



Job No: 9073/2  
Our Ref: 9073/2-AA  
11 December 2019

Woorong Park Pty Ltd  
C/- J Wyndham Prince Pty Ltd  
PO Box 4366  
PENRITH WESTFIELD NSW 2750  
Email: [CMudie@jwprince.com.au](mailto:CMudie@jwprince.com.au)

Attention: Mr C Mudie

Dear Sir

Re: **Twenty-five Lot Subdivision  
Newpark Precinct 2, Marsden Park  
Post Earthworks Salinity Assessment Report**

At your request, Geotech Testing Pty Ltd conducted a salinity assessment at the above site after completion of earthworks. A total of 25 lots are covered in this report (Lot 2601 to 2625).

#### **Field Work**

Field work for the investigation was carried out between 27 November 2019, under the supervision of a Senior Geotechnical Engineer from the company and consisted of excavating twelve test pits (TP1 to TP12), using an excavator. The test pits were terminated at a depth of 1.5m or at shallow depths due refusal on fill boulders etc. The approximate locations of the test pits are shown on the attached Drawing Nos 9073/1-AA1 and 9073/1-AA2. The brief description of materials encountered in the test pits are provided in the attached Table A.

#### **Site Conditions**

The lots are adjacent to the existing residential development on the eastern side. The site generally slopes towards the south-westerly direction. At the time of field work earthworks were mostly completed, with most lots covered with topsoil and the site possessing little to no vegetation.

#### **Sub-surface Conditions**

Subsurface conditions encountered in the test pits are detailed in the attached Table A.

#### **Groundwater Conditions**

Groundwater was not observed in the test pits during the short time they remained open. It must be noted that fluctuations in the level of groundwater might occur due to variations in rainfall, temperature and/or other factors.

#### **Exposure Classification**

##### **Laboratory Testing**

During field work, a total of 12 soil samples were recovered for chemical testing in the NATA accredited laboratory of SGS to assess salinity (Electrical Conductivity (EC)) and acidity (pH) properties. The test results are summarised below with Exposure Classifications.

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Location	Depth	EC (mS/cm)	pH	MF	EC <sub>e</sub> (dS/m)	Exposure Classification
TP1	0.5-0.9	89	5.7	8	0.7	A1
TP2	0.4-0.6	200	5.2	8	1.6	A2
TP3	0.5-0.7	160	5.6	8	1.3	A1
TP4	0.3-0.5	160	5.6	8	1.3	A1
TP5	0.8-1.0	500	6.5	8	4.0	A2
TP6	0.6-0.8	260	7.6	9	2.3	A1
TP7	0.5-0.8	320	5.4	8	2.6	A2
TP8	0.6-0.8	250	5.4	8	2.0	A2
TP9	0.2-0.4	330	6.7	9	3.0	A1
TP10	0.4-0.6	400	6.4	9	3.6	A1
TP11	0.4-0.6	220	5.4	8	1.8	A2
TP12	0.3-0.5	540	4.9	9	4.9	A2

\* The multiplication factor (MF) is a function of the soil texture and description (Site Investigations for Urban Salinity – 2002)

### Specifications

Electrical Conductivity (EC) testing was carried out to assess soil salinity, as outlined in the DEH (Department of Environment and Heritage) publication, “Site Investigations for Urban Salinity - 2002”. The test conducted on a soil sample for salinity is generally made up of 1:5 soil water suspension, which is one part air dried soil to five parts distilled water. The determined EC is multiplied by a factor (varying from 6 to 17) based on the texture of the soil sample to obtain Corrected Electrical Conductivity designated as EC<sub>e</sub>. Based on site investigation results, an average multiplication factor of 7 was used for the clays encountered during field work. The DEH publication defines various classes of saline soils as follows:

Classification	EC <sub>e</sub> (dS/m)	Exposure Classification AS2870-2011
Non-saline	<2	A1
Slightly saline	2 – 4	
Moderately saline	4 – 8	A2
Very saline	8 – 16	B1
Highly saline	>16	B2

Acidity (pH) testing was also conducted to determine the aggressivity of the soils to steel and concrete. The various classes of aggressive soils are defined as follows according to AS2870-2011.

Classification	pH	Exposure Classification AS2870-2011
Non-aggressive	>5.5	A1
Mild	4.5-5.5	A2
Moderate	4.0-4.5	B1
Severe	<4.0	B2

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Based on the results, it is assessed that soils at the site are generally non-saline to slightly saline and non-aggressive to mildly aggressive to steel and concrete.

**Conclusion**

Based on the procedures described in AS2870-2011 the exposure classifications for the proposed lots are shown below.

Lot No	Exposure Classification
2601	A1
2602	A1
2603	A2
2604	A2
2605	A1
2606	A1
2607	A1
2608	A1
2609	A2
2610	A2
2611	A1
2612	A1
2613	A1
2614	A2
2615	A2
2616	A2
2617	A2
2618	A1
2619	A1
2620	A1
2621	A1
2622	A1
2623	A2
2624	A2
2625	A2

Based on the results of the post site works salinity assessment, the site is suitable for the residential subdivision development. The construction requirements for A1 & A2 classifications are shown below (AS2870-2011, Table 5.3).

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Classification	Minimum Design Characteristic Strength	Minimum Initial Curing
A1	20 MPa	3 days
A2	25 MPa	3 days

If you have any questions, please do not hesitate to contact the undersigned.

Yours faithfully  
GEOTECH TESTING PTY LTD



EMGED RIZKALLA  
Director

Attached Table A – Summary of Test Pits (9073/1)  
Drawing Nos 9073/1-AA1 & AA2 – Test Pit Locations

**TABLE A**

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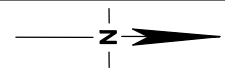
TEST PIT NUMBER	DEPTH (m)	SAMPLE DEPTH (m)	MATERIAL DESCRIPTION
TP1	0.0 – 0.3	0.3 -0.5	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.3 – 1.5	0.5 – 0.8	FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
TP2	0.0 – 0.3	0.4 – 0.6	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.3 – 1.5		FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
TP3	0.0 – 0.4	0.4 – 0.9	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.4 – 1.5	0.5 – 0.7	FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
TP4	0.0 – 0.3	0.4 – 0.6	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.3 – 1.5	0.3 – 0.5	FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
TP5	0.0 – 0.8	0.8 – 1.0	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.8 – 1.5		FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
TP6	0.0 – 0.6	0.6 – 0.8	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.6 – 1.5	0.6 – 0.8	FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
TP7	0.0 – 0.5		FILL: Silty Clay, low plasticity, brown, with some gravel
	0.5 – 1.0	0.5 – 0.8	FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
	0.1 – 1.5		FILL: Silty Clay, low plasticity, dark grey
TP8	0.0 – 0.5	0.5 – 0.7	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.5 – 1.5	0.6 – 0.8	FILL: Silty Clay, low to medium plasticity, red brown, with ironstone

**TABLE A**

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<b>TEST PIT NUMBER</b>	<b>DEPTH (m)</b>	<b>SAMPLE DEPTH (m)</b>	<b>MATERIAL DESCRIPTION</b>
TP9	0.0 – 0.2	0.2 – 0.4	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.2 – 1.5		FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
TP10	0.0 – 0.3	0.3 – 0.5	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.3 – 1.5	0.4 – 0.6	FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
TP11	0.0 – 0.2	0.4 – 0.8	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.2 – 1.4	0.3 – 0.5	FILL: Silty Clay, low to medium plasticity, red brown, with ironstone
	1.4 – 1.5		(CI-CH) Silty CLAY, medium to high plasticity, red, brown to grey, stiff, M<PL
TP12	0.0 – 0.2	0.3 – 0.5	FILL: Silty Clay, low plasticity, brown, with some gravel
	0.2 – 1.5	0.3 – 0.5	FILL: Silty Clay, low to medium plasticity, red brown, with ironstone



**LEGEND**

- Test Pit
- Test Pit (March 2018)



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**NOTES**

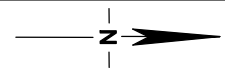
1. Site features are indicative and are not to scale.
2. This drawing has been produced using a base plan provided by others to which additional information e.g test pits, borehole locations or notes have been added. Some or all of the plan may not be relevant at the time of producing this drawing

J Wyndham Prince Pty Ltd  
 25 Lot Subdivision  
 Precinct 2, Newpark  
 Marsden Park Subdivision

**Test Pit Locations**

Drawing No: 9073/1-AA1  
 Job No: 9073/1  
 Drawn By: MH  
 Date: 2 December 2019  
 Checked By: MT

File No: 9073-1  
 Layers: 0, AA1



**LEGEND**

- Test Pit
- Test Pit (March 2018)



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J Wyndham Prince Pty Ltd  
25 Lot Subdivision  
Precinct 2, Newpark  
Marsden Park Subdivision

**Test Pit Locations**

Drawing No: 9073/1-AA2  
Job No: 9073/1  
Drawn By: MH  
Date: 2 December 2019  
Checked By: MT

File No: 9073-1  
Layers: 0, AA2