

Riverwalk Estate Stage 30

GITA Inspection Verification Report

Prepared For: Excell Gray Bruni

Report Number D21673A V1

Version Release Date 15 Feb 2022

Report Released By C Caulfield

Title Project Manager

Signature



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1 Introduction

Terra Firma Laboratories was engaged by Excell Gray Bruni as the Geotechnical Inspection and Testing Authority (GITA) to provide Level 1 supervision and testing works on the earthworks component for Riverwalk Estate Stage 30. This work was conducted over the period of 10/09/2021 to 30/11/2021.

This report presents that the allotment earthworks was carried out in accordance with AS3798-2007 *Guidelines for Earthworks for Commercial and Residential Development* and in compliance with the compaction control specifications established by the contractor.

2 Scope of Work

2.1 Area of Work

The areas of work included Lots 3001 through to 3065, bounded by streets Varshan Lane, Eka Lane, Priya Street, Sila Road, Gita Crescent, Pandava Road and Puri Street. The site will be a Residential development.

The area on which fill was placed is shown on site plan (Appendix 1: *Test Location Plan*) based on drawings prepared by Dalton Consulting Engineers (Drawing Reference: 10930FP01) and provided by Excell Gray Bruni.

The supervision work by the GITA involved both inspection of sub grade preparation work and full time inspection and testing of fill placement.

2.2 Specification

The technical specification (Reference from Drawings) for compaction control requirements was provided by Excell Gray Bruni and established that:

Test Rolling is required for all layers of structural fill and materials within 150mm of permanent subgrade level so as to withstand test rolling without visible deformation or springing. Corrective action is required where unstable areas exceed 20% of the area being considered by test rolling.

Section 5.2 of AS3798-2007 (Section 5.2) establishes a specification requirement for a minimum density ratio of not less than 95% noting that soils containing more than 20% of particles coarser than 37.5mm cannot be tested for relative compaction using the procedures of AS1289 5.1.1 and AS1289 5.2.1.

In accordance with Table 8.1 (AS3798), for large scale operations, (greater than 1500m²), the minimum testing frequency is 1 test per layer per material type per 2500m² or 1 test per 500m³ distributed reasonable evenly throughout full depth and area or 3 tests per lot. AS3798 defines a lot as “an area of work that is essentially homogenous in relation to material type and moisture condition, rolling response and compaction technique, and which has been used for the assessment of the relative compaction of an area of work”. All three of these test frequencies must be achieved and this is typically confirmed to have been achieved when 3 tests per visit (day) have been completed.

2.3 Limitations

Terra Firma Laboratories cannot verify any works completed by others outside of the time period specified in the introduction. Uncontrolled works may include, but are not limited to trenching for services, cut and fill works for slab preparation or subsequent removal of vegetation and back fill of holes unless specified in section 2.1 of this report.

Terra Firma Laboratories cannot verify that the material used as a filling medium is free from chemical or other contamination. The scope and the period of Terra Firma Laboratories as described in the introduction are subject to restrictions and limitations. Terra Firma Laboratories did not perform a complete assessment of all possible conditions and circumstances that may exist at the site. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Terra Firma Laboratories.

Verification of finished surface level to design levels is outside of the scope of the GITA report.

Any drawings or marked locations presented in this report should be considered only as pictorial evidence of our work. Therefore, unless otherwise stated, any dimensions should not be used for accurate calculations or dimensioning.

Where data has been supplied by the client or a third party, it is assumed that the information is correct unless otherwise stated. No responsibility is accepted by Terra Firma Laboratories for incomplete or inaccurate data supplied by others.

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3 Construction Method

3.1 Subgrade Preparation

At the time of subgrade inspection the following was observed:

- Subgrade preparation involved stripping the site of topsoil, vegetation and organic matter to a depth of approximately 200mm below existing levels.
- The site was cleared of all trees and stumps to the extent necessary for the fill placement to proceed
- The roots of all trees and any debris was removed from site prior to any fill placement

The sub-grade area was then proof-rolled to confirm it was capable of withstanding test rolling without visible deformation or springing and any areas observed to be soft or otherwise unsuitable were rectified. The sub-grade was watered and scarified prior to fill placement to aid layer bonding.

3.2 Fill Placement

The contractor was observed to have suitable construction equipment and plant available on-site during the construction period for use in the fill placement.

All fill was placed in layers of thicknesses not exceeding 300mm. At the completion of a placed layer, compaction testing was performed to confirm appropriate compaction had been achieved and supported the observations made. It should be noted that the compaction tests are representative samples of the fill placed and support the visual assessment of the works completed. Each house lot does not necessarily require a compaction test to have been conducted within the house allotment but may have been verified by testing conducted within up to a 2500m² area of the house lot.

Final fill placement levels were verified against design level by others. For the purposes of this report, it was observed that finished levels were in accordance with levels marked on site by survey markers.

The final 300mm of fill placed across the site was placed as a topsoil layer or growing medium and should be considered as non-structural, as it was placed in an uncontrolled manner, as allowed by specifications and placement of the final 300mm of fill was not observed by the GITA.

4 Construction Verification

Compaction Verification testing is summarized in a detailed test register with test certificates attached provided in Appendix 2: *Compaction Test Register and Test Certificates*. A test location

plan (D21673D1, Appendix 1) providing a schematic of test locations across the extent of scope of works for every placed layer of fill is also documented.

A total of 74 density tests (Hilf method in accordance with 1289 5.7.1) were undertaken with 0 failed results. The results summarised in the compaction test register (Appendix 2) confirm that for every layer of fill placed in a specific work area, satisfactory testing was completed.

5 Statement of Compliance

The intention of this report is to provide a description of the earthworks construction for Stage 30 at Riverwalk Estate. For completed fill areas of greater than 300mm, and for works completed between 10/09/2021 and 30/11/2021, earthworks construction activities were conducted under the full time supervision of the Geotechnical Inspection and Testing Authority. Inspections and testing of the fill areas at this site indicate that both sub grade preparation and fill placement have been conducted in accordance with the specification. The earthworks construction for Stage 30 of Riverwalk Estate was observed to be constructed in compliance with the requirements of the Technical Specification.



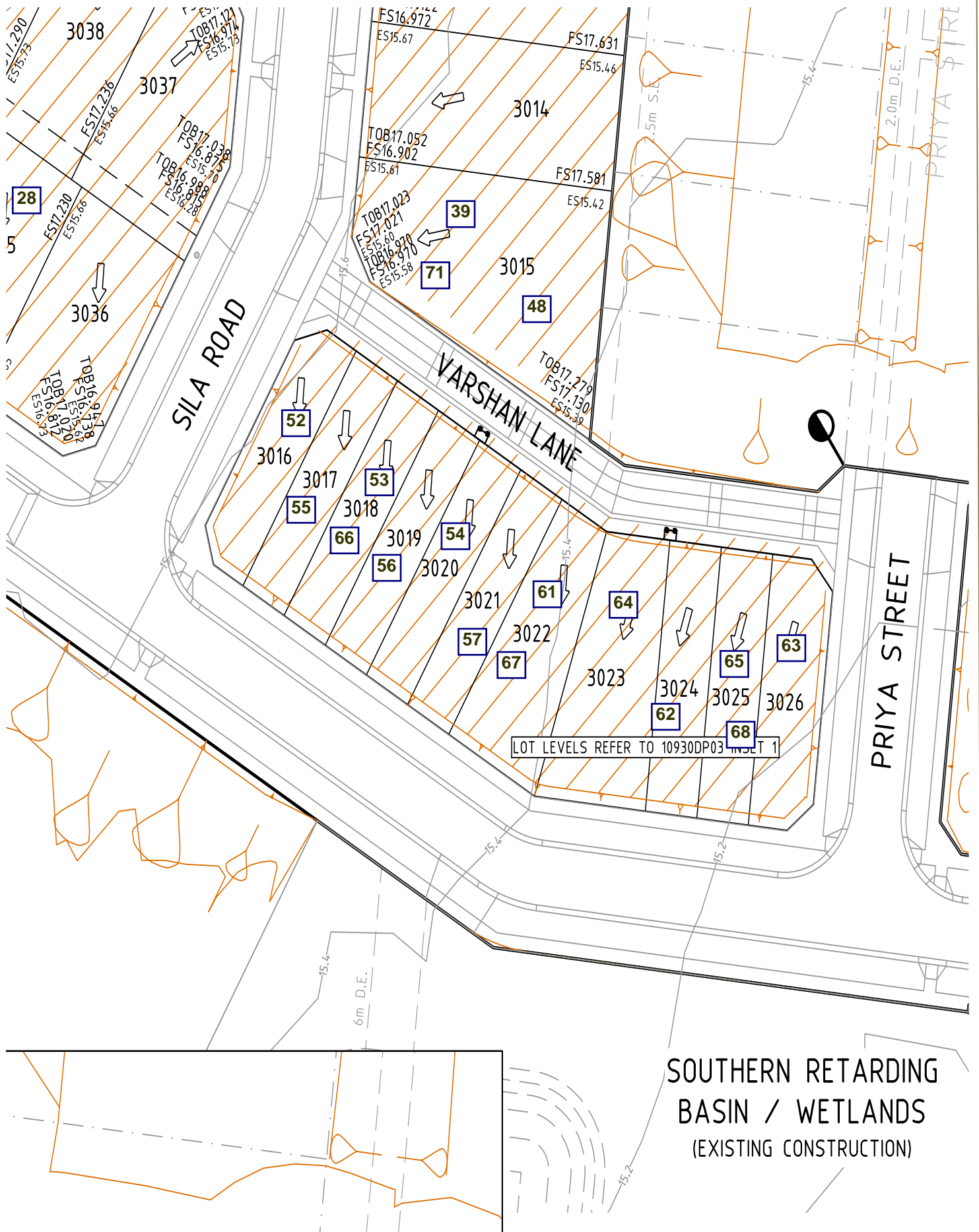
Your Worksite is Our Laboratory.

Appendix 1: Test Location Plan

Our Head Office
47 National Ave
Pakenham, VIC 3810

Our Laboratories
Pakenham 03 9769 5799
Deer Park 03 8348 5596
Bibra Lake 08 9395 7220

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**SOUTHERN RETARDING
BASIN / WETLANDS
(EXISTING CONSTRUCTION)**



Our Head Office
47 National Ave
Pakenham, VIC 3810

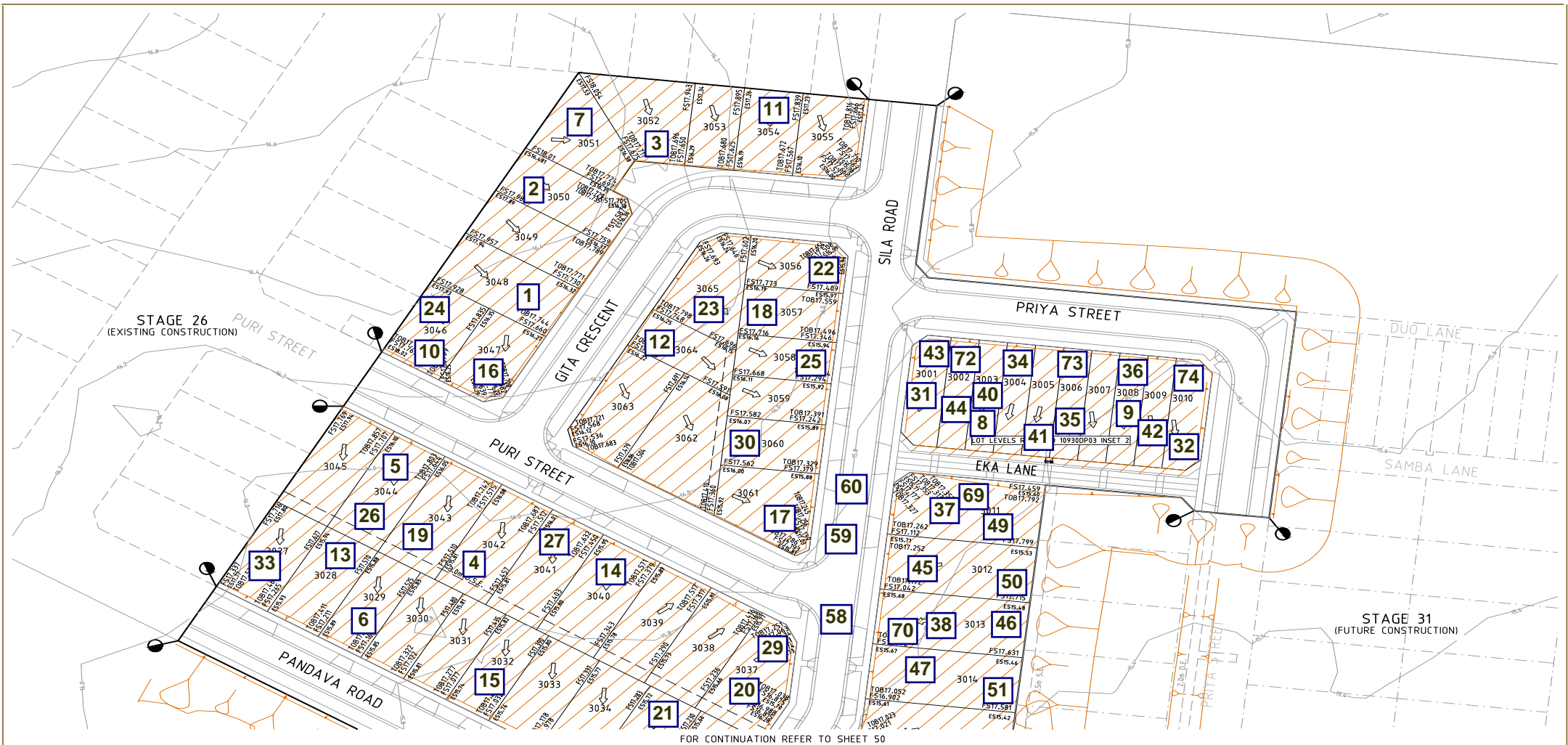
Our Laboratories
Pakenham 03 9769 5799
Deer Park 03 8348 5596
Bibra Lake 08 9395 7220

Test Location Plan
not to scale

Client: Excell Gray Bruni

Project: Riverwalk Estate Stage 30

Reference: D21673 D1



Our Head Office
47 National Ave
Pakenham, VIC 3810

Our Laboratories
Pakenham 03 9769 5799
Deer Park 03 8348 5596
Bibra Lake 08 9395 7220

Test Location Plan

not to scale

Client: Excell Gray Bruni

Project: Riverwalk Estate Stage 30

Reference: D21673 D2



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Appendix 2: Compaction Test Register and Test Certificates



Compaction Test Register

Client: Excell Gray Bruni **Project No:** D21673
Project: Riverwalk Estate Stage 30 **Specification:** 95%

Date:	Test No:	Layer:	Retest of:	Density:	Pass/Fail:	Lot No:	Report No:
10/09/2021	1	Layer 1		95.0%	Pass	Lot 3048	D21673-1
10/09/2021	2	Layer 1		95.5%	Pass	Lot 3050	D21673-1
10/09/2021	3	Layer 1		95.5%	Pass	Lot 3052	D21673-1
11/09/2021	4	Layer 1		106.0%	Pass	Lot 3042	D21673-2
11/09/2021	5	Layer 1		98.0%	Pass	Lot 3044	D21673-2
11/09/2021	6	Layer 1		96.5%	Pass	Lot 3029	D21673-2
14/09/2021	7	Layer 2		101.0%	Pass	Lot 3051	D21673-3
14/09/2021	8	Layer 1		99.0%	Pass	Lot 3003	D21673-3
14/09/2021	9	Layer 1		99.5%	Pass	Lot 3008	D21673-3
15/09/2021	10	Layer 3		100.0%	Pass	Lot 3046	D21673-4
15/09/2021	11	Layer 3		101.0%	Pass	Lot 3054	D21673-4
15/09/2021	12	Layer 1		101.0%	Pass	Lot 3064	D21673-4
16/09/2021	13	Layer 2		105.5%	Pass	Lot 3028	D21673-5
16/09/2021	14	Layer 1		101.0%	Pass	Lot 3040	D21673-5
16/09/2021	15	Layer 1		102.0%	Pass	Lot 3032	D21673-5
17/09/2021	16	Layer 4		99.0%	Pass	Lot 3047	D21673-6
17/09/2021	17	Layer 2		98.5%	Pass	Lot 3061	D21673-6
17/09/2021	18	Layer 2		95.5%	Pass	Lot 3057	D21673-6
20/09/2021	19	Layer 3		101.0%	Pass	Lot 3043	D21673-7
20/09/2021	20	Layer 2		101.5%	Pass	Lot 3037	D21673-7
20/09/2021	21	Layer 2		105.5%	Pass	Lot 3035	D21673-7
5/10/2021	22	Layer 3		104.0%	Pass	Lot 3056	D21673-8
5/10/2021	23	Layer 4		103.0%	Pass	Lot 3065	D21673-8
5/10/2021	24	Layer 5		99.0%	Pass	Lot 3046	D21673-8
6/10/2021	25	Layer 3		102.0%	Pass	Lot 3058	D21673-9
6/10/2021	26	Layer 4		102.0%	Pass	Lot 3044	D21673-9
6/10/2021	27	Layer 3		102.0%	Pass	Lot 3041	D21673-9
8/10/2021	28	Layer 3		102.5%	Pass	Lot 3035	D21673-10
8/10/2021	29	Layer 4		103.5%	Pass	Lot 3037	D21673-10
8/10/2021	30	Layer 4		97.5%	Pass	Lot 3060	D21673-10
9/10/2021	31	Layer 1		103.0%	Pass	Lot 3001	D21673-11
9/10/2021	32	Layer 1		102.0%	Pass	Lot 3010	D21673-11
9/10/2021	33	Layer 5		99.0%	Pass	Lot 3027	D21673-11
12/10/2021	34	Layer 02		106.5%	Pass	Lot 3004	D21673-12
12/10/2021	35	Layer 02		100.5%	Pass	Lot 3006	D21673-12
12/10/2021	36	Layer 02		102.5%	Pass	Lot 3008	D21673-12
13/10/2021	37	Layer 01		108.5%	Pass	Lot 3011	D21673-13
13/10/2021	38	Layer 01		107.0%	Pass	Lot 3013	D21673-13
13/10/2021	39	Layer 01		107.5%	Pass	Lot 3015	D21673-13
19/10/2021	40	Layer 03		103.5%	Pass	Lot 3003	D21673-14
19/10/2021	41	Layer 03		106.5%	Pass	Lot 3005	D21673-14

Material Test Report


Report Number: D21673-1
Issue Number: 1
Date Issued: 14/09/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3729
Date Sampled: 10/09/2021
Dates Tested: 10/09/2021 - 13/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: On Site



Deer Park Laboratory
 Factory 1 80-82 Rebecca Drive Ravenhall VIC 3023
 Phone: 0435 751 756
 Email: ehippola@terrafirmalabs.com.au



Accredited for compliance with ISO/IEC 17025 - Testing


 Approved Signatory: Eranda Hippola
 Snr lab Tech

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3729A	D21-3729B	D21-3729C
Test Number	1	2	3
Date Tested	10/09/2021	10/09/2021	10/09/2021
Time Tested	13:00	13:15	13:30
Test Request #/Location	LOT 3048	LOT 3050	LOT 3052
Layer / Reduced Level	Layer 1	Layer 1	Layer 1
Thickness of Layer (mm)	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.71	1.76	1.75
Field Moisture Content %	28.1	25.8	29.4
Field Dry Density (FDD) t/m ³	1.33	1.40	1.35
Peak Converted Wet Density t/m ³	1.80	1.84	1.83
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	27.0	28.6	30.3
Adj. Field Moisture Content % (AS1289.5.4.1)	28.1	25.8	29.4
Moisture Ratio % (AS1289.5.4.1)	104.0	90.5	97.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	-1.0	2.5	1.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	95.0	95.5	95.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-2
Issue Number: 1
Date Issued: 15/09/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3734
Date Sampled: 11/09/2021
Dates Tested: 11/09/2021 - 14/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Clay
Material Source: On site



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 Approved Signatory: Eranda Hippola
 Snr lab Tech

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3734A	D21-3734B	D21-3734C
Test Number	4	5	6
Date Tested	11/09/2021	11/09/2021	11/09/2021
Time Tested	10:30	10:45	11:00
Test Request #/Location	LOT 3042	LOT 3044	LOT 3029
Layer / Reduced Level	Layer 1	Layer 1	Layer 1
Thickness of Layer (mm)	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	2.06	1.89	1.84
Field Moisture Content %	13.6	14.2	14.1
Field Dry Density (FDD) t/m ³	1.81	1.65	1.61
Peak Converted Wet Density t/m ³	1.94	1.93	1.90
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	14.2	14.5	13.4
Adj. Field Moisture Content % (AS1289.5.4.1)	13.6	14.2	14.1
Moisture Ratio % (AS1289.5.4.1)	96.0	98.0	105.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	0.5	0.5	-0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	106.0	98.0	96.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-3
Issue Number: 1
Date Issued: 20/09/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3744
Date Sampled: 14/09/2021
Dates Tested: 14/09/2021 - 20/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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 Approved Signatory: Eranda Hippola
 Snr lab Tech

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3744A	D21-3744B	D21-3744C
Test Number	7	8	9
Date Tested	14/09/2021	14/09/2021	14/09/2021
Time Tested	12:30	12:45	13:00
Test Request #/Location	LOT 3051	LOT 3003	LOT 3008
Easting	**	**	**
Northing	**	**	**
Layer / Reduced Level	Layer 2	Layer 1	Layer 1
Thickness of Layer (mm)	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.99	1.81	1.83
Field Moisture Content %	29.0	29.0	29.7
Field Dry Density (FDD) t/m ³	1.54	1.41	1.41
Peak Converted Wet Density t/m ³	1.97	1.83	1.84
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	29.3	28.6	29.6
Adj. Field Moisture Content % (AS1289.5.4.1)	29.0	29.0	29.7
Moisture Ratio % (AS1289.5.4.1)	99.0	101.0	100.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	0.5	-0.5	0.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	101.0	99.0	99.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D21673-4
Issue Number: 1
Date Issued: 20/09/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3750
Date Sampled: 15/09/2021
Dates Tested: 15/09/2021 - 20/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Approved Signatory: Eranda Hippola
 Snr lab Tech

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3750A	D21-3750B	D21-3750C
Test Number	10	11	12
Date Tested	15/09/2021	15/09/2021	15/09/2021
Time Tested	14:30	14:45	15:00
Test Request #/Location	LOT 3046	LOT 3054	LOT 3064
Layer / Reduced Level	Layer 3	Layer 3	Layer 1
Thickness of Layer (mm)	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.92	1.98	1.97
Field Moisture Content %	25.6	25.9	19.7
Field Dry Density (FDD) t/m ³	1.53	1.57	1.64
Peak Converted Wet Density t/m ³	1.93	1.96	1.95
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	25.6	25.7	20.0
Adj. Field Moisture Content % (AS1289.5.4.1)	25.6	25.9	19.7
Moisture Ratio % (AS1289.5.4.1)	100.0	101.0	98.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	0.0	0.0	0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	100.0	101.0	101.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-5
Issue Number: 1
Date Issued: 21/09/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3754
Dates Tested: 16/09/2021 - 21/09/2021
Location: Riverwalk Estate Stage 30 - Level one



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 Approved Signatory: Eranda Hippola
 Snr lab Tech

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3754A	D21-3754B	D21-3754C
Test Number	13	14	15
Date Tested	16/09/2021	16/09/2021	16/09/2021
Time Tested	13:00	13:15	13:30
Test Request #/Location	LOT 3028	LOT 3040	LOT 3032
Layer / Reduced Level	Layer 2	Layer 1	Layer 1
Thickness of Layer (mm)	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.90	1.84	1.85
Field Moisture Content %	28.0	30.6	29.1
Field Dry Density (FDD) t/m ³	1.49	1.41	1.43
Peak Converted Wet Density t/m ³	1.81	1.82	1.82
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	28.3	30.8	29.2
Adj. Field Moisture Content % (AS1289.5.4.1)	28.0	30.6	29.1
Moisture Ratio % (AS1289.5.4.1)	99.0	99.0	99.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	0.5	0.0	0.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	105.5	101.0	102.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-6
Issue Number: 1
Date Issued: 22/09/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3767
Date Sampled: 17/09/2021
Dates Tested: 17/09/2021 - 21/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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 Approved Signatory: Eranda Hippola
 Snr lab Tech

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	D21-3767A	D21-3767B	D21-3767C
Test Number	16	17	18
Date Tested	17/09/2021	17/09/2021	17/09/2021
Time Tested	14:30	14:45	15:00
Test Request #/Location	LOT 3047	LOT 3061	LOT 3057
Layer / Reduced Level	Layer 4	Layer 2	Layer 2
Thickness of Layer (mm)	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.92	2.01	1.83
Field Moisture Content %	19.7	17.6	12.1
Field Dry Density (FDD) t/m ³	1.60	1.71	1.64
Peak Converted Wet Density t/m ³	1.93	2.04	1.92
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	21.8	17.6	14.3
Adj. Field Moisture Content % (AS1289.5.4.1)	19.7	17.6	12.1
Moisture Ratio % (AS1289.5.4.1)	90.0	99.5	85.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	2.0	0.0	2.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	99.0	98.5	95.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-7
Issue Number: 1
Date Issued: 22/09/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3778
Date Sampled: 20/09/2021
Dates Tested: 20/09/2021 - 21/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3778A	D21-3778B	D21-3778C
Test Number	19	20	21
Date Tested	20/09/2021	20/09/2021	20/09/2021
Time Tested	14:00	14:15	14:30
Test Request #/Location	LOT 3043	LOT 3037	LOT 3035
Layer / Reduced Level	Layer 3	Layer 2	Layer 2
Thickness of Layer (mm)	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.88	1.88	1.96
Field Moisture Content %	21.9	33.7	20.8
Field Dry Density (FDD) t/m ³	1.54	1.41	1.62
Peak Converted Wet Density t/m ³	1.86	1.86	1.85
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	21.9	33.5	21.2
Adj. Field Moisture Content % (AS1289.5.4.1)	21.9	33.7	20.8
Moisture Ratio % (AS1289.5.4.1)	100.0	100.5	98.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	0.0	0.0	0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	101.0	101.5	105.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-8
Issue Number: 1
Date Issued: 07/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3783
Date Sampled: 05/10/2021
Dates Tested: 05/10/2021 - 06/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Clay
Material Source: Import



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	D21-3783A	D21-3783B	D21-3783C
Test Number	22	23	24
Date Tested	05/10/2021	05/10/2021	05/10/2021
Time Tested	15:54	15:54	15:54
Test Request #/Location	Lot 3056	Lot 3065	Lot 3046
Layer / Reduced Level	Layer 3	Layer 4	Layer 5
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Field Wet Density (FWD) t/m ³	1.86	1.95	1.90
Field Moisture Content %	31.5	22.5	24.6
Field Dry Density (FDD) t/m ³	1.41	1.59	1.53
Peak Converted Wet Density t/m ³	1.78	1.90	1.93
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	1.0	2.5	0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	104.0	103.0	99.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D21673-9
Issue Number: 1
Date Issued: 08/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3786
Date Sampled: 06/10/2021
Dates Tested: 06/10/2021 - 07/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Clay
Material Source: Import



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

	D21-3786A	D21-3786B	D21-3786C
Sample Number	D21-3786A	D21-3786B	D21-3786C
Test Number	25	26	27
Date Tested	06/10/2021	06/10/2021	06/10/2021
Time Tested	15:33	15:33	15:33
Test Request #/Location	Lot 3058	Lot 3044	Lot 3041
Layer / Reduced Level	Layer 3	Layer 4	Layer 3
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Field Wet Density (FWD) t/m ³	1.91	1.92	1.93
Field Moisture Content %	20.9	22.3	23.6
Field Dry Density (FDD) t/m ³	1.58	1.57	1.56
Peak Converted Wet Density t/m ³	1.87	1.88	1.89
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	2.5	2.5	2.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	102.0	102.0	102.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D21673-10
Issue Number: 1
Date Issued: 13/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3799
Date Sampled: 08/10/2021
Dates Tested: 08/10/2021 - 12/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Clay
Material Source: Import



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3799A	D21-3799B	D21-3799C
Test Number	28	29	30
Date Tested	08/10/2021	08/10/2021	08/10/2021
Time Tested	14:26	14:26	14:26
Test Request #/Location	Lot 3035	Lot 3037	Lot 3060
Layer / Reduced Level	Layer 3	Layer 4	Layer 4
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Field Wet Density (FWD) t/m ³	1.97	1.98	1.82
Field Moisture Content %	22.6	22.5	22.7
Field Dry Density (FDD) t/m ³	1.60	1.62	1.48
Peak Converted Wet Density t/m ³	1.92	1.91	1.87
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	-1.0	0.5	-1.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	102.5	103.5	97.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-11
Issue Number: 1
Date Issued: 13/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3800
Date Sampled: 09/10/2021
Dates Tested: 09/10/2021 - 12/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3800A	D21-3800B	D21-3800C
Test Number	31	32	33
Date Tested	09/10/2021	09/10/2021	09/10/2021
Time Tested	11:06	11:06	11:06
Test Request #/Location	Lot 3001	Lot 3010	Lot 3027
Layer / Reduced Level	Layer 1	Layer 1	Layer 5
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Field Wet Density (FWD) t/m ³	2.04	2.05	1.94
Field Moisture Content %	15.1	14.7	15.0
Field Dry Density (FDD) t/m ³	1.78	1.79	1.69
Peak Converted Wet Density t/m ³	1.98	2.00	1.96
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	0.0	-0.5	0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	103.0	102.0	99.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-12
Issue Number: 1
Date Issued: 14/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3810
Date Sampled: 12/10/2021
Dates Tested: 12/10/2021 - 13/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: On Site



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3810A	D21-3810B	D21-3810C
Test Number	34	35	36
Date Tested	12/10/2021	12/10/2021	12/10/2021
Time Tested	13:00	13:15	13:30
Test Request #/Location	Lot 3004	Lot 3006	Lot 3008
Layer / Reduced Level	Layer 02	Layer 02	Layer 02
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.99	1.92	1.89
Field Moisture Content %	22.3	10.8	22.2
Field Dry Density (FDD) t/m ³	1.63	1.74	1.55
Peak Converted Wet Density t/m ³	1.87	1.91	1.85
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	25.7	13.7	25.6
Adj. Field Moisture Content % (AS1289.5.4.1)	22.3	10.8	22.2
Moisture Ratio % (AS1289.5.4.1)	87.0	79.0	86.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	3.0	3.0	3.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	106.5	100.5	102.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-13
Issue Number: 1
Date Issued: 15/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3815
Date Sampled: 13/10/2021 2:30
Dates Tested: 13/10/2021 - 14/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3815A	D21-3815B	D21-3815C
Test Number	37	38	39
Date Tested	13/10/2021	13/10/2021	13/10/2021
Time Tested	14:30	14:45	15:00
Test Request #/Location	LOT 3011	LOT 3013	LOT 3015
Layer / Reduced Level	Layer 01	Layer 01	Layer 01
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.93	1.94	1.95
Field Moisture Content %	23.4	22.4	21.8
Field Dry Density (FDD) t/m ³	1.56	1.58	1.60
Peak Converted Wet Density t/m ³	1.78	1.81	1.82
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	28.6	27.3	25.9
Adj. Field Moisture Content % (AS1289.5.4.1)	23.4	22.4	21.8
Moisture Ratio % (AS1289.5.4.1)	82.0	82.0	84.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	5.0	4.5	4.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	108.5	107.0	107.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-14
Issue Number: 1
Date Issued: 22/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3832
Date Sampled: 19/10/2021
Dates Tested: 19/10/2021 - 21/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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 NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3832A	D21-3832B	D21-3832C
Test Number	40	41	42
Date Tested	19/10/2021	19/10/2021	19/10/2021
Time Tested	15:00	15:15	15:30
Test Request #/Location	Lot 3003	Lot 3005	Lot 3009
Layer / Reduced Level	Layer 03	Layer 03	Layer 03
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.93	2.00	2.01
Field Moisture Content %	26.0	24.1	23.4
Field Dry Density (FDD) t/m ³	1.53	1.61	1.63
Peak Converted Wet Density t/m ³	1.86	1.88	1.89
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	28.4	27.5	26.4
Adj. Field Moisture Content % (AS1289.5.4.1)	26.0	24.1	23.4
Moisture Ratio % (AS1289.5.4.1)	91.5	88.0	89.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	2.5	3.0	3.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	103.5	106.5	106.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-15
Issue Number: 1
Date Issued: 22/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3842
Date Sampled: 20/10/2021
Dates Tested: 20/10/2021 - 21/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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 NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3842A	D21-3842B	D21-3842C
Test Number	43	44	45
Date Tested	20/10/2021	20/10/2021	20/10/2021
Time Tested	14:45	15:00	15:15
Test Request #/Location	Lot 3001	Lot 3002	Lot 3012
Layer / Reduced Level	Layer 03	Layer 03	Layer 02
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.98	1.93	1.92
Field Moisture Content %	22.2	23.0	22.2
Field Dry Density (FDD) t/m ³	1.62	1.57	1.57
Peak Converted Wet Density t/m ³	1.96	1.94	1.95
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	22.1	23.3	22.2
Adj. Field Moisture Content % (AS1289.5.4.1)	22.2	23.0	22.2
Moisture Ratio % (AS1289.5.4.1)	100.5	99.0	100.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	0.0	0.5	0.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	101.0	99.5	98.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-16
Issue Number: 1
Date Issued: 25/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3846
Date Sampled: 21/10/2021
Dates Tested: 21/10/2021 - 22/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3846A	D21-3846B	D21-3846C
Test Number	46	47	48
Date Tested	21/10/2021	21/10/2021	21/10/2021
Time Tested	14:45	15:00	15:15
Test Request #/Location	Lot 3013	Lot 3014	Lot 3015
Layer / Reduced Level	Layer 02	Layer 02	Layer 02
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.90	2.05	1.95
Field Moisture Content %	21.6	20.8	19.4
Field Dry Density (FDD) t/m ³	1.57	1.70	1.64
Peak Converted Wet Density t/m ³	1.89	1.97	1.94
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	24.1	23.4	21.9
Adj. Field Moisture Content % (AS1289.5.4.1)	21.6	20.8	19.4
Moisture Ratio % (AS1289.5.4.1)	89.5	89.0	88.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	2.5	2.5	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	100.5	104.0	101.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-17
Issue Number: 1
Date Issued: 26/10/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3850
Date Sampled: 22/10/2021
Dates Tested: 22/10/2021 - 25/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3850A	D21-3850B	D21-3850C
Test Number	49	50	51
Date Tested	22/10/2021	22/10/2021	22/10/2021
Time Tested	14:45	15:00	15:15
Test Request #/Location	Lot 3011	Lot 3012	Lot 3014
Layer / Reduced Level	Layer 02	Layer 02	Layer 02
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	2.00	2.09	2.11
Field Moisture Content %	22.1	19.2	20.9
Field Dry Density (FDD) t/m ³	1.64	1.75	1.75
Peak Converted Wet Density t/m ³	1.93	1.99	1.98
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	24.8	21.4	24.0
Adj. Field Moisture Content % (AS1289.5.4.1)	22.1	19.2	20.9
Moisture Ratio % (AS1289.5.4.1)	89.0	89.5	87.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	2.5	2.0	3.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	103.5	105.0	107.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-18
Issue Number: 1
Date Issued: 09/11/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3913
Date Sampled: 05/11/2021
Dates Tested: 05/11/2021 - 08/11/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	D21-3913A	D21-3913B	D21-3913C
Test Number	52	53	54
Date Tested	05/11/2021	05/11/2021	05/11/2021
Time Tested	12:30	13:30	14:30
Test Request #/Location	Lot 3016 (Channel)	Lot 3018 (Channel)	Lot 3020 (Channel)
Layer / Reduced Level	Layer 1	Layer 2	Layer 3
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	8	7	12
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**
Field Wet Density (FWD) t/m ³	1.92	1.89	2.00
Field Moisture Content %	23.0	22.8	23.1
Field Dry Density (FDD) t/m ³	1.59	1.56	1.66
Peak Converted Wet Density t/m ³	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.89	1.88	1.92
Adj. Optimum Moisture Content % (AS1289.5.4.1)	24.2	24.5	22.3
Adj. Field Moisture Content % (AS1289.5.4.1)	21.2	21.2	20.5
Moisture Ratio % (AS1289.5.4.1)	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	87.5	86.5	92.0
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	3.0	3.0	2.0
Hilf Density Ratio (%)	102.0	100.5	104.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-19
Issue Number: 1
Date Issued: 09/11/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3915
Date Sampled: 06/11/2021
Dates Tested: 06/11/2021 - 08/11/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3915A	D21-3915B	D21-3915C
Test Number	55	56	57
Date Tested	06/11/2021	06/11/2021	06/11/2021
Time Tested	12:00	12:15	12:30
Test Request #/Location	Lot 3017	Lot 3019	Lot 3021
Layer / Reduced Level	Layer 01	Layer 01	Layer 01
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	7	8	8
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**
Field Wet Density (FWD) t/m ³	1.97	1.99	1.98
Field Moisture Content %	21.7	22.8	22.6
Field Dry Density (FDD) t/m ³	1.64	1.65	1.64
Peak Converted Wet Density t/m ³	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.91	1.92	1.92
Adj. Optimum Moisture Content % (AS1289.5.4.1)	22.5	23.4	22.8
Adj. Field Moisture Content % (AS1289.5.4.1)	20.2	21.0	20.7
Moisture Ratio % (AS1289.5.4.1)	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	89.5	89.5	91.0
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	2.5	2.5	2.0
Hilf Density Ratio (%)	103.0	103.5	103.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-20
Issue Number: 1
Date Issued: 10/11/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3919
Date Sampled: 08/11/2021
Dates Tested: 08/11/2021 - 09/11/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Site Selection: Selected by Client
Location: Riverwalk Estate stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3919A	D21-3919B	D21-3919C
Test Number	58	59	60
Date Tested	08/11/2021	08/11/2021	08/11/2021
Time Tested	11:45	12:00	12:15
Test Request #/Location	Channel near to Sila Rd	Channel near to Sila Rd	Channel near to Sila Rd
Easting	292279	292285	292286
Northing	5799927	5799949	5799975
Layer / Reduced Level	Layer 01	Layer 01	Layer 01
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.91	1.93	1.98
Field Moisture Content %	23.9	21.9	23.4
Field Dry Density (FDD) t/m ³	1.54	1.59	1.60
Peak Converted Wet Density t/m ³	1.86	1.92	1.94
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	26.3	22.9	24.5
Adj. Field Moisture Content % (AS1289.5.4.1)	23.9	21.9	23.4
Moisture Ratio % (AS1289.5.4.1)	91.0	95.5	95.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	2.5	1.0	1.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	102.5	100.5	102.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D21673-21
Issue Number: 1
Date Issued: 19/11/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3952
Date Sampled: 17/11/2021
Dates Tested: 17/11/2021 - 18/11/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Site Selection: Selected by Client
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3952A	D21-3952B	D21-3952C
Test Number	61	62	63
Date Tested	17/11/2021	17/11/2021	17/11/2021
Time Tested	12:30	12:45	13:00
Test Request #/Location	Lot 3022	Lot 3024	Lot 3026
Layer / Reduced Level	Layer 02	Layer 02	Layer 02
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	5	7	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	0
Field Wet Density (FWD) t/m ³	2.02	2.06	2.07
Field Moisture Content %	22.7	23.6	20.1
Field Dry Density (FDD) t/m ³	1.66	1.69	1.72
Peak Converted Wet Density t/m ³	**	**	1.99
Adjusted Peak Converted Wet Density t/m ³	2.00	2.02	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	21.8	22.2	21.6
Adj. Field Moisture Content % (AS1289.5.4.1)	21.5	22.0	20.1
Moisture Ratio % (AS1289.5.4.1)	**	**	93.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	99.0	99.0	**
Moisture Variation (Wv) %	**	**	1.5
Adjusted Moisture Variation %	0.0	0.0	**
Hilf Density Ratio (%)	101.0	102.0	104.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report

Report Number: D21673-22
Issue Number: 1
Date Issued: 22/11/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3956
Date Sampled: 18/11/2021
Dates Tested: 18/11/2021 - 19/11/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3956A	D21-3956B	
Test Number	64	65	
Date Tested	18/11/2021	18/11/2021	
Time Tested	10:15	10:30	
Test Request #/Location	Lot 3023	Lot 3025	
Layer / Reduced Level	Layer 03	Layer 03	
Thickness of Layer (mm)	300	300	
Soil Description	Clay	Clay	
Test Depth (mm)	275	275	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	6	11	
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	
Field Wet Density (FWD) t/m ³	2.08	2.07	
Field Moisture Content %	13.3	13.4	
Field Dry Density (FDD) t/m ³	1.85	1.85	
Peak Converted Wet Density t/m ³	**	**	
Adjusted Peak Converted Wet Density t/m ³	2.06	2.07	
Adj. Optimum Moisture Content % (AS1289.5.4.1)	14.5	14.0	
Adj. Field Moisture Content % (AS1289.5.4.1)	12.5	11.9	
Moisture Ratio % (AS1289.5.4.1)	**	**	
Adjusted Moisture Ratio % (AS1289.5.4.1)	86.0	85.0	
Moisture Variation (Wv) %	**	**	
Adjusted Moisture Variation %	2.0	2.0	
Hilf Density Ratio (%)	101.0	100.0	
Compaction Method	Standard	Standard	
Report Remarks	**	**	

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-23
Issue Number: 1
Date Issued: 24/11/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3967
Date Sampled: 22/11/2021
Dates Tested: 22/11/2021 - 23/11/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Site Selection: Selected by Client
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

	D21-3967A	D21-3967B	D21-3967C
Sample Number			
Test Number	66	67	68
Date Tested	22/11/2021	22/11/2021	22/11/2021
Time Tested	08:23	08:23	08:23
Test Request #/Location	Lot 3018	Lot 3022	Lot 3025
Layer / Reduced Level	Layer 5	Layer 5	Layer 5
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.93	2.16	2.04
Field Moisture Content %	23.1	24.5	22.2
Field Dry Density (FDD) t/m ³	1.57	1.73	1.67
Peak Converted Wet Density t/m ³	1.89	1.90	1.88
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	25.5	26.7	24.5
Adj. Field Moisture Content % (AS1289.5.4.1)	23.1	24.5	22.2
Moisture Ratio % (AS1289.5.4.1)	90.5	92.0	90.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	2.5	2.0	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	102.5	113.5	108.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-24
Issue Number: 1
Date Issued: 30/11/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 3998
Date Sampled: 26/11/2021
Dates Tested: 26/11/2021 - 29/11/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Site Selection: Selected by Client
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3998A	D21-3998B	D21-3998C
Test Number	69	70	71
Date Tested	26/11/2021	26/11/2021	26/11/2021
Time Tested	14:30	14:45	15:00
Test Request #/Location	Lot 3011	Lot 3013	Lot 3015
Layer / Reduced Level	Layer 7	Layer 7	Layer 7
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.98	2.07	1.99
Field Moisture Content %	21.7	20.7	19.6
Field Dry Density (FDD) t/m ³	1.62	1.71	1.67
Peak Converted Wet Density t/m ³	1.89	1.96	1.89
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	24.8	23.5	22.1
Adj. Field Moisture Content % (AS1289.5.4.1)	21.7	20.7	19.6
Moisture Ratio % (AS1289.5.4.1)	87.5	88.0	88.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	3.0	2.5	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	105.0	105.5	105.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC

Material Test Report


Report Number: D21673-25
Issue Number: 1
Date Issued: 02/12/2021
Client: Excell Gray Bruni
 12 Allied Drive, Tullamarine Vic 3043
Project Number: D21673
Project Name: Riverwalk Estate Stage 30 - Level one
Project Location: Werribee
Work Request: 4013
Date Sampled: 30/11/2021
Dates Tested: 30/11/2021 - 01/12/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Site Selection: Selected by Client
Location: Riverwalk Estate Stage 30 - Level one
Material: Silty Clay
Material Source: Imported



Deer Park Laboratory
 17 Walhalla Way Ravenhall VIC 3023
 Phone: 0435 751 756
 Email: ehippola@terrafirmalabs.com.au



Accredited for compliance with ISO/IEC 17025 - Testing


 Approved Signatory: Eranda Hippola
 Laboratory Manager
 NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-4013A	D21-4013B	D21-4013C
Test Number	72	73	74
Date Tested	30/11/2021	30/11/2021	30/11/2021
Time Tested	14:30	14:45	15:00
Test Request #/Location	Lot 3002	Lot 3006	Lot 3010
Layer / Reduced Level	Layer 06	Layer 06	Layer 06
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	2.00	1.96	2.04
Field Moisture Content %	24.2	24.7	24.5
Field Dry Density (FDD) t/m ³	1.61	1.57	1.64
Peak Converted Wet Density t/m ³	1.99	1.95	1.96
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	25.9	25.3	23.4
Adj. Field Moisture Content % (AS1289.5.4.1)	24.2	24.7	24.5
Moisture Ratio % (AS1289.5.4.1)	93.5	97.5	104.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	1.5	0.5	-1.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	100.5	100.5	104.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:
 Positive values = test is dry of OMC
 Negative values = test is wet of OMC