GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

Job No: 7747/54
Our Ref: 7747/54-AF
20 June 2023

Redbank Communities
PO Box 262
NORTH RICHMOND NSW 2754
Email: andrewflaherty@redbankcommunities.com.au

Attention: Mr A Flaherty

Dear Sir

re: Redbank Development
Grose Vale Road, North Richmond
Site Fill Testing at Promenade - Southern Heights, Ridgetops, Dam 7 and Dam 8

This letter report provides a summary of site filling testing carried out at Southern Heights, Promenade, Ridgetop, Dam 7 and Dam 8.

The tests were undertaken within the terms of our NATA accreditation, at the dates and to the procedures shown on the test result sheets, copies of which are attached. The site filling works at Promenade, Southern Heights and Ridgetops were carried out under Level 2 Inspection and Testing as per AS3798 (Standards Australia, 2007) and at Dam 7 and Dam 8 under Level 1 Inspection and Testing as per AS3798. The frequency of the density testing and inspection were in accordance with the above standard. It should be noted that except for Dam 13, Dam 7 and Dam 8, the site filling works at all other stages at Redbank development were conducted under Level 2 Inspection and Testing.

A total of 913 tests were conducted against the volume of fill of about 382,030m^3 placed at the above sites. Based on the number of the tests conducted and the fill volume, the frequency of the testing is one density test for every 418m^3 of fill. It should be noted that AS3798 requires a minimum of one test for every 500m^3 of fill. The tests were spread across the fill area and conducted at different depths. An extract regarding the frequency of testing from the above standard is shown below.

TABLE 8.1

FREQUENCY OF FIELD DENSITY TESTS

Type of earthworks	Frequency of tests (see Note 2)
Type 1 Large scale operations (greater than 1500m^2 e.g., subdivisions, large industrial lots, road embankments)	1 test per layer per material type per 2500m^2; *or* 1 test per 500m^3 distributed reasonably evenly throughout full depth and area; *or* 3 tests per lot (Clause 1.2.8)
	Whichever requires the most tests

The compacted fill attained the density ratio of 98% Standard. An extract regarding the requirement of minimum compaction as per AS3798 is shown on the following page.

TABLE 5.1

MINIMUM RELATIVE COMPACTION

Item	Application	Minimum relative compaction, %	
		Minimum density ratio (at standard compactive effort) (Cohesive soils) (see Note 1)	Minimum density index (Cohesionless soils) (see Note 2)
1	Residential—lot, fill, house, sites	95 (see Note 3)	70
2	Commercial—fills to support minor loadings, including floor loadings of up to 20 kPa and isolated pad or strip footings to 100 kPa	98 (see Note 4)	75
3	Fill to support pavements (see Note 5)		
	(a) General fill	95	70
	(b) Subgrade (to a depth of 0.3 m)	98	75

In addition to the above density testing, our Geotechnical Officer also conducted stripping inspection of topsoil and proof rolling of the exposed ground surface before the placement of fill.

It should be noted that the site filling at the above sites was carried out as bulk earthworks and not for individual residential lot.

We certify that all the site filling works at the subject sites were conducted as per the requirements of AS3798 and the fill is assessed as **CONTROLLED FILL**.

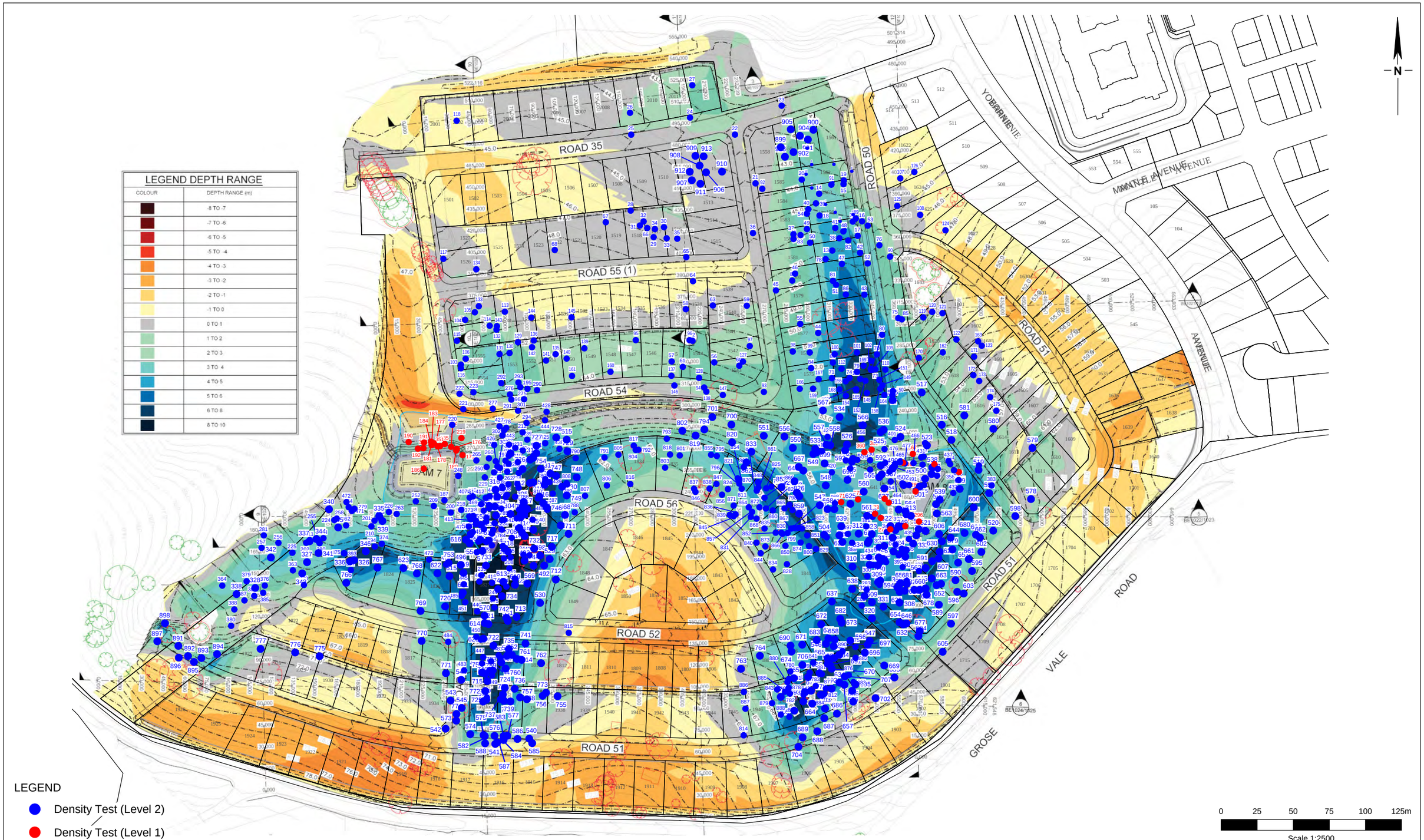
If you have any questions relating to this report, please do not hesitate to contact the undersigned.

Yours faithfully
GEOTECH TESTING PTY LTD

ZIAUDDIN AHMED
Principal Geotechnical Engineer

Attached: Drawing 7747/54-ALL (FDT#1-913)
Drawings 7747/54-1 to 7747/54-18
Density Test Results (FDT# 1 to 913)

Reference
Standards Australia, 2007. *AS3798-2007 Guidelines on earthworks for commercial and residential developments.* Sydney: SAI Global Limited.



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NOTES

1. 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 information on this plan may not be relevant at the time of producing this drawing.
2. Site features are shown at approximate locations and are not to scale.

Redbank Communities
Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-ALL
Job No: 7747/54
Drawn By: MH
Date: 20 September 2022
Checked By: ZA

File Ref: 7747-54 (A3L)
Layers: 0, ALL

LEGEND

Density Test

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Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-1
Job No: 7747/54
Drawn By: MH
Date: 22 April 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay1

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Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-2
Job No: 7747/54
Drawn By: MH
Date: 24 May 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay2

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Redbank Communities
Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-3
Job No: 7747/54
Drawn By: MH
Date: 22 June 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay3

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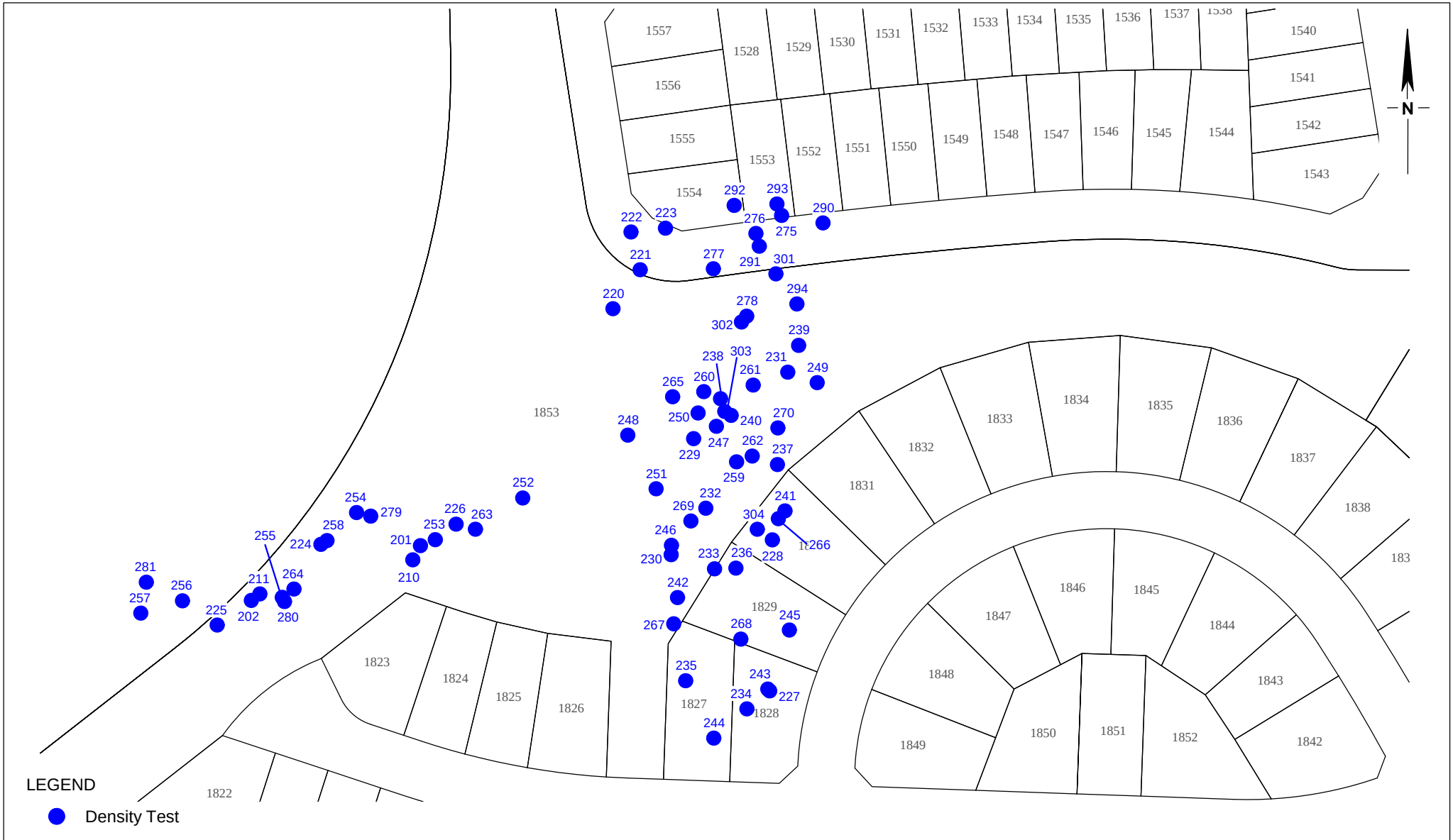
Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-4
Job No: 7747/54
Drawn By: MH
Date: 21 July 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay4



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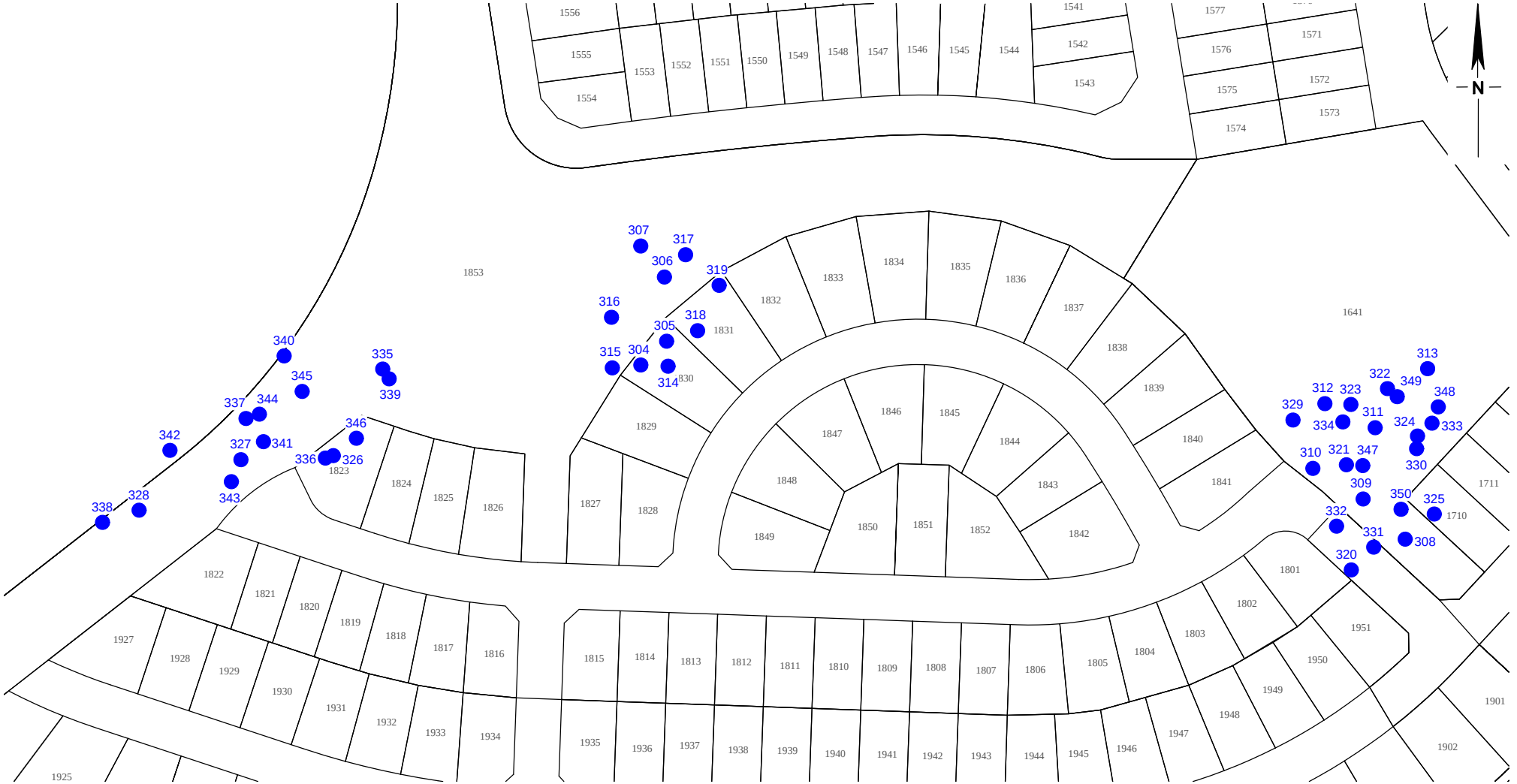
Redbank Communities
Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-5
Job No: 7747/54
Drawn By: MH
Date: 21 July 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay5



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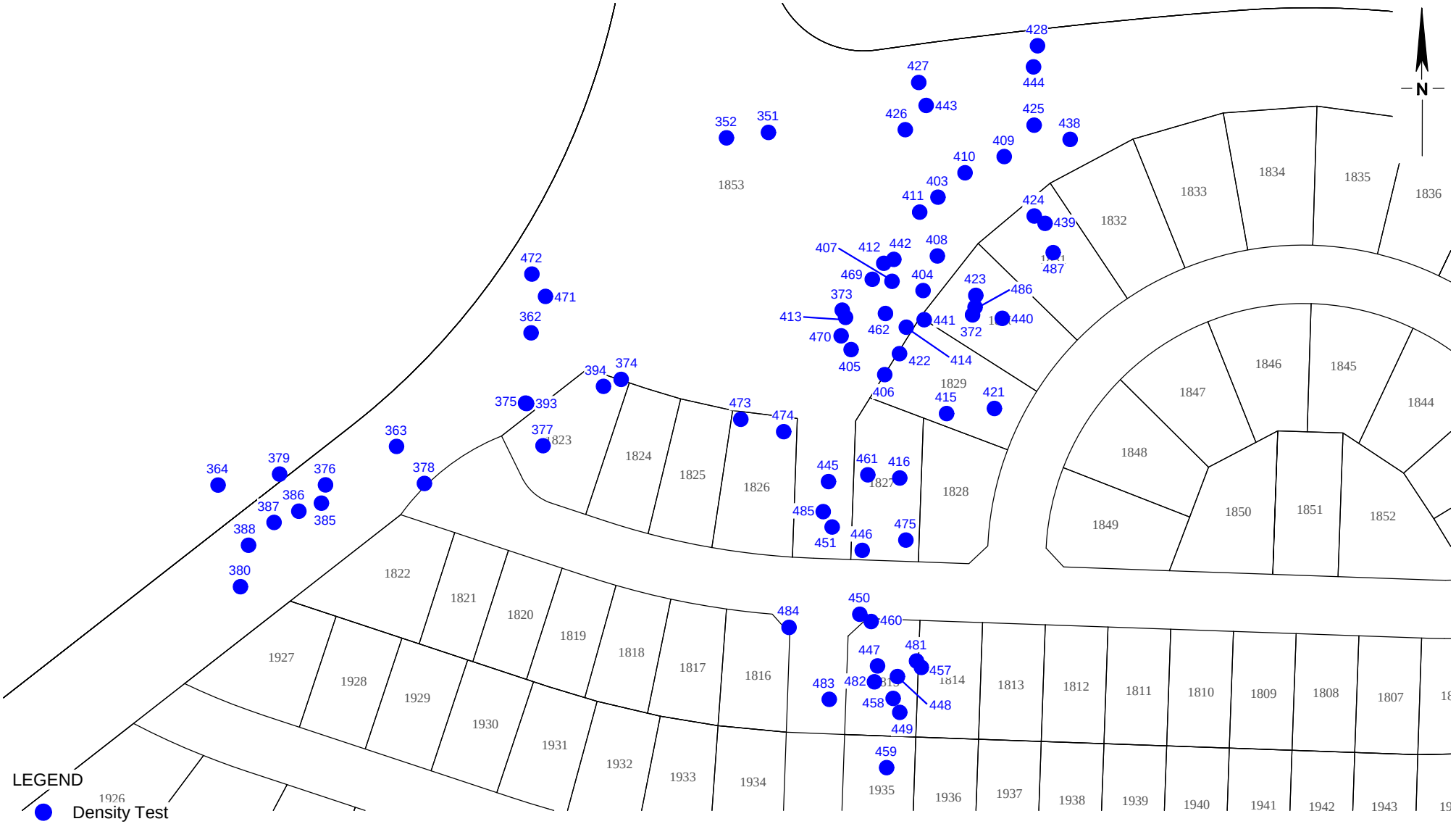
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-6
Job No: 7747/54
Drawn By: MH
Date: 24 August 2021
Checked By: AK

File No: 7747-54
Layers: 0, Lay6



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Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-7
Job No: 7747/54
Drawn By: MH
Date: 24 August 2021
Checked By: AK

File No: 7747-54
Layers: 0, Lay7

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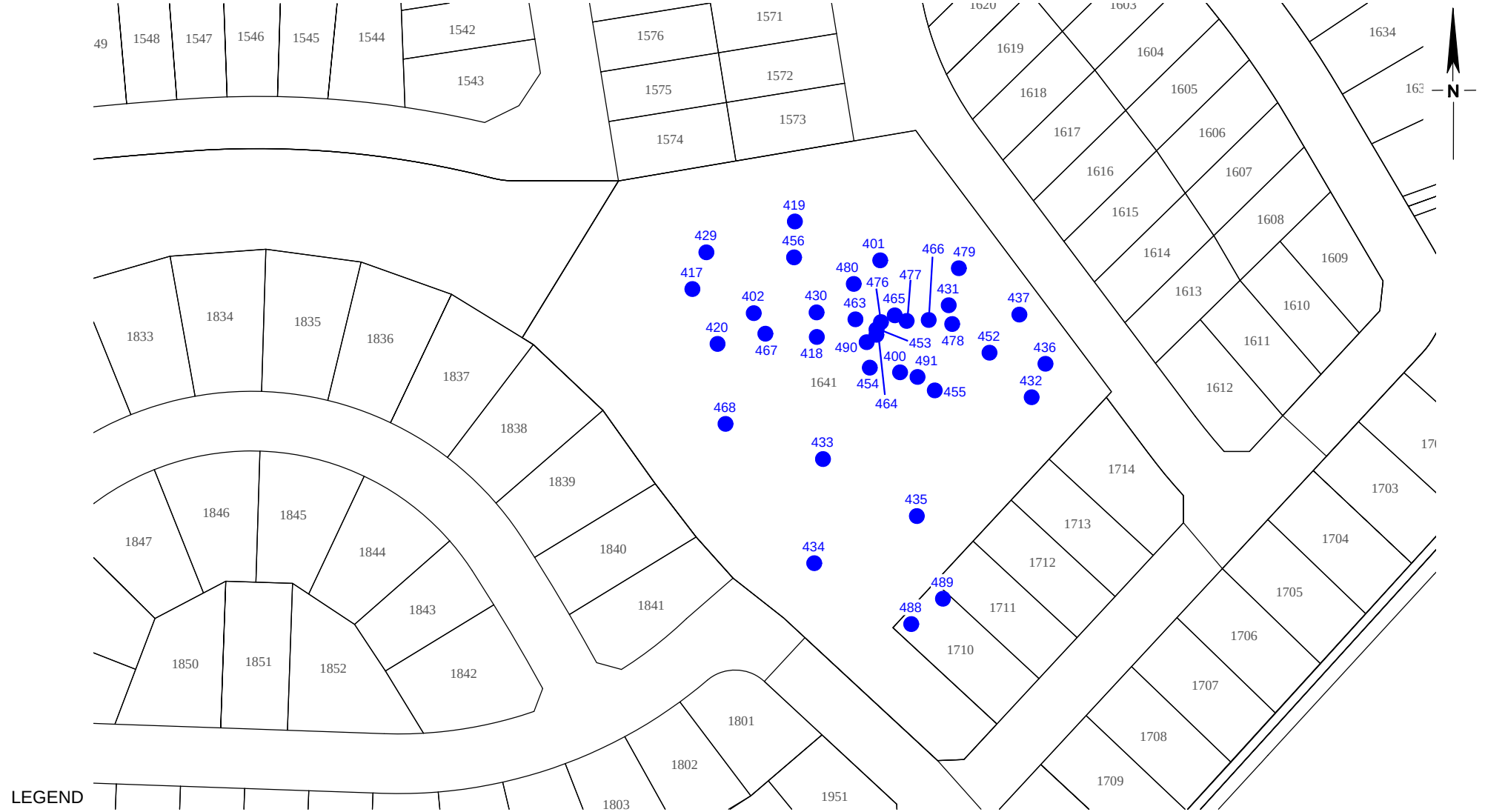
Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-8
Job No: 7747/54
Drawn By: MH
Date: 24 August 2021
Checked By: AK

File No: 7747-54
Layers: 0, Lay8



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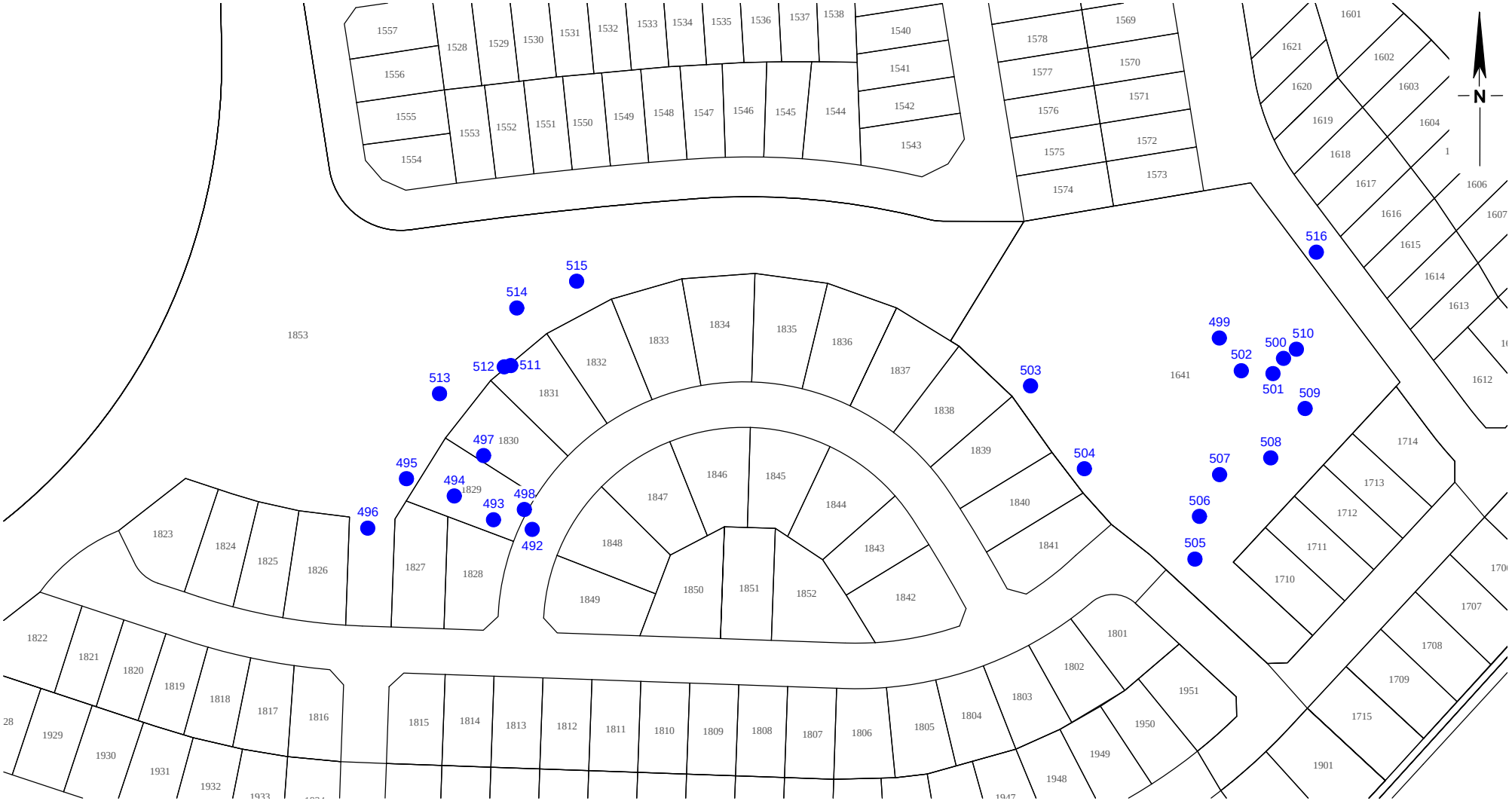
Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-9
Job No: 7747/54
Drawn By: MH
Date: 24 August 2021
Checked By: AK

File No: 7747-54
Layers: 0, Lay9



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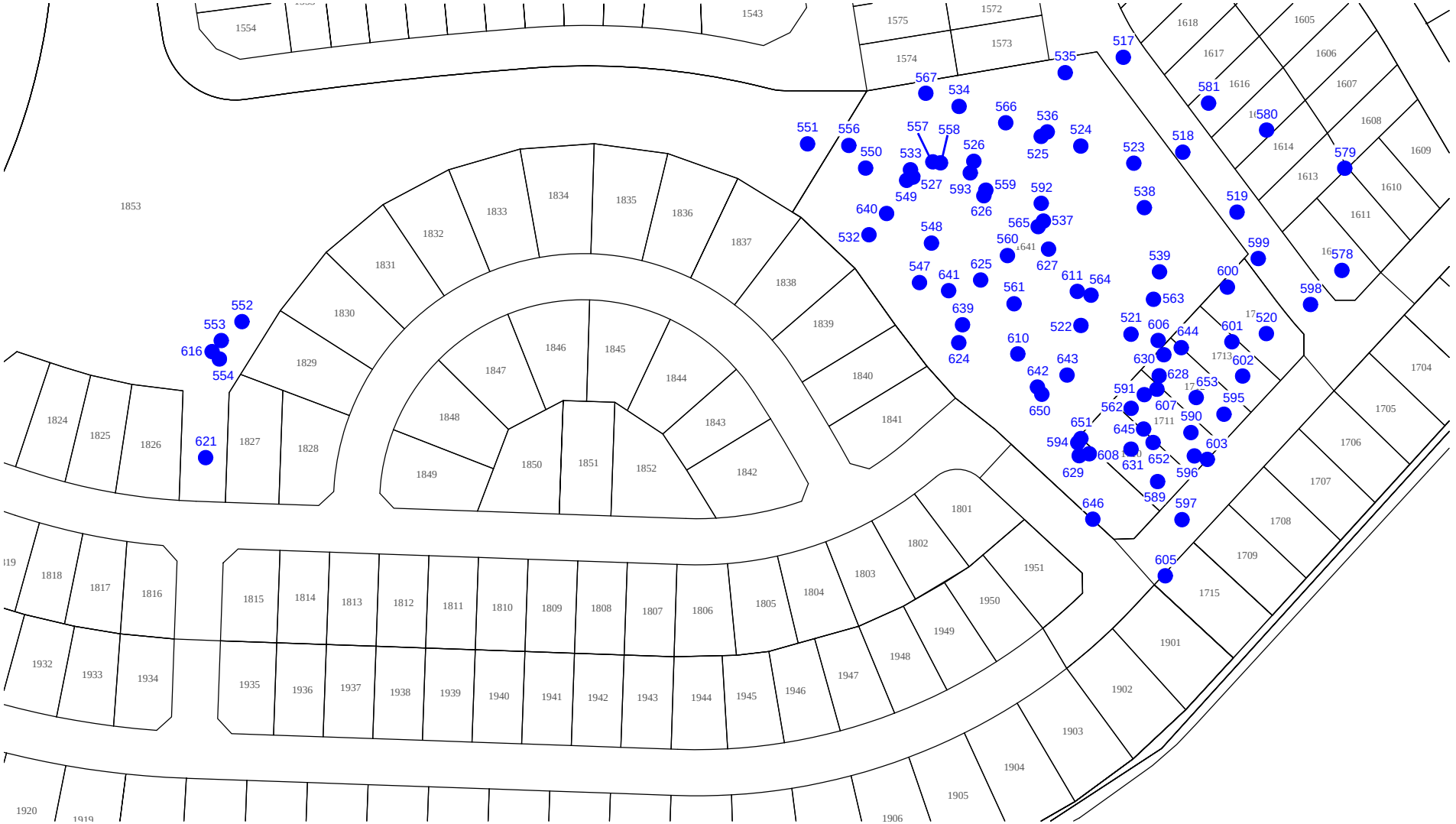
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-10
Job No: 7747/54
Drawn By: MH
Date: 24 August 2021
Checked By: AK

File No: 7747-54
Layers: 0, Lay10



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Proposed Development
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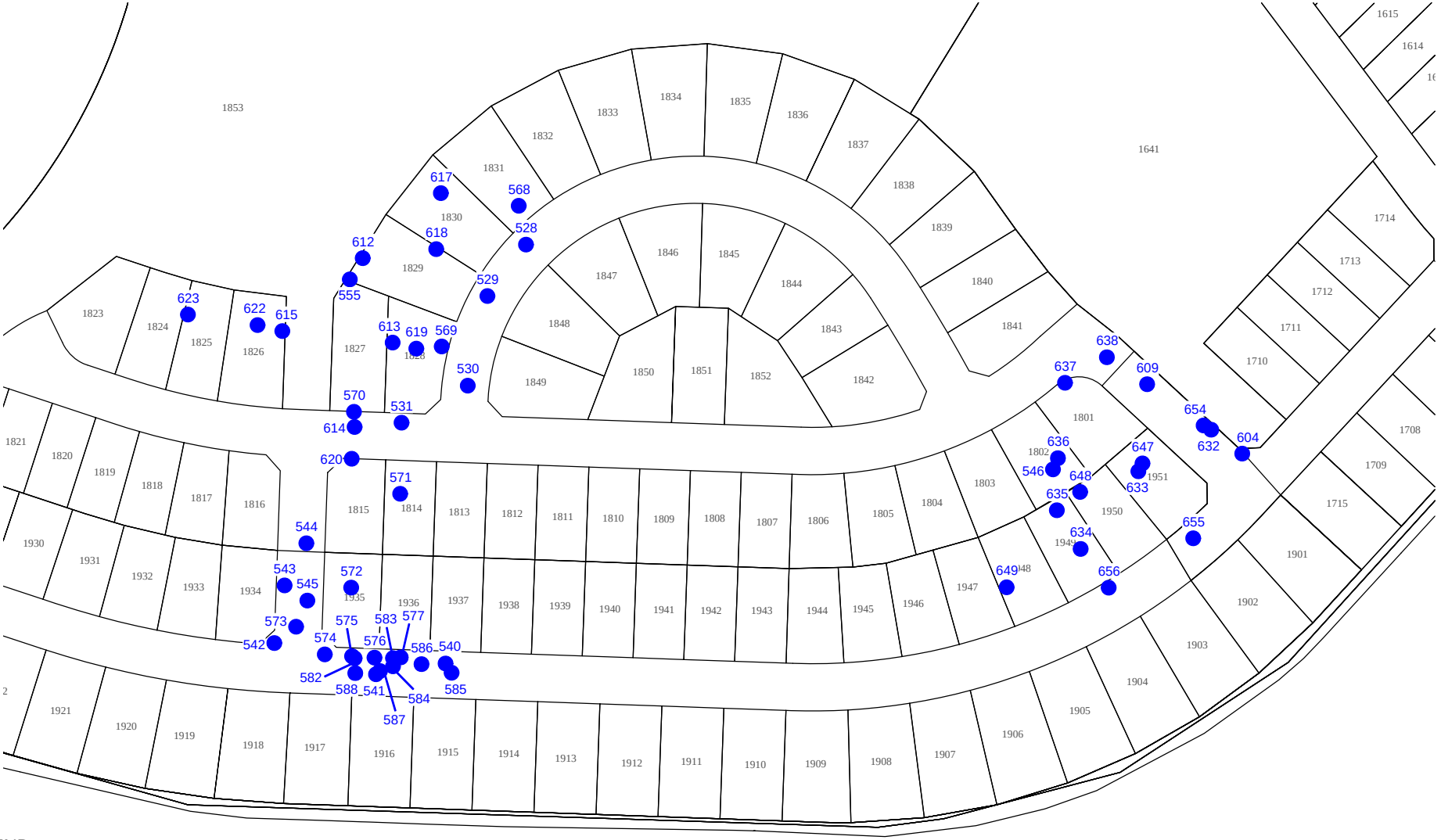
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-11
Job No: 7747/54
Drawn By: MH
Date: 24 September 2021
Checked By: AK

File No: 7747-54
Layers: 0, Lay11



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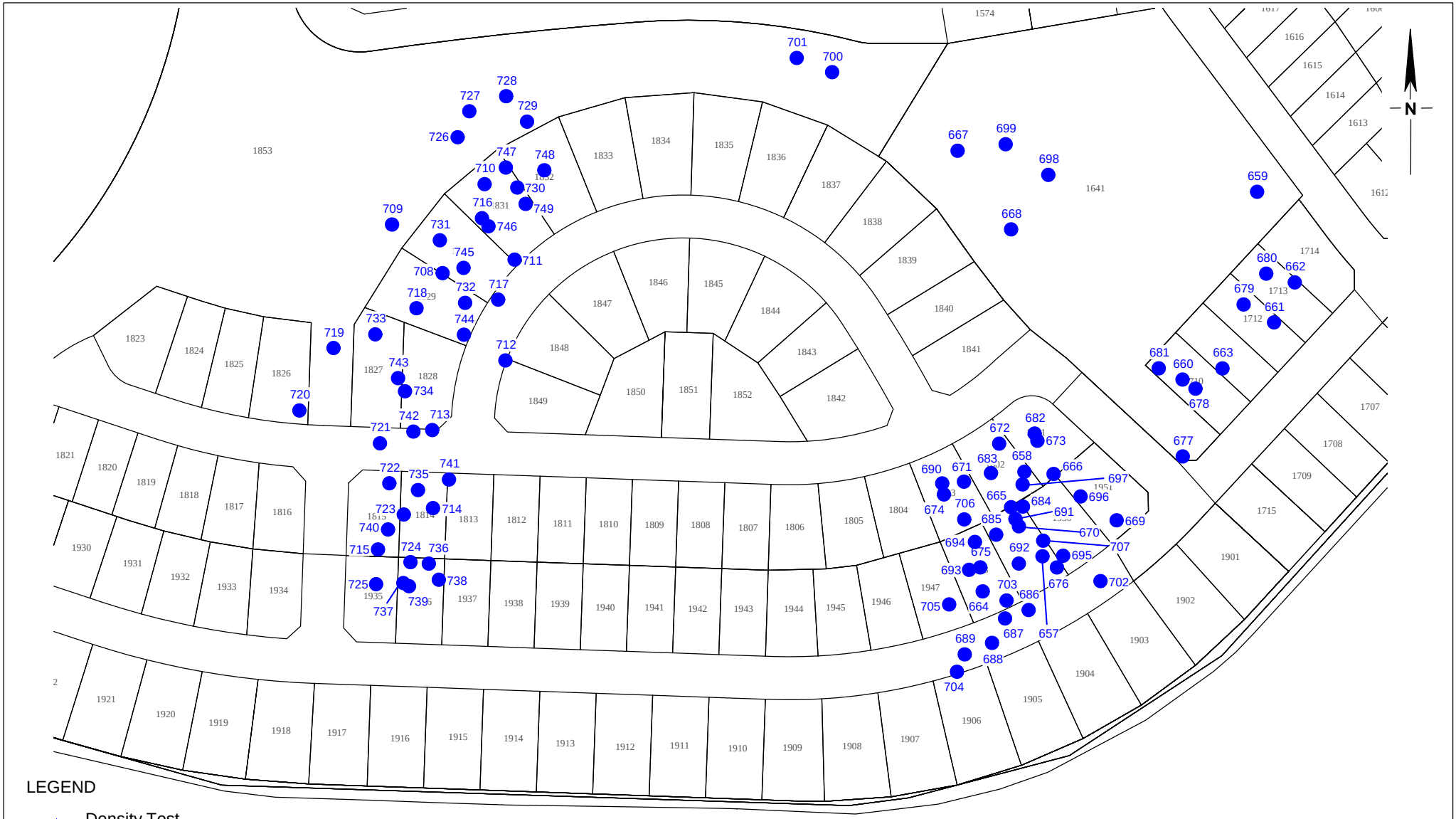
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-12
Job No: 7747/54
Drawn By: MH
Date: 24 September 2021
Checked By: AK

File No: 7747-54
Layers: 0, Lay12



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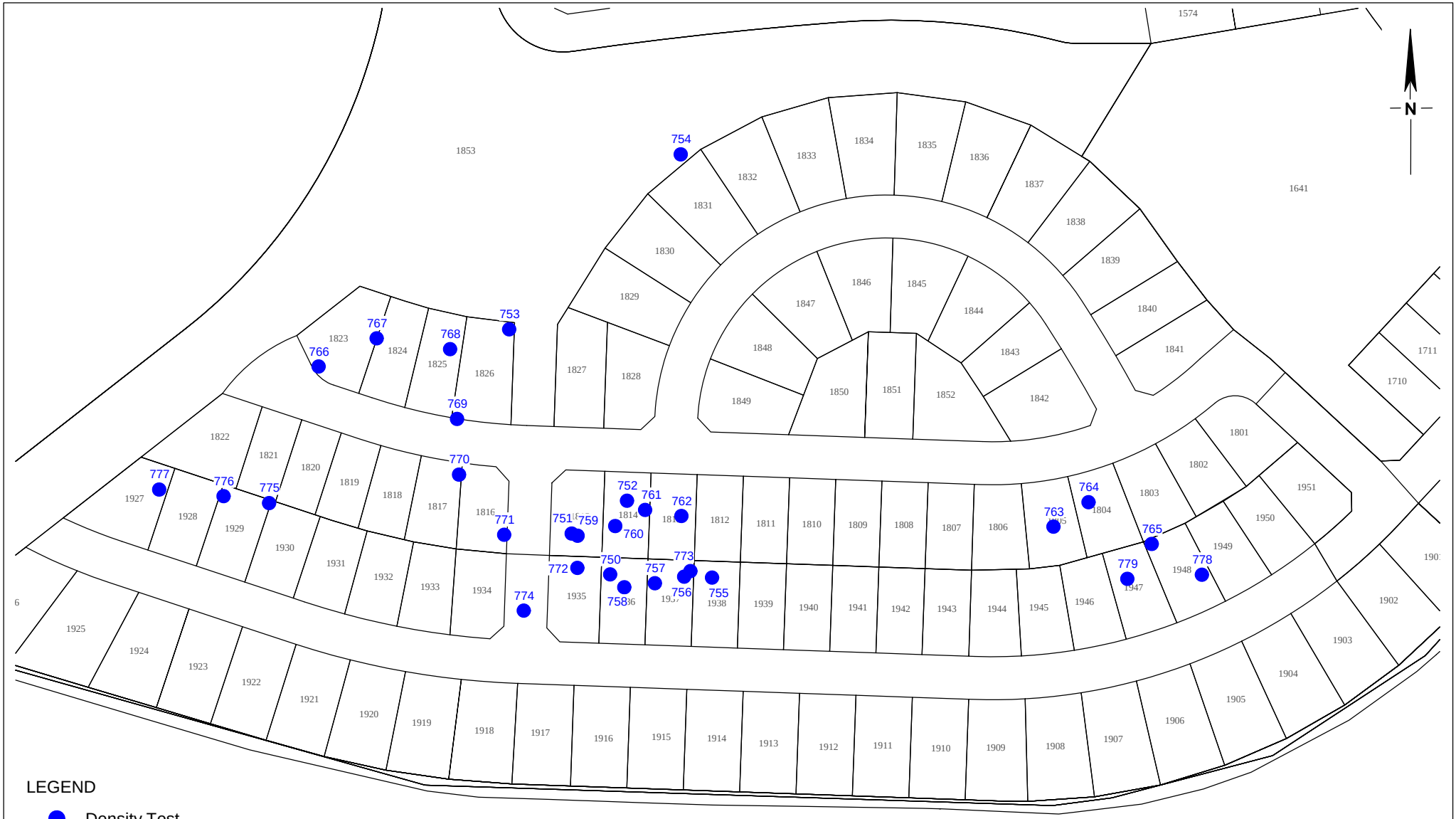
Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-13
Job No: 7747/54
Drawn By: MH
Date: 25 October 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay13



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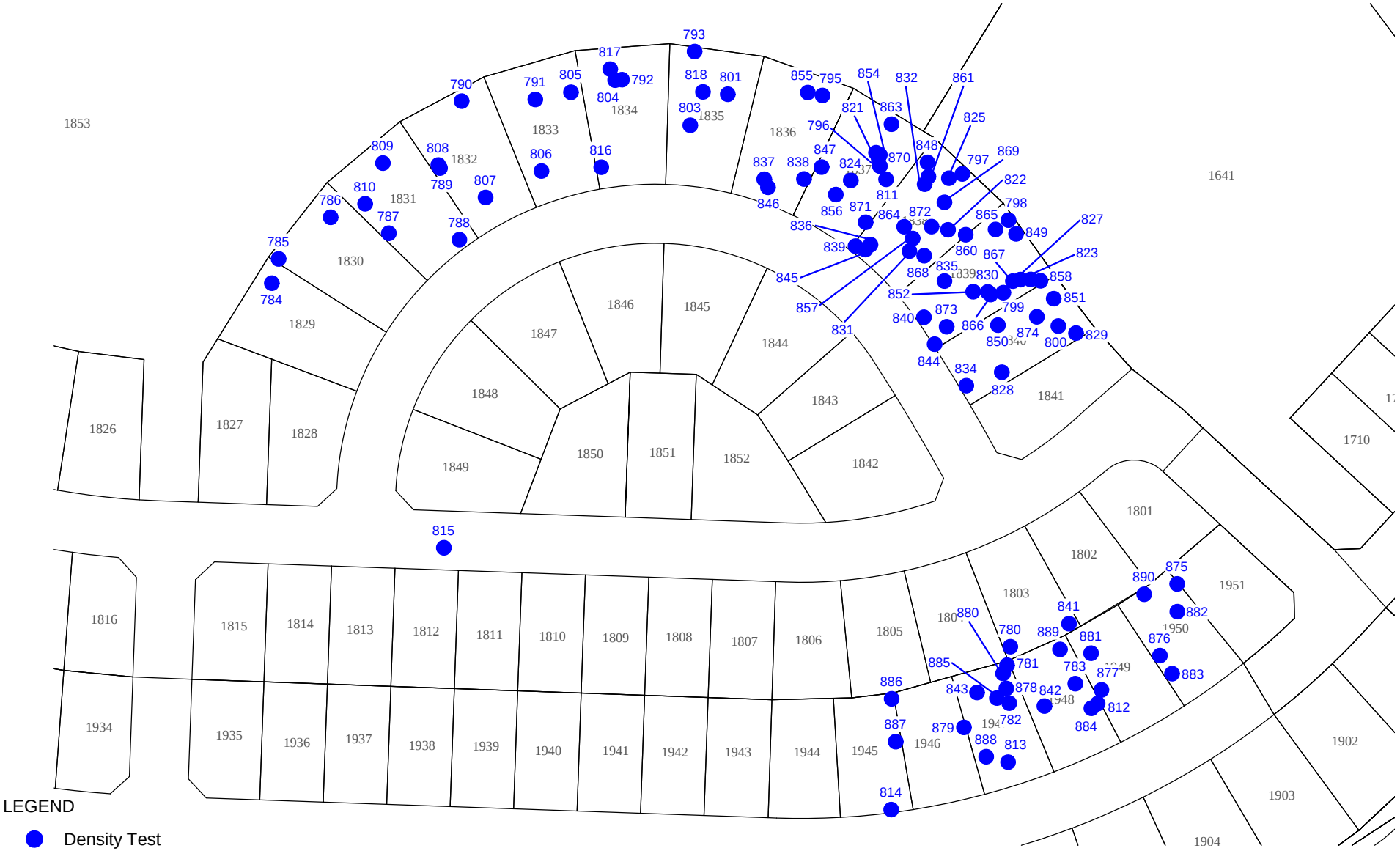
Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-14
Job No: 7747/54
Drawn By: MH
Date: 25 October 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay14



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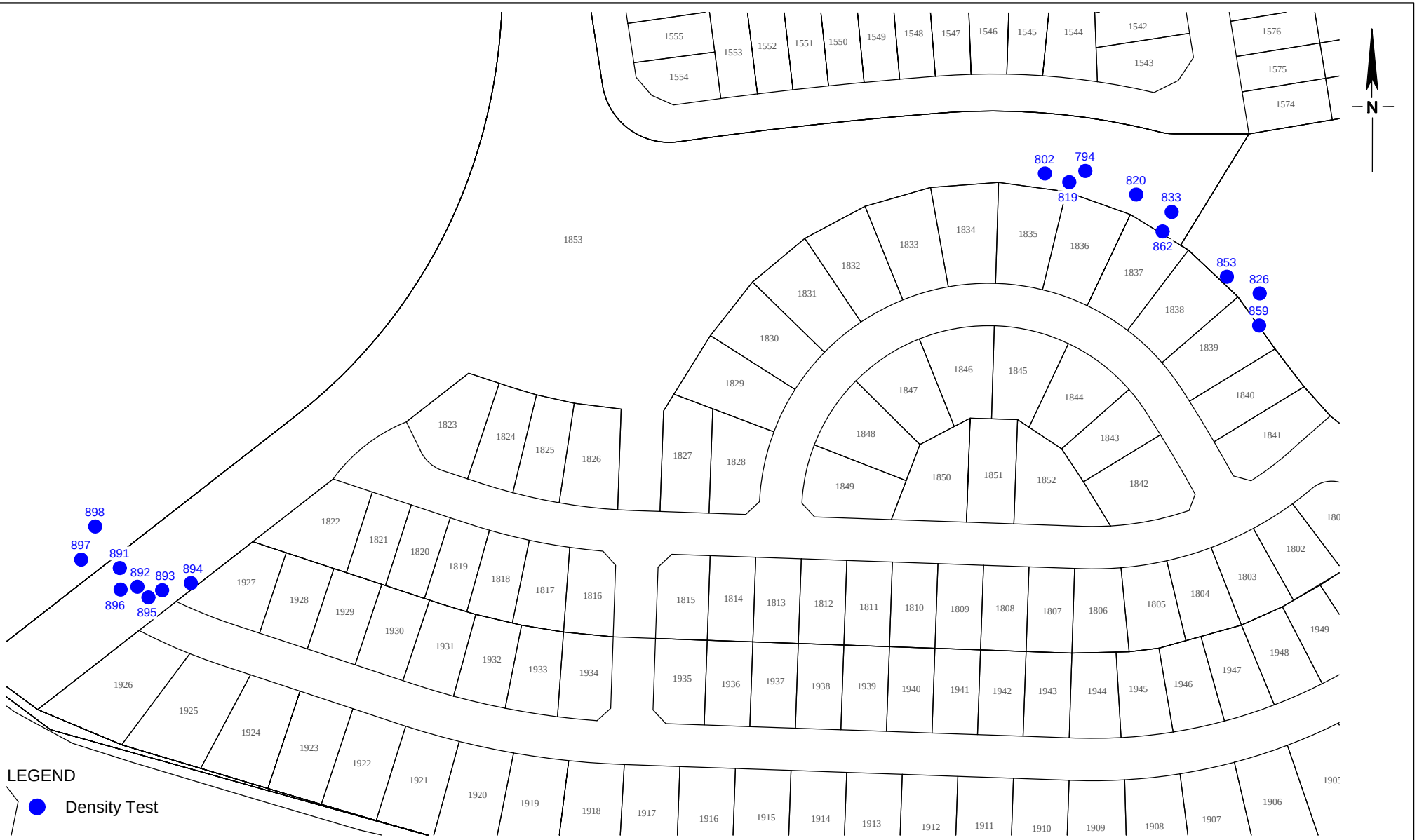
Location of Field Density Tests

Drawing No: 7747/54-15
Job No: 7747/54
Drawn By: MH
Date: 24 November 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay15



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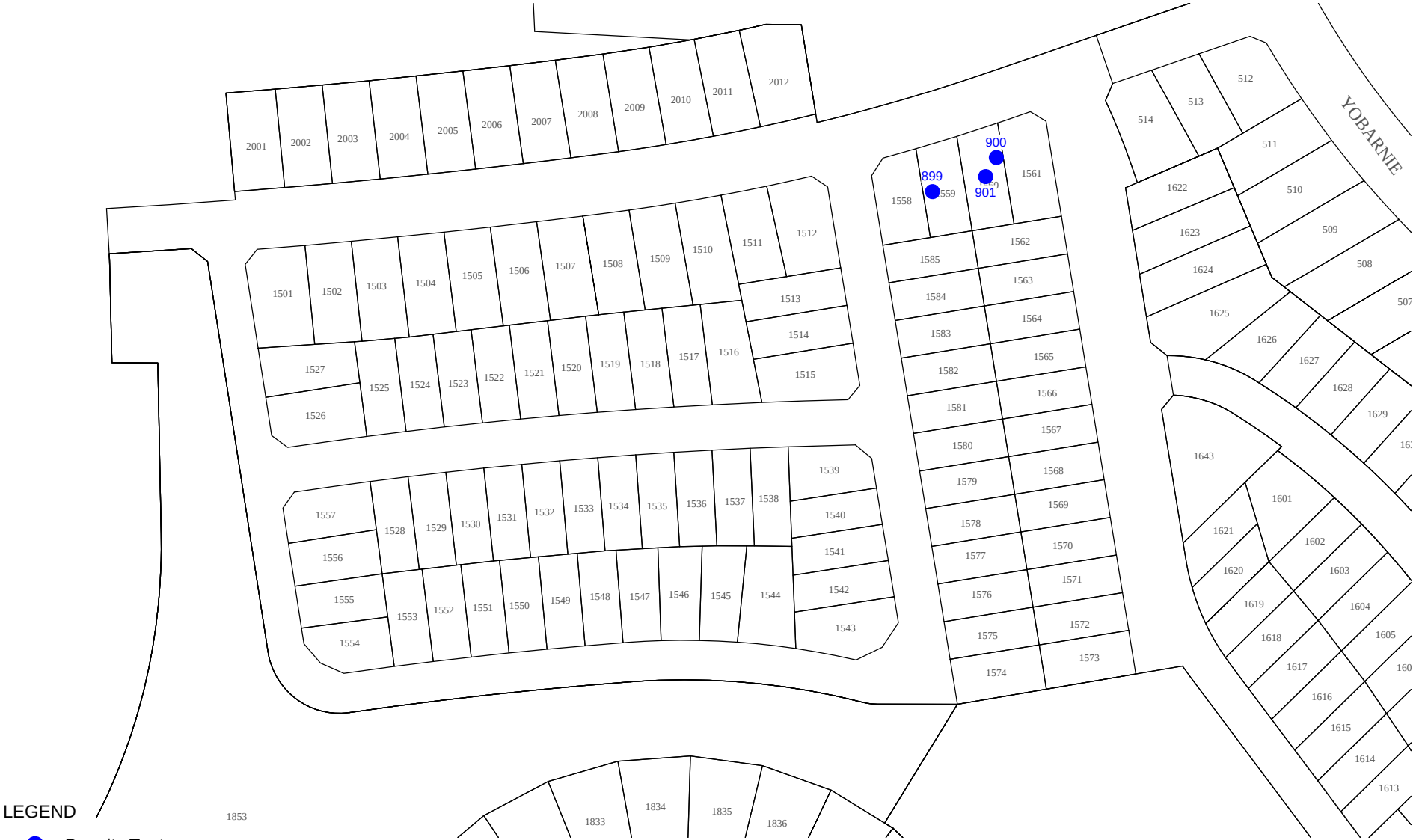
Location of Field Density Tests

Drawing No: 7747/54-16
Job No: 7747/54
Drawn By: MH
Date: 24 November 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay16



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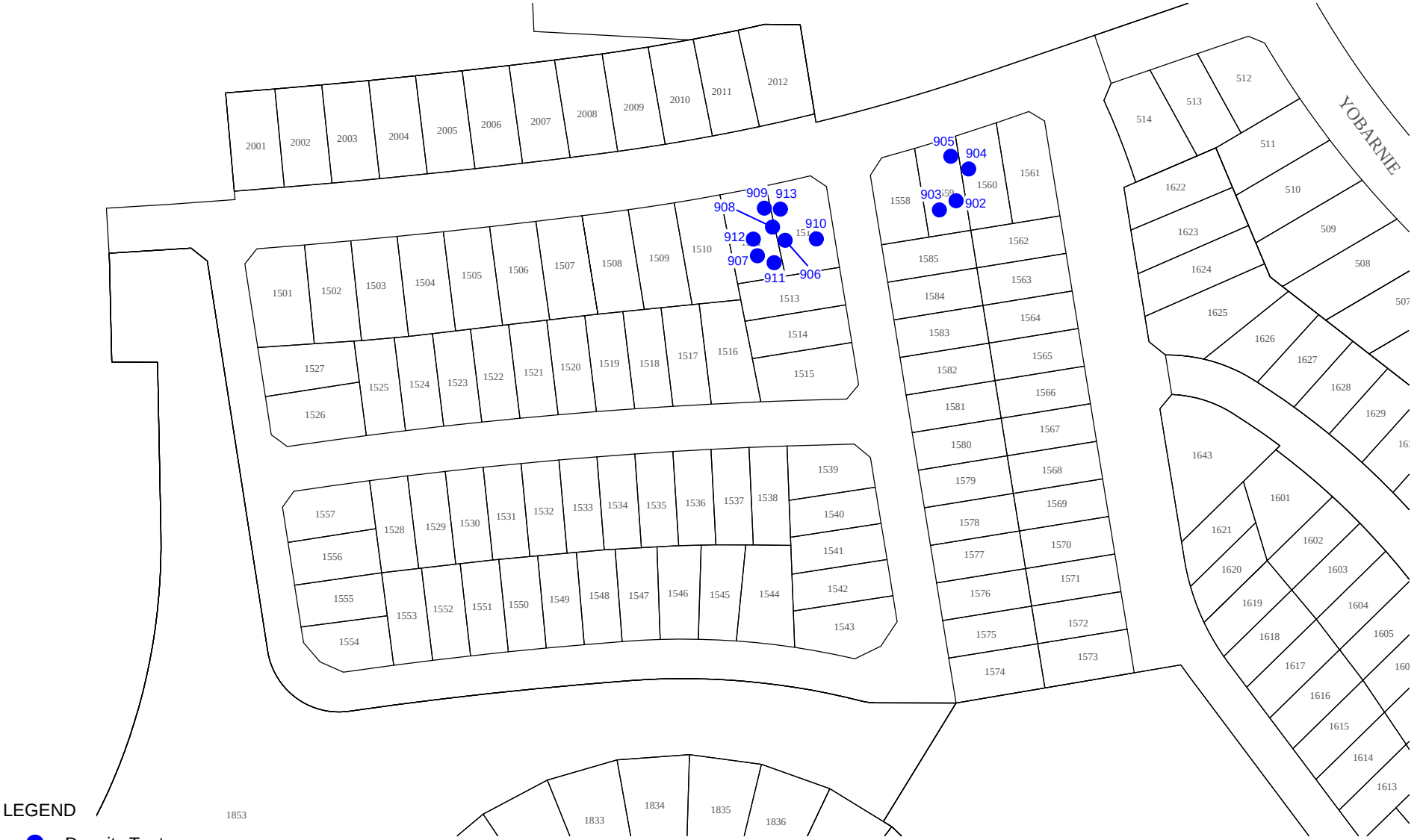
Redbank Communities
Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-17
Job No: 7747/54
Drawn By: MH
Date: 24 November 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay17



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Proposed Development
Southern Heights, Ridgteops and Promenade
Grose Vale Road, North Richmond

Location of Field Density Tests

Drawing No: 7747/54-18
Job No: 7747/54
Drawn By: MH
Date: 14 December 2021
Checked By: HW

File No: 7747-54
Layers: 0, Lay18

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/4/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			1	2	3	4	5	6	7	8
DATE TESTED & SAMPLED			16/4/2021				19/4/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**99**	**100**	**100**	**99.5**	**99.5**	**99.5**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**-2.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-1							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	40.31	40.18	40.63	40.55	40.85	40.67	41.57	40.86
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.08	2.08	2.08	2.10	2.07	2.08	2.08
Field Moisture Content		%	19.5	17.5	19.5	20.0	19.0	18.0	19.0	19.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			1	2	3	4	5	6	7	8
Lab Compaction Date Tested			21/04/2021							
Peak Converted Wet Density		t/m³	2.09	2.10	2.08	2.08	2.11	2.08	2.09	2.10
Apparent Optimum Moisture Content		%	19.5	17.5	21.5	20.0	19.0	18.0	19.0	19.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2-3	2	2-3	2-3	2-3	2	2-3	2-3

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4 (b),
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 22/04/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/4/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			9	10	11	12			
DATE TESTED & SAMPLED			20/4/2021						
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**99.5**	**99**	**98**	**99.5**			
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.0**	**0.0**	**0.0**			
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	-	-	-	-			
Shown on Drawing No			7747/54-1						
Retested by Test			-	-	-	-			
Reduced Level		m	40.65	41.41	41.99	41.78			
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.09	2.05	2.11	2.07			
Field Moisture Content		%	19.0	17.0	17.0	17.5			
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5			
Lab Compaction result from test number			9	10	11	12			
Lab Compaction Date Tested			21/04/2021						
Peak Converted Wet Density		t/m³	2.10	2.07	2.15	2.08			
Apparent Optimum Moisture Content		%	18.5	17.0	17.0	17.5			
Number of Compaction Points			3	3	3	3			
Test Procedures - See Note Number			12	12	12	12			
Material Description - see below			2-3	2	2	2			

Notes

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6: AS 1289 1.2.1 clause 6.4 (b),
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			13	14	15	16	17	18	19	20
DATE TESTED & SAMPLED			25/04/2021				26/04/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**101**	**99.5**	**101.5**	**101**	**100.5**	**100**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-2							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	42.07	42.20	42.05	42.11	42.49	42.74	42.25	42.46
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.09	2.07	2.08	2.08	2.07	2.07	2.08
Field Moisture Content		%	17.5	17.0	16.5	20.0	17.5	18.0	16.5	18.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			13	14	15	16	17	18	19	20
Lab Compaction Date Tested			27/04/2021							
Peak Converted Wet Density		t/m³	2.07	2.07	2.08	2.05	2.06	2.06	2.07	2.08
Apparent Optimum Moisture Content		%	17.5	17.5	16.5	20.0	17.5	18.0	16.5	19.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2-3	2	2	2	2

Notes

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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H Wilson 24/05/2021
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			21	22	23	24	25	26	27	28
DATE TESTED & SAMPLED			26/04/2021				27/04/2021			28/04/2021
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**100.5**	**100.5**	**100.5**	**100**	**100**	**100**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.5**	**-0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-2							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	42.93	41.84	41.01	42.37	44.04	43.92	41.97	45.49
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.08	2.07	2.06	2.08	2.06	2.09	2.08	2.07
Field Moisture Content		%	18.0	17.0	17.0	17.0	18.0	19.5	20.5	17.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			21	22	23	24	25	26	27	28
Lab Compaction Date Tested			27/04/2021				28/04/2021			
Peak Converted Wet Density		t/m³	2.07	2.06	2.05	2.07	2.06	2.09	2.08	2.06
Apparent Optimum Moisture Content		%	18.0	17.0	17.0	17.5	18.0	19.5	21.0	17.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2-3	2-3	2

Notes

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6: AS 1289 1.2.1 clause 6.4
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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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H Wilson 24/05/2021
Approved Signatory

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			29	30	31	32	33	34	35	36
DATE TESTED & SAMPLED			28/04/2021					29/04/2021	
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**100**	**101**	**100.5**	**100.5**	**100.5**	**100.5**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-2							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	45.68	45.97	46.05	46.32	46.62	46.99	46.97	44.57
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.09	2.08	2.07	2.08	2.08	2.08	2.09
Field Moisture Content		%	16.5	17.5	17.5	17.0	17.5	19.0	18.0	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			29	30	31	32	33	34	35	36
Lab Compaction Date Tested			28/04/2021		29/04/2021					
Peak Converted Wet Density		t/m³	2.07	2.09	2.06	2.06	2.07	2.07	2.07	2.08
Apparent Optimum Moisture Content		%	16.5	18.0	18.0	17.0	18.0	19.5	18.0	17.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2-3	2	2

Notes

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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			37	38	39	40	41	42	43	44
DATE TESTED & SAMPLED			29/04/2021					30/04/2021		
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**101**	**100.5**	**101.5**	**101**	**99.5**	**101**	**101**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-2							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	44.57	44.09	43.92	44.44	44.38	44.73	45.04	46.64
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.08	2.09	2.09	2.08	2.07	2.08	2.09	2.09
Field Moisture Content		%	18.0	18.0	17.5	19.0	18.0	18.0	18.5	18.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			37	38	39	40	41	42	43	44
Lab Compaction Date Tested			29/04/2021					30/04/2021		
Peak Converted Wet Density		t/m³	2.07	2.07	2.08	2.05	2.05	2.09	2.07	2.07
Apparent Optimum Moisture Content		%	18.0	18.0	17.5	19.0	18.0	18.5	18.5	18.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/05/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			45	46	47	48	49	50	51	52
DATE TESTED & SAMPLED			03/05/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**99**	**99.5**	**100**	**99.5**	**99**	**99**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-2							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	46.57	46.16	45.89	44.91	45.42	46.12	46.54	45.60
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.12	2.13	2.13	2.09	2.11	2.13	2.14
Field Moisture Content		%	17.0	18.0	17.0	17.0	17.0	20.5	16.5	17.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			45	46	47	48	49	50	51	52
Lab Compaction Date Tested			04/05/2021							
Peak Converted Wet Density		t/m³	2.10	2.14	2.14	2.13	2.10	2.13	2.15	2.16
Apparent Optimum Moisture Content		%	17.0	18.0	17.0	17.0	17.0	20.5	17.0	18.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			53	54	55	56	57	58	59	60
DATE TESTED & SAMPLED			10/05/2021						12/05/2021	
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**99.5**	**99.5**	**99.5**	**99.5**	**99**	**99.5**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-2							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	44.62	45.15	47.44	51.14	52.55	49.53	48.19	50.44
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.08	2.07	2.07	2.06	2.07	2.06	2.08	2.06
Field Moisture Content		%	21.5	21.5	18.5	19.5	18.0	16.5	18.0	16.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			53	54	55	56	57	58	59	60
Lab Compaction Date Tested			11/05/2021						13/05/2021	
Peak Converted Wet Density		t/m³	2.08	2.08	2.08	2.07	2.08	2.08	2.09	2.06
Apparent Optimum Moisture Content		%	21.5	22.0	18.5	19.0	18.0	16.5	18.0	16.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			3	3	2-3	2-3	2	2	2	2

Notes

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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			61	62	63	64	65	66	67	68
DATE TESTED & SAMPLED			12/05/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**99.5**	**99.5**	**99.5**	**99.5**	**99.5**	**99**	**99.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-2							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	52.58	51.31	48.95	47.26	46.94	46.84	46.72	47.73
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.08	2.10	2.08	2.11	2.08	2.07	2.11	2.09
Field Moisture Content		%	16.5	18.5	19.0	17.5	17.5	17.5	18.0	18.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			61	62	63	64	65	66	67	68
Lab Compaction Date Tested			13/05/2021						14/05/2021	
Peak Converted Wet Density		t/m³	2.09	2.11	2.09	2.12	2.09	2.08	2.13	2.10
Apparent Optimum Moisture Content		%	16.5	19.0	19.0	18.0	17.5	17.5	18.0	18.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2-3	2	2	2	2	2

Notes

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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			69	70	71	72	73	74	75	76
DATE TESTED & SAMPLED			12/05/2021		13/05/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99**	**99**	**100**	**99.5**	**99.5**	**99.5**	**100**	**99.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-2							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	47.08	45.46	47.75	46.73	47.34	47.82	46.38	45.47
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.08	2.09	2.10	2.09	2.08	2.08	2.09	2.08
Field Moisture Content		%	18.0	17.0	17.5	17.0	18.5	17.5	19.0	17.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			69	70	71	72	73	74	75	76
Lab Compaction Date Tested			14/05/2021							
Peak Converted Wet Density		t/m³	2.10	2.11	2.10	2.10	2.09	2.09	2.09	2.09
Apparent Optimum Moisture Content		%	18.0	17.0	17.5	17.0	18.5	17.5	19.0	18.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2-3	2-3

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			77	78	79	80	81	82	83	84
DATE TESTED & SAMPLED			13/05/2021		14/05/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**99**	**99.5**	**99.5**	**99.5**	**99.5**	**99**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**-0.5**	**0.0**	**-0.5**	**-0.5**	**0.0**	**-0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-2							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	44.83	46.61	47.93	47.17	47.06	45.95	46.01	50.11
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.08	2.09	2.07	2.08	2.09	2.11	2.07	2.08
Field Moisture Content		%	17.5	18.0	18.5	17.5	18.0	17.5	18.0	18.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			77	78	79	80	81	82	83	84
Lab Compaction Date Tested			14/05/2021		17/05/2021					
Peak Converted Wet Density		t/m³	2.09	2.11	2.08	2.09	2.10	2.12	2.09	2.10
Apparent Optimum Moisture Content		%	18.0	18.5	18.5	17.5	18.5	17.5	18.5	18.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2-3	2	2	2	2	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/05/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/5/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			85	86						
DATE TESTED & SAMPLED			14/05/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**98.5**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-						
Shown on Drawing No			7747/54-2							
Retested by Test			-	-						
Reduced Level		m	47.64	48.18						
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.07	2.11						
Field Moisture Content		%	18.0	18.5						
Material retained on	19mm Sieve (wet)	%	<5	<5						
Lab Compaction result from test number			85	86						
Lab Compaction Date Tested			17/05/2021							
Peak Converted Wet Density		t/m³	2.08	2.14						
Apparent Optimum Moisture Content		%	18.0	18.5						
Number of Compaction Points			3	3						
Test Procedures - See Note Number			12	12						
Material Description - see below			2	2						

Notes

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			87	88	89	90	91	92	93	94
DATE TESTED & SAMPLED			17/5/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**100**	**102**	**102**	**100**	**101**	**100**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**-0.5**	**-0.5**	**0.0**	**0.5**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	47.77	45.95	44.70	45.90	43.56	43.83	51.64	53.19
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.25	2.23	2.26	2.23	2.15	2.23	2.20	2.24
Field Moisture Content		%	14.5	15.0	14.5	17.0	14.0	14.5	16.0	14.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			87	88	89	90	91	92	93	94
Lab Compaction Date Tested			27/05/2021	27/05/2021	27/05/2021	27/05/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021
Peak Converted Wet Density		t/m³	2.24	2.23	2.22	2.19	2.15	2.21	2.20	2.22
Apparent Optimum Moisture Content		%	14.5	15.0	15.0	17.5	14.0	14.5	16.0	14.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			95	96	97	98	99	100	101	102
DATE TESTED & SAMPLED			19/5/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**100**	**100**	**99.5**	**101**	**100.5**	**100**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**-0.5**	**-1.0**	**-0.5**	**0.0**	**-0.5**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	52.96	52.51	50.82	50.68	50.74	51.06	50.76	49.66
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.11	2.09	2.09	2.09	2.10	2.11	2.09
Field Moisture Content		%	18.5	18.0	19.5	21.0	19.5	19.5	19.5	19.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			95	96	97	98	99	100	101	102
Lab Compaction Date Tested			01/06/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021	01/06/2021
Peak Converted Wet Density		t/m³	2.10	2.11	2.09	2.10	2.07	2.09	2.11	2.08
Apparent Optimum Moisture Content		%	19.0	18.5	21.0	21.5	19.5	20.0	19.5	19.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2-3	2	2-3	2-3	2-3	2-3	2-3	2

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4 (b),
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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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H Wilson 23/06/2021
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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		103	104	105	106				
DATE TESTED & SAMPLED		19/5/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**99.5**	**99.5**	**99.5**	**99.5**				
Moisture Variation from OMC (-Drier/+Wetter)	%	**-1.0**	**-0.5**	**-1.5**	**-0.5**				
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage (Carriageway L/R)	m	-	-	-	-				
Shown on Drawing No		7747/54-3							
Retested by Test		-	-	-	-				
Reduced Level	m	48.71	47.72	47.41	48.36				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.12	2.12	2.10	2.11				
Field Moisture Content	%	12.5	12.5	11.5	11.5				
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5				
Lab Compaction result from test number		103	104	105	106				
Lab Compaction Date Tested		02/06/2021	02/06/2021	02/06/2021	02/06/2021				
Peak Converted Wet Density	t/m³	2.13	2.13	2.11	2.12				
Apparent Optimum Moisture Content	%	13.5	13.0	13.0	12.0				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		1-2	1-2	1	1-2				

Notes

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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			107	108						
DATE TESTED & SAMPLED			20/05/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**100**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**-0.5**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-						
Shown on Drawing No			7747/54-3							
Retested by Test			-	-						
Reduced Level		m	43.45	45.02						
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.19	2.12						
Field Moisture Content		%	12.5	10.5						
Material retained on	19mm Sieve (wet)	%	<5	<5						
Lab Compaction result from test number			107	108						
Lab Compaction Date Tested			02/06/2021	02/06/2021						
Peak Converted Wet Density		t/m³	2.18	2.12						
Apparent Optimum Moisture Content		%	12.0	11.0						
Number of Compaction Points			3	3						
Test Procedures - See Note Number			12	12						
Material Description - see below			1-2	1						

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4 (b),
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 23/06/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			109	110	111	112	113	114	115	116
DATE TESTED & SAMPLED			20/05/2021		24/05/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**101**	**99.5**	**99.5**	**100**	**100**	**100**	**98.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	50.81	50.49	50.89	51.92	48.22	48.97	48.85	50.18
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.11	2.19	2.11	2.10	2.11	2.09	2.12	2.10
Field Moisture Content		%	12.0	13.0	16.5	13.5	16.0	14.0	14.5	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			109	110	111	112	113	114	115	116
Lab Compaction Date Tested			02/06/2021	02/06/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021	25/05/2021
Peak Converted Wet Density		t/m³	2.11	2.17	2.12	2.11	2.11	2.09	2.12	2.13
Apparent Optimum Moisture Content		%	13.5	13.0	16.5	13.5	16.0	14.0	14.5	17.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			1-2	1-2	2	2	2	2	2	2

Notes

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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		117	118						
DATE TESTED & SAMPLED		24/05/2021	25/05/2021						
RESULTS									
Hilf Density Ratio	**Standard** %	**99.5**	**100.5**						
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**						
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage (Carriageway L/R)	m	-	-						
Shown on Drawing No		7747/54-3							
Retested by Test		-	-						
Reduced Level	m	46.72	44.77						
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.13						
Field Moisture Content	%	15.5	16.0						
Material retained on 19mm Sieve (wet)	%	<5	<5						
Lab Compaction result from test number		117	118						
Lab Compaction Date Tested		25/05/2021	18/06/2021						
Peak Converted Wet Density	t/m³	2.10	2.12						
Apparent Optimum Moisture Content	%	15.5	16.5						
Number of Compaction Points		3	3						
Test Procedures - See Note Number		12	12						
Material Description - see below		2	2						

Notes

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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			119	120	121	122	123	124	125	126
DATE TESTED & SAMPLED			25/05/2021							26/05/2021
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**101.5**	**100**	**99**	**99.5**	**100.5**	**98.5**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.5**	**0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	49.08	49.58	50.19	52.04	53.38	46.88	44.78	44.01
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.14	2.14	2.12	2.12	2.12	2.13	2.10	2.13
Field Moisture Content		%	16.0	16.0	16.5	15.0	15.5	15.5	16.0	15.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			119	120	121	122	123	124	125	126
Lab Compaction Date Tested			18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021
Peak Converted Wet Density		t/m³	2.12	2.11	2.12	2.14	2.13	2.12	2.13	2.13
Apparent Optimum Moisture Content		%	16.0	16.0	16.0	15.0	15.5	15.5	15.5	15.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			127	128	129	130	131	132	133	134
DATE TESTED & SAMPLED			26/05/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**99.5**	**101**	**100**	**100.5**	**99.5**	**98.5**	**99.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.5**	**0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	52.51	54.57	50.37	51.21	51.70	50.05	48.55	47.49
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.12	2.13	2.14	2.11	2.12	2.12	2.15	2.14
Field Moisture Content		%	15.5	17.5	16.5	14.5	15.5	16.5	16.5	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			127	128	129	130	131	132	133	134
Lab Compaction Date Tested			18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021
Peak Converted Wet Density		t/m³	2.13	2.14	2.12	2.11	2.11	2.13	2.18	2.14
Apparent Optimum Moisture Content		%	15.0	17.5	16.5	14.5	15.0	16.5	16.0	16.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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10. DGS20
11. DGS40
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13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			135	136	137	138	139	140	141	142
DATE TESTED & SAMPLED			26/05/2021				27/05/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**99.5**	**100**	**99**	**104**	**101.5**	**101.5**	**98.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**-0.5**	**0.0**	**-0.5**	**-0.5**	**0.0**	**0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	51.70	52.01	54.57	54.16	51.83	52.44	52.21	52.10
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.03	2.06	2.03	2.02	2.19	2.16	2.17	2.18
Field Moisture Content		%	18.5	15.5	18.0	18.0	14.0	12.0	13.0	12.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			135	136	137	138	139	140	141	142
Lab Compaction Date Tested			18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021	18/06/2021	09/06/2021	09/06/2021
Peak Converted Wet Density		t/m³	2.04	2.07	2.03	2.04	2.11	2.13	2.14	2.21
Apparent Optimum Moisture Content		%	18.5	15.5	18.5	18.0	14.5	12.5	13.5	12.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4 (b),
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 23/06/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			143	144	145	146	147	148	149	150
DATE TESTED & SAMPLED			27/05/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**101.5**	**101**	**102**	**101**	**100.5**	**100.5**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-0.5**	**0.0**	**0.0**	**-0.5**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	49.83	50.03	50.54	54.12	53.89	46.43	46.31	46.61
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.17	2.18	2.17	2.16	2.17	2.13	2.14	2.15
Field Moisture Content		%	12.5	12.5	14.0	14.0	13.5	14.0	14.5	15.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			143	144	145	146	147	148	149	150
Lab Compaction Date Tested			09/06/2021	09/06/2021	09/06/2021	09/06/2021	27/05/2021	27/05/2021	27/05/2021	27/05/2021
Peak Converted Wet Density		t/m³	2.15	2.15	2.15	2.12	2.15	2.12	2.13	2.14
Apparent Optimum Moisture Content		%	13.0	12.5	14.5	14.0	13.5	14.0	14.5	15.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
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6: AS 1289 1.2.1 clause 6.4 (b),
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
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3. CH-Clays of high plasticity
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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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H Wilson 23/06/2021
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			151	152	153	154	155	156	157	158
DATE TESTED & SAMPLED			27/05/2021	28/05/2021						
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**101**	**100.5**	**101**	**101**	**101.5**	**100.5**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	47.30	48.01	49.05	50.13	50.10	50.16	50.08	51.01
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.16	2.11	2.11	2.12	2.11	2.14	2.13	2.12
Field Moisture Content		%	15.0	17.0	14.5	15.0	15.0	14.0	16.0	15.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			151	152	153	154	155	156	157	158
Lab Compaction Date Tested			27/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021	31/05/2021
Peak Converted Wet Density		t/m³	2.15	2.09	2.10	2.10	2.09	2.11	2.12	2.11
Apparent Optimum Moisture Content		%	15.0	17.0	14.5	15.0	15.0	14.0	16.0	15.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4 (b),
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

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Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			159	160	161					
DATE TESTED & SAMPLED			28/05/2021	31/05/2021						
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**100.5**	**100**					
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**					
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-					
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-					
Reduced Level		m	52.38	53.74	53.78					
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.11	2.14	2.14					
Field Moisture Content		%	14.5	18.0	16.0					
Material retained on	19mm Sieve (wet)	%	<5	<5	<5					
Lab Compaction result from test number			159	160	161					
Lab Compaction Date Tested			31/05/2021	02/06/2021	02/06/2021					
Peak Converted Wet Density		t/m³	2.11	2.12	2.14					
Apparent Optimum Moisture Content		%	14.5	18.0	16.0					
Number of Compaction Points			3	3	3					
Test Procedures - See Note Number			12	12	12					
Material Description - see below			2	2	2					

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4 (b),
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			162	163						
DATE TESTED & SAMPLED			01/06/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**101.5**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-						
Shown on Drawing No			7747/54-3							
Retested by Test			-	-						
Reduced Level		m	51.87	53.37						
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.24	2.22						
Field Moisture Content		%	15.0	15.5						
Material retained on	19mm Sieve (wet)	%	<5	<5						
Lab Compaction result from test number			162	163						
Lab Compaction Date Tested			03/06/2021	03/06/2021						
Peak Converted Wet Density		t/m³	2.23	2.19						
Apparent Optimum Moisture Content		%	15.0	15.0						
Number of Compaction Points			3	3						
Test Procedures - See Note Number			12	12						
Material Description - see below			2	2						

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			164	165	166	167	168	169		
DATE TESTED & SAMPLED			01/06/2021		02/06/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101.5**	**101**	**100**	**100**	**100.5**	**101**		
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.5**	**0.0**	**0.5**	**0.5**	**0.0**		
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-		
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-		
Reduced Level		m	51.02	52.46	52.84	52.58	52.90	51.09		
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.21	2.23	2.18	2.18	2.19	2.19		
Field Moisture Content		%	15.0	16.0	16.5	16.0	17.0	16.0		
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5		
Lab Compaction result from test number			164	165	166	167	168	169		
Lab Compaction Date Tested			03/06/2021	03/06/2021	04/06/2021	04/06/2021	04/06/2021	04/06/2021		
Peak Converted Wet Density		t/m³	2.18	2.21	2.18	2.18	2.18	2.17		
Apparent Optimum Moisture Content		%	15.0	15.5	16.5	16.0	16.5	16.0		
Number of Compaction Points			3	3	3	3	3	3		
Test Procedures - See Note Number			12	12	12	12	12	12		
Material Description - see below			2	2	2	2	2	2		

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4 (b),
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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H Wilson 23/06/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 23/6/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			170	171	172	173	174	175		
DATE TESTED & SAMPLED			03/06/2021		09/06/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**99.5**	**100**	**100**	**100**	**101**		
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**		
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-		
Shown on Drawing No			7747/54-3							
Retested by Test			-	-	-	-	-	-		
Reduced Level		m	50.49	53.56	54.05	54.77	55.57	56.42		
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.16	2.16	2.09	2.11	2.07	2.08		
Field Moisture Content		%	17.5	17.0	14.5	15.5	15.0	15.5		
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5		
Lab Compaction result from test number			170	171	172	173	174	175		
Lab Compaction Date Tested			03/06/2021	03/06/2021	10/06/2021	10/06/2021	10/06/2021	10/06/2021		
Peak Converted Wet Density		t/m³	2.15	2.17	2.09	2.11	2.07	2.06		
Apparent Optimum Moisture Content		%	17.5	17.0	14.5	15.5	15.0	15.5		
Number of Compaction Points			3	3	3	3	3	3		
Test Procedures - See Note Number			12	12	12	12	12	12		
Material Description - see below			2	2	2	2	2	2		

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			176	177	178	179	180	181	182	183
DATE TESTED & SAMPLED			16/06/2021				17/06/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**100.5**	**99.5**	**100.5**	**101.5**	**100**	**101**	**101.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**1.0**	**0.5**	**0.5**	**0.5**	**1.0**	**0.5**	**0.5**	**0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights Dam 8							
Shown on Drawing No			7747/54-4							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	72.87	73.62	73.70	73.19	73.53	74.32	74.02	74.81
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.10	2.08	2.09	2.11	2.09	2.10	2.11
Field Moisture Content		%	18.5	16.0	18.0	19.0	18.5	19.0	22.0	19.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			176	177	178	179	180	181	182	183
Lab Compaction Date Tested			25/06/2021	25/06/2021	25/06/2021	25/06/2021	25/06/2021	25/06/2021	25/06/2021	25/06/2021
Peak Converted Wet Density		t/m³	2.08	2.09	2.09	2.08	2.08	2.09	2.08	2.08
Apparent Optimum Moisture Content		%	17.5	15.5	17.5	18.5	18.0	18.5	21.5	19.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			184	185	186	187	188	189	190	191
DATE TESTED & SAMPLED			17/06/2021		18/06/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**101**	**103.5**	**102**	**100.5**	**103.5**	**102**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.5**	**0.5**	**2.0**	**1.0**	**1.0**	**1.0**	**0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights Dam 8							
Shown on Drawing No			7747/54-4							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	75.67	75.86	76.35	77.12	77.57	76.19	76.99	77.17
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.10	2.14	2.13	2.13	2.13	2.14	2.13
Field Moisture Content		%	20.5	20.0	18.5	19.5	17.0	20.5	18.5	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			184	185	186	187	188	189	190	191
Lab Compaction Date Tested			25/06/2021	25/06/2021	24/06/2021	24/06/2021	24/06/2021	24/06/2021	24/06/2021	24/06/2021
Peak Converted Wet Density		t/m³	2.08	2.08	2.07	2.09	2.12	2.06	2.10	2.13
Apparent Optimum Moisture Content		%	19.5	19.5	18.0	17.5	16.0	19.5	17.5	16.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2-3	2-3	2	2	2	2	2	2

Notes

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13: RMS T111, T119, T120, T166
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17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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8. DGB20
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11. DGS40
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			192	193	194	195	196	197	198	199
DATE TESTED & SAMPLED			18/06/2021			21/06/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**103**	**101**	**102**	**102**	**99.5**	**103.5**	**104**	**103.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**1.0**	**0.0**	**0.5**	**0.5**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights Dam 8							
Shown on Drawing No			7747/54-4							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	77.44	76.98	78.73	75.13	75.18	75.49	77.86	78.57
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.13	2.04	2.02	2.14	2.14	2.15	2.16	2.15
Field Moisture Content		%	18.5	21.5	19.5	18.0	17.5	18.0	17.5	18.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			192	193	194	195	196	197	198	199
Lab Compaction Date Tested			24/06/2021	23/06/2021	23/06/2021	25/06/2021	25/06/2021	25/06/2021	25/06/2021	26/06/2021
Peak Converted Wet Density		t/m³	2.07	2.02	1.98	2.10	2.15	2.08	2.08	2.08
Apparent Optimum Moisture Content		%	17.5	20.5	19.0	18.0	16.5	18.0	17.5	18.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	3	2	2	2	2	2	2

Notes

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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			200	201	202	203	204	205	206	207
DATE TESTED & SAMPLED			21/06/2021			22/06/2021				
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**102**	**101**	**102.5**	**103.5**	**103**	**103**	**102.5**	**102**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.5**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights Dam 8							
Shown on Drawing No			7747/54-4	7747/54-5		7747/54-4				
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	77.93	78.36	81.03	75.49	76.54	78.36	78.78	79.38
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.14	2.15	2.14	2.13	2.13	2.13	2.12	2.14
Field Moisture Content		%	18.0	18.5	18.5	19.0	18.5	16.5	18.0	17.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			200	201	202	203	204	205	206	207
Lab Compaction Date Tested			28/06/2021	26/06/2021	26/06/2021	28/06/2021	28/06/2021	26/06/2021	28/06/2021	26/06/2021
Peak Converted Wet Density		t/m³	2.09	2.13	2.09	2.06	2.07	2.07	2.07	2.10
Apparent Optimum Moisture Content		%	18.0	18.0	19.0	19.0	18.5	16.5	18.0	17.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			208	209	210	211	212	213	214	215
DATE TESTED & SAMPLED			22/06/2021				23/06/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**103.5**	**103.5**	**102.5**	**102**	**103**	**103**	**101.5**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.5**	**0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights Dam 8							
Shown on Drawing No			7747/54-4		7747/54-5		7747/54-4			
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	80.34	78.19	79.14	81.94	75.57	76.27	77.72	78.50
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.13	2.15	2.14	2.14	2.17	2.18	2.17	2.17
Field Moisture Content		%	19.0	17.5	19.0	17.5	16.0	17.0	16.5	17.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			208	209	210	211	212	213	214	215
Lab Compaction Date Tested			26/06/2021	28/06/2021	26/06/2021	25/06/2021	29/06/2021	28/06/2021	29/06/2021	29/06/2021
Peak Converted Wet Density		t/m³	2.06	2.08	2.09	2.10	2.11	2.12	2.14	2.17
Apparent Optimum Moisture Content		%	19.0	17.5	19.5	17.5	16.0	17.0	16.5	16.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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17. RMS T120, T164, T173

Material Description

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* Cement Stabilised
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$ Gypsum Stabilised

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			216	217	218	219	220	221	222	223
DATE TESTED & SAMPLED			23/06/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**100.5**	**101**	**99.5**	**103**	**103**	**101.5**	**101.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**-0.5**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights Dam 8							
Shown on Drawing No			7747/54-4				7747/54-5			
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	79.14	80.14	78.39	75.79	75.78	75.47	75.62	75.682
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.17	2.18	2.17	2.17	2.17	2.17	2.16	2.16
Field Moisture Content		%	18.5	17.0	17.5	16.5	16.5	15.5	17.0	16.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			216	217	218	219	220	221	222	223
Lab Compaction Date Tested			29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021	28/06/2021	28/06/2021
Peak Converted Wet Density		t/m³	2.15	2.16	2.15	2.18	2.11	2.11	2.13	2.13
Apparent Optimum Moisture Content		%	18.5	16.5	18.0	16.0	16.5	15.0	17.0	16.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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9. DGB40
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11. DGS40
12. FCR20
13. FCR40
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15. Recycled Roadbase
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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			224	225	226	227	228	229	230	231
DATE TESTED & SAMPLED			24/06/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**102**	**100.5**	**101**	**100**	**101.5**	**99.5**	**101**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.5**	**-2.0**	**-2.0**	**-2.0**	**-2.0**	**-2.0**	**-2.0**	**-2.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops Dam 7							
Shown on Drawing No			7747/54-5							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	81.13	83.23	78.48	81.10	79.13	77.75	79.35	76.87
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.13	2.13	2.13	2.14	2.12	2.13	2.11	2.12
Field Moisture Content		%	17.5	18.0	17.0	18.5	18.5	19.0	17.5	19.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			224	225	226	227	228	229	230	231
Lab Compaction Date Tested			28/06/2021	28/06/2021	28/06/2021	28/06/2021	28/06/2021	28/06/2021	28/06/2021	28/06/2021
Peak Converted Wet Density		t/m³	2.13	2.09	2.12	2.12	2.12	2.10	2.12	2.10
Apparent Optimum Moisture Content		%	19.0	20.0	19.0	20.0	20.5	21.0	19.5	21.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2-3	2	2-3	3	3	2-3	3

Notes

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13: RMS T111, T119, T120, T166
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17. RMS T120, T164, T173

Material Description

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3. CH-Clays of high plasticity
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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
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11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			232	233	234	235	236	237	238	239
DATE TESTED & SAMPLED			25/06/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**103.5**	**102.5**	**102**	**98**	**99**	**100.5**	**100**	**98**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**1.0**	**0.0**	**0.0**	**1.5**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops Dam 7							
Shown on Drawing No			7747/54-5							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	79.17	79.69	81.56	81.31	79.99	78.85	77.89	76.48
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.14	2.13	2.14	2.13	2.12	2.14	2.15	2.15
Field Moisture Content		%	16.5	19.0	18.5	17.0	15.0	16.5	20.0	18.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			232	233	234	235	236	237	238	239
Lab Compaction Date Tested			29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021
Peak Converted Wet Density		t/m³	2.07	2.08	2.10	2.17	2.14	2.12	2.15	2.19
Apparent Optimum Moisture Content		%	16.5	19.0	17.0	17.0	15.0	15.0	20.0	18.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2-3	2

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Form No R 020 Version 10 10/20 - issued by ER

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PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			240	241	242	243	244	245	246	247
DATE TESTED & SAMPLED			28/06/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**100.5**	**98**	**102.5**	**101.5**	**100.5**	**99.5**	**102**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.0**	**-1.5**	**-2.0**	**0.0**	**-1.0**	**-0.5**	**-1.0**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops Dam 7							
Shown on Drawing No			7747/54-5							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	78.54	79.14	79.84	81.47	81.44	80.66	79.53	78.35
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.20	2.19	2.18	2.19	2.15	2.16	2.18	2.18
Field Moisture Content		%	14.5	14.0	11.5	16.0	15.0	13.0	15.0	13.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			240	241	242	243	244	245	246	247
Lab Compaction Date Tested			29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021	29/06/2021
Peak Converted Wet Density		t/m³	2.19	2.18	2.22	2.14	2.12	2.15	2.19	2.14
Apparent Optimum Moisture Content		%	15.5	15.5	13.0	16.0	15.5	13.5	16.0	13.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 22/07/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			248	249	250	251	252	253	254	255
DATE TESTED & SAMPLED			28/06/2021		29/06/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**103.5**	**102.5**	**101.5**	**99.5**	**102.5**	**101.5**	**99**	**101**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-0.5**	**0.5**	**0.5**	**-1.5**	**-1.0**	**0.5**	**0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops Dam 7							
Shown on Drawing No			7747/54-5							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	78.12	77.23	77.96	79.05	78.70	79.71	81.22	83.54
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.21	2.19	2.10	2.09	2.11	2.09	2.10	2.12
Field Moisture Content		%	13.5	13.0	18.0	19.0	19.5	18.5	18.5	19.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			248	249	250	251	252	253	254	255
Lab Compaction Date Tested			29/06/2021	29/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Peak Converted Wet Density		t/m³	2.14	2.14	2.07	2.10	2.06	2.06	2.12	2.10
Apparent Optimum Moisture Content		%	13.5	13.5	17.5	18.5	21.0	19.5	18.0	18.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	3	2-3	2	2

Notes

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			256	257	258	259	260	261	262	263
DATE TESTED & SAMPLED			29/06/2021		30/06/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**98**	**100**	**99.5**	**101**	**102**	**101**	**103**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.5**	**0.5**	**-0.5**	**0.5**	**1.0**	**0.0**	**-1.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops Dam 7							
Shown on Drawing No			7747/54-5							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	84.77	85.08	82.38	79.10	77.93	78.14	79.28	79.10
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.09	2.18	2.08	2.16	2.17	2.16	2.15
Field Moisture Content		%	17.5	18.0	19.0	16.5	16.5	17.0	17.5	19.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			256	257	258	259	260	261	262	263
Lab Compaction Date Tested			30/06/2021	30/06/2021	01/07/2021	01/07/2021	01/07/2021	01/07/2021	01/07/2021	01/07/2021
Peak Converted Wet Density		t/m³	2.09	2.13	2.18	2.09	2.14	2.13	2.13	2.09
Apparent Optimum Moisture Content		%	17.0	17.5	18.5	16.5	15.5	16.0	17.5	20.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2-3

Notes

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7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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9. DGB40
10. DGS20
11. DGS40
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13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			264	265	266	267	268	269	270	271
DATE TESTED & SAMPLED			30/06/2021		01/07/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101.5**	**101**	**101.5**	**102**	**102.5**	**101**	**103**	**99.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.5**	**0.5**	**0.0**	**0.5**	**-1.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops Dam 7							
Shown on Drawing No			7747/54-5							7747/54-4
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	83.70	77.80	79.94	80.75	81.21	80.16	78.88	71.58
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.16	2.17	2.09	2.12	2.13	2.12	2.14	2.03
Field Moisture Content		%	17.5	16.5	20.0	112.5	18.5	18.0	19.0	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			264	265	266	267	268	269	270	271
Lab Compaction Date Tested			01/07/2021	01/07/2021	02/07/2021	02/07/2021	02/07/2021	02/07/2021	02/07/2021	02/07/2021
Peak Converted Wet Density		t/m³	2.13	2.15	2.06	2.08	2.08	2.10	2.08	2.04
Apparent Optimum Moisture Content		%	17.5	16.5	20.0	112.0	18.5	18.0	18.5	18.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	3	2	2	2	2	2

Notes

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
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8. DGB20
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14. RC - Recycled Concrete
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			272	273	274	275	276	277	278	279
DATE TESTED & SAMPLED			01/07/2021				05/07/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**103**	**102**	**103**	**100.5**	**100.5**	**102**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.0**	**1.0**	**0.5**	**0.0**	**0.5**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights Dam 8				Ridgetops Dam 7			
Shown on Drawing No			7747/54-4			7747/54-5				
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	71.69	71.75	72.42	74.78	75.24	75.62	75.40	81.39
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.12	2.13	2.11	2.13	2.10	2.11	2.09	2.09
Field Moisture Content		%	19.0	19.0	21.0	22.0	16.5	19.5	17.5	20.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			272	273	274	275	276	277	278	279
Lab Compaction Date Tested			02/07/2021	02/07/2021	02/07/2021	02/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021
Peak Converted Wet Density		t/m³	2.10	2.07	2.07	2.07	2.09	2.10	2.05	2.11
Apparent Optimum Moisture Content		%	19.0	18.5	20.5	21.5	17.0	19.0	18.0	20.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	3	3	2	2-3	2	2-3

Notes

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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 22/07/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			280	281	282	283	284	285	286	287
DATE TESTED & SAMPLED			05/07/2021						06/07/2021	
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**102**	**102**	**101.5**	**100**	**100**	**100**	**101.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.5**	**-2.0**	**-2.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops Dam 7			Southern Heights Dam 8				
Shown on Drawing No			7747/54-5			7747/54-4				
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	83.96	85.72	74.57	74.88	74.37	73.28	73.02	72.89
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.12	2.10	2.09	2.08	2.10	2.10	2.09
Field Moisture Content		%	18.5	17.5	19.0	18.0	17.0	18.5	16.0	15.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			280	281	282	283	284	285	286	287
Lab Compaction Date Tested			06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021	06/07/2021	07/07/2021	07/07/2021
Peak Converted Wet Density		t/m³	2.07	2.08	2.06	2.06	2.08	2.10	2.10	2.06
Apparent Optimum Moisture Content		%	18.5	17.5	19.0	18.5	17.0	18.5	18.0	17.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			288	289	290	291	292	293	294	295
DATE TESTED & SAMPLED			06/07/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**104**	**104**	**101**	**101**	**101**	**100.5**	**102**	**103.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.5**	**-0.5**	**-0.5**	**-1.0**	**-0.5**	**-0.5**	**0.0**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights Dam 8			Ridgetops Dam 7				
Shown on Drawing No			7747/54-4		7747/54-5					7747/54-4
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	72.18	73.57	76.15	76.25	76.11	76.73	76.06	74.39
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.11	2.12	2.10	2.08	2.08	2.10	2.09	2.11
Field Moisture Content		%	15.5	16.0	16.0	15.5	15.5	16.0	15.0	#N/A
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			288	289	290	291	292	293	294	295
Lab Compaction Date Tested			07/07/2021	07/07/2021	07/07/2021	07/07/2021	07/07/2021	07/07/2021	07/07/2021	07/07/2021
Peak Converted Wet Density		t/m³	2.03	2.04	2.08	2.06	2.06	2.09	2.05	2.04
Apparent Optimum Moisture Content		%	17.0	16.5	16.5	16.0	16.0	16.5	15.0	#N/A
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 22/07/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			296	297	298	299	300	301	302	303
DATE TESTED & SAMPLED			07/07/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**98.5**	**99**	**99.5**	**98**	**102**	**98.5**	**102.5**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.0**	**0.0**	**-1.5**	**-0.5**	**0.0**	**0.5**	**-0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights Dam 8						Ridgetops Dam 7	
Shown on Drawing No			7747/54-4					7747/54-5		
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	73.69	73.12	74.27	74.52	75.31	77.42	77.11	78.67
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.12	2.10	2.11	2.10	2.12	2.12	2.10	2.10
Field Moisture Content		%	12.5	13.5	13.0	12.5	13.5	14.0	13.5	14.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			296	297	298	299	300	301	302	303
Lab Compaction Date Tested			08/07/2021	08/07/2021	08/07/2021	08/07/2021	08/07/2021	08/07/2021	08/07/2021	08/07/2021
Peak Converted Wet Density		t/m³	2.15	2.12	2.12	2.14	2.08	2.15	2.05	2.09
Apparent Optimum Moisture Content		%	13.5	13.5	14.5	13.5	14.0	13.5	14.0	14.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		304	305						
DATE TESTED & SAMPLED		07/07/2021	07/07/2021						
RESULTS									
Hilf Density Ratio **Standard**	**%**	**101**	**103**						
Moisture Variation from OMC **(-Drier/+Wetter)**	**%**	**-2.0**	**-1.5**						
Specification **Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**							**±2%**
TEST LOCATION									
		Ridgetops							
Shown on Drawing No		7747/54-6							
Retested by Test		-	-						
Reduced Level	m	52.834	54.390						
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.10	2.11						
Field Moisture Content	%	13.5	14.0						
Material retained on 19mm Sieve (wet)	%	<5	<5						
Lab Compaction result from test number		304	305						
Lab Compaction Date Tested		08/07/2021	08/07/2021						
Peak Converted Wet Density	t/m³	2.08	2.05						
Apparent Optimum Moisture Content	%	16.0	15.5						
Number of Compaction Points		3	3						
Test Procedures - See Note Number		12	12						
Material Description - see below		2	2						

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		306	307	308	309	310	311		
DATE TESTED & SAMPLED		07/07/2021		08/07/2021					
RESULTS									
Hilf Density Ratio **Standard**	%	**103.5**	**98**	**99.5**	**98.5**	**98.5**	**100**		
Moisture Variation from OMC **(-Drier/+Wetter)**	%	**-1.5**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**		
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Shown on Drawing No		Southern Heights							
		7747/54-6							
Retested by Test		-	-	-	-	-	-		
Reduced Level	m	56.218	56.959	49.70	49.72	50.30	50.77		
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.11	2.12	2.09	2.09	2.08	2.10		
Field Moisture Content	%	13.0	13.5	16.5	16.0	17.5	15.5		
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5		
Lab Compaction result from test number		306	307	308	309	310	311		
Lab Compaction Date Tested		08/07/2021	08/07/2021	12/07/2021	12/07/2021	12/07/2021	12/07/2021		
Peak Converted Wet Density	t/m³	2.04	2.16	2.10	2.12	2.11	2.10		
Apparent Optimum Moisture Content	%	14.0	14.0	17.0	16.0	17.5	15.5		
Number of Compaction Points		3	3	3	3	3	3		
Test Procedures - See Note Number		12	12	12	12	12	12		
Material Description - see below		2	2	2	2	2	2		

Notes

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6: AS 1289 1.2.1 clause 6.4
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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/08/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		312							
DATE TESTED & SAMPLED		08/07/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**98**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
			Ridgetops						
Shown on Drawing No			7747/54-6						
Retested by Test			-						
Reduced Level		m	50.84						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.10						
Field Moisture Content		%	16.5						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			312						
Lab Compaction Date Tested			12/07/2021						
Peak Converted Wet Density		t/m³	2.14						
Apparent Optimum Moisture Content		%	16.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		313							
DATE TESTED & SAMPLED		08/07/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**100.5**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
			Southern Heights						
Shown on Drawing No			7747/54-6						
Retested by Test			-						
Reduced Level		m	50.35						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.10						
Field Moisture Content		%	17.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			313						
Lab Compaction Date Tested			12/07/2021						
Peak Converted Wet Density		t/m³	2.09						
Apparent Optimum Moisture Content		%	17.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		314							
DATE TESTED & SAMPLED		08/07/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**101.5**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
			Ridgetops						
Shown on Drawing No			7747/54-6						
Retested by Test			-						
Reduced Level		m	55.86						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.11						
Field Moisture Content		%	17.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			314						
Lab Compaction Date Tested			12/07/2021						
Peak Converted Wet Density		t/m³	2.08						
Apparent Optimum Moisture Content		%	16.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

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7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		315	316	317					
DATE TESTED & SAMPLED		08/07/2021							
RESULTS									
Hilf Density Ratio Standard	%	**102**	**100**	**99**					
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.5**	**0.5**					
Specification Density Ratio (Standard)		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
		Southern Heights							
Shown on Drawing No		7747/54-6							
Retested by Test		-	-	-					
Reduced Level	m	53.97	53.94	55.40					
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.08	2.09					
Field Moisture Content	%	18.0	16.0	17.5					
Material retained on 19mm Sieve (wet)	%	<5	<5	<5					
Lab Compaction result from test number		315	316	317					
Lab Compaction Date Tested		12/07/2021	12/07/2021	12/07/2021					
Peak Converted Wet Density	t/m³	2.05	2.08	2.11					
Apparent Optimum Moisture Content	%	18.0	15.5	17.0					
Number of Compaction Points		3	3	3					
Test Procedures - See Note Number		12	12	12					
Material Description - see below		2	2	2					

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		318	319	320					
DATE TESTED & SAMPLED		08/07/2021		12/07/2021					
RESULTS									
Hilf Density Ratio **Standard**	%	**100.5**	**99**	**101.5**					
Moisture Variation from OMC **(-Drier/+Wetter)**	%	**0.0**	**0.5**	**0.0**					
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
		Ridgetops							
Shown on Drawing No		7747/54-6							
Retested by Test		-	-	-					
Reduced Level	m	54.90	55.24	51.993					
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.08	2.08	2.10					
Field Moisture Content	%	17.0	17.0	21.0					
Material retained on 19mm Sieve (wet)	%	<5	<5	<5					
Lab Compaction result from test number		318	319	320					
Lab Compaction Date Tested		12/07/2021	12/07/2021	13/07/2021					
Peak Converted Wet Density	t/m³	2.07	2.10	2.07					
Apparent Optimum Moisture Content	%	16.5	16.5	20.5					
Number of Compaction Points		3	3	3					
Test Procedures - See Note Number		12	12	12					
Material Description - see below		2	2	2-3					

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
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Material Description

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17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		321	322	323	324	325			
DATE TESTED & SAMPLED		12/07/2021							
RESULTS									
Hilf Density Ratio **Standard**	%	**98.5**	**100**	**101**	**98.5**	**101**			
Moisture Variation from OMC **(-Drier/+Wetter)**	%	**-2.0**	**0.0**	**0.5**	**-1.5**	**0.0**			
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Shown on Drawing No		Southern Heights							
		7747/54-6							
Retested by Test		-	-	-	-	-			
Reduced Level	m	52.210	51.155	51.96	51.887	51.934			
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.11	2.10	2.09	2.12			
Field Moisture Content	%	20.5	19.0	20.0	17.5	17.0			
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5			
Lab Compaction result from test number		321	322	323	324	325			
Lab Compaction Date Tested		13/07/2021	13/07/2021	13/07/2021	13/07/2021	13/07/2021			
Peak Converted Wet Density	t/m³	2.12	2.11	2.08	2.12	2.10			
Apparent Optimum Moisture Content	%	22.5	19.0	20.0	19.0	16.5			
Number of Compaction Points		3	3	3	3	3			
Test Procedures - See Note Number		12	12	12	12	12			
Material Description - see below		3	2	2-3	2	2			

Notes

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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/08/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		326							
DATE TESTED & SAMPLED		12/07/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**102**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
			Ridgetops						
Shown on Drawing No			7747/54-6						
Retested by Test			-						
Reduced Level		m	58.242						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.10						
Field Moisture Content		%	17.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			326						
Lab Compaction Date Tested			13/07/2021						
Peak Converted Wet Density		t/m³	2.06						
Apparent Optimum Moisture Content		%	18.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		327	328	329	330				
DATE TESTED & SAMPLED		12/07/2021		13/07/2021					
RESULTS									
Hilf Density Ratio Standard	%	**99**	**101**	**103.5**	**104**				
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.5**	**0.0**				
Specification Density Ratio (Standard)		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Shown on Drawing No		Southern Heights 7747/54-6							
Retested by Test		-	-	-	-				
Reduced Level	m	60.403	62.161	52.01	51.916				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.11	2.10	2.11				
Field Moisture Content	%	18.5	16.5	21.5	20.5				
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5				
Lab Compaction result from test number		327	328	329	330				
Lab Compaction Date Tested		13/07/2021	13/07/2021	14/07/2021	14/07/2021				
Peak Converted Wet Density	t/m³	2.11	2.09	2.03	2.03				
Apparent Optimum Moisture Content	%	18.5	16.5	21.0	20.5				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		2	2	3	2-3				

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		331	332						
DATE TESTED & SAMPLED		13/07/2021							
RESULTS									
Hilf Density Ratio **Standard**	**%**	**101.5**	**104**						
Moisture Variation from OMC **(-Drier/+Wetter)**	**%**	**0.0**	**-0.5**						
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
		Ridgetops							
Shown on Drawing No		7747/54-6							
Retested by Test		-	-						
Reduced Level	m	52.366	52.920						
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.12	2.12						
Field Moisture Content	%	20.5	20.0						
Material retained on 19mm Sieve (wet)	%	<5	<5						
Lab Compaction result from test number		331	332						
Lab Compaction Date Tested		14/07/2021	14/07/2021						
Peak Converted Wet Density	t/m³	2.09	2.04						
Apparent Optimum Moisture Content	%	20.5	20.5						
Number of Compaction Points		3	3						
Test Procedures - See Note Number		12	12						
Material Description - see below		2-3	2-3						

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		333	334	335					
DATE TESTED & SAMPLED		13/07/2021							
RESULTS									
Hilf Density Ratio Standard	%	**101**	**102.5**	**102.5**					
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**-0.5**	**0.0**					
Specification Density Ratio (Standard)	≥98%	**Specification Moisture Variance from OMC**							±2%
TEST LOCATION									
		Southern Heights							
Shown on Drawing No		7747/54-6							
Retested by Test		-	-	-					
Reduced Level	m	51.859	52.200	56.81					
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.12	2.09	2.09					
Field Moisture Content	%	20.5	21.5	20.0					
Material retained on 19mm Sieve (wet)	%	<5	<5	<5					
Lab Compaction result from test number		333	334	335					
Lab Compaction Date Tested		14/07/2021	14/07/2021	14/07/2021					
Peak Converted Wet Density	t/m³	2.10	2.04	2.04					
Apparent Optimum Moisture Content	%	20.5	22.0	20.0					
Number of Compaction Points		3	3	3					
Test Procedures - See Note Number		12	12	12					
Material Description - see below		2-3	3	2-3					

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		336							
DATE TESTED & SAMPLED		13/07/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**103**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
			Ridgetops						
Shown on Drawing No			7747/54-6						
Retested by Test			-						
Reduced Level		m	59.290						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.13						
Field Moisture Content		%	20.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			336						
Lab Compaction Date Tested			14/07/2021						
Peak Converted Wet Density		t/m³	2.07						
Apparent Optimum Moisture Content		%	19.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2-3						

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18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
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Form No R 020 Version 10 10/20 - issued by ER

NATA
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		337	338	339	340	341	342	343	344
DATE TESTED & SAMPLED		13/07/2021		14/07/2021					
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**102.5**	**102.5**	**104**	**103**	**99.5**	**103**	**102**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-1.5**	**0.0**	**-1.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Shown on Drawing No			Southern Heights 7747/54-6							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	60.949	62.824	57.313	60.260	61.19	62.810	62.436	61.594
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.12	2.09	2.09	2.09	2.11	2.08	2.10	2.08
Field Moisture Content		%	21.0	21.0	20.0	20.0	19.0	18.0	19.5	19.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			337	338	339	340	341	342	343	344
Lab Compaction Date Tested			14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021	14/07/2021
Peak Converted Wet Density		t/m³	2.07	2.04	2.01	2.03	2.12	2.02	2.06	2.10
Apparent Optimum Moisture Content		%	21.0	21.0	20.0	20.0	19.0	19.5	19.5	20.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2-3	2-3	2-3	2-3	2	2-3	2-3	2-3

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/08/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		345							
DATE TESTED & SAMPLED		14/07/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**102**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
			Southern Heights						
Shown on Drawing No			7747/54-6						
Retested by Test			-						
Reduced Level		m	60.157						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.08						
Field Moisture Content		%	19.5						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			345						
Lab Compaction Date Tested			14/07/2021						
Peak Converted Wet Density		t/m³	2.04						
Apparent Optimum Moisture Content		%	19.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2-3						

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/08/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		346							
DATE TESTED & SAMPLED		14/07/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**102.5**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
			Ridgetops						
Shown on Drawing No			7747/54-6						
Retested by Test			-						
Reduced Level		m	59.156						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.09						
Field Moisture Content		%	18.5						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			346						
Lab Compaction Date Tested			14/07/2021						
Peak Converted Wet Density		t/m³	2.04						
Apparent Optimum Moisture Content		%	18.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

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7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		347	348	349	350				
DATE TESTED & SAMPLED		14/07/2021							
RESULTS									
Hilf Density Ratio **Standard**	%	**102.5**	**100**	**103.5**	**102**				
Moisture Variation from OMC (-Drier/+Wetter)	%	**-0.5**	**-1.5**	**-0.5**	**0.5**				
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Shown on Drawing No		Southern Heights							
		7747/54-6							
Retested by Test		-	-	-	-				
Reduced Level	m	52.30	51.496	51.846	52.530				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.11	2.09	2.10				
Field Moisture Content	%	18.0	22.0	19.5	21.0				
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5				
Lab Compaction result from test number		347	348	349	350				
Lab Compaction Date Tested		14/07/2021	14/07/2021	14/07/2021	14/07/2021				
Peak Converted Wet Density	t/m³	2.04	2.11	2.02	2.06				
Apparent Optimum Moisture Content	%	18.5	24.0	19.5	20.5				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		2	2-3	2-3	2-3				

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/08/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			351	352	353	354	355	356	357	358
DATE TESTED & SAMPLED			15/07/2021							
RESULTS										
Density Ratio	Standard	%	102.5	101.5	102.5	103	103	102.5	102	102.5
Moisture Variation from OMC (-Drier/+Wetter)		%	**- 0.5**	**- 2.0**	**- 0.5**	**- 0.5**	**- 1.0**	**0.0**	**0.0**	**- 0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**± 2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-7		7747/54-8					
Shown on Drawing No			Dam 7 Key			Dam 8 Key				
Reduced Level		m	54.00	54.36	45.65	48.68	48.10	45.82	47.30	49.55
FIELD & LABORATORY DATA										
Field Dry Density		t/m³	1.69	1.62	1.66	1.70	1.70	1.63	1.73	1.73
Field Moisture Content		%	18.6	20.5	21.1	20.7	20.6	23.4	21.6	20.9
Material retained on	19 mm Sieve	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab compaction result from test number			251	252	253	254	255	256	257	258
Lab Compaction Date Tested			16/07/2021			19/07/2021				
Maximum Dry Density		t/m³	1.65	1.60	1.62	1.65	1.65	1.59	1.70	1.69
Number of Compaction Points			4	4	4	4	4	4	4	4
Optimum Moisture Content		%	19.0	22.5	21.5	21.0	21.5	23.5	21.5	21.5
Test Procedures - See Notes			6	6	6	6	6	6	6	6
Material Description - see below			2	2-3	2-3	2-3	2-3	2-3	2-3	2-3

Notes

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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Coal Wash

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R022 Version 20 12/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/08/2021

Approved Signatory

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/8/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		359							
DATE TESTED & SAMPLED		15/07/2021							
RESULTS									
Hilf Density Ratio	Standard %	101							
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**							
Specification	**Density Ratio (Standard)**	**≥95%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
Chainage (Carriageway L/R)	m	Southern Heights							
Shown on Drawing No		7747/54-8							
Retested by Test		-							
Reduced Level	m	46.06							
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.10							
Field Moisture Content	%	18.0							
Material retained on 19mm Sieve (wet)	%	<5							
Lab Compaction result from test number		359							
Lab Compaction Date Tested		19/07/2021							
Peak Converted Wet Density	t/m³	2.08							
Apparent Optimum Moisture Content	%	18.0							
Number of Compaction Points		3							
Test Procedures - See Note Number		12							
Material Description - see below		2							

Notes

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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/8/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		360	361	362	363	364			
DATE TESTED & SAMPLED		15/07/2021							
RESULTS									
Hilf Density Ratio Standard	%	102	103	102.5	98.5	99.5			
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**			
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2**
TEST LOCATION									
Chainage (Carriageway L/R)	m	Southern Heights		Ridgetops	Ridgetops	Ridgetops			
Shown on Drawing No		7747/54-8		7747/54-7					
Retested by Test		-	-	-	-	-			
Reduced Level	m	46.42	46.64	59.80	62.74	65.02			
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.11	2.11	2.10	2.02	2.03			
Field Moisture Content	%	18.5	18.0	57.0	18.0	18.5			
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5			
Lab Compaction result from test number		360	361	362	363	364			
Lab Compaction Date Tested		19/07/2021							
Peak Converted Wet Density	t/m³	2.07	2.05	2.05	2.05	2.04			
Apparent Optimum Moisture Content	%	18.5	18.0	57.5	18.5	18.5			
Number of Compaction Points		3	3	3	3	3			
Test Procedures - See Note Number		12	12	12	12	12			
Material Description - see below		2	2	2	2	2			

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/08/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			365	366	367	368			
DATE TESTED & SAMPLED			16/07/2021						
RESULTS									
Density Ratio	Standard	%	104	102.5	103	102			
Moisture Variation from OMC	(-Drier/+Wetter)	%	**- 1.5**	**0.0**	**- 2.0**	**0.0**			
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**± 2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Dam 8 Key	Dam 8 Key	Dam 8 Key	Dam 8 Key			
Shown on Drawing No			7747/54-8						
Retested by test			-	-	-	-			
Reduced Level		m	50.48	48.37	49.10	49.77			
FIELD & LABORATORY DATA									
Field Dry Density		t/m³	1.66	1.62	1.68	1.62			
Field Moisture Content		%	21.0	23.6	20.1	23.5			
Material retained on	19 mm Sieve	%	<5	<5	<5	<5			
Lab compaction result from test number			365	366	367	368			
Lab Compaction Date Tested			20/07/2021		19/07/2021				
Maximum Dry Density		t/m³	1.60	1.58	1.63	1.59			
Number of Compaction Points			4	4	4	4			
Optimum Moisture Content		%	22.5	23.5	22.0	23.5			
Test Procedures - See Notes			6	6	6	6			
Material Description - see below			2-3	3	2-3	3			

Notes

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6: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.4.1, 5.8.1
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9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Coal Wash

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R022 Version 20 12/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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H Wilson 24/08/2021

Approved Signatory

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/8/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			369	370	371	372	373	374	375	376
DATE TESTED & SAMPLED			16/07/2021							
RESULTS										
Hilf Density Ratio	Standard	%	100.5	101	100.5	100	100.5	99.5	100	100
Moisture Variation from OMC	(-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights				Ridgetops			
Shown on Drawing No			7747/54-8			7747/54-7				
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	48.80	50.83	52.70	56.51	56.32	58.34	61.33	63.87
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.09	2.09	2.07	2.09	2.08	2.06	2.08
Field Moisture Content		%	19.5	16.5	16.5	18.0	18.0	18.0	18.0	19.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			369	370	371	372	373	374	375	376
Lab Compaction Date Tested			17/07/2021							
Peak Converted Wet Density		t/m³	2.09	2.07	2.08	2.07	2.08	2.09	2.06	2.08
Apparent Optimum Moisture Content		%	19.5	16.5	16.5	18.0	18.0	18.0	18.0	19.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2-3	2	2	2	2	2	2	2

Notes

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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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9. DGB40
10. DGS20
11. DGS40
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13. FCR40
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15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
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Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		377	378	379	380	381	382	383	384
DATE TESTED & SAMPLED		02/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	103	103.5	103.5	103.5	103.5	103	103	103.5
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops				Southern Heights			
Shown on Drawing No		7747/54-7				7747/54-8			
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	62.36	63.80	64.87	66.57	52.30	52.83	54.17	53.42
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.09	2.10	2.11	2.11	2.12	2.10	2.09
Field Moisture Content	%	20.5	22.0	22.0	21.5	21.0	18.5	22.0	22.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		377	378	379	380	381	382	383	384
Lab Compaction Date Tested		03/08/2021	03/08/2021	03/08/2021	03/08/2021	03/08/2021	03/08/2021	03/08/2021	03/08/2021
Peak Converted Wet Density	t/m³	2.03	2.02	2.03	2.04	2.04	2.06	2.04	2.02
Apparent Optimum Moisture Content	%	20.0	21.5	22.0	21.5	21.0	18.5	22.0	22.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2-3	3	3	3	3	2	3	3

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		385	386	387	388	389	390	391	392
DATE TESTED & SAMPLED		03/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	100	100	100.5	100	99.5	100	100	100
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops				Southern Heights			
Shown on Drawing No		7747/54-7				7747/54-8			
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	63.87	64.70	65.00	84.00	67.17	53.23	54.09	52.90
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.06	2.06	2.08	2.07	2.06	2.07	2.08	2.06
Field Moisture Content	%	20.5	20.0	20.0	20.0	19.5	19.0	19.5	20.0
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		385	386	387	388	389	390	391	392
Lab Compaction Date Tested		03/08/2021	03/08/2021	03/08/2021	03/08/2021	03/08/2021	03/08/2021	03/08/2021	03/08/2021
Peak Converted Wet Density	t/m³	2.06	2.06	2.07	2.07	2.07	2.07	2.08	2.06
Apparent Optimum Moisture Content	%	20.5	20.0	20.0	20.0	19.5	19.0	19.0	19.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2-3	2-3	2-3	2-3	2-3	2	2-3	2-3

Notes

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14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		393	394	395	396	397	398	399	400
DATE TESTED & SAMPLED		03/08/2021				04/08/2021			
RESULTS									
Hilf Density Ratio Standard	%	101.5	101.5	102	101.5	104	99.5	101.5	102
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.5**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops		Southern Heights					
Shown on Drawing No		7747/54-7		7747/54-8					7747/54-9
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	61.85	59.54	51.20	52.38	53.04	53.58	52.47	49.04
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.11	2.11	2.10	2.11	2.10	2.11	2.08	2.09
Field Moisture Content	%	18.0	21.0	21.5	20.0	15.5	16.0	16.0	16.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		393	394	395	396	397	398	399	400
Lab Compaction Date Tested		04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021
Peak Converted Wet Density	t/m³	2.08	2.08	2.06	2.08	2.02	2.12	2.05	2.05
Apparent Optimum Moisture Content	%	18.0	21.0	21.0	19.5	15.5	15.5	16.0	16.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	3	3	2-3	2	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/08/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		401	402	403	404	405	406	407	408
DATE TESTED & SAMPLED		04/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	99	99	102	102.5	101.5	100	102.5	100.5
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Southern Heights		Ridgetops					
Shown on Drawing No		7747/54-9		7747/54-7					
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	48.47	48.80	55.44	56.69	57.34	57.47	57.13	56.56
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.10	2.09	2.09	2.12	2.08	2.09	2.09
Field Moisture Content	%	17.5	14.5	16.0	16.0	16.5	16.0	17.0	16.0
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		401	402	403	404	405	406	407	408
Lab Compaction Date Tested		04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021	04/08/2021
Peak Converted Wet Density	t/m³	2.11	2.12	2.05	2.04	2.09	2.08	2.04	2.08
Apparent Optimum Moisture Content	%	17.5	14.5	15.5	16.0	16.5	16.0	17.0	16.0
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	2	2	2	2	2

Notes

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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		409	410	411	412	413	414	415	416
DATE TESTED & SAMPLED		05/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	98.5	99.5	100.5	101	99	100.5	99.5	100
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
Shown on Drawing No		Ridgetops							
		7747/54-7							
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	54.01	54.63	56.52	57.43	57.37	57.86	58.28	58.58
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.06	2.05	2.05	2.04	2.07	2.07	2.06	2.08
Field Moisture Content	%	16.0	16.0	16.5	18.0	19.5	18.0	17.0	17.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		409	410	411	412	413	414	415	416
Lab Compaction Date Tested		06/08/2021	06/08/2021	06/08/2021	06/08/2021	06/08/2021	06/08/2021	06/08/2021	06/08/2021
Peak Converted Wet Density	t/m³	2.09	2.06	2.04	2.02	2.09	2.06	2.07	2.08
Apparent Optimum Moisture Content	%	16.5	16.5	16.5	18.0	19.5	18.0	17.0	17.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	2	2-3	2	2	2

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		417	418	419	420	421	422	423	424
DATE TESTED & SAMPLED		05/08/2021				06/08/2021			
RESULTS									
Hilf Density Ratio Standard	%	99	101.5	99.5	100	102	101	101.5	100.5
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.5**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Southern Heights				Ridgetops			
Shown on Drawing No		7747/54-9				7747/54-7			
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	49.02	48.53	48.45	48.95	58.46	58.04	57.70	55.85
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.03	2.06	2.04	2.08	2.08	2.07	2.08
Field Moisture Content	%	17.0	19.0	16.0	18.5	16.5	18.5	16.0	16.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		417	418	419	420	421	422	423	424
Lab Compaction Date Tested		06/08/2021	06/08/2021	06/08/2021	06/08/2021	09/08/2021	09/08/2021	09/08/2021	09/08/2021
Peak Converted Wet Density	t/m³	2.11	2.00	2.07	2.04	2.04	2.06	2.04	2.07
Apparent Optimum Moisture Content	%	17.0	19.0	16.0	18.5	16.5	18.5	16.5	17.0
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	2	2	2	2	2

Notes

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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		425	426	427	428	429	430	431	432
DATE TESTED & SAMPLED		06/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	101	100.5	98	99	100.5	100.5	100	99
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops				Southern Heights			
Shown on Drawing No		7747/54-7				7747/54-9			
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	53.75	53.34	53.74	54.23	49.27	49.06	49.67	50.58
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.06	2.06	2.05	2.07	2.06	2.06	2.08	2.06
Field Moisture Content	%	16.5	19.0	17.5	21.5	18.5	17.0	16.0	18.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		425	426	427	428	429	430	431	432
Lab Compaction Date Tested		09/08/2021	09/08/2021	09/08/2021	09/08/2021	09/08/2021	09/08/2021	09/08/2021	09/08/2021
Peak Converted Wet Density	t/m³	2.04	2.05	2.09	2.09	2.05	2.05	2.08	2.08
Apparent Optimum Moisture Content	%	16.5	19.0	17.5	21.5	18.5	17.0	16.0	18.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	3	2	2	2	2

Notes

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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		433	434	435	436	437	438	439	440
DATE TESTED & SAMPLED		09/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	100	100.5	100.5	100	100	99	100	99
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Southern Heights					Ridgetops		
Shown on Drawing No		7747/54-9					7747/54-7		
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	52.36	54.01	53.48	51.57	51.33	55.54	56.75	58.26
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.06	2.05	2.07	2.06	2.11	2.08	2.06	2.11
Field Moisture Content	%	17.0	17.0	17.0	19.0	18.0	18.5	17.5	20.0
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		433	434	435	436	437	438	439	440
Lab Compaction Date Tested		10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021	10/08/2021
Peak Converted Wet Density	t/m³	2.06	2.04	2.06	2.06	2.11	2.10	2.06	2.13
Apparent Optimum Moisture Content	%	17.0	16.5	17.0	19.0	18.0	18.5	17.5	20.0
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	2	2	2	2	2-3

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/08/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		441	442	443	444	445	446	447	448
DATE TESTED & SAMPLED		09/08/2021				10/08/2021			
RESULTS									
Hilf Density Ratio Standard	%	99.5	100	100	100.5	99.5	99	99	99.5
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
Shown on Drawing No		Ridgetops							
		7747/54-7							
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	58.50	57.48	55.12	55.50	57.93	57.81	57.97	58.74
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.08	2.05	2.04	2.07	2.06	2.05	2.07
Field Moisture Content	%	18.5	16.5	16.0	17.5	17.5	17.0	19.5	17.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		441	442	443	444	445	446	447	448
Lab Compaction Date Tested		10/08/2021	10/08/2021	10/08/2021	10/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021
Peak Converted Wet Density	t/m³	2.10	2.08	2.05	2.03	2.08	2.08	2.07	2.08
Apparent Optimum Moisture Content	%	18.5	16.0	16.0	17.5	17.0	17.0	19.5	17.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	2	2	2	2-3	2

Notes

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7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
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9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		449	450	451	452	453	454	455	456
DATE TESTED & SAMPLED		10/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	99.5	100	99.5	99.5	99.5	99.5	100	99
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops			Southern Heights				
Shown on Drawing No		7747/54-7			7747/54-9				
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	60.00	58.60	58.31	50.08	49.58	50.18	50.25	49.05
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.05	2.06	2.04	2.05	2.10	2.07	2.05	2.05
Field Moisture Content	%	20.5	17.0	17.0	18.5	16.5	20.0	19.0	17.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		449	450	451	452	453	454	455	456
Lab Compaction Date Tested		11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021	11/08/2021
Peak Converted Wet Density	t/m³	2.06	2.06	2.05	2.06	2.11	2.08	2.05	2.07
Apparent Optimum Moisture Content	%	20.5	16.5	16.5	18.5	16.5	20.0	18.5	17.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2-3	2	2	2	2	2-3	2	2

Notes

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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

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Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		457	458	459	460	461	462	463	464
DATE TESTED & SAMPLED		11/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	98	100	102	100	98.5	99.5	100.5	99
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**1.0**	**-1.5**	**0.0**	**0.0**	**-0.5**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops							Southern Heights
Shown on Drawing No		7747/54-7						7747/54-9	
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	59.54	60.15	62.30	59.79	58.89	58.55	49.50	49.96
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.11	2.10	2.12	2.13	2.11	2.10	2.09	2.11
Field Moisture Content	%	17.5	16.0	17.5	19.5	17.0	15.5	17.0	16.0
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		457	458	459	460	461	462	463	464
Lab Compaction Date Tested		18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021
Peak Converted Wet Density	t/m³	2.15	2.10	2.08	2.13	2.14	2.11	2.08	2.13
Apparent Optimum Moisture Content	%	17.5	16.0	16.5	21.0	17.5	15.5	17.5	16.0
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	2-3	2	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		465	466	467	468	469	470	471	472
DATE TESTED & SAMPLED		11/08/2021				12/08/2021			
RESULTS									
Hilf Density Ratio Standard	%	99	98	99.5	99.5	102.5	100.5	98.5	100
Moisture Variation from OMC (-Drier/+Wetter)	%	**1.0**	**0.0**	**1.0**	**2.0**	**0.5**	**0.5**	**0.5**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Southern Heights				Ridgetops			
Shown on Drawing No		7747/54-9				7747/54-7			
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	50.56	51.13	49.40	51.55	58.13	58.68	59.12	60.01
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.11	2.10	2.13	2.12	2.11	2.10	2.09	2.10
Field Moisture Content	%	16.5	18.5	17.0	16.5	15.5	16.5	16.5	14.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		465	466	467	468	469	470	471	472
Lab Compaction Date Tested		18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021
Peak Converted Wet Density	t/m³	2.13	2.14	2.14	2.13	2.06	2.09	2.12	2.10
Apparent Optimum Moisture Content	%	15.5	18.5	16.0	14.5	15.0	16.0	16.0	14.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	2	2	2	2	2

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		473	474	475	476	477	478	479	480
DATE TESTED & SAMPLED		12/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	101	100	98	100	100.5	101	102.5	103
Moisture Variation from OMC (-Drier/+Wetter)	%	**-1.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops			Southern Heights				
Shown on Drawing No		7747/54-7			7747/54-9				
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	58.80	59.39	60.06	51.34	51.74	52.29	50.73	49.73
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.11	2.13	2.10	2.11	2.12	2.12	2.13	2.13
Field Moisture Content	%	21.0	16.5	14.5	14.0	21.5	17.0	16.5	16.0
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		473	474	475	476	477	478	479	480
Lab Compaction Date Tested		18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021
Peak Converted Wet Density	t/m³	2.09	2.13	2.14	2.11	2.11	2.10	2.08	2.07
Apparent Optimum Moisture Content	%	22.0	16.0	14.0	14.0	21.5	16.5	16.0	16.0
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		3	2	2	2	3	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/08/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		481	482	483	484	485	486	487	488
DATE TESTED & SAMPLED		13/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	99	100	98.5	99.5	101.5	103	102	100
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops							
Shown on Drawing No		7747/54-7							7747/54-9
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	60.68	61.39	62.92	61.84	59.78	58.67	57.91	52.96
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.08	2.08	2.08	2.08	2.09	2.11	2.10	2.08
Field Moisture Content	%	18.5	18.0	18.0	17.0	17.0	18.0	16.5	17.0
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		481	482	483	484	485	486	487	488
Lab Compaction Date Tested		18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021	18/08/2021
Peak Converted Wet Density	t/m³	2.10	2.08	2.11	2.09	2.06	2.05	2.06	2.08
Apparent Optimum Moisture Content	%	18.5	18.0	18.0	17.0	16.5	18.0	16.5	17.0
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	2	2	2	2	2

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		489	490	491	492	493	494	495	496
DATE TESTED & SAMPLED		13/08/2021				16/08/2021			
RESULTS									
Hilf Density Ratio Standard	%	101	100.5	99.5	102.5	103.5	102.5	103.5	98.5
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**-1.5**	**-1.5**	**-1.5**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Southern Heights				Ridgetops			
Shown on Drawing No		7747/54-9			7747/54-10				
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	53.30	52.38	51.39	59.77	60.18	60.00	59.68	59.76
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.10	2.08	2.09	2.09	2.11	2.11	2.11	2.10
Field Moisture Content	%	15.5	20.0	17.0	18.0	13.5	13.0	14.0	13.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		489	490	491	492	493	494	495	496
Lab Compaction Date Tested		19/08/2021	23/08/2021	23/08/2021	23/08/2021	23/08/2021	23/08/2021	23/08/2021	23/08/2021
Peak Converted Wet Density	t/m³	2.08	2.07	2.10	2.04	2.04	2.06	2.04	2.13
Apparent Optimum Moisture Content	%	15.5	20.0	17.0	18.0	14.5	14.0	15.5	13.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2-3	2	2	2	2	2	2

Notes

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17. RMS T120, T164, T173

Material Description

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9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		497	498	499	500	501	502	503	504
DATE TESTED & SAMPLED		16/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	100.5	102	101.5	102	103	101.5	101.5	100.5
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.5**	**-1.5**	**0.5**	**-1.5**	**-2.0**	**-2.0**	**-1.0**	**-2.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops				Southern Heights			
Shown on Drawing No		7747/54-10							
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	59.52	59.82	52.52	52.43	52.46	52.27	51.90	52.94
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.12	2.12	2.11	2.14	2.12	2.13	2.11	2.10
Field Moisture Content	%	14.0	13.0	12.5	12.0	13.5	13.0	14.0	14.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		497	498	499	500	501	502	503	504
Lab Compaction Date Tested		23/08/2021	23/08/2021	23/08/2021	23/08/2021	20/08/2021	19/08/2021	19/08/2021	19/08/2021
Peak Converted Wet Density	t/m³	2.11	2.08	2.08	2.09	2.06	2.10	2.08	2.09
Apparent Optimum Moisture Content	%	14.0	14.5	12.0	13.5	15.5	15.5	14.5	16.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	1	2	2	2	2	2

Notes

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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		505	506	507	508	509	510	511	512
DATE TESTED & SAMPLED		17/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	100	102	98.5	99	98.5	99.5	101	100
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**-0.5**	**0.0**	**0.5**	**0.5**	**0.0**	**0.0**	**0.0**
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
Shown on Drawing No		Southern Heights							
		7747/54-10							
Retested by Test		-	-	-	-	-	-	-	-
Reduced Level	m	54.44	54.70	54.08	53.47	52.76	52.62	57.56	57.67
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.12	2.11	2.12	2.10	2.11	2.12	2.11	2.11
Field Moisture Content	%	13.5	16.0	14.5	14.5	16.5	15.0	17.0	15.5
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number		505	506	507	508	509	510	511	512
Lab Compaction Date Tested		22/08/2021	22/08/2021	22/08/2021	22/08/2021	22/08/2021	22/08/2021	22/08/2021	22/08/2021
Peak Converted Wet Density	t/m³	2.12	2.07	2.15	2.12	2.14	2.13	2.09	2.11
Apparent Optimum Moisture Content	%	14.0	16.5	14.5	14.0	16.0	15.0	16.5	15.5
Number of Compaction Points		3	3	3	3	3	3	3	3
Test Procedures - See Note Number		12	12	12	12	12	12	12	12
Material Description - see below		2	2	2	2	2	2	2	2

Notes

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14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/08/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/08/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		513	514	515	516				
DATE TESTED & SAMPLED		17/08/2021							
RESULTS									
Hilf Density Ratio Standard	%	100.5	100.5	100.5	100.5				
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.0**	**0.0**	**0.5**	**0.5**				
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**N/A**
TEST LOCATION									
		Ridgetops							
Shown on Drawing No		7747/54-10							
Retested by Test		-	-	-	-				
Reduced Level	m	58.61	56.84	56.65	53.99				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.11	2.11	2.10	2.13				
Field Moisture Content	%	19.5	19.5	18.5	19.5				
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5				
Lab Compaction result from test number		513	514	515	516				
Lab Compaction Date Tested		20/08/2021	20/08/2021	20/08/2021	20/08/2021				
Peak Converted Wet Density	t/m³	2.10	2.10	2.09	2.12				
Apparent Optimum Moisture Content	%	19.0	19.5	18.0	19.0				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		2-3	2-3	2	2				

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			517	518	519	520	521	522	523	524
DATE TESTED & SAMPLED			19/08/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**101**	**101.5**	**101**	**101**	**98**	**98**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-2.0**	**-1.5**	**-2.0**	**-2.0**	**-2.0**	**-1.5**	**-0.5**	**-1.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	52.04	54.74	56.04	56.68	53.47	53.84	51.24	51.02
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.11	2.12	2.13	2.12	2.13	2.14	2.12	2.12
Field Moisture Content		%	10.0	10.5	12.0	12.0	10.0	10.0	13.5	12.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	19
Lab Compaction result from test number			517	518	519	520	521	522	523	524
Lab Compaction Date Tested			26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
Peak Converted Wet Density		t/m³	2.12	2.10	2.10	2.10	2.11	2.18	2.16	2.12
Apparent Optimum Moisture Content		%	11.5	12.0	13.5	14.0	12.0	11.5	14.0	13.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			1	1	1	2	1	1	2	1

Notes

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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			525	526	527					
DATE TESTED & SAMPLED			19/08/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**100.5**	**98**					
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-2.0**	**-2.0**	**-2.0**					
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-	-	-					
Reduced Level		m	51.15	51.71	51.78					
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.11	2.11	2.13					
Field Moisture Content		%	11.0	11.5	11.0					
Material retained on	19mm Sieve (wet)	%	<5	<5	<5					
Lab Compaction result from test number			525	526	527					
Lab Compaction Date Tested			26/08/2021	26/08/2021	26/08/2021					
Peak Converted Wet Density		t/m³	2.11	2.10	2.17					
Apparent Optimum Moisture Content		%	13.0	13.5	12.5					
Number of Compaction Points			3	3	3					
Test Procedures - See Note Number			12	12	12					
Material Description - see below			1-2	1-2	1-2					

Notes

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
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9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		528	529	530	531				
DATE TESTED & SAMPLED		19/08/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**99.5**	**100.5**	**100.5**	**101**				
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**-1.0**	**0.5**	**0.0**	**0.0**				
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Ridgetops							
Shown on Drawing No		7747/54-12							
Retested by Test		-	-	-	-				
Reduced Level	m	60.09	60.98	62.41	62.30				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.13	2.11	2.10	2.13				
Field Moisture Content	%	12.0	20.5	19.5	18.5				
Material retained on	19mm Sieve (wet) %	<5	<5	<5	<5				
Lab Compaction result from test number		528	529	530	531				
Lab Compaction Date Tested		26/08/2021	20/08/2021	20/08/2021	20/08/2021				
Peak Converted Wet Density	t/m³	2.14	2.10	2.09	2.11				
Apparent Optimum Moisture Content	%	13.5	20.0	19.5	18.5				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		1-2	2-3	2-3	2				

Notes

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6: AS 1289 1.2.1 clause 6.4
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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			532	533	534	535	536	537	538	539
DATE TESTED & SAMPLED			19/08/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**100**	**100.5**	**100.5**	**100.5**	**100.5**	**100.5**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	52.55	52.68	51.79	50.57	51.56	52.77	53.54	53.05
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.11	2.10	2.11	2.12	2.12	2.12	2.12	2.11
Field Moisture Content		%	19.0	20.5	20.5	19.0	19.5	19.0	19.5	19.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			532	533	534	535	536	537	538	539
Lab Compaction Date Tested			20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021	20/08/2021
Peak Converted Wet Density		t/m³	2.10	2.10	2.10	2.11	2.11	2.11	2.11	2.10
Apparent Optimum Moisture Content		%	19.0	20.0	20.0	19.0	19.0	18.5	19.0	18.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2-3	2-3	2	2-3	2	2	2

Notes

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17. RMS T120, T164, T173

Material Description

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3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			540	541	542	543	544	545	546	
DATE TESTED & SAMPLED			19/08/2021	21/08/2021						
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**100.5**	**100**	**100**	**100**	**100**	**99**	
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-12							
Retested by Test			-	-	-	-	-	-	-	
Reduced Level		m	70.04	69.01	69.49	67.02	64.09	66.12	54.24	
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.11	2.11	2.12	2.11	2.12	2.11	2.11	
Field Moisture Content		%	19.5	16.5	16.0	18.5	18.0	18.5	18.0	
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	
Lab Compaction result from test number			540	541	542	543	544	545	546	
Lab Compaction Date Tested			20/08/2021	23/08/2021	23/08/2021	23/08/2021	23/08/2021	23/08/2021	23/08/2021	
Peak Converted Wet Density		t/m³	2.11	2.10	2.12	2.11	2.12	2.11	2.13	
Apparent Optimum Moisture Content		%	19.0	16.5	16.0	18.5	18.0	18.0	18.0	
Number of Compaction Points			3	3	3	3	3	3	3	
Test Procedures - See Note Number			12	12	12	12	12	12	12	
Material Description - see below			2	2	2	2	2	2	2	

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/09/2021
Approved Signatory

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email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			547	548	549	550	551	552	553	554
DATE TESTED & SAMPLED			21/08/2021						23/08/2021	
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**100.5**	**99.5**	**100**	**100**	**99.5**	**99.5**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	53.29	53.67	53.08	52.78	53.13	60.18	60.30	60.46
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.12	2.11	2.02	2.03	2.11	2.01	2.12	2.11
Field Moisture Content		%	18.0	17.5	18.0	18.5	17.5	17.0	18.5	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			547	548	549	550	551	552	553	554
Lab Compaction Date Tested			23/08/2021	23/08/2021	23/08/2021	23/08/2021	23/08/2021	23/08/2021	26/08/2021	26/08/2021
Peak Converted Wet Density		t/m³	2.12	2.10	2.03	2.03	2.11	2.01	2.13	2.11
Apparent Optimum Moisture Content		%	18.0	17.5	18.0	18.5	17.5	17.0	18.5	17.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		555							
DATE TESTED & SAMPLED		23/08/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**100**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Ridgetops						
Shown on Drawing No			7747/54-12						
Retested by Test			-						
Reduced Level		m	60.60						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.13						
Field Moisture Content		%	18.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			555						
Lab Compaction Date Tested			26/08/2021						
Peak Converted Wet Density		t/m³	2.13						
Apparent Optimum Moisture Content		%	18.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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H Wilson 24/09/2021
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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			556	557	558	559	560	561	562	563
DATE TESTED & SAMPLED			23/08/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**100.5**	**100.5**	**100.5**	**100.5**	**100**	**99.5**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.5**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	53.33	53.26	53.21	53.46	54.28	54.90	53.75	53.33
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.12	2.10	2.14	2.12	2.11	2.11	2.11	2.12
Field Moisture Content		%	17.5	17.5	19.5	19.0	17.0	16.5	18.0	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			556	557	558	559	560	561	562	563
Lab Compaction Date Tested			26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021	26/08/2021
Peak Converted Wet Density		t/m³	2.12	2.09	2.13	2.11	2.10	2.11	2.12	2.12
Apparent Optimum Moisture Content		%	17.5	17.5	19.0	19.0	17.0	16.5	18.0	17.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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Approved Signatory

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		564	565	566	567				
DATE TESTED & SAMPLED		23/08/2021	27/08/2021						
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**100**	**100**	**100.5**	**100**			
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**			
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Southern Heights						
Shown on Drawing No			7747/54-11						
Retested by Test			-	-	-	-			
Reduced Level		m	54.03	53.76	52.14	52.12			
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.12	2.11	2.11	2.12			
Field Moisture Content		%	19.5	17.5	18.0	17.5			
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5			
Lab Compaction result from test number			564	565	566	567			
Lab Compaction Date Tested			26/08/2021	01/09/2021	01/09/2021	01/09/2021			
Peak Converted Wet Density		t/m³	2.12	2.11	2.10	2.12			
Apparent Optimum Moisture Content		%	19.5	17.5	18.0	17.5			
Number of Compaction Points			3	3	3	3			
Test Procedures - See Note Number			12	12	12	12			
Material Description - see below			2-3	2	2	2			

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			568	569	570	571	572	573	574	575
DATE TESTED & SAMPLED			27/08/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**99**	**99.5**	**99**	**99.5**	**98.5**	**99**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-12							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	59.23	61.89	62.22	63.07	64.71	67.95	65.57	66.01
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.11	2.12	2.12	2.12	2.10	2.10	2.11
Field Moisture Content		%	18.5	17.5	17.5	17.5	17.0	19.0	19.0	18.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			568	569	570	571	572	573	574	575
Lab Compaction Date Tested			01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021	01/09/2021
Peak Converted Wet Density		t/m³	2.09	2.13	2.13	2.14	2.13	2.13	2.12	2.13
Apparent Optimum Moisture Content		%	18.5	17.5	17.5	17.5	17.0	19.0	19.0	18.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/9/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		576	577						
DATE TESTED & SAMPLED		27/08/2021	30/08/2021						
RESULTS									
Hilf Density Ratio	**Standard** %	**99**	**98**						
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**0.0**	**0.0**						
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Ridgetops							
Shown on Drawing No		7747/54-12							
Retested by Test		-	-						
Reduced Level	m	66.38	67.00						
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.12	2.09						
Field Moisture Content	%	17.0	16.0						
Material retained on	19mm Sieve (wet) %	<5	<5						
Lab Compaction result from test number		576	577						
Lab Compaction Date Tested		01/09/2021	01/09/2021						
Peak Converted Wet Density	t/m³	2.14	2.13						
Apparent Optimum Moisture Content	%	17.0	16.0						
Number of Compaction Points		3	3						
Test Procedures - See Note Number		12	12						
Material Description - see below		2	2						

Notes

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6: AS 1289 1.2.1 clause 6.4
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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/09/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		578	579	580	581				
DATE TESTED & SAMPLED		30/08/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**99.5**	**100.5**	**98.5**	**98**			
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**-0.5**	**0.0**	**-0.5**			
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Southern Heights						
Shown on Drawing No			7747/54-11						
Retested by Test			-	-	-	-			
Reduced Level		m	59.45	58.56	56.83	55.25			
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.09	2.11	2.09	2.10			
Field Moisture Content		%	16.5	16.0	16.5	14.5			
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5			
Lab Compaction result from test number			578	579	580	581			
Lab Compaction Date Tested			31/08/2021	31/08/2021	31/08/2021	31/08/2021			
Peak Converted Wet Density		t/m³	2.10	2.10	2.12	2.14			
Apparent Optimum Moisture Content		%	17.0	16.5	16.5	14.5			
Number of Compaction Points			3	3	3	3			
Test Procedures - See Note Number			12	12	12	12			
Material Description - see below			2	2	2	2			

Notes

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6: AS 1289 1.2.1 clause 6.4
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			582	583	584	585	586	587	588	
DATE TESTED & SAMPLED			30/08/2021			01/09/2021				
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99**	**99**	**98**	**102**	**102.5**	**100.5**	**100.5**	
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**0.0**	**-0.5**	**-1.0**	**-0.5**	**0.0**	**-0.5**	
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-12							
Retested by Test			-	-	-	-	-	-	-	
Reduced Level		m	66.62	67.40	67.58	68.76	68.86	69.05	69.45	
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.14	2.09	2.08	2.09	2.09	2.08	
Field Moisture Content		%	15.5	15.0	16.0	18.0	17.5	16.5	16.5	
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	
Lab Compaction result from test number			582	583	584	585	586	587	588	
Lab Compaction Date Tested			31/08/2021	31/08/2021	31/08/2021	03/09/2021	03/09/2021	03/09/2021	03/09/2021	
Peak Converted Wet Density		t/m³	2.11	2.16	2.13	2.04	2.04	2.08	2.07	
Apparent Optimum Moisture Content		%	16.0	15.0	16.5	19.0	18.0	16.5	17.5	
Number of Compaction Points			3	3	3	3	3	3	3	
Test Procedures - See Note Number			12	12	12	12	12	12	12	
Material Description - see below			2	2	2	2	2	2	2	

Notes

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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			589	590	591	592	593	594	595	596
DATE TESTED & SAMPLED			01/09/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**103**	**100.5**	**102.5**	**101**	**100**	**99.5**	**101.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-1.0**	**0.0**	**-0.5**	**0.0**	**-2.0**	**0.0**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	55.50	55.82	54.02	53.40	53.81	54.21	56.64	57.37
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.11	2.09	2.08	2.10	2.10	2.09	2.07	2.08
Field Moisture Content		%	17.0	20.0	20.0	18.0	13.5	21.0	17.5	19.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			589	590	591	592	593	594	595	596
Lab Compaction Date Tested			03/09/2021	03/09/2021	03/09/2021	03/09/2021	03/09/2021	03/09/2021	03/09/2021	03/09/2021
Peak Converted Wet Density		t/m³	2.09	2.03	2.07	2.05	2.08	2.09	2.08	2.05
Apparent Optimum Moisture Content		%	17.0	21.0	20.0	18.5	13.5	23.0	17.5	19.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2-3	2-3	2	2	3	2	2-3

Notes

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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			597	598	599	600	601	602	603	
DATE TESTED & SAMPLED			02/09/2021				03/09/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**103**	**105**	**102.5**	**101**	**98**	**99.5**	**99**	
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**-0.5**	**-0.5**	**-0.5**	**0.0**	**-0.5**	**0.5**	
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-	-	-	-	-	-	-	
Reduced Level		m	57.44	58.54	56.72	55.79	56.57	57.82	57.95	
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.09	2.07	2.06	2.11	2.15	2.11	
Field Moisture Content		%	18.0	19.5	18.0	17.5	16.0	17.0	16.0	
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	
Lab Compaction result from test number			597	598	599	600	601	602	603	
Lab Compaction Date Tested			07/09/2021	07/09/2021	07/09/2021	07/09/2021	10/09/2021	10/09/2021	10/09/2021	
Peak Converted Wet Density		t/m³	2.03	1.99	2.02	2.04	2.15	2.16	2.13	
Apparent Optimum Moisture Content		%	18.5	20.0	18.5	18.0	16.0	17.5	16.0	
Number of Compaction Points			3	3	3	3	3	3	3	
Test Procedures - See Note Number			12	12	12	12	12	12	12	
Material Description - see below			2	2-3	2	2	2	2	2	

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/09/2021
Approved Signatory

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email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		604							
DATE TESTED & SAMPLED		03/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**99**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Ridgetops						
Shown on Drawing No			7747/54-12						
Retested by Test			-						
Reduced Level		m	57.99						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.09						
Field Moisture Content		%	17.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			604						
Lab Compaction Date Tested			10/09/2021						
Peak Converted Wet Density		t/m³	2.11						
Apparent Optimum Moisture Content		%	17.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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H Wilson 24/09/2021
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		605	606	607	608				
DATE TESTED & SAMPLED		03/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**103**	**100.5**	**100**	**98.5**			
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**0.0**	**0.0**	**0.0**			
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Southern Heights						
Shown on Drawing No			7747/54-11						
Retested by Test			-	-	-	-			
Reduced Level		m	58.50	55.06	55.32	55.72			
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.10	2.13	2.12	2.10			
Field Moisture Content		%	16.0	16.0	15.5	15.5			
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5			
Lab Compaction result from test number			605	606	607	608			
Lab Compaction Date Tested			13/09/2021	13/09/2021	13/09/2021	13/09/2021			
Peak Converted Wet Density		t/m³	2.04	2.12	2.12	2.13			
Apparent Optimum Moisture Content		%	16.0	15.5	15.5	15.5			
Number of Compaction Points			3	3	3	3			
Test Procedures - See Note Number			12	12	12	12			
Material Description - see below			2	2	2	2			

Notes

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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		609							
DATE TESTED & SAMPLED		06/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**102**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Ridgetops						
Shown on Drawing No			7747/54-12						
Retested by Test			-						
Reduced Level		m	55.38						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.09						
Field Moisture Content		%	14.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			609						
Lab Compaction Date Tested			09/09/2021						
Peak Converted Wet Density		t/m³	2.05						
Apparent Optimum Moisture Content		%	15.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		610	611						
DATE TESTED & SAMPLED		06/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**102**	**102**					
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**-0.5**					
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Southern Heights						
Shown on Drawing No			7747/54-11						
Retested by Test			-	-					
Reduced Level		m	55.54	54.24					
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.11	2.10					
Field Moisture Content		%	16.0	15.0					
Material retained on	19mm Sieve (wet)	%	<5	<5					
Lab Compaction result from test number			610	611					
Lab Compaction Date Tested			09/09/2021	09/09/2021					
Peak Converted Wet Density		t/m³	2.07	2.06					
Apparent Optimum Moisture Content		%	16.5	15.5					
Number of Compaction Points			3	3					
Test Procedures - See Note Number			12	12					
Material Description - see below			2	2					

Notes

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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		612	613	614	615				
DATE TESTED & SAMPLED		06/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**101.5**	**102**	**100**	**101**			
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-1.5**	**-1.0**	**0.0**			
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Ridgetops						
Shown on Drawing No			7747/54-12						
Retested by Test			-	-	-	-			
Reduced Level		m	61.24	62.22	62.49	61.43			
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.12	2.10	2.09	2.11			
Field Moisture Content		%	17.0	15.5	16.0	15.5			
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5			
Lab Compaction result from test number			612	613	614	615			
Lab Compaction Date Tested			09/09/2021	09/09/2021	09/09/2021	09/09/2021			
Peak Converted Wet Density		t/m³	2.09	2.06	2.09	2.09			
Apparent Optimum Moisture Content		%	17.0	17.0	17.0	16.0			
Number of Compaction Points			3	3	3	3			
Test Procedures - See Note Number			12	12	12	12			
Material Description - see below			2	2	2	2			

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			616							
DATE TESTED & SAMPLED			06/09/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**							
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**							
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-							
Reduced Level		m	61.33							
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09							
Field Moisture Content		%	15.0							
Material retained on	312 Sieve (wet)	%	<5							
Lab Compaction result from test number			616							
Lab Compaction Date Tested			09/09/2021							
Peak Converted Wet Density		t/m³	2.07							
Apparent Optimum Moisture Content		%	15.5							
Number of Compaction Points			3							
Test Procedures - See Note Number			12							
Material Description - see below			2							

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/09/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		617	618	619	620				
DATE TESTED & SAMPLED		06/09/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**99.5**	**102.5**	**101.5**	**100**				
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**-2.0**	**-1.0**	**-0.5**	**0.0**				
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Ridgetops							
Shown on Drawing No		7747/54-12							
Retested by Test		-	-	-	-				
Reduced Level	m	59.77	60.55	62.23	63.19				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.08	2.09	2.10	2.08				
Field Moisture Content	%	15.5	16.0	15.5	17.5				
Material retained on 312 Sieve (wet)	%	<5	<5	<5	<5				
Lab Compaction result from test number		617	618	619	620				
Lab Compaction Date Tested		09/09/2021	09/09/2021	09/09/2021	09/09/2021				
Peak Converted Wet Density	t/m³	2.09	2.04	2.07	2.08				
Apparent Optimum Moisture Content	%	2.0	16.5	16.0	18.0				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		2	2	2	2				

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		621							
DATE TESTED & SAMPLED		07/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**101**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Southern Heights						
Shown on Drawing No			7747/54-11						
Retested by Test			-						
Reduced Level		m	61.90						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.06						
Field Moisture Content		%	15.0						
Material retained on	312 Sieve (wet)	%	<5						
Lab Compaction result from test number			621						
Lab Compaction Date Tested			13/09/2021						
Peak Converted Wet Density		t/m³	2.04						
Apparent Optimum Moisture Content		%	15.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

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14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		622	623						
DATE TESTED & SAMPLED		07/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**101**	**100**					
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**0.0**					
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Ridgetops						
Shown on Drawing No			7747/54-12						
Retested by Test			-	-					
Reduced Level		m	60.93	60.14					
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.08	2.07					
Field Moisture Content		%	19.0	18.5					
Material retained on	312 Sieve (wet)	%	<5	<5					
Lab Compaction result from test number			622	623					
Lab Compaction Date Tested			13/09/2021	13/09/2021					
Peak Converted Wet Density		t/m³	2.06	2.07					
Apparent Optimum Moisture Content		%	19.5	18.5					
Number of Compaction Points			3	3					
Test Procedures - See Note Number			12	12					
Material Description - see below			2-3	2					

Notes

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6: AS 1289 1.2.1 clause 6.4
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9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			624	625	626	627	628	629	630	631
DATE TESTED & SAMPLED			07/09/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101.5**	**102.5**	**100.5**	**103**	**103**	**101**	**102**	**102**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-1.5**	**-0.5**	**-0.5**	**-1.0**	**-0.5**	**-0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	55.53	55.19	54.92	54.63	56.24	56.33	55.73	57.25
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.11	2.06	2.09	2.08	2.07	2.08	2.10
Field Moisture Content		%	17.5	17.0	18.5	17.0	17.0	#NUM!	18.5	19.0
Material retained on	312 Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			624	625	626	627	628	629	630	631
Lab Compaction Date Tested			13/09/2021	14/09/2021	14/09/2021	14/09/2021	14/09/2021	14/09/2021	14/09/2021	14/09/2021
Peak Converted Wet Density		t/m³	2.06	2.06	2.05	2.03	2.02	2.05	2.04	2.06
Apparent Optimum Moisture Content		%	17.5	18.5	19.0	17.5	18.0	#NUM!	19.0	19.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

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Material Description

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17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			632	633	634	635	636	637	638	
DATE TESTED & SAMPLED			07/09/2021	08/09/2021						
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**103**	**102**	**102.5**	**102**	**98**	**103**	**99.5**	
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-1.5**	**-1.0**	**0.0**	**0.0**	**-1.5**	**-0.5**	
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-12							
Retested by Test			-	-	-	-	-	-	-	
Reduced Level		m	56.79	56.36	57.44	57.27	56.51	54.97	55.50	
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.12	2.10	2.10	2.10	2.11	2.10	
Field Moisture Content		%	17.5	15.0	19.5	15.5	15.0	15.0	17.0	
Material retained on	312 Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	
Lab Compaction result from test number			632	633	634	635	636	637	638	
Lab Compaction Date Tested			14/09/2021	13/09/2021	13/09/2021	13/09/2021	13/09/2021	14/09/2021	14/09/2021	
Peak Converted Wet Density		t/m³	2.04	2.08	2.05	2.06	2.14	2.05	2.11	
Apparent Optimum Moisture Content		%	17.5	16.5	20.5	15.5	15.0	16.5	17.0	
Number of Compaction Points			3	3	3	3	3	3	3	
Test Procedures - See Note Number			12	12	12	12	12	12	12	
Material Description - see below			2	2	2	2	2	2	2	

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/09/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
Telephone: (02) 4722 2744

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email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			639	640	641	642	643	644	645	646
DATE TESTED & SAMPLED			08/09/2021				09/09/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**103**	**103.5**	**101.5**	**102**	**100.5**	**102**	**101**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.5**	**-1.5**	**0.0**	**0.0**	**0.0**	**0.0**	**-1.5**	**-1.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Southern Heights							
Shown on Drawing No			7747/54-11							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	55.75	54.86	55.83	55.39	55.64	56.33	56.92	56.70
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.10	2.09	2.12	2.05	2.06	2.05	2.06
Field Moisture Content		%	14.5	15.0	15.0	15.5	21.0	19.5	19.5	19.0
Material retained on	312 Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			639	640	641	642	643	644	645	646
Lab Compaction Date Tested			14/09/2021	14/09/2021	14/09/2021	14/09/2021	17/09/2021	17/09/2021	17/09/2021	17/09/2021
Peak Converted Wet Density		t/m³	2.03	2.03	2.06	2.08	2.04	2.02	2.03	2.06
Apparent Optimum Moisture Content		%	16.0	16.5	14.5	15.0	21.0	19.5	21.0	20.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2-3	2-3	2-3	2

Notes

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8. DGB20
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12. FCR20
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14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
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18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			647	648	649					
DATE TESTED & SAMPLED			10/09/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**102**	**99**	**99**					
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**1.0**	**0.0**					
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-12							
Retested by Test			-	-	-					
Reduced Level		m	56.62	57.05	58.60					
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.11	2.12					
Field Moisture Content		%	17.5	17.5	17.0					
Material retained on	312 Sieve (wet)	%	<5	<5	<5					
Lab Compaction result from test number			647	648	649					
Lab Compaction Date Tested			11/09/2021	11/09/2021	11/09/2021					
Peak Converted Wet Density		t/m³	2.06	2.13	2.14					
Apparent Optimum Moisture Content		%	17.0	16.5	17.0					
Number of Compaction Points			3	3	3					
Test Procedures - See Note Number			12	12	12					
Material Description - see below			2	2	2					

Notes

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14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
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Material Description

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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		650	651	652	653				
DATE TESTED & SAMPLED		10/09/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**99**	**100.5**	**99.5**	**100.5**				
Moisture Variation from OMC (-Drier/+Wetter)	%	**0.5**	**0.0**	**0.0**	**0.0**				
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Southern Heights							
Shown on Drawing No		7747/54-11							
Retested by Test		-	-	-	-				
Reduced Level	m	56.32	57.09	57.64	58.20				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.12	2.09	2.10	2.07				
Field Moisture Content	%	17.5	18.5	19.0	19.0				
Material retained on 312 Sieve (wet)	%	<5	<5	<5	<5				
Lab Compaction result from test number		650	651	652	653				
Lab Compaction Date Tested		11/09/2021	11/09/2021	11/09/2021	11/09/2021				
Peak Converted Wet Density	t/m³	2.14	2.08	2.11	2.06				
Apparent Optimum Moisture Content	%	17.0	18.5	19.0	19.0				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		2	2	2	2				

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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14: RMS T111, T120, T166, T173
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Material Description

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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/9/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		654	655	656					
DATE TESTED & SAMPLED		10/09/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**100.5**	**98.5**	**99.5**					
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**0.0**	**0.0**	**0.0**					
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Ridgetops							
Shown on Drawing No		7747/54-12							
Retested by Test		-	-	-					
Reduced Level	m	58.10	58.46	60.42					
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.06	2.11	2.11					
Field Moisture Content	%	17.0	18.0	18.5					
Material retained on 312 Sieve (wet)	%	<5	<5	<5					
Lab Compaction result from test number		654	655	656					
Lab Compaction Date Tested		11/09/2021	11/09/2021	11/09/2021					
Peak Converted Wet Density	t/m³	2.05	2.14	2.12					
Apparent Optimum Moisture Content	%	17.0	17.5	18.5					
Number of Compaction Points		3	3	3					
Test Procedures - See Note Number		12	12	12					
Material Description - see below		2	2	2					

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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17. RMS T120, T164, T173

Material Description

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10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
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17. CSS - Crushed Sandstone
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19. Cowels Brown

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Form No R 020 Version 10 10/20 - issued by ER

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			657	658					
DATE TESTED & SAMPLED			13/9/2021						
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**99.5**	**99.5**					
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-0.5**					
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Ridgetops						
Shown on Drawing No			7747/54-13						
Retested by Test			-	-					
Reduced Level		m	58.45	57.58					
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.07	2.08					
Field Moisture Content		%	18.5	18.0					
Material retained on	19mm Sieve (wet)	%	<5	<5					
Lab Compaction result from test number			657	658					
Lab Compaction Date Tested			13/09/2021	13/09/2021					
Peak Converted Wet Density		t/m³	2.08	2.09					
Apparent Optimum Moisture Content		%	18.5	18.5					
Number of Compaction Points			3	3					
Test Procedures - See Note Number			12	12					
Material Description - see below			2	2					

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17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
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\# Lime Stabilised
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Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/10/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
Telephone: (02) 4722 2744

Unit 4, 18-20 Whyalla Place, Prestons NSW 2170
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		659	660	661	662	663			
DATE TESTED & SAMPLED		13/9/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**98.5**	**101**	**99**	**99**	**99**			
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**0.5**	**0.5**	**0.0**	**0.0**	**0.5**			
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Southern Heights							
Shown on Drawing No		7747/54-13							
Retested by Test		-	-	-	-	-			
Reduced Level	m	55.73	57.73	58.28	58.65	58.32			
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.06	2.09	2.07	2.09	2.11			
Field Moisture Content	%	18.5	20.0	18.0	18.0	18.0			
Material retained on	19mm Sieve (wet) %	<5	<5	<5	<5	<5			
Lab Compaction result from test number		659	660	661	662	663			
Lab Compaction Date Tested		13/09/2021	13/09/2021	13/09/2021	13/09/2021	13/09/2021			
Peak Converted Wet Density	t/m³	2.09	2.07	2.09	2.11	2.13			
Apparent Optimum Moisture Content	%	18.0	19.5	18.0	17.5	17.5			
Number of Compaction Points		3	3	3	3	3			
Test Procedures - See Note Number		12	12	12	12	12			
Material Description - see below		2	2	2	2	2			

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/10/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER		664	665	666					
DATE TESTED & SAMPLED		13/9/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**98**	**99**	**98.5**					
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**0.0**	**0.0**	**0.0**					
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Ridgetops							
Shown on Drawing No		7747/54-13							
Retested by Test		-	-	-					
Reduced Level	m	58.87	57.72	57.95					
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.11	2.09					
Field Moisture Content	%	18.0	17.5	18.0					
Material retained on	19mm Sieve (wet) %	<5	<5	<5					
Lab Compaction result from test number		664	665	666					
Lab Compaction Date Tested		13/09/2021	13/09/2021	13/09/2021					
Peak Converted Wet Density	t/m³	2.13	2.13	2.12					
Apparent Optimum Moisture Content	%	18.0	17.5	18.0					
Number of Compaction Points		3	3	3					
Test Procedures - See Note Number		12	12	12					
Material Description - see below		2	2	2					

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		667	668						
DATE TESTED & SAMPLED		14/09/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**98**	**98**						
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**-1.0**	**-0.5**						
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Southern Heights							
Shown on Drawing No		7747/54-13							
Retested by Test		-	-						
Reduced Level	m	55.24	55.96						
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.10	2.11						
Field Moisture Content	%	13.0	12.5						
Material retained on	19mm Sieve (wet) %	<5	<5						
Lab Compaction result from test number		667	668						
Lab Compaction Date Tested		23/09/2021	23/09/2021						
Peak Converted Wet Density	t/m³	2.14	2.15						
Apparent Optimum Moisture Content	%	14.0	12.5						
Number of Compaction Points		3	3						
Test Procedures - See Note Number		12	12						
Material Description - see below		1-2	1-2						

Notes

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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
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6: AS 1289 1.2.1 clause 6.4
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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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5. SM-Silty sands, sand-silt mixtures
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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			669	670	671	672	673	674	675	676
DATE TESTED & SAMPLED			14/09/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**98**	**98.5**	**99**	**98**	**99.5**	**99.5**	**98**	**98.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.0**	**-1.5**	**-1.5**	**-1.5**	**-1.5**	**-1.5**	**-0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-13							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	58.99	59.11	58.76	58.10	58.26	59.48	59.78	59.93
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.11	2.07	2.06	2.08	2.09	2.08	2.08
Field Moisture Content		%	13.0	13.5	13.0	13.0	13.0	12.5	13.0	12.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			669	670	671	672	673	674	675	676
Lab Compaction Date Tested			23/09/2021	23/09/2021	23/09/2021	23/09/2021	23/09/2021	23/09/2021	22/09/2021	22/09/2021
Peak Converted Wet Density		t/m³	2.14	2.14	2.09	2.10	2.09	2.10	2.12	2.11
Apparent Optimum Moisture Content		%	14.0	14.5	14.5	14.0	14.5	14.0	13.5	12.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			1-2	2	1-2	1-2	1-2	1-2	1-2	1

Notes

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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		677	678	679	680	681			
DATE TESTED & SAMPLED		14/09/2021		15/09/2021					
RESULTS									
Hilf Density Ratio	**Standard** %	**98.5**	**99**	**99.5**	**100**	**100**			
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**			
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Southern Heights							
Shown on Drawing No		7747/54-13							
Retested by Test		-	-	-	-	-			
Reduced Level	m	58.48	58.14	58.30	58.54	58.04			
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.10	2.09	2.06	2.07	2.06			
Field Moisture Content	%	13.5	13.0	18.5	19.0	18.0			
Material retained on	19mm Sieve (wet) %	<5	<5	<5	<5	<5			
Lab Compaction result from test number		677	678	679	680	681			
Lab Compaction Date Tested		22/09/2021	22/09/2021	16/09/2021	16/09/2021	16/09/2021			
Peak Converted Wet Density	t/m³	2.13	2.11	2.07	2.07	2.06			
Apparent Optimum Moisture Content	%	13.5	13.5	18.5	19.0	18.0			
Number of Compaction Points		3	3	3	3	3			
Test Procedures - See Note Number		12	12	12	12	12			
Material Description - see below		1-2	1-2	2	2-3	2			

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			682	683	684	685	686	687	688	689
DATE TESTED & SAMPLED			15/09/2021					16/09/2021		
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**100.5**	**100.5**	**100.5**	**100**	**103.5**	**103.5**	**104**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**-1.5**	**-1.5**	**-1.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-13							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	58.02	59.30	58.94	59.64	60.88	61.52	61.84	62.86
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.06	2.06	2.05	2.07	2.07	2.08	2.09
Field Moisture Content		%	21.0	19.5	20.0	18.5	19.0	22.0	20.5	21.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			682	683	684	685	686	687	688	689
Lab Compaction Date Tested			16/09/2021	16/09/2021	16/09/2021	16/09/2021	16/09/2021	24/09/2021	24/09/2021	24/09/2021
Peak Converted Wet Density		t/m³	2.09	2.05	2.05	2.04	2.07	2.00	2.01	2.01
Apparent Optimum Moisture Content		%	21.0	19.5	20.0	19.0	19.0	23.5	22.0	22.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2-3	2-3	2-3	2-3	2-3	3	2-3	2-3

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/10/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			690	691	692	693	694	695	696	697
DATE TESTED & SAMPLED			16/09/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**104.5**	**102.5**	**103.5**	**103**	**102.5**	**99**	**99**	**98**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.5**	**-2.0**	**-1.5**	**-2.0**	**-1.5**	**0.0**	**0.5**	**0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-13							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	60.02	60.06	60.48	60.71	60.69	60.46	59.66	59.64
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.06	2.09	2.07	2.06	2.06	2.07	2.08
Field Moisture Content		%	21.0	21.5	19.0	20.5	20.5	24.0	23.5	22.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			690	691	692	693	694	695	696	697
Lab Compaction Date Tested			24/09/2021	24/09/2021	24/09/2021	24/09/2021	24/09/2021	27/09/2021	27/09/2021	27/09/2021
Peak Converted Wet Density		t/m³	2.00	2.01	2.02	2.01	2.01	2.08	2.09	2.12
Apparent Optimum Moisture Content		%	22.0	23.0	21.0	22.0	22.0	24.0	23.0	21.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2-3	2-3	2-3	2-3	2-3	3	2	2-3

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		698	699	700	701				
DATE TESTED & SAMPLED		16/09/2021	17/09/2021						
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**99**	**100.5**	**100.5**	**102.5**			
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.5**	**0.5**			
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Southern Heights						
Shown on Drawing No			7747/54-13						
Retested by Test			-	-	-	-			
Reduced Level		m	55.03	55.59	54.43	54.89			
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.07	2.10	2.07	2.08			
Field Moisture Content		%	22.0	17.0	17.0	18.0			
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5			
Lab Compaction result from test number			698	699	700	701			
Lab Compaction Date Tested			27/09/2021	23/09/2021	23/09/2021	23/09/2021			
Peak Converted Wet Density		t/m³	2.09	2.09	2.06	2.03			
Apparent Optimum Moisture Content		%	21.5	17.0	16.5	17.5			
Number of Compaction Points			3	3	3	3			
Test Procedures - See Note Number			12	12	12	12			
Material Description - see below			2-3	2	2	2			

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			702	703	704	705	706	707	708
DATE TESTED & SAMPLED			17/09/2021						
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**1006.5**	**100.5**	**100.5**	**99.5**	**100.5**	**100**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.5**	**0.5**	**0.5**	**0.0**	**0.5**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Ridgetops						
Shown on Drawing No			7747/54-13						
Retested by Test			-	-	-	-	-	-	-
Reduced Level		m	60.64	61.32	63.55	61.40	60.76	60.68	60.97
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	20.83	2.11	2.08	2.06	2.05	2.04	2.07
Field Moisture Content		%	#NUM!	18.0	17.5	19.0	18.0	17.5	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			702	703	704	705	706	707	708
Lab Compaction Date Tested			23/09/2021	23/09/2021	23/09/2021	27/09/2021	27/09/2021	27/09/2021	27/09/2021
Peak Converted Wet Density		t/m³	2.07	2.10	2.07	2.07	2.04	2.04	2.07
Apparent Optimum Moisture Content		%	#NUM!	17.5	17.5	18.5	18.0	17.5	17.5
Number of Compaction Points			3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12
Material Description - see below			2	2	2	2-3	23	2	2

Notes

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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		709							
DATE TESTED & SAMPLED		24/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**100**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Southern Heights						
Shown on Drawing No			7747/54-13						
Retested by Test			-						
Reduced Level		m	59.35						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.06						
Field Moisture Content		%	18.5						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			709						
Lab Compaction Date Tested			27/09/2021						
Peak Converted Wet Density		t/m³	2.06						
Apparent Optimum Moisture Content		%	18.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

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17. RMS T120, T164, T173

Material Description

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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			710	711	712	713	714	715	716	717
DATE TESTED & SAMPLED			24/09/2021			27/09/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**100**	**99.5**	**98.5**	**98.5**	**98**	**98**	**98**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.5**	**0.0**	**0.5**	**0.5**	**0.5**	**0.0**	**0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-13							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	57.97	60.32	62.16	63.03	63.68	64.62	59.74	61.36
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.06	2.05	2.04	2.05	2.06	2.04	2.04	2.06
Field Moisture Content		%	16.5	18.5	17.5	16.5	17.5	18.5	18.0	30.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			710	711	712	713	714	715	716	717
Lab Compaction Date Tested			27/09/2021	27/09/2021	27/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021	28/09/2021
Peak Converted Wet Density		t/m³	2.07	2.05	2.05	2.08	2.09	2.08	2.08	2.10
Apparent Optimum Moisture Content		%	16.5	18.0	17.5	16.5	17.5	18.0	18.5	30.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/10/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER		718							
DATE TESTED & SAMPLED		27/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**98.5**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Ridgetops						
Shown on Drawing No			7747/54-13						
Retested by Test			-						
Reduced Level		m	62.21						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.04						
Field Moisture Content		%	18.5						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			718						
Lab Compaction Date Tested			28/09/2021						
Peak Converted Wet Density		t/m³	2.07						
Apparent Optimum Moisture Content		%	18.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		719							
DATE TESTED & SAMPLED		27/09/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**99**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Southern Heights						
Shown on Drawing No			7747/54-13						
Retested by Test			-						
Reduced Level		m	62.78						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.05						
Field Moisture Content		%	19.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			719						
Lab Compaction Date Tested			28/09/2021						
Peak Converted Wet Density		t/m³	2.07						
Apparent Optimum Moisture Content		%	19.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2-3						

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			720	721	722	723	724	725		
DATE TESTED & SAMPLED			27/09/2021			28/09/2021				
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**98.5**	**98.5**	**98**	**100**	**100**	**99.5**		
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.5**	**0.5**	**0.0**	**0.0**	**0.0**		
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-13							
Retested by Test			-	-	-	-	-	-		
Reduced Level		m	63.07	63.08	63.75	64.89	65.28	65.69		
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.05	2.04	2.03	2.05	2.04	2.05		
Field Moisture Content		%	17.0	17.0	17.5	16.5	17.5	21.5		
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5		
Lab Compaction result from test number			720	721	722	723	724	725		
Lab Compaction Date Tested			28/09/2021	28/09/2021	28/09/2021	06/10/2021	06/10/2021	06/10/2021		
Peak Converted Wet Density		t/m³	2.08	2.07	2.07	2.05	2.04	2.06		
Apparent Optimum Moisture Content		%	17.0	16.5	17.5	17.0	17.5	21.5		
Number of Compaction Points			3	3	3	3	3	3		
Test Procedures - See Note Number			12	12	12	12	12	12		
Material Description - see below			2	2	2	2	2	3		

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		726	727	728	729				
DATE TESTED & SAMPLED		28/09/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**100**	**100**	**100**	**100.5**				
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**0.0**	**0.0**	**0.0**	**0.0**				
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	Southern Heights							
Shown on Drawing No		7747/54-13							
Retested by Test		-	-	-	-				
Reduced Level	m	57.39	57.44	56.91	58.15				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.05	2.06	2.06	2.04				
Field Moisture Content	%	18.5	18.5	17.5	18.5				
Material retained on	19mm Sieve (wet) %	<5	<5	<5	<5				
Lab Compaction result from test number		726	727	728	729				
Lab Compaction Date Tested		06/10/2021	06/10/2021	06/10/2021	06/10/2021				
Peak Converted Wet Density	t/m³	2.05	2.06	2.06	2.03				
Apparent Optimum Moisture Content	%	18.5	18.5	17.5	18.5				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		2	2	2	2				

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
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17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			730	731	732	733	734	735	736	737
DATE TESTED & SAMPLED			28/09/2021					01/10/2021		
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100**	**99.5**	**100.5**	**100**	**100**	**101.5**	**101**	**101**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-13							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	59.14	60.75	62.16	62.62	63.34	63.97	65.70	66.30
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.05	2.03	2.05	2.06	2.04	2.20	2.18	2.19
Field Moisture Content		%	17.5	17.0	17.5	22.0	18.5	17.0	16.0	16.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			730	731	732	733	734	735	736	737
Lab Compaction Date Tested			06/10/2021	06/10/2021	06/10/2021	06/10/2021	06/10/2021	07/10/2021	07/10/2021	07/10/2021
Peak Converted Wet Density		t/m³	2.05	2.04	2.04	2.06	2.04	2.17	2.16	2.17
Apparent Optimum Moisture Content		%	17.5	17.0	17.5	22.0	18.5	17.0	16.0	16.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	3	2	2	2	2

Notes

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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/10/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			738	739	740	741	742	743	744	745
DATE TESTED & SAMPLED			01/10/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**100.5**	**101.5**	**101**	**101.5**	**101**	**101.5**	**101**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-13							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	66.76	67.18	65.06	63.97	63.64	63.57	63.02	61.77
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.18	2.16	2.18	2.17	2.18	2.21	2.17	2.16
Field Moisture Content		%	15.5	16.5	16.0	19.0	18.0	17.5	19.5	18.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			738	739	740	741	742	743	744	745
Lab Compaction Date Tested			07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021	07/10/2021
Peak Converted Wet Density		t/m³	2.16	2.15	2.15	2.15	2.15	2.19	2.14	2.14
Apparent Optimum Moisture Content		%	15.5	17.0	16.0	19.0	18.0	17.5	19.5	18.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2-3	2-3	2	2-3	2

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			746	747	748	749	750	751	752	753
DATE TESTED & SAMPLED			01/10/2021				06/10/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101**	**101**	**101**	**101**	**99**	**100.5**	**101.5**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-13				7747/54-14			
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	60.34	59.54	60.15	60.52	68.14	66.02	65.11	62.83
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.20	2.17	2.14	2.16	2.12	2.10	2.09	2.12
Field Moisture Content		%	17.0	19.0	15.5	16.0	18.5	16.5	16.5	18.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			746	747	748	749	750	751	752	753
Lab Compaction Date Tested			07/10/2021	07/10/2021	07/10/2021	07/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021
Peak Converted Wet Density		t/m³	2.18	2.15	2.12	2.13	2.14	2.09	2.06	2.14
Apparent Optimum Moisture Content		%	17.0	19.0	15.5	15.5	18.0	16.0	16.5	18.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2-3	2	2	2	2	2	2

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
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3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		754							
DATE TESTED & SAMPLED		06/10/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**102**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Southern Heights						
Shown on Drawing No			7747/54-14						
Retested by Test			-						
Reduced Level		m	60.33						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.12						
Field Moisture Content		%	22.5						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			754						
Lab Compaction Date Tested			08/10/2021						
Peak Converted Wet Density		t/m³	2.08						
Apparent Optimum Moisture Content		%	22.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

Notes

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9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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Approved Signatory

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			755	756	757	758	759	760	761	762
DATE TESTED & SAMPLED			06/10/2021							07/10/2021
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**102**	**100.5**	**102**	**100.5**	**100.5**	**101.5**	**101.5**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-14							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	68.74	69.11	68.70	69.04	65.73	66.07	65.43	66.24
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.08	2.08	2.11	2.10	2.10	2.13	2.13	2.11
Field Moisture Content		%	16.5	16.5	16.0	16.5	17.0	17.0	17.0	16.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			755	756	757	758	759	760	761	762
Lab Compaction Date Tested			08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021	08/10/2021	09/10/2021
Peak Converted Wet Density		t/m³	2.04	2.07	2.07	2.09	2.09	2.10	2.10	2.13
Apparent Optimum Moisture Content		%	16.5	17.0	16.5	16.5	17.5	17.0	17.0	16.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
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13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			763	764	765	766	767	768	769	770
DATE TESTED & SAMPLED			07/10/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**100**	**99.5**	**101**	**100**	**100**	**100**	**98.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-14							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	63.05	61.65	61.07	63.37	62.57	63.40	63.94	65.40
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.13	2.13	2.12	2.10	2.11	2.12	2.13	2.11
Field Moisture Content		%	16.5	17.5	20.0	17.0	16.5	17.0	17.0	19.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			763	764	765	766	767	768	769	770
Lab Compaction Date Tested			09/10/2021	09/10/2021	09/10/2021	09/10/2021	09/10/2021	09/10/2021	09/10/2021	09/10/2021
Peak Converted Wet Density		t/m³	2.14	2.13	2.13	2.08	2.11	2.12	2.13	2.14
Apparent Optimum Moisture Content		%	16.5	18.0	20.0	17.0	16.5	17.0	16.5	19.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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6: AS 1289 1.2.1 clause 6.4
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

A Kench 25/10/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
Telephone: (02) 4722 2744

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email: info@geotech.com.au www.geotech.com.au

GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER			771	772	773	774	775	776	777	778
DATE TESTED & SAMPLED				07/10/2021				08/10/2021		
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**100**	**99.5**	**101**	**101**	**101**	**101.5**	**101**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.5**	**-1.0**	**0.0**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	Ridgetops							
Shown on Drawing No			7747/54-14							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	66.11	68.58	69.64	68.41	70.53	71.06	71.30	61.29
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.14	2.14	2.13	2.06	2.06	2.07	2.08	2.07
Field Moisture Content		%	16.5	18.0	17.0	15.0	15.5	14.5	15.0	15.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			771	772	773	774	775	776	777	778
Lab Compaction Date Tested			09/10/2021	09/10/2021	09/10/2021	19/10/2021	19/10/2021	19/10/2021	19/10/2021	19/10/2021
Peak Converted Wet Density		t/m³	2.15	2.14	2.14	2.04	2.04	2.05	2.05	2.05
Apparent Optimum Moisture Content		%	16.5	17.5	16.5	15.5	16.0	15.5	15.0	15.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 25/10/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE RIDGETOPS

TEST NUMBER		779							
DATE TESTED & SAMPLED		08/10/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**100.5**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.5**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	Ridgetops						
Shown on Drawing No			7747/54-14						
Retested by Test			-						
Reduced Level		m	62.80						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.05						
Field Moisture Content		%	16.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			779						
Lab Compaction Date Tested			19/10/2021						
Peak Converted Wet Density		t/m³	2.04						
Apparent Optimum Moisture Content		%	17.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

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15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

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7. SP-Sand, crushed dust, filling sand, washed sand
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9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			780	781	782	783	784	785	786	787
DATE TESTED & SAMPLED			18/10/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**98**	**98**	**98**	**99**	**100**	**99.5**	**100**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**0.0**	**-0.5**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-	-	-
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.04	2.05	2.05	2.06	2.13	2.12	2.14	2.11
Field Moisture Content		%	17.0	16.5	16.5	16.0	16.5	16.0	17.0	16.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			780	781	782	783	784	785	786	787
Lab Compaction Date Tested			20/10/2021	20/10/2021	20/10/2021	20/10/2021	27/10/2021	27/10/2021	27/10/2021	27/10/2021
Peak Converted Wet Density		t/m³	2.08	2.09	2.09	2.08	2.13	2.13	2.14	2.13
Apparent Optimum Moisture Content		%	17.0	16.5	17.0	16.5	16.5	16.5	17.0	16.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
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Corporate Site Number 2727

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H Wilson 24/11/2021
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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			788	789	790	791	792	793		
DATE TESTED & SAMPLED			18/10/2021	19/10/2021						
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**98.5**	**98.5**	**102**	**100**	**99.5**		
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.5**		
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-		
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-		
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.08	2.09	2.17	2.12	2.09		
Field Moisture Content		%	14.0	16.0	15.5	16.5	17.0	15.5		
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5		
Lab Compaction result from test number			788	789	790	791	792	793		
Lab Compaction Date Tested			18/10/2021	20/10/2021	20/10/2021	20/10/2021	20/10/2021	27/10/2021		
Peak Converted Wet Density		t/m³	2.10	2.11	2.12	2.13	2.12	2.10		
Apparent Optimum Moisture Content		%	14.0	16.0	15.5	16.5	17.0	15.0		
Number of Compaction Points			3	3	3	3	3	3		
Test Procedures - See Note Number			12	12	12	12	12	12		
Material Description - see below			2	2	2	2	2	2		

Notes

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9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			794							
DATE TESTED & SAMPLED			19/10/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99**							
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**							
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-							
Shown on Drawing No			7747/54-16							
Retested by Test			Southern Heights							
Reduced Level		m	-							
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09							
Field Moisture Content		%	15.5							
Material retained on	19mm Sieve (wet)	%	<5							
Lab Compaction result from test number			794							
Lab Compaction Date Tested			27/10/2021							
Peak Converted Wet Density		t/m³	2.11							
Apparent Optimum Moisture Content		%	15.5							
Number of Compaction Points			3							
Test Procedures - See Note Number			12							
Material Description - see below			2							

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17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
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$ Gypsum Stabilised

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			795	796	797	798	799	800	801	
DATE TESTED & SAMPLED			19/10/2021				20/10/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**98.5**	**101**	**101**	**99**	**99.5**	**99.5**	
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**0.0**	**0.0**	**-0.5**	**-0.5**	**-0.5**	
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-	-	
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.09	2.16	2.15	2.06	2.06	2.07	
Field Moisture Content		%	16.5	16.0	16.5	16.5	16.0	14.5	18.0	
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	
Lab Compaction result from test number			795	796	797	798	799	800	801	
Lab Compaction Date Tested			27/10/2021	27/10/2021	27/10/2021	27/10/2021	21/10/2021	21/10/2021	21/10/2021	
Peak Converted Wet Density		t/m³	2.10	2.12	2.14	2.13	2.08	2.07	2.08	
Apparent Optimum Moisture Content		%	16.5	16.0	16.5	16.5	17.0	15.0	18.5	
Number of Compaction Points			3	3	3	3	3	3	3	
Test Procedures - See Note Number			12	12	12	12	12	12	12	
Material Description - see below			2	2	2	2	2	2	2	

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/11/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		802							
DATE TESTED & SAMPLED		20/10/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**98**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	-						
Shown on Drawing No			7747/54-16						
Retested by Test			Southern Heights						
Reduced Level		m	-						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.07						
Field Moisture Content		%	15.5						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			802						
Lab Compaction Date Tested			21/10/2021						
Peak Converted Wet Density		t/m³	2.11						
Apparent Optimum Moisture Content		%	16.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
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9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			803	804	805	806	807	808	809	810
DATE TESTED & SAMPLED			20/10/2021							21/10/2021
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**101**	**99.5**	**101**	**101**	**100**	**100.5**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**-0.5**	**-0.5**	**-1.5**	**-0.5**	**-0.5**	**-1.0**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-	-	-
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.07	2.08	2.06	2.07	2.08	2.06	2.06	2.07
Field Moisture Content		%	16.5	16.0	14.0	16.5	14.0	16.0	15.5	21.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			803	804	805	806	807	808	809	810
Lab Compaction Date Tested			22/10/2021	22/10/2021	22/10/2021	22/10/2021	22/10/2021	22/10/2021	22/10/2021	28/10/2021
Peak Converted Wet Density		t/m³	2.06	2.06	2.07	2.05	2.06	2.06	2.05	2.06
Apparent Optimum Moisture Content		%	16.5	16.5	14.5	18.0	14.5	16.5	16.5	21.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2-3

Notes

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14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			811	812	813	814	815	816	817	818
DATE TESTED & SAMPLED			21/10/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**99**	**98**	**99**	**99.5**	**99.5**	**99**	**99**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.0**	**-1.0**	**-0.5**	**-0.5**	**0.5**	**0.0**	**0.0**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-	-	-
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.06	2.07	2.06	2.08	2.09	2.07	2.06	2.06
Field Moisture Content		%	19.5	21.5	17.5	20.5	21.5	17.5	21.0	22.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			811	812	813	814	815	816	817	818
Lab Compaction Date Tested			28/10/2021	28/10/2021	28/10/2021	25/10/2021	25/10/2021	25/10/2021	25/10/2021	28/10/2021
Peak Converted Wet Density		t/m³	2.07	2.09	2.10	2.10	2.10	2.08	2.08	2.08
Apparent Optimum Moisture Content		%	20.5	22.5	18.0	21.0	21.0	17.5	21.0	22.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2-3	2-3	2-3	2-3	2-3	2	2-3	2-3

Notes

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

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H Wilson 24/11/2021
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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			819	820						
DATE TESTED & SAMPLED			21/10/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**101**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**-2.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-						
Shown on Drawing No			7747/54-16							
Retested by Test			Southern Heights							
Reduced Level		m	-	-						
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.07	2.07						
Field Moisture Content		%	22.0	17.0						
Material retained on	19mm Sieve (wet)	%	<5	<5						
Lab Compaction result from test number			819	820						
Lab Compaction Date Tested			28/10/2021	28/10/2021						
Peak Converted Wet Density		t/m³	2.08	2.05						
Apparent Optimum Moisture Content		%	21.5	19.0						
Number of Compaction Points			3	3						
Test Procedures - See Note Number			12	12						
Material Description - see below			2-3	2						

Notes

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15: RMS T120, T119, T162
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17. RMS T120, T164, T173

Material Description

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		821	822	823	824	825			
DATE TESTED & SAMPLED		22/10/2021							
RESULTS									
Hilf Density Ratio	**Standard** **%**	**98.5**	**98.5**	**99.5**	**99**	**99**			
Moisture Variation from OMC	**(-Drier/+Wetter) %**	**0.5**	**0.5**	**0.5**	**-0.5**	**-0.5**			
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	-	-	-	-	-			
Shown on Drawing No		7747/54-15							
Retested by Test		Ridgetops							
Reduced Level	m	-	-	-	-	-			
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.14	2.11	2.09	2.07	2.04			
Field Moisture Content	%	17.5	17.0	15.0	15.5	17.5			
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5	<5			
Lab Compaction result from test number		821	822	823	824	825			
Lab Compaction Date Tested		26/10/2021	26/10/2021	26/10/2021	26/10/2021	26/10/2021			
Peak Converted Wet Density	t/m³	2.17	2.14	2.10	2.09	2.06			
Apparent Optimum Moisture Content	%	17.0	16.5	14.5	16.0	18.0			
Number of Compaction Points		3	3	3	3	3			
Test Procedures - See Note Number		12	12	12	12	12			
Material Description - see below		2	2	2	2	2			

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/11/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		826							
DATE TESTED & SAMPLED		22/10/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**99**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	-						
Shown on Drawing No			7747/54-16						
Retested by Test			Southern Heights						
Reduced Level		m	-						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.06						
Field Moisture Content		%	16.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			826						
Lab Compaction Date Tested			26/10/2021						
Peak Converted Wet Density		t/m³	2.08						
Apparent Optimum Moisture Content		%	16.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			2						

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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H Wilson 24/11/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			827	828	829	830	831	832		
DATE TESTED & SAMPLED			22/10/2021		25/10/2021					
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**98.5**	**98.5**	**99**	**98.5**	**100.5**	**98.5**		
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**-0.5**	**0.5**	**-0.5**	**-1.0**	**0.5**		
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-		
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-		
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.06	2.07	2.06	2.03	2.07	2.10		
Field Moisture Content		%	16.5	16.5	18.5	17.5	16.0	18.0		
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5		
Lab Compaction result from test number			827	828	829	830	831	832		
Lab Compaction Date Tested			26/10/2021	26/10/2021	27/10/2021	27/10/2021	27/10/2021	27/10/2021		
Peak Converted Wet Density		t/m³	2.09	2.10	2.08	2.06	2.06	2.13		
Apparent Optimum Moisture Content		%	17.0	17.0	18.0	18.0	17.0	17.5		
Number of Compaction Points			3	3	3	3	3	3		
Test Procedures - See Note Number			12	12	12	12	12	12		
Material Description - see below			2	2	2	2	2	2		

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		833							
DATE TESTED & SAMPLED		26/10/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**99.5**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	-						
Shown on Drawing No			7747/54-16						
Retested by Test			Southern Heights						
Reduced Level		m	-						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.14						
Field Moisture Content		%	12.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			833						
Lab Compaction Date Tested			02/11/2021						
Peak Converted Wet Density		t/m³	2.15						
Apparent Optimum Moisture Content		%	12.0						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			1						

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
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9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
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4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			834	835	836	837	838	839	840	841
DATE TESTED & SAMPLED			26/10/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**98.5**	**100**	**99**	**98.5**	**99**	**100.5**	**99.5**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.5**	**0.0**	**1.0**	**0.5**	**0.5**	**-0.5**	**0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-	-	-
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.15	2.15	2.14	2.13	2.15	2.14	2.14	2.15
Field Moisture Content		%	13.0	12.5	12.0	12.5	12.5	12.0	12.0	12.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			834	835	836	837	838	839	840	841
Lab Compaction Date Tested			02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021	02/11/2021
Peak Converted Wet Density		t/m³	2.18	2.15	2.16	2.16	2.17	2.13	2.15	2.15
Apparent Optimum Moisture Content		%	13.0	12.0	12.0	11.5	12.0	11.5	12.5	12.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			1	1-2	1	1-2	1-2	1	1	1-2

Notes

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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14. RC - Recycled Concrete
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16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			842	843	844	845	846	847	848	849
DATE TESTED & SAMPLED			26/10/2021	27/10/2021			28/10/2021			
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**98**	**99.5**	**99.5**	**99.5**	**100**	**100**	**101**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**-0.5**	**0.5**	**-0.5**	**0.0**	**-0.5**	**0.0**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-	-	-
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.14	2.15	2.16	2.15	2.12	2.12	2.11	2.10
Field Moisture Content		%	13.0	12.5	12.0	13.0	13.5	13.5	13.0	12.5
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			842	843	844	845	846	847	848	849
Lab Compaction Date Tested			02/11/2021	29/10/2021	29/10/2021	29/10/2021	12/11/2021	12/11/2021	12/11/2021	12/11/2021
Peak Converted Wet Density		t/m³	2.18	2.16	2.17	2.16	2.12	2.12	2.09	2.10
Apparent Optimum Moisture Content		%	12.5	13.0	12.0	13.5	14.0	13.5	12.5	12.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	1-2	1-2	1-2	2	2	2	1-2

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/11/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			850	851	852					
DATE TESTED & SAMPLED			28/10/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99**	**101**	**99**					
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**-0.5**	**0.0**					
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-					
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-					
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.11	2.12					
Field Moisture Content		%	12.5	15.0	16.0					
Material retained on	19mm Sieve (wet)	%	<5	<5	<5					
Lab Compaction result from test number			850	851	852					
Lab Compaction Date Tested			12/11/2021	12/11/2021	12/11/2021					
Peak Converted Wet Density		t/m³	2.11	2.09	2.14					
Apparent Optimum Moisture Content		%	12.0	15.5	16.0					
Number of Compaction Points			3	3	3					
Test Procedures - See Note Number			12	12	12					
Material Description - see below			1-2	2	2					

Notes

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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		853							
DATE TESTED & SAMPLED		28/10/2021							
RESULTS									
Hilf Density Ratio	**Standard** %	**99**							
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**0.0**							
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	-							
Shown on Drawing No		7747/54-16							
Retested by Test		Southern Heights							
Reduced Level	m	-							
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.08							
Field Moisture Content	%	15.5							
Material retained on	19mm Sieve (wet) %	<5							
Lab Compaction result from test number		853							
Lab Compaction Date Tested		12/11/2021							
Peak Converted Wet Density	t/m³	2.10							
Apparent Optimum Moisture Content	%	16.0							
Number of Compaction Points		3							
Test Procedures - See Note Number		12							
Material Description - see below		2							

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			854	855	856	857	858		
DATE TESTED & SAMPLED			29/10/2021						
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**101.5**	**98.5**	**100.5**	**99**	**98.5**		
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.5**	**-0.5**	**-1.0**	**-0.5**	**-0.5**		
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	-	-	-	-	-		
Shown on Drawing No			7747/54-15						
Retested by Test			Ridgetops						
Reduced Level		m	-	-	-	-	-		
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.12	2.09	2.11	2.13	2.09		
Field Moisture Content		%	13.5	12.0	13.0	14.0	14.0		
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5		
Lab Compaction result from test number			854	855	856	857	858		
Lab Compaction Date Tested			15/11/2021	15/11/2021	15/11/2021	15/11/2021	15/11/2021		
Peak Converted Wet Density		t/m³	2.09	2.12	2.10	2.15	2.12		
Apparent Optimum Moisture Content		%	15.0	12.5	14.0	14.0	15.0		
Number of Compaction Points			3	3	3	3	3		
Test Procedures - See Note Number			12	12	12	12	12		
Material Description - see below			1-2	1	1-2	2	2		

Notes

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2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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H Wilson 24/11/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		859							
DATE TESTED & SAMPLED		29/10/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**98**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	-						
Shown on Drawing No			7747/54-16						
Retested by Test			Southern Heights						
Reduced Level		m	-						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.09						
Field Moisture Content		%	12.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			859						
Lab Compaction Date Tested			15/11/2021						
Peak Converted Wet Density		t/m³	2.13						
Apparent Optimum Moisture Content		%	12.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			1						

Notes

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6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
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16. RMS T120, T162, T173
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Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
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11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			860	861						
DATE TESTED & SAMPLED			29/10/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**101.5**	**100.5**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**-2.0**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-						
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-						
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.12	2.11						
Field Moisture Content		%	14.5	13.0						
Material retained on	19mm Sieve (wet)	%	<5	<5						
Lab Compaction result from test number			860	861						
Lab Compaction Date Tested			15/11/2021	15/11/2021						
Peak Converted Wet Density		t/m³	2.09	2.10						
Apparent Optimum Moisture Content		%	15.0	15.0						
Number of Compaction Points			3	3						
Test Procedures - See Note Number			12	12						
Material Description - see below			2	2						

Notes

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Material Description

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17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
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$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		862							
DATE TESTED & SAMPLED		01/11/2021							
RESULTS									
Hilf Density Ratio	**Standard**	**%**	**101**						
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**1.4**						
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**					**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R)	m	-						
Shown on Drawing No			7747/54-16						
Retested by Test			Southern Heights						
Reduced Level		m	-						
FIELD & LABORATORY DATA									
Field Wet Density		t/m³	2.14						
Field Moisture Content		%	11.0						
Material retained on	19mm Sieve (wet)	%	<5						
Lab Compaction result from test number			862						
Lab Compaction Date Tested			12/11/2021						
Peak Converted Wet Density		t/m³	2.12						
Apparent Optimum Moisture Content		%	11.5						
Number of Compaction Points			3						
Test Procedures - See Note Number			12						
Material Description - see below			1						

Notes

1: Assigned Values have been obtained from our Penrith laboratory – Accreditation No 2734
2: Assigned Values have been obtained from our Prestons laboratory – Accreditation No 14234
3. Results have been calculated using infinite decimal places. Therefore, calculated values may vary from those shown
4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/11/2021
Approved Signatory

34 Borec Road, Penrith NSW 2750
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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			863	864	865	866	867	868	869	870
DATE TESTED & SAMPLED			01/11/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**101**	**100.5**	**99.5**	**99**	**99.5**	**100**	**100.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-1.5**	**-1.5**	**-1.5**	**-0.5**	**-0.5**	**-0.5**	**0.0**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-	-	-
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.14	2.15	2.13	2.14	2.13	2.13	2.15	2.15
Field Moisture Content		%	12.5	12.0	12.5	17.0	17.5	17.5	17.0	12.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			863	864	865	866	867	868	869	870
Lab Compaction Date Tested			12/11/2021	12/11/2021	12/11/2021	12/11/2021	12/11/2021	12/11/2021	12/11/2021	15/11/2021
Peak Converted Wet Density		t/m³	2.13	2.13	2.12	2.15	2.15	2.14	2.15	2.14
Apparent Optimum Moisture Content		%	14.0	14.0	14.0	17.5	18.0	18.0	17.0	12.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			1-2	1-2	1.5	2	2	2	2	1

Notes

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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
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16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			871	872	873	874	875	876	877	878
DATE TESTED & SAMPLED			01/11/2021							02/11/2021
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**99.5**	**100.5**	**101.5**	**100.5**	**100**	**100**	**100**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-0.5**	**-0.5**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-	-	-
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.13	2.13	2.15	2.11	2.10	2.08	2.12	2.12
Field Moisture Content		%	12.0	11.5	12.0	18.5	17.0	16.5	16.0	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			871	872	873	874	875	876	877	878
Lab Compaction Date Tested			15/11/2021	15/11/2021	15/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021
Peak Converted Wet Density		t/m³	2.14	2.14	2.14	2.08	2.09	2.08	2.12	2.12
Apparent Optimum Moisture Content		%	12.5	12.0	12.0	18.5	17.0	16.5	16.0	17.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			1-2	1	1	2	2	2	2	2

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			879	880	881	882	883	884	885	886
DATE TESTED & SAMPLED			02/11/2021			03/11/2021				
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**100.5**	**100.5**	**100.5**	**99.5**	**99**	**98**	**100**	**101**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.0**	**0.0**	**-0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-15							
Retested by Test			Ridgetops							
Reduced Level		m	-	-	-	-	-	-	-	-
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.09	2.10	2.07	2.10	2.10	2.08	2.08
Field Moisture Content		%	18.0	15.5	16.5	16.5	18.0	16.0	17.5	17.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			879	880	881	882	883	884	885	886
Lab Compaction Date Tested			08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021	08/11/2021
Peak Converted Wet Density		t/m³	2.09	2.08	2.09	2.08	2.12	2.14	2.08	2.06
Apparent Optimum Moisture Content		%	18.0	15.5	17.0	16.5	18.0	15.5	17.5	17.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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5: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.3.1, 5.4.1
6: AS 1289 1.2.1 clause 6.4
7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
10: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.5.1, 5.6.1
11: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.3.1, 5.7.1
12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
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Material Description

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9. DGB40
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11. DGS40
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13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
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Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		887	888	889	890				
DATE TESTED & SAMPLED		03/11/2021			16/11/2021				
RESULTS									
Hilf Density Ratio	**Standard** %	**101**	**98.5**	**98**	**99.5**				
Moisture Variation from OMC	**(-Drier/+Wetter)** %	**0.0**	**-0.5**	**0.0**	**-2.0**				
Specification	**Density Ratio (Standard)**	**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage	(Carriageway L/R) m	-	-	-	-				
Shown on Drawing No		7747/54-15							
Retested by Test		Ridgetops							
Reduced Level	m	-	-	-	-				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.09	2.05	2.09	2.08				
Field Moisture Content	%	18.0	15.5	15.0	11.5				
Material retained on	19mm Sieve (wet) %	<5	<5	<5	<5				
Lab Compaction result from test number		887	888	889	890				
Lab Compaction Date Tested		08/11/2021	08/11/2021	08/11/2021	17/11/2021				
Peak Converted Wet Density	t/m³	2.07	2.08	2.13	2.09				
Apparent Optimum Moisture Content	%	18.0	16.0	15.0	14.0				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		2	2	2	1				

Notes

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17. RMS T120, T164, T173

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16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			891	892	893	894	895	896	897	898
DATE TESTED & SAMPLED			16/11/2021							17/11/2021
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**102**	**101.5**	**103**	**101**	**102**	**100.5**	**99.5**
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**-2.0**	**-2.0**	**-2.0**	**-2.0**	**-2.0**	**-2.0**	**-2.0**	**-0.5**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-16							
Retested by Test			Southern Heights							
Reduced Level		m	-	-	-	-	-	-	-	-
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.09	2.08	2.08	2.11	2.08	2.09	2.07	2.08
Field Moisture Content		%	12.5	14.0	12.5	12.5	11.5	12.0	12.0	18.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			891	892	893	894	895	896	897	898
Lab Compaction Date Tested			17/11/2021	17/11/2021	17/11/2021	17/11/2021	17/11/2021	17/11/2021	17/11/2021	19/11/2021
Peak Converted Wet Density		t/m³	2.10	2.04	2.05	2.05	2.06	2.05	2.06	2.09
Apparent Optimum Moisture Content		%	14.5	16.0	14.5	14.5	13.5	14.0	14.0	18.5
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			1-2	2	2	1-2	1-2	1-2	1	2

Notes

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7: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.2.1, 5.4.1, 5.8.1
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9: Full details of Test Procedure 5.8.1 available on request
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12. AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.7.1, 5.8.1
13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

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3. CH-Clays of high plasticity
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5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

Form No R 020 Version 10 10/20 - issued by ER

NATA
Accreditation Number 2734
Corporate Site Number 2727

Accredited for compliance with ISO/IEC 17025 - Testing.

H Wilson 24/11/2021
Approved Signatory

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GEOTECH TESTING PTY LTD®
ABN 71 076 676 321

FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 24/11/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			899	900	901					
DATE TESTED & SAMPLED			17/11/2021							
RESULTS										
Hilf Density Ratio	**Standard**	**%**	**99.5**	**99.5**	**99.5**					
Moisture Variation from OMC	**(-Drier/+Wetter)**	**%**	**0.5**	**0.0**	**-0.5**					
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-					
Shown on Drawing No			7747/54-17							
Retested by Test			Promenade							
Reduced Level		m	-	-	-					
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.10	2.03	2.09					
Field Moisture Content		%	14.5	17.0	18.0					
Material retained on	19mm Sieve (wet)	%	<5	<5	<5					
Lab Compaction result from test number			899	900	901					
Lab Compaction Date Tested			19/11/2021	19/11/2021	19/11/2021					
Peak Converted Wet Density		t/m³	2.11	2.04	2.10					
Apparent Optimum Moisture Content		%	14.0	17.0	18.5					
Number of Compaction Points			3	3	3					
Test Procedures - See Note Number			12	12	12					
Material Description - see below			2	2	2					

Notes

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4: AS 1289 1.2.1 clause 6.4 (b), 2.1.1, 5.1.1, 5.3.1, 5.4.1
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8: AS 1289 1.2.1 clause 6.4 (b), 2.1.1., 5.5.1, 5.6.1, 5.8.1
9: Full details of Test Procedure 5.8.1 available on request
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13: RMS T111, T119, T120, T166
14: RMS T111, T120, T166, T173
15: RMS T120, T119, T162
16. RMS T120, T162, T173
17. RMS T120, T164, T173

Material Description

1. CL-Clays of low plasticity, gravelly clays, sandy clays, silty clays
2. CI-Clay of medium plasticity, gravelly clays, sandy clays, silty clays
3. CH-Clays of high plasticity
4. SC-Clayey sands, sand-clay mixtures
5. SM-Silty sands, sand-silt mixtures
6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
10. DGS20
11. DGS40
12. FCR20
13. FCR40
14. RC - Recycled Concrete
15. Recycled Roadbase
16. RSB - Recycled Sub-base
17. CSS - Crushed Sandstone
18. RSS - Ripped Sandstone
19. Cowels Brown

* Cement Stabilised
\# Lime Stabilised
$ Gypsum Stabilised

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GEOTECH TESTING PTY LTD®
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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 16/12/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER			902	903	904	905	906	907	908	909
DATE TESTED & SAMPLED			18/11/2021					29/11/2021		
RESULTS										
Hilf Density Ratio	Standard	%	99.5	100	99.5	100	100	100	100	99.5
Moisture Variation from OMC	(-Drier/+Wetter)	%	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
Specification	**Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION										
Chainage	(Carriageway L/R)	m	-	-	-	-	-	-	-	-
Shown on Drawing No			7747/54-18							
Retested by Test			-	-	-	-	-	-	-	-
Reduced Level		m	900mm Below	600mm Below	300mm Below	FSL	1.8m Below	1.5m Below	1.2m Below	900mm Below
FIELD & LABORATORY DATA										
Field Wet Density		t/m³	2.05	2.05	2.06	2.05	2.04	2.05	2.06	2.05
Field Moisture Content		%	16.0	16.5	18.5	17.0	15.5	16.5	18.0	16.0
Material retained on	19mm Sieve (wet)	%	<5	<5	<5	<5	<5	<5	<5	<5
Lab Compaction result from test number			902	903	904	905	906	907	908	909
Lab Compaction Date Tested			30/11/2021							
Peak Converted Wet Density		t/m³	2.06	2.05	2.07	2.05	2.04	2.05	2.06	2.06
Apparent Optimum Moisture Content		%	15.5	16.0	18.5	17.0	15.5	16.5	18.0	16.0
Number of Compaction Points			3	3	3	3	3	3	3	3
Test Procedures - See Note Number			12	12	12	12	12	12	12	12
Material Description - see below			2	2	2	2	2	2	2	2

Notes

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Material Description

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6. GC-Clayey gravels, gravel-sand-clay mixtures
7. SP-Sand, crushed dust, filling sand, washed sand
8. DGB20
9. DGB40
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19. Cowels Brown

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FIELD DENSITY RESULTS

REDBANK COMMUNITIES
PO BOX 1918
PENRITH NSW 2750

Laboratory: Penrith
Job No: 7747/54
Date: 16/12/2021

PROJECT: SITE FILL TESTING
PROPOSED DEVELOPMENT, GROSE VALE ROAD, NORTH RICHMOND, STAGE SOUTHERN HEIGHTS

TEST NUMBER		910	911	912	913				
DATE TESTED & SAMPLED		02/12/2021							
RESULTS									
Hilf Density Ratio Standard	%	101	100	98	103				
Moisture Variation from OMC (-Drier/+Wetter)	%	**-1.5**	**0.5**	**0.0**	**0.5**				
Specification **Density Ratio (Standard)**		**≥98%**	**Specification Moisture Variance from OMC**						**±2%**
TEST LOCATION									
Chainage (Carriageway L/R)	m	-	-	-	-				
Shown on Drawing No		7747/54-18							
Retested by Test		-	-	-	-				
Reduced Level	m	600mm Below	300mm Below	FSL	FSL				
FIELD & LABORATORY DATA									
Field Wet Density	t/m³	2.04	2.06	2.05	2.03				
Field Moisture Content	%	16.5	17.0	16.0	15.5				
Material retained on 19mm Sieve (wet)	%	<5	<5	<5	<5				
Lab Compaction result from test number		910	911	912	913				
Lab Compaction Date Tested		30/11/2021							
Peak Converted Wet Density	t/m³	2.02	2.06	2.09	1.97				
Apparent Optimum Moisture Content	%	18.0	16.5	16.0	15.5				
Number of Compaction Points		3	3	3	3				
Test Procedures - See Note Number		12	12	12	12				
Material Description - see below		2	2	2	2				

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