CTVol 6002 Fol's 31 & 32)	
1949 – 1951	Theo James Hicks, dairy farmer Norman Kenneth Hicks, dairy farmer
(Part Portion 29 Parish Prospect and other land – Area 159 Acres 3 Roods 29 Perches – CTVol 5280 Fol's 145, 146 & 147)	
1941 – 1949	Norman Kenneth Hicks, farmer Leslie Gordon Hicks, farmer Theo James Hicks, farmer
1949 – 1949	Theo James Hicks, dairy farmer Norman Kenneth Hicks, dairy farmer
Aerial Photograph Review	
Date	Description of Lot C & D DP374324

Date	Title Holder Lot C & D DP374324
1930	The lots appear to be undeveloped rural land
1943	The lots appear to be developed however the image resolution is not of sufficient quality to make out the land use
1970	The lots are residential dwellings
1994	No significant changes observed
2006	No significant changes observed
2017	No significant changes observed

Conclusions drawn from the aerial photographs must be treated with caution as the interpretation is subjective and is often limited by the quality of the image.

4.2 NSW EPA Contaminated Land Search

A search of the Contaminated Land data based for the property was conducted as part of this Limited Environmental Site Assessment. The EPA does not hold records for notification of a contaminated site under Section 60 of the CLM Act (1997).

No license or notices have been issued to the site under the Protection of the Environment (Operations) Act 1997.

4.3 WorkCover NSW Dangerous Goods Search

A dangerous goods search was not performed for the site, given the site history it is considered highly unlikely that large scale storage of chemicals such as fuels in above ground or underground storage tanks has occurred at the site.

4.4 Past Industrial Processes

There is no evidence of historical or current industrial processes on the site.

4.5 Manufacturing Processes

The historical data review did not indicate that manufacturing processes had occurred at the subject site.

4.6 Hazardous Materials

No hazardous materials were observed during the site walkover with the exception of possible asbestos fragments found at Lot 15 DP448744.

4.7 Storage Tanks

No storage tanks were observed during the site inspection.

4.8 Discharges to Land, Water and Air

No information for the site regarding discharges to land, water and air was available for review at the time of writing this report. As no manufacturing operations are known to have occurred at the site, it is unlikely that there may have been previous discharges to land, water or air associated with the historical operations.

4.9 Previous Investigations

A Phase 1 Environmental Audit was completed for a wider site in 2007 by WSP. Based on the findings of the Phase 1 Environmental Audit, WSP (2007) concluded that the following site activities may have the potential to cause soil and/or groundwater contamination:

- Market gardening activities on Lot 26 DP801210 and Lot 17 DP802753;
- Demolition of previous structures on Lots 10 to 12 inclusive and Lot 15 of DP448744 and Lot 3 DP1192514 (previously known as Lot 19 DP802753);
- Filling associated with the straightening of the unnamed watercourse on Lot 19 DP44844;
- Small haulage business in the south-western corner of Lot 3 DP1192514 (previously known as Lot 19 DP802753); and
- Unauthorised waste disposal/dumping along the verges of Thornley and Reservoir Roads and on Lot 18 DP802753.

5 SITE CONDITION AND ENVIRONMENTAL SETTING

5.1 Topography and Surface Waters

The following comments are sourced from WSP (2007):

According to the Prospect 1:25000 Topographic & Orthographic Map (9030-2N Third Edition), the northern and western boundaries of the site lie at approximately 70m AHD and form an embankment to the M4 Motorway (Great Western Highway) and unnamed extension of the Prospect Highway respectively. The land to the west of Reservoir Road is generally level with localised lower lying marshy areas.

The site condition including the surface profile observed during the site visit confirmed the WSP (2007) comments.

5.2 Visible Signs of Contamination

There were no visible signs of plant stress or contamination on the block during the site investigations.

5.3 Presence of Drums and Wastes

There were no drums or wastes on site during the site investigations.

5.4 Fill Material

Fill material was not generally observed at the site.

5.5 Odours

Minor hydrocarbons odours were observed in the vicinity of the truck depot, these were likely due to the presence of heavy vehicles in the area. Refuelling was not observed to occur at the site. Odours were not observed on the remainder of the site.

6 GEOLOGY AND HYDROGEOLOGY

6.1 Geology

WSP (2007) describes the geology at the site as:

According to the Penrith 1:100,000 Geological Series Sheet 9030 Edition 1 (1991) the geology immediately underlying the site is comprised from Middle Triassic Bringelly Shale of the Wianamatta Group. The Bringelly Shale is characterised shale, carbonaceous claystone, laminate and fine to medium grained lithic sandstone, rare coal and tuff. There is also volcanic intrusion south east of the site comprising Jurassic Picrite, Dolerite and Basalt.

Arcadis has reviewed the geology map for the current site area site and concurs with the above description.

6.2 Soils

WSP (2007) described the soil at the site as:

According to the Penrith Soil Landscape Series Sheet 9030, the site is immediately underlain by Blacktown Residual soils group. They are classified as shallow to moderately deep (<100cm) hard setting mottled texture contrast soils, red and brown podzolic soils on crests grading to yellow podzolic soils on lower slopes and in drainage lines. These soils have moderately reactive highly plastic subsoil, low fertility, and poor soil drainage. The landscape is comprised of gently undulating rises on Wianamatta Group shales. Local relief to 30m, slopes usually <5%. Broad rounded crests and ridges with gently inclined slopes.

The geological profile observed during site works by Arcadis was consistent with the above description.

6.3 Hydrogeology

WSP (2007) described the hydrogeology of the site as follows:

Information provided by The Department of Natural Resources (DNR) on groundwater bore data, indicated that there is 1 registered groundwater bore located within a 500m radius of the site.

The closest bore (GW101177) is located approximately 285m south of the site adjacent to Girraween Creek. The well was formed by rotary air blast drilling techniques in 1998 for industrial purposes to a depth of 150m. The licence (No.158272) for water extraction has since been cancelled.

It was reported that the water-bearing zones were encountered between 25 and 30m (shale), 56 and 60m (shale) and

125 and 140m (sandstone and quartz) below ground level. Standing water level on completion after two hours development with air was noted to be some 14m below ground level. Ground conditions comprised 2.5m of overburden, which was underlain by interbedded sandstones and shales.

Limited physiochemical data of the groundwater was collected for this bore and included measurements of yield (0.6 to 1.7L/s) and salinity (490 to 520mg/L).

Arcadis has reviewed the hydrogeology for the current site area and concurs with the above description.

6.4 Hydrology

Girraween Creek is located approximately 130m east of the site and flows in a north easterly direction, where it eventually discharges into Toongabbie Creek and Parramatta River.

6.5 Acid Sulfate Soil Risk

A review of the Australian Soil Resource Information System (ASRIS) map shows the subject site to be situated in an area of 'extremely low probability/very low probability for acid sulfate soil.

6.6 Salinity

A review of the Department of Land and Water Conservation (DLWC) Draft Salinity Hazard Mapping for Western Sydney shows the subject site to be situated in areas of low to high salinity potential (refer to figure 4 Appendix A).

The following lots were identified to be in areas of high salinity potential:

- Lot 3 DP1192514;
- Lot 17 DP802753;
- Lot 11 DP801209;
- Lot 10 DP448744; and
- Lot 11 DP448744.

7 SALINITY INVESTIGATION

The following section presents an overview of the field observations for soil encountered during the field works. Bore logs are included in Appendix C. Photos taken during the site walkover are provided in Appendix D.

7.1 Field Observations

The geology and soil observed across the site during the site walkover and intrusive works was as follows:

- The site was unsealed with grass covering the majority of the site.
- Reworked clay material was encountered across the site to a maximum depth of 1.5m bgl (TP1, located on the western side of the site) during the investigation.
- Natural material was encountered from 0.50 m to a depth of 2.0 m below ground level (bgl) and was described as orange/grey silty clay with orange/red mottling, slightly moist, medium to high plasticity with brown organic inclusions.
- Groundwater was not encountered above 2m below ground level.
- No odours or staining were observed during the collection of samples. Photoionisation detector (PID) readings that were recorded during test-pitting and screening of soil samples indicated ranged from 0.1ppm to 0.4ppm and indicated a low possibility of volatile organic compounds being present.
- Fly-tipping was observed on the road verges within the site. Waste materials such as hard rubbish including asbestos sheeting was present on the road verges (see Appendix D).

7.2 Soil Analytical Results

The soil analytical results were compared against the *values of soil salinity classes* as provided in Appendix 1 of DLWC (2002). Result summary tables are included in Appendix E with copies of laboratory certificates included in Appendix F.

The data shows that the soil at the site varies from non-saline to moderately saline. The topsoil at the site is generally in the non-saline category whilst the deeper silty clays range from slightly to moderately saline.

8 DISCUSSION

In developing plans for the site the following will need to be considered:

- Contamination:
  - Based on the site walkover and review of site history, the potential for gross or widespread contamination at the site is low;
  - Fly-tipping was observed on the road verges within the site. Materials disposed of at the roadside included asbestos sheeting.
- Salinity:
  - The topsoil was generally non-saline, whilst the silty clays were slightly to moderately saline in nature.
  - The Department of Land and Water Conservation (DLWC) Draft Salinity Hazard Mapping for Western Sydney shows parts of the site to be high risk salinity potential. As such the following are recommended to be included into building design, consistent with the Pemulwuy Industrial Controls – Holroyd Development Control Plan 2013:
    - A detailed salinity assessment where earthworks are proposed, particularly if groundwater levels are altered or earthworks extend to a depth where groundwater is exposed.
    - In order to prevent moisture rising through concrete slabs, firstly lay a thick layer of sand on the building site. Next, lay a damp-proof membrane of thick plastic.
    - Concrete can be made more resistant to salinity by increasing its strength to reduce the permeability. A sulfate resistant concrete can also be used which will reduce reinforcement corrosion. A minimum of 65 millimetres of concrete cover on strip or slab reinforcement is recommended in saline environments. Compaction and curing of the concrete are also advised.
    - Bricks: A brick damp course which is correctly installed will prevent moisture moving into the bricks. It is possible to use exposure quality bricks which are more resistant to water and salt. Waterproofing can also be added to the mortar to prevent water entry.
    - Plant gardens which do not require a lot of watering. This includes use of native plants which do not require excess watering, deep rooted trees to prevent the ground water table rising, the use of mulch, and the reduction of lawn areas.
    - Where automatic watering systems are installed, measure soil moisture content to ensure they work, and to counter the possibility of over-watering.
    - Do not locate gardens close to buildings, as watering may affect foundations or render the damp-course ineffective.
    - Avoid disturbance of natural flow lines, as this is where the salinity is first likely to appear. This includes retaining native vegetation along watercourses and rehabilitation of disturbed areas using native vegetation.
    - Minimise throughflow when designing stormwater management, and this includes the careful design and construction of detention and retention basins to avoid high velocity runoff and soil erosion in susceptible areas.

9 CONCLUSIONS

Based on information provided in this report addressing BCC requirements for salinity and contamination, we conclude that the subject site is suitable for new urban development, and we understand that this will be in the form of new industrial development. To prevent damage to buildings and infrastructure caused by salinity the recommendations listed in Section 9 should be incorporated into building and landscape design.

Based on the observations made during the site walkover and sampling, the site history and analytical results, Arcadis considers the site may be considered suitable for commercial/industrial land use.

10 REFERENCES

ANZECC/NHMRC (1992) Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites

Department of Environment and Climate Change (2009) Guidelines on the Duty to Report Contamination Under the Contaminated Land Management Act 1997

Department of Land and Water Conservation (2002) Site Investigations for Urban Salinity

National Environment Protection Council (1999) 'National Environment Protection (Assessment of Site Contamination Measure 1999' as amended 2013

NSW DECC (2009) Guidelines on the Duty to Report Contamination under the Contaminated Land Management Act 1997

Pemulwuy Industrial Controls – Holroyd Development Control Plan 2013

WSP (2007) Phase 1 Environmental Audit, Reservoir Road, Prospect, NSW.

APPENDIX A FIGURES

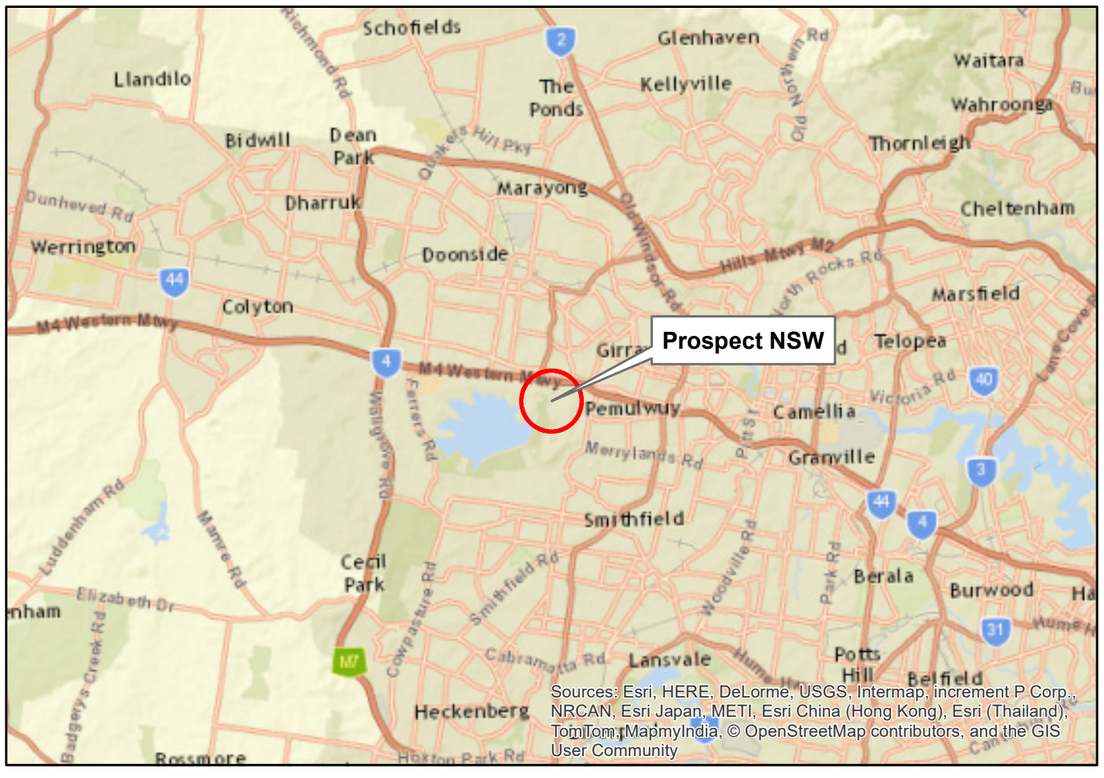
Figure 1

Site Location

Preliminary Site Investigation & Limited Soil Investigation

Reservoir Road, Prospect, NSW

ARCADIS Design & Consultancy for natural and built assets



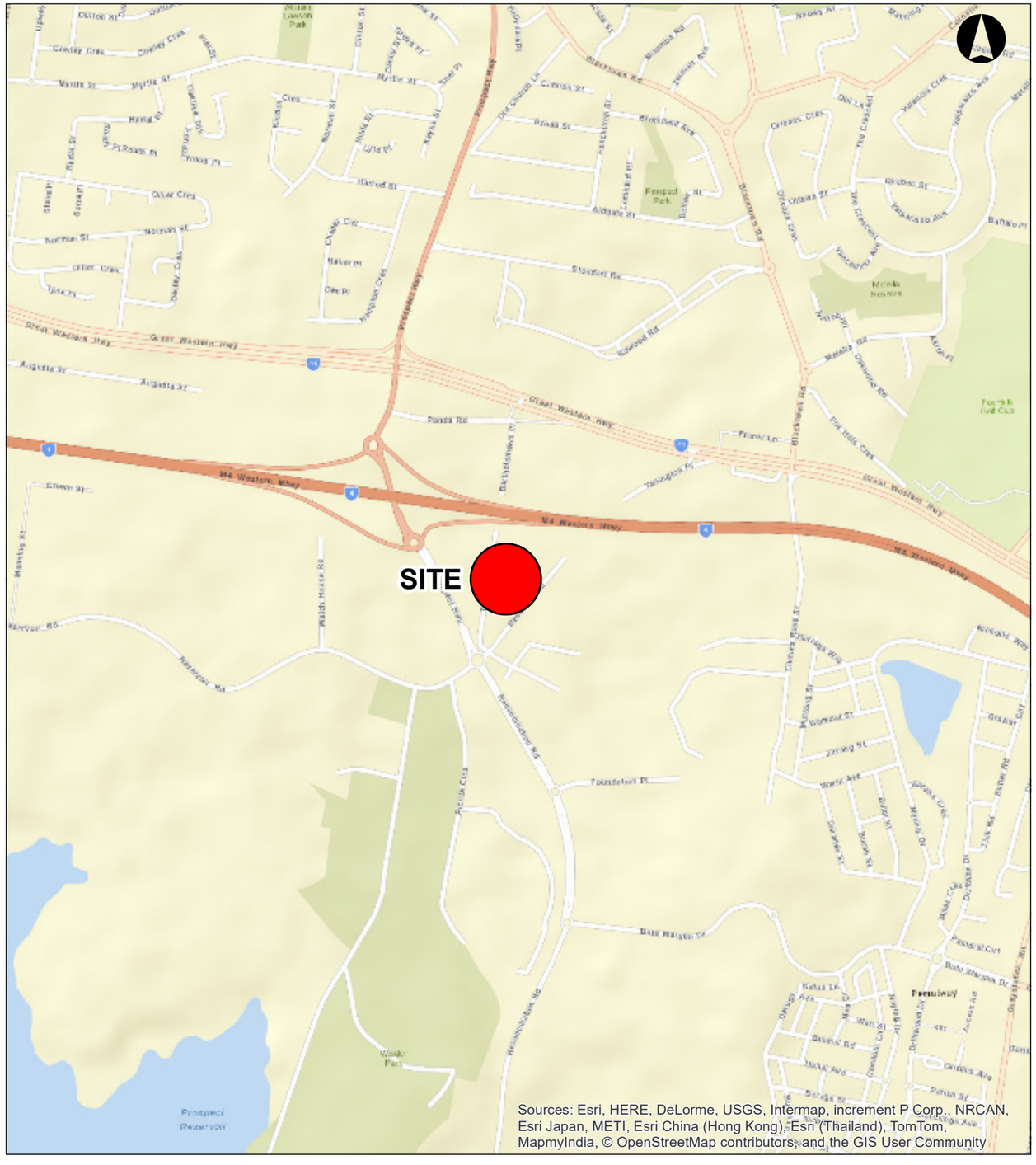


Figure 2

Site Layout

Preliminary Site Investigation & Limited Soil Sampling

Reservoir Road, Prospect NSW

ARCADIS Design & Consultancy for natural and built assets

[Job number], 14-Feb-18 version [1]

Figure 3

Sampling Locations

Preliminary Site Investigation & Limited Soil Sampling

Reservoir Road, Prospect NSW

ARCADIS Design & Consultancy for natural and built assets

[Job number], 15-Feb-18 version [1]

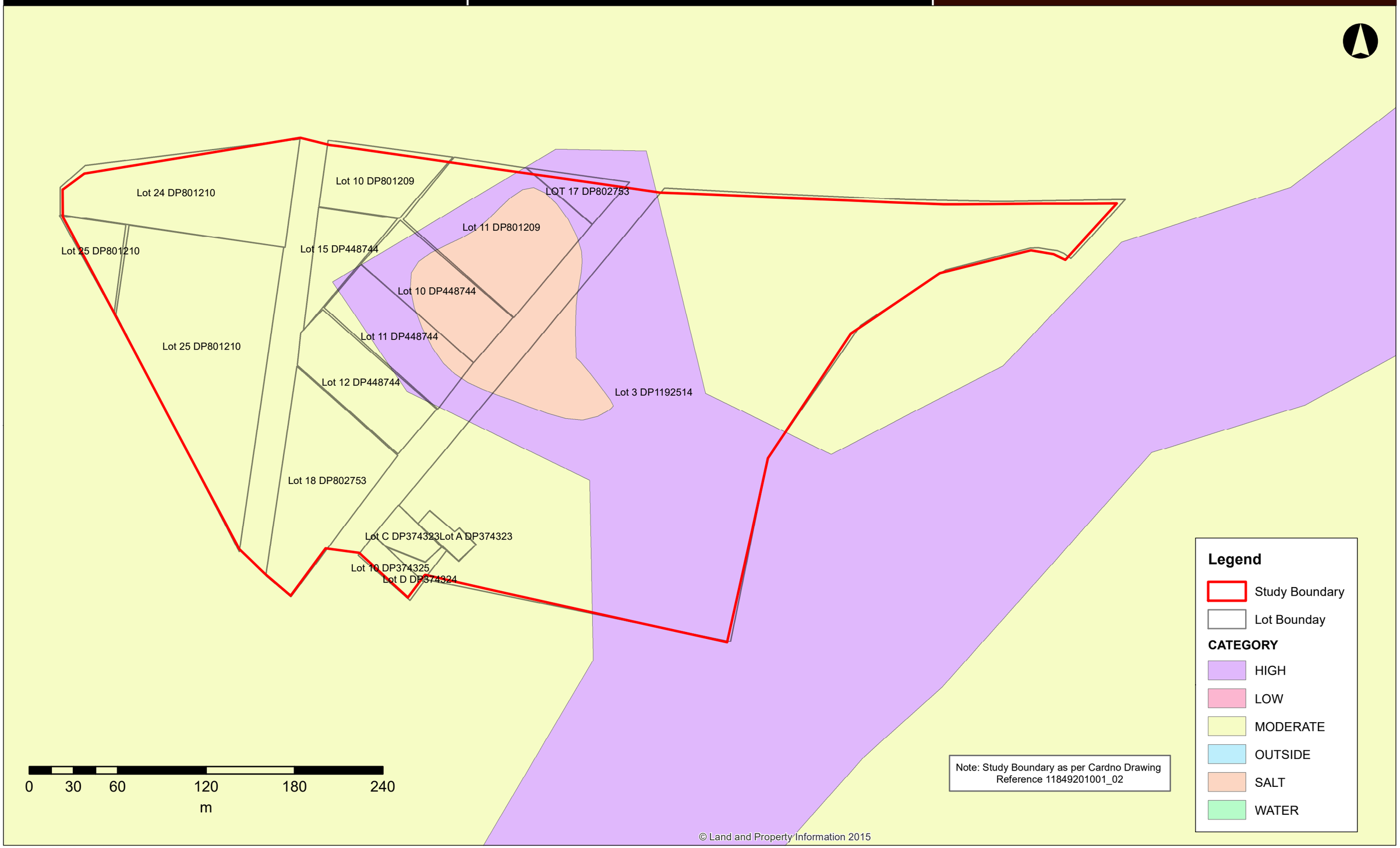
Figure 4

Salinity Mapping of Western Sydney

Preliminary Site Investigation & Limited Soil Sampling

Reservoir Road, Prospect NSW

ARCADIS Design & Consultancy for natural and built assets

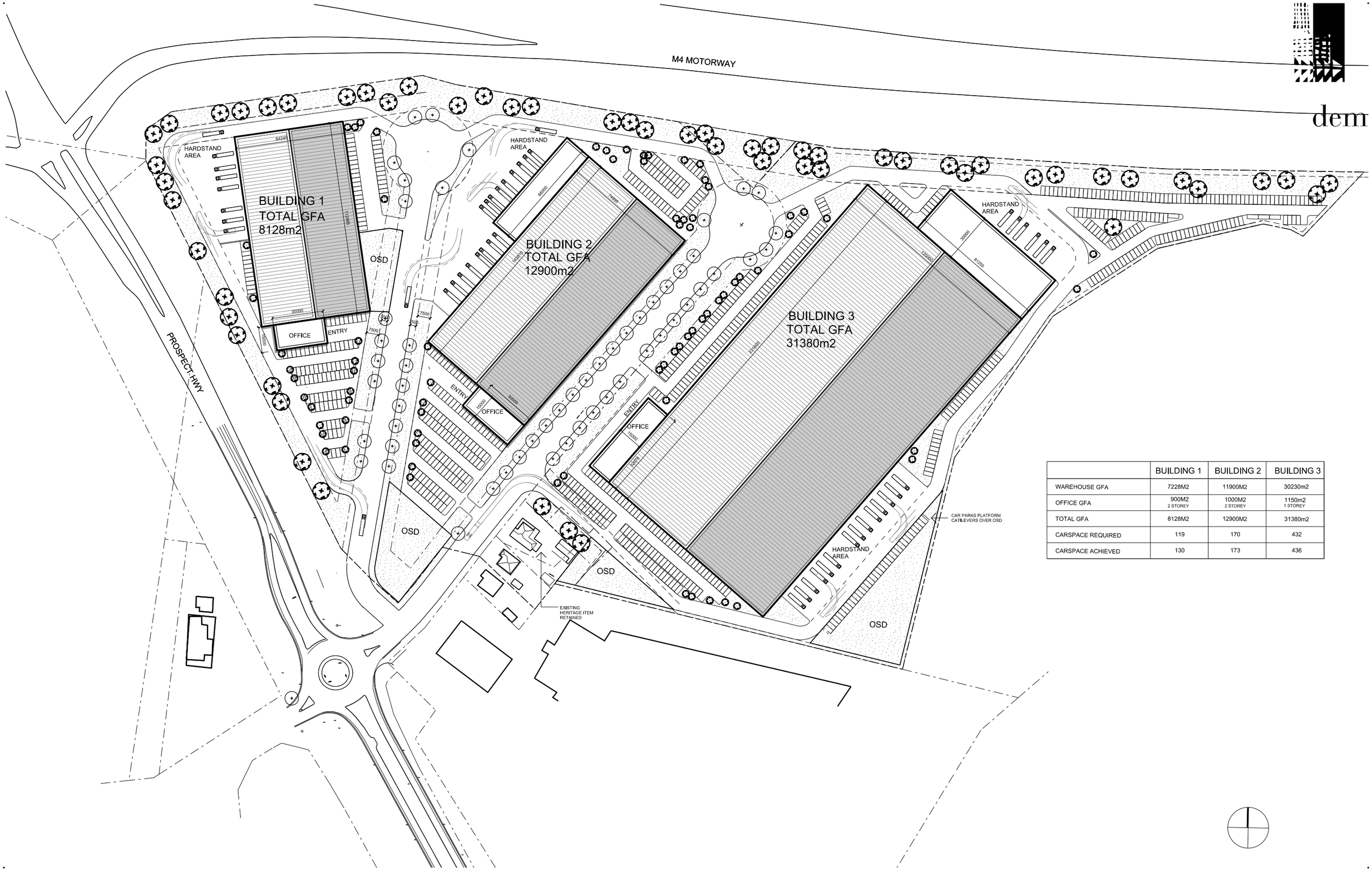


[Job number], 14-Feb-18 version [1]

APPENDIX B PROPOSED DEVELOPMENT PLAN

nominated architects: Rudi Valla BArch (Hons) nsw reg no 6582 Jon Pizey BArch nsw reg no 6567

dem



	BUILDING 1	BUILDING 2	BUILDING 3
WAREHOUSE GFA	7228M2	11900M2	30230m2
OFFICE GFA	900M2 2 STOREY	1000M2 2 STOREY	1150m2 1 STOREY
TOTAL GFA	8128M2	12900M2	31380m2
CARSPACE REQUIRED	119	170	432
CARSPACE ACHIEVED	130	173	436

prospect masterplan

Prospect South Masterplan - Option 1

plotted: 09/02/18 plotted by: VIP

date 09-02-18 scale 1:1000 drwg no. arsk0101 proj no. 4463-00 rev no. -03

planning, urban design, architecture, landscape architecture, interior design
level 8 15 help street chatswood nsw 2067
t: (02) 8966 6000 f: (02) 8966 6111
e: sydney@dem.com.au

APPENDIX CBORE LOGS

Test Pit Log

Environmental Strategies | ARCADIS Design & Consultancy for natural and built assets

Hole ID.	**TP1**
Project Number:	**17260**
Hole Depth:	**2.00 m**
Sheet:	**1 of 1**

Project Name:	**Prospect Salinity Assessment**	Date:	**31/10/2017**
Location / Site:	**Thornley Road & Reservoir Road, Prospect NSW**	Ground Level :	**N/A**
Client:		Top of Casing :	**N/A**
Drilling Company:	**Ken Coles Excavations Pty Ltd**	Easting:	**N/A**
Drill Method:	**Excavator (5t, 500mm bucket)**	Northing:	**N/A**
		Zone:	**N/A**

Method	Water Level	Depth (mbgl)	RL (mAHD)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Sample ID PID ppm	Sample ID ID No.	Observations / Comments
							Grass				
EX		0.15				Fill	**FILL** - TOPSOIL.	dry			No odour. No PACM.
		0.2					**FILL** - TOPSOIL, brown, low plasticity, angular sandstone gravel 10-100mm, roots.	slightly moist	0.0	TP1_0.5	No odour. No PACM.
		0.4									
		0.60									
		0.70					**FILL** - Silty CLAY, dark brown, orange / red mottling, medium plasticity, angular gravel 10-20mm, grass roots.	moist			No odour. No PACM. Reworked Natural.
		0.8					**FILL** - Silty CLAY, dark brown, orange / red mottling, medium plasticity.	moist	0.1	TP1_1.0	No odour. No PACM. Reworked Natural.
		1.0									
		1.2									
		1.4									
		1.50			CH	Natural	**Silty CLAY** - grey, orange / red mottling, high plasticity, brown organic inclusions.	slightly moist			No odour. No PACM.
		1.6									
		1.8									
		2.00					**End of Hole at 2.00 m** Target depth.				
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Additional Comments

Method

HA	Hand Auger	MR	Mud Rotary
CC	Concrete Corer	PT	Push Tube
CB	Concrete Breaker	AH	Air Hammer
SFA	Solid Flight Auger	EX	Excavator
HFA	Hollow Flight Auger		
SPT	Standard Penetometer Test		

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Contact: laurie.white@reumad.com.au

Logged By: **Caitlain Regena** Date: **31/10/2017**
Checked By: Date:

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Test Pit Log

Environmental Strategies | ARCADIS Design & Consultancy for natural and built assets

Hole ID.	**TP2**
Project Number:	**17260**
Hole Depth:	**1.90 m**
Sheet:	**1 of 1**

Project Name:	**Prospect Salinity Assessment**	Date:	**31/10/2017**
Location / Site:	**Thornley Road & Reservoir Road, Prospect NSW**	Ground Level :	**N/A**
Client:		Top of Casing :	**N/A**
Drilling Company:	**Ken Coles Excavations Pty Ltd**	Easting:	**N/A**
Drill Method:	**Excavator (5t, 500mm bucket)**	Northing:	**N/A**
		Zone:	**N/A**

Method	Water Level	Depth (mbgl)	RL (mAHD)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Sample ID PID ppm	Sample ID ID No.	Observations / Comments
							Grass				
EX		0.15				Fill	**FILL** - TOPSOIL.	dry			No odour. No PACM.
		0.2					**FILL** - TOPSOIL, brown, low plasticity, organics, roots.	slightly moist	0.4	TP2_0.5	No odour. No PACM.
		0.4									
		0.6									
		0.70									
		0.8			CH	Natural	**Silty CLAY** - grey, red / orange mottling, high plasticity.	moist	0.1	TP2_1.0	No odour. No PACM.
		1.0									
		1.2									
		1.4					Brown organics at 1.5m.				
		1.6									
		1.8									
		1.90					**End of Hole at 1.90 m** Target depth.				
		2.0									
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Additional Comments

Method

HA	Hand Auger	MR	Mud Rotary
CC	Concrete Corer	PT	Push Tube
CB	Concrete Breaker	AH	Air Hammer
SFA	Solid Flight Auger	EX	Excavator
HFA	Hollow Flight Auger		
SPT	Standard Penetometer Test		

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Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Caitlain Regena** Date: **31/10/2017**
Checked By: Date:

Test Pit Log

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Hole ID.	**TP3**
Project Number:	**17260**
Hole Depth:	**1.80 m**
Sheet:	**1 of 1**

Project Name:	**Prospect Salinity Assessment**	Date:	**31/10/2017**
Location / Site:	**Thornley Road & Reservoir Road, Prospect NSW**	Ground Level :	**N/A**
Client:		Top of Casing :	**N/A**
Drilling Company:	**Ken Coles Excavations Pty Ltd**	Easting:	**N/A**
Drill Method:	**Excavator (5t, 500mm bucket)**	Northing:	**N/A**
		Zone:	**N/A**

Method	Water Level	Depth (mbgl)	RL (mAHD)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Sample ID PID ppm	Sample ID ID No.	Observations / Comments
							Grass				
EX		0.15				Fill	**FILL** - TOPSOIL.	dry			No odour. No PACM.
		0.2				Fill	**FILL** - TOPSOIL, brown, some orange / red mottling, low plasticity, angular sandstone gravel 10-100mm, organics.	slightly moist	0.0	TP3_0.5	No odour. No PACM.
		0.4									
		0.6									
		0.70									
		0.8			CL	Natural	**Silty CLAY** - orange / grey, some red mottling, medium plasticity.	slightly moist	0.0	TP3_1.0	No odour. No PACM.
		1.0									
		1.2									
		1.4									
		1.50									
		1.6			CH		**Silty CLAY** - grey, red / orange mottling, high plasticity.	slightly moist			No odour. No PACM.
		1.80									
		2.0					**End of Hole at 1.80 m** Target depth.				
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Additional Comments

Method

HA	Hand Auger	MR	Mud Rotary
CC	Concrete Corer	PT	Push Tube
CB	Concrete Breaker	AH	Air Hammer
SFA	Solid Flight Auger	EX	Excavator
HFA	Hollow Flight Auger		
SPT	Standard Penetometer Test		

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Contact: laurie.white@reumad.com.au

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Test Pit Log

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Hole ID.	**TP4**
Project Number:	**17260**
Hole Depth:	**2.00 m**
Sheet:	**1 of 1**

Project Name:	**Prospect Salinity Assessment**	Date:	**31/10/2017**
Location / Site:	**Thornley Road & Reservoir Road, Prospect NSW**	Ground Level :	**N/A**
Client:		Top of Casing :	**N/A**
Drilling Company:	**Ken Coles Excavations Pty Ltd**	Easting:	**N/A**
Drill Method:	**Excavator (5t, 500mm bucket)**	Northing:	**N/A**
		Zone:	**N/A**

Method	Water Level	Depth (mbgl)	RL (mAHD)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Sample ID PID ppm	Sample ID ID No.	Observations / Comments
							Grass				
EX		0.15				Fill	**FILL** - TOPSOIL.	dry			No odour. No PACM.
		0.2					**FILL** - TOPSOIL, brown, low plasticity, angular gravel to 100mm, organics.	slightly moist	0.0	TP4_0.5	No odour. No PACM.
		0.4									
		0.60			CH		**Silty CLAY** - red / brown, high plasticity.	slightly moist			No odour. No PACM.
		0.8									
		0.90				Natural	**Silty CLAY** - grey, red mottling, very stiff, high plasticity.	slightly moist	0.0	TP4_1.0	No odour. No PACM.
		1.0									
		1.2									
		1.4			CH		Becoming increasingly grey at 1.5m.				
		1.6									
		1.8									
		2.00					**End of Hole at 2.00 m** Target depth.				
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Additional Comments

Method

HA	Hand Auger	MR	Mud Rotary
CC	Concrete Corer	PT	Push Tube
CB	Concrete Breaker	AH	Air Hammer
SFA	Solid Flight Auger	EX	Excavator
HFA	Hollow Flight Auger		
SPT	Standard Penetometer Test		

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Logged By: **Caitlain Regena** Date: **31/10/2017**
Checked By: Date:

ES ARCADIS 17260 PROSPECT.GPJ ES.GDT 10/11/17 10:27:47 AM - drawn by laurie white at www.reumad.com.au

Test Pit Log

Environmental Strategies | ARCADIS Design & Consultancy for natural and built assets

Hole ID.	**TP5**
Project Number:	**17260**
Hole Depth:	**2.00 m**
Sheet:	**1 of 1**

Project Name:	**Prospect Salinity Assessment**	Date:	**31/10/2017**
Location / Site:	**Thornley Road & Reservoir Road, Prospect NSW**	Ground Level :	**N/A**
Client:		Top of Casing :	**N/A**
Drilling Company:	**Ken Coles Excavations Pty Ltd**	Easting:	**N/A**
Drill Method:	**Excavator (5t, 500mm bucket)**	Northing:	**N/A**
		Zone:	**N/A**

Method	Water Level	Depth (mbgl)	RL (mAHD)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Sample ID PID ppm	Sample ID ID No.	Observations / Comments
							Grass				
EX		0.15				Fill	**FILL** - TOPSOIL.	dry			No odour. No PACM.
		0.2					**FILL** - TOPSOIL, light brown, some orange mottling, low plasticity, silty clay inclusions, organics.	dry	0.0	TP5_0.5	No odour. No PACM.
		0.4									
		0.6									
		0.8									
		0.90			CL	Natural	**Silty CLAY** - orange / brown, firm to stiff, medium plasticity.	slightly moist	0.0	TP5_1.0	No odour. No PACM.
		1.0									
		1.2									
		1.4					Becoming CLAY at 1.5m, grey with orange / red mottling.				
		1.6									
		1.8									
		2.00					**End of Hole at 2.00 m** Target depth.				
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Additional Comments

Method

HA	Hand Auger	MR	Mud Rotary
CC	Concrete Corer	PT	Push Tube
CB	Concrete Breaker	AH	Air Hammer
SFA	Solid Flight Auger	EX	Excavator
HFA	Hollow Flight Auger		
SPT	Standard Penetometer Test		

REUMAD

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Caitlain Regena** Date: **31/10/2017**
Checked By: Date:

ES ARCADIS 17260 PROSPECT.GPJ ES.GDT 10/11/17 10:27:48 AM - drawn by laurie white at www.reumad.com.au

Test Pit Log

Environmental Strategies | ARCADIS Design & Consultancy for natural and built assets

Hole ID.	**TP6**
Project Number:	**17260**
Hole Depth:	**2.00 m**
Sheet:	**1 of 1**

Project Name:	**Prospect Salinity Assessment**	Date:	**31/10/2017**
Location / Site:	**Thornley Road & Reservoir Road, Prospect NSW**	Ground Level :	**N/A**
Client:		Top of Casing :	**N/A**
Drilling Company:	**Ken Coles Excavations Pty Ltd**	Easting:	**N/A**
Drill Method:	**Excavator (5t, 500mm bucket)**	Northing:	**N/A**
		Zone:	**N/A**

Method	Water Level	Depth (mbgl)	RL (mAHD)	Graphic Log	USCS Symbol	Material Type	Material Description	Moisture	Sample ID PID ppm	Sample ID ID No.	Observations / Comments
							Grass				
EX		0.15				Fill	**FILL** - TOPSOIL.	dry			No odour. No PACM.
		0.2					**FILL** - TOPSOIL, light brown, some red / orange mottling, stiff, medium plasticity, silty clay inclusions.	dry			No odour. No PACM.
		0.4									
		0.50							0.0	TP6_0.5	
		0.6			CH	Natural	**Silty CLAY** - orange / brown, red mottling, very stiff, high plasticity, some brown organic matter.	slightly moist			No odour. No PACM.
		0.8									
		1.0							0.0	TP6_1.0	
		1.2									
		1.4									
		1.6									
		1.8									
		2.00					**End of Hole at 2.00 m** Target depth.				
		2.2									
		2.4									
		2.6									
		2.8									
		3.0									

Additional Comments

Could not get excavator past gate / river.

Method

HA	Hand Auger	MR	Mud Rotary
CC	Concrete Corer	PT	Push Tube
CB	Concrete Breaker	AH	Air Hammer
SFA	Solid Flight Auger	EX	Excavator
HFA	Hollow Flight Auger		
SPT	Standard Penetometer Test		

REUMAD

Log Drawn By: Laurie White
Contact: laurie.white@reumad.com.au

Logged By: **Caitlain Regena** Date: **31/10/2017**
Checked By: Date:

ES ARCADIS 17260 PROSPECT.GPJ ES.GDT 10/11/17 10:27:49 AM - drawn by laurie white at www.reumad.com.au

APPENDIX D SITE PHOTOGRAPHS

Image 1	
General soil profile showing brown topsoil overlying orange and grey silty sands	

Image 2	
Potential ACM fragments discarded on the road verges within the site	

Image 3	
Discarded hard rubbish	

Image 4	
Discarded hard rubbish	

Image 5	
Discarded hard rubbish	

APPENDIX E RESULTS SUMMARY TABLE

Table 1:
Soil Salinity Data
Prospect Rezoning

	pH 1:5 soil:water1:5 soil:water	Electrical Conductivity (Non Compensated)	Ece	
	pH Units	µS/cm	µS/cm	dS/m
EQL		1		

Location Code	Sample Depth (m)	Sampled Date				
TP2	0.5	31-Oct-17	5.6	87	783	0.783
TP2	1	31-Oct-17	4.8	860	7740	7.74
TP5	0.5	31-Oct-17	6.2	40	360	0.36
TP5	1	31-Oct-17	6	230	2070	2.07
TP6	0.5	31-Oct-17	6.3	130	1170	1.17
TP6	1	31-Oct-17	6.7	430	3870	3.87

APPENDIX F LABORATORY REPORTS

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

CERTIFICATE OF ANALYSIS 179037

Client Details

Client	Environmental Strategies Pty Ltd
Attention	Natasha Pasley, Caitlain Regena, Toby Scrivener
Address	Level 16, 580 George St, Sydney, NSW, 2000

Sample Details

Your Reference	**17260**
Number of Samples	12 Soil
Date samples received	02/11/2017
Date completed instructions received	02/11/2017

Analysis Details

Please refer to the following pages for results, methodology summary and quality control data.

Samples were analysed as received from the client. Results relate specifically to the samples as received.

Results are reported on a dry weight basis for solids and on an as received basis for other matrices.

Report Details

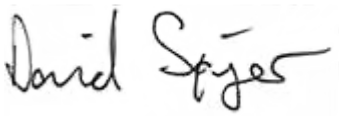
Date results requested by	09/11/2017
Date of Issue	06/11/2017

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

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

Results Approved By
Nick Sarlamis, Inorganics Supervisor

Authorised By



David Springer, General Manager

Misc Inorg - Soil						
Our Reference		179037-3	179037-4	179037-9	179037-10	179037-11
Your Reference	UNITS	TP2	TP2	TP5	TP5	TP6
Depth		0.5	1.0	0.5	1.0	0.5
Date Sampled		31/10/2017	31/10/2017	31/10/2017	31/10/2017	31/10/2017
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017
Date analysed	-	03/11/2017	03/11/2017	03/11/2017	03/11/2017	03/11/2017
pH 1:5 soil:water	pH Units	5.6	4.8	6.2	6.0	6.3
Electrical Conductivity 1:5 soil:water	µS/cm	87	860	40	230	130

Misc Inorg - Soil		
Our Reference		179037-12
Your Reference	UNITS	TP6
Depth		1.0
Date Sampled		31/10/2017
Type of sample		Soil
Date prepared	-	03/11/2017
Date analysed	-	03/11/2017
pH 1:5 soil:water	pH Units	6.7
Electrical Conductivity 1:5 soil:water	µS/cm	430

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.

QUALITY CONTROL: Misc Inorg - Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			03/11/2017	3	03/11/2017	03/11/2017		03/11/2017	[NT]
Date analysed	-			03/11/2017	3	03/11/2017	03/11/2017		03/11/2017	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	3	5.6	5.5	2	103	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	3	87	89	2	99	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.

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 - Client

ENVIROLAB GROUP - National phone number 1300 42 43 44

Client: Arcadis	**Client Project Name / Number / Site etc (ie report title):** 17260
Contact Person: Natasha Pasley	
Project Mgr: Natasha Pasley	
Sampler: Caitlain Regena	**Envirolab Quote No. :** 17260
Level 15, 580 George Street, Sydney 2000	**Date results required:** Standard **Or choose:** Normal *Note: Inform lab in advance if urgent turnaround is required - surcharges apply*
Phone: 8907 3982 **Mob:** 04 32 693 453	**Report format:** esdat
Email: Natasha.Pasley@arcadis.com, Toby.Scrivener@arcadis.com	**Lab Comments:**
CC Caitlain.Regena@arcadis.com	

Envirolab Services
12 Ashley St, Chatswood, NSW 2067
Ph 02 9910 6200 /
sydney@envirolab.com.au

Envirolab Sample ID	Client Sample ID or information	Depth (m)	Date sampled	Type of sample		pH	Extract Electrical Conductivity (Ece)	Hold											Comments
																			Provide as much information about the sample as you can
1	TP1_0.5	0.5	31-10-17	Soil				x											
2	TP1_1.0	1.0	31-10-17	Soil				x											
3	TP2_0.5	0.5	31-10-17	Soil		x	x												
4	TP2_1.0	1.0	31-10-17	Soil		x	x												
5	TP3_0.5	0.5	31-10-17	Soil				x											
6	TP3_1.0	1.0	31-10-17	Soil				x											
7	TP4_0.5	0.5	31-10-17	Soil				x											
8	TP4_1.0	1.0	31-10-17	Soil				x											
9	TP5_0.5	0.5	31-10-17	Soil		x	x												
10	TP5_1.0	1.0	31-10-17	Soil		x	x												
11	TP6_0.5	0.5	31-10-17	Soil		x	x												
12	TP6_1.0	1.0	31-10-17	Soil		x	x												

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

Job No: 179037
Date Received: 2/11/2017
Time Received: 14:20
Received by: R
Temp: Cool/Ambient 4.1
Cooling: Ice/Icepack
Security: Intact/Broken/None

Relinquished by (Company): Arcadis	**Received by (Company):** ES NRG	***Lab use only:***
Print Name: Caitlain Regena	**Print Name:**	**Samples Received:** Cool or Ambient (circle one)
Date & Time: 31/10/2017	**Date & Time:** 2/11/2017 14:20	**Temperature Received at:** (if applicable)
Signature: Regena.	**Signature:** R	**Transported by:** Hand delivered / courier