

Job No: 9073/1 Our Ref: 9073/1-AA 11 December 2019

Woorong Park Pty Ltd C/- J Wyndham Prince Pty Ltd PO Box 4366 PENRITH WESTFIELD NSW 2750 Email: <u>CMudie@jwprince.com.au</u>

Attention: Mr C Mudie

Dear Sir

Re: Twenty-five Lot Subdivision Newpark Precinct 2, Marsden Park Site Classification Report

Please find herewith our site classifications report for the proposed dwellings to be constructed at the above subdivision. A total of 25 lots are covered in this report (Lot 2601 to 2625).

This report contains information on surface and sub-surface conditions encountered at the site, together with an assessment of the site classifications in accordance with AS2870-2011 "Residential Slabs & Footings".

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

Yours faithfully GEOTECH TESTING PTY LTD

EMGED RIZKALLA Director

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9073/1-AA Newpark Precinct 2, Marsden Park

1.0 INTRODUCTION

This report provides the results of a geotechnical investigation for the classification of the proposed lots at Newpark Precinct 2. A total of 25 lots are covered in this report (Lot 2601 to 2625).

A previous site classification report (Our Ref: 8599/8-AA dated 29 March 2018) was carried out and submitted for Precinct 2 of the subdivision. This report covers additional lots which were not covered by the foregoing report.

Site classification in accordance with AS2870-2011 is only applicable for design of footing systems for a single dwelling, house, townhouse or similar structure that would be detached or separated by a party wall or common wall including buildings classified as Class 1 and Class 10a in the Building Code of Australia (BCA). AS2870 is not suitable for dwellings situated vertically above or below another dwelling. Therefore, a geotechnical investigation would be required for other dwellings to be classified in accordance with the BCA.

It is understood that the proposed dwellings are of brick veneer construction, and wall loadings are expected to be in the range of 15kN/m to 50kN/m. The maximum working load (safe bearing pressure) would be in the order of 50kPa for ground supported floor slabs and 100kPa for strip and pad footings (AS2870-2011).

2.0 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.

3.0 SITE CONDITIONS

3.1 Site Surface 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.

3.2 Sub-Surface Conditions

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

3.3 Groundwater Conditions

Groundwater was not observed in the test pits during the short time that 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 not evident during investigation.

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9073/1-AA Newpark Precinct 2, Marsden Park

4.0 LABORATORY TESTING

During the course of the investigation, laboratory tests were conducted on a number samples recovered from the naturally occurring clay and fill materials, aimed at determining Shrink/Swell Index and Atterberg limits as per relevant Australian Standards. The detailed test results are included in Appendix C, and are summarised below:

| TP | Depth (m) | Material Description | I _{ss} (%/ _p F) | l _P (%) | LS (%) |
|------|--------------|---|--|-----------------------|-----------|
| TP1 | 0.3 – 0.5 | FILL: Silty Clay, low to medium plasticity, red brown, with ironstone | NT | 30 | 15.0 |
| TP3 | 0.4 – 0.9 | FILL: Silty Clay, low to medium plasticity, red brown, with ironstone | 1.3 | NT | NT |
| TP4 | 0.4 – 0.6 | FILL: Silty Clay, low to medium plasticity, red brown, with ironstone | 0.5 | NT | NT |
| TP6 | 0.6 – 0.8 | FILL: Silty Clay, low to medium plasticity, red brown, with ironstone | 0.9 | NT | NT |
| TP8 | 0.5 – 0.7 | FILL: Silty Clay, low to medium plasticity, red brown, with ironstone | NT | 32 | 15.0 |
| TP10 | 0.3 – 0.5 | FILL: Silty Clay, low plasticity, brown, with some gravel | NT | 18 | 9.5 |
| TP11 | 0.3 – 0.5 | FILL: Silty Clay, low plasticity, brown, with some gravel | NT | 35 | 17.0 |
| TP12 | 0.3 – 0.5 | FILL: Silty Clay, low plasticity, brown, with some gravel | NT | 31 | 15.5 |

 I_{ss} : Shrink Swell Index; I_P : Plastic Index; LS : Linear Shrinkage NT: Not Tested

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5.0 DISCUSSION & RECOMMENDATIONS

5.1 Assessment of Fill

Geotech Testing Pty Ltd provided Level 1 supervision and testing during fill placement (Reports 8599/3-R1, R2, R3 and R4) at the site. Based on the test pit results and the compaction tests results, the fill material found at the site is classified as "Controlled" fill.

5.2 Site Classifications

Based on the above information, site classifications to AS2870-2011 are summarised in Appendix B. It should be noted that lots containing more than 400mm of clay fill (assessed as controlled fill) would originally be classified as Class "P" in accordance with AS2870-2011. However, based on the results of this investigation, which included laboratory testing, the lots are classified as detailed in Appendix B.

It is recommended that footings for the proposed dwellings are founded on the same stratum, below any topsoil, loose or deleterious material, to minimise the potential for differential movement. In the event that bedrock is encountered in any portion of the footing excavations, the remainder of the foundations must be supported on bedrock to ensure even bearing. The classifications presented in Appendix B of this report are applicable to the Lots at the dates of conducting the investigation, being 27 November 2019 and are made on the following assumptions:

- The design and construction requirements of AS2870 must be followed.
- The recommendations for foundation performance and site maintenance set out in Appendix B of AS2870 must be followed.
- The proposed dwellings must be in accordance with AS2870. A detailed geotechnical investigation will be required for other dwellings to be classified in accordance with the BCA.

It is recommended that house owners are made aware of recommendations in the CSIRO publication, "Guide to Home Owners on Foundation Maintenance and Footing Performance" and AS2870 Appendix H of AS2871-2011.

GEOTECH TESTING PTY LTD

Woorong Park Pty Ltd C/- J Wyndham Prince Pty Ltd ER.sf/11.12.2019

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APPENDIX A

TABLE A (Test Pit Summary)

TEST PIT LOCATION PLAN (Drawing Nos 9073/1-AA1 & AA2)

TABLE A

| Job No: Our Ref: | 9073/1 9073/1-AA | • | Page 1 of 2 |
|---------------------|---------------------|---------------------|---|
| 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 |
| | | | |

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TABLE A

Job No:

9073/1

| Dur Ref: 9073/1-AA | | | | | | |
|--------------------|-----------|---------------------|---|--|--|--|
| TEST PIT NUMBER | DEPTH (m) | SAMPLE DEPTH (m) | MATERIAL DESCRIPTION | | | |
| 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< td=""></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 | | | |
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APPENDIX B

SUMMARY OF SITE CLASSIFICATIONS

Job No: 9073/1 Our Ref: 9073/1-AA

TABLE B

SUMMARY OF SITE CLASSIFICATIONS ADDITIONAL LOTS NEWPARK PRECINCT 2, MARSDEN PARK

| Lot No | Site Classification |
|-------------------------|---|
| 2601 | М |
| 2602 | М |
| 2603 | М |
| 2604 | М |
| 2605 | М |
| 2606 | М |
| 2607 | М |
| 2608 | М |
| 2609 | М |
| 2610 | М |
| 2611 | М |
| 2612 | М |
| 2613 | М |
| 2614 | М |
| 2615 | М |
| 2616 | М |
| 2617 | М |
| 2618 | М |
| 2619 | М |
| 2620 | М |
| 2621 | М |
| 2622 | М |
| 2623 | М |
| 2624 | М |
| 2625 | М |
| Class M: I surface m | Moderately Reactive, ovement : 20-40mm |

APPENDIX C

LABORATORY TEST RESULTS (Shrink/Swell & Atterberg Limits)



J WYNDHAM PRINCE PTY LTD PO BOX 4366 PENRITH WESTFIELD NSW 2750

SITE CLASSIFICATION 25 LOT SUBDIVISION, PRECINCT 2, NEWPARK, MARSDEN PARK SUBDIVISION

| | | | Page 1 of 2 |
|--|--|--|---|
| Job No: 9073/1 Laboratory Penrith Date Tested 10/12/2019 |) | Tested By: Checked By: | BG & BC AK |
| Sample Identification | Test Pit 1 | Test Pit 8 | Test Pit 10 |
| Laboratory Number | 9073/1-1 | 9073/1-5 | 9073/1-6 |
| Depth (m) | 0.3 - 0.5 | 0.5 - 0.7 | 0.3 - 0.5 |
| Test Description | | | |
| Liquid Limit (W _L) | 47% | 50% | 31% |
| Plastic Limit (W _P) | 17% | 18% | 13% |
| Plastic Index (I _P) | 30% | 32% | 18% |
| Linear Shrinkage (LS) | 15.0% | 15.0% | 9.5% |
| Mould Length (mm) | 127 | 127 | 127 |
| Sample History | Oven Dried Dry Sieved | Oven Dried Dry Sieved | Oven Dried Dry Sieved |
| Material Description | FILL: Silty Clay, medium plasticity, medium plasticity, brown, some fine to medium gravel | FILL: Silty Clay, medium plasticity, brown, some fine to medium gravel | FILL: Silty Clay, low plasticity, brown, some fine to medium gravel |

TEST RESULTS - ATTERBERG LIMITS Test Procedure AS1289 3.1.1, 3.2.1, 3.3.1, 3.4.1



Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench

11/12/2019 Approved Signatory

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J WYNDHAM PRINCE PTY LTD PO BOX 4366 PENRITH WESTFIELD NSW 2750

SITE CLASSIFICATION 25 LOT SUBDIVISION, PRECINCT 2, NEWPARK, MARSDEN PARK SUBDIVISION

| | | | | Page 2 of 2 |
|--|---|---|---------------|-------------|
| Job No: 9073/1 Laboratory Penrith Date Tested 10/12/2019 | 9 | Tested By: Checked By: | BG & BC AK | |
| Sample Identification | Test Pit 11 | Test Pit 12 | | |
| Laboratory Number | 9073/1-7 | 9037/1-8 | | |
| Depth (m) | 0.3 - 0.5 | 0.3 - 0.5 | | |
| Test Description | | | | |
| Liquid Limit (W _L) | 51% | 51% | | |
| Plastic Limit (W _P) | 16% | 20% | | |
| Plastic Index (I _P) | 35% | 31% | | |
| Linear Shrinkage (LS) | 17.0% | 15.5% | | |
| Mould Length (mm) | 127 | 127 | | |
| Sample History | Oven Dried | Oven Dried | | |
| | Dry Sieved | Dry Sieved | | |
| Material Description | FILL: Silty Clay, medium to high plasticity, red-brown, some fine to medium gravel | FILL: Silty Clay, medium to high plasticity, brown, some fine to medium gravel | | |
| Form No R004 Version 12 - 06/13 - Is | ssued by ER | A Kench | | 11/12/2019 |

TEST RESULTS - ATTERBERG LIMITS Test Procedure AS1289 3.1.1, 3.2.1, 3.3.1, 3.4.1



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J WYNDHAM PRINCE PTY LTD PO BOX 4366 PENRITH WESTFIELD NSW 2750

| Job No: | 9073/1 |
|--------------|------------|
| Tested By: | SS |
| Checked By: | AK |
| Date Tested: | 28/11/2019 |
| Laboratory | Penrith |

SITE CLASSIFICATION 25 LOT SUBDIVISION, PRECINCT 2, NEWPARK, MARSDEN PARK SUBDIVISION

TEST RESULTS - SHRINK / SWELL INDEX

Page 1 of 1

| Test Procedure: AS 1289 7.1.1 | | | | | | |
|---|---|--|--|--|--|--|
| Sample Identification | Test Pit 3 | Test Pit 4 | Test Pit 6 | | | |
| Depth (m) | 0.4 - 0.9 | 0.4 - 0.6 | 0.6 - 0.8 | | | |
| Laboratory Number | 9073/1-2 | 9073/1-3 | 9073/1-4 | | | |
| Test Description | | | | | | |
| Moisture Content | | | | | | |
| Initial % | 11.2 | 18.2 | 8.3 | | | |
| Final % | 17.7 | 28.3 | 16.9 | | | |
| Swell % | 3.3 | 0.2 | 1.5 | | | |
| Shrinkage % | 0.4 | 0.8 | 0.9 | | | |
| Shrink/Swell Index %/ _p F | 1.3 | 0.5 | 0.9 | | | |
| Material Description | FILL: Silty Clay, low plasticity, red- brown, some fine to medium gravel | FILL: Silty Clay, low plasticity, red-brown, some fine to medium gravel | FILL: Silty Clay, low plasticity, red-brown, some fine to medium gravel | | | |

Form No R007 Version 12 06/13



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