Riverwalk Stage 23B

GITA Inspection Verification Report

Prepared For:	Excell Gray Bruni
Report Number	D21568A V1
Version Release Date	29 Jul 2021
Report Released By	C Caulfield
Title	Project Manager
Signature	

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Appendices

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 Stage 23B. This work was conducted over the period of 20/04/2021 to 27/07/2021.

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 2301 through to 2321 and 2340, bounded by streets Geelong Road and Supple 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: 10855FP01) 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 1500m^2), the minimum testing frequency is 1 test per layer per material type per 2500m^2 or 1 test per 500m^3 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.

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 to have been conducted within the house allotment but may have been verified by testing conducted within up to a 2500m^2 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 material 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 material 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 (D21568D1, 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 37 density tests (Hilf method in accordance with 1289 5.7.1) were undertaken with 1 failed results. The contractor was notified of any failed tests and the failed areas were ripped, watered, compacted and then re-tested to confirm compliance with the specification. 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.

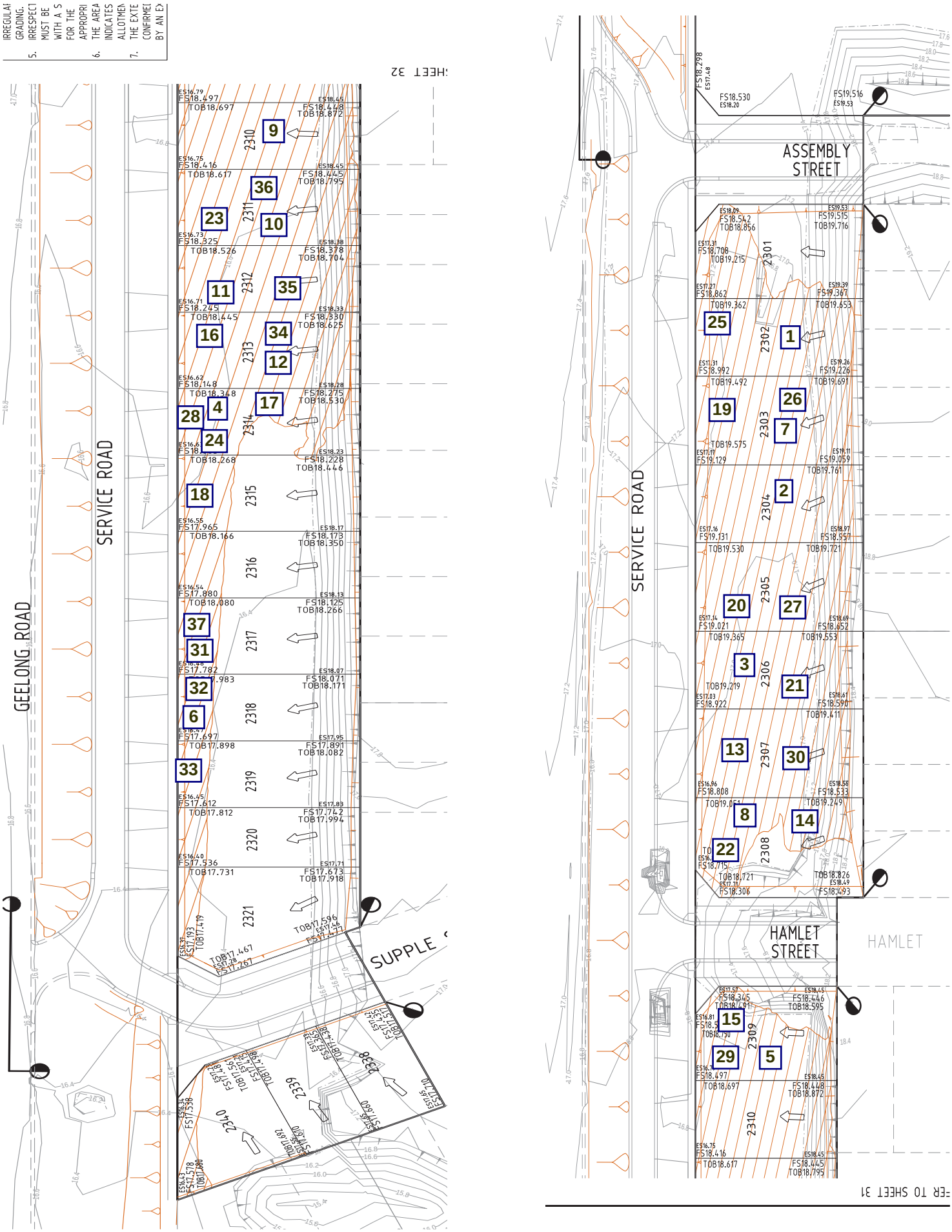
5 Statement of Compliance

The intention of this report is to provide a description of the earthworks construction for Stage 23B at Riverwalk. For completed fill areas of greater than 300mm, and for works completed between 20/04/2021 and 27/07/2021, 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 23B of Riverwalk was observed to be constructed in compliance with the requirements of the Technical Specification.

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



terra firma laboratories

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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, Stage 23B
Reference:	D21568 D1

Appendix 2: Compaction Test Register and Test Certificates

Compaction Test Register

Client: Excell Gray Bruni
Project: Riverwalk Stage 23B
Project No: D21568
Specification: 95%

Date:	Test No:	Layer:	Retest of:	Density:	Pass/Fail:	Lot No:	Report No:
20/04/2021	1	Layer 1		106.5%	Pass	Lot 2302	D21568-1
20/04/2021	2	Layer 1		104.5%	Pass	Lot 2304	D21568-1
20/04/2021	3	Layer 1		104.0%	Pass	Lot 2306	D21568-1
20/04/2021	4	Layer 1		105.0%	Pass	Lot 2314	D21568-1
20/04/2021	5	Layer 1		100.5%	Pass	Lot 2316	D21568-1
20/04/2021	6	Layer 1		98.5%	Pass	Lot 2318	D21568-1
22/04/2021	7	Layer 3		102.0%	Pass	Lot 2303	D21568-2
22/04/2021	8	Layer 3		101.0%	Pass	Lot 2308	D21568-2
22/04/2021	9	Layer 3		102.0%	Pass	Lot 2310	D21568-2
23/04/2021	10	Layer 4		101.0%	Pass	Lot 2311	D21568-3
23/04/2021	11	Layer 4		102.5%	Pass	Lot 2312	D21568-3
23/04/2021	12	Layer 4		100.5%	Pass	Lot 2313	D21568-3
24/04/2021	13	Layer 5		98.0%	Pass	Lot 2307	D21568-4
24/04/2021	14	Layer 5		98.0%	Pass	Lot 2308	D21568-4
24/04/2021	15	Layer 5		96.5%	Pass	Lot 2309	D21568-4
26/04/2021	16	Layer 6		99.0%	Pass	Lot 2313	D21568-7
26/04/2021	17	Layer 6		101.5%	Pass	Lot 2314	D21567-7
26/04/2021	18	Layer 6		100.0%	Pass	Lot 2315	D21567-7
27/04/2021	19	Layer 6		95.0%	Pass	Lot 2303	D21568-5
27/04/2021	20	Layer 6		97.0%	Pass	Lot 2305	D21568-5
27/04/2021	21	Layer 6		97.5%	Pass	Lot 2306	D21568-5
28/04/2021	22	Layer 7		103.0%	Pass	Lot 2308	D21568-6
28/04/2021	23	Layer 7		106.5%	Pass	Lot 2311	D21568-6
28/04/2021	24	Layer 7		104.0%	Pass	Lot 2314	D21568-6
29/04/2021	25	Layer 8		101.5%	Pass	Lot 2302	D21568-8
29/04/2021	26	Layer 8		101.0%	Pass	Lot 2303	D21568-8
29/04/2021	27	Layer 8		99.5%	Pass	Lot 2305	D21568-8
30/04/2021	28	Layer 8		102.0%	Pass	Lot 2314	D21568-9
30/04/2021	29	Layer 8		101.5%	Pass	Lot 2309	D21568-9
30/04/2021	30	Layer 8		100.5%	Pass	Lot 2307	D21568-9
2/06/2021	31	Layer 9		94.5%	Fail	Lot 2317	D21568-10
2/06/2021	32	Layer 9		102.0%	Pass	Lot 2318	D21568-10
2/06/2021	33	Layer 9		97.5%	Pass	Lot 2319	D21568-10
3/06/2021	34	Layer 09		99.5%	Pass	Lot 2313	D21568-11
3/06/2021	35	Layer 09		100.0%	Pass	Lot 2312	D21568-11
3/06/2021	36	Layer 09		99.5%	Pass	Lot 2311	D21568-11
27/07/2021	37	Layer 9	Test #31	101.0%	Pass	Lot 2317	D21568-12

Material Test Report

Report Number: D21568-1
Issue Number: 1
Date Issued: 22/04/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3024
Date Sampled: 20/04/2021 14:30
Dates Tested: 20/04/2021 - 22/04/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Stage 23B - Level one
Material: gravelly CLAY
Material Source: onsite

terra firma laboratories
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

NATA WORLD RECOGNISED ACCREDITATION

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	D21-3024A	D21-3024B	D21-3024C	D21-3024D	D21-3024E	D21-3024F
Test Number	1	2	3	4	5	6
Date Tested	20/04/2021	20/04/2021	20/04/2021	20/04/2021	20/04/2021	20/04/2021
Time Tested	**	**	**	**	**	**
Test Request #/Location	Lot 2302	Lot 2304	Lot 2306	Lot 2314	Lot 2316	Lot 2318
Layer / Reduced Level	Layer 1	Layer 1	Layer 1	Layer 1	Layer 1	Layer 1
Thickness of Layer (mm)	300	300	300	300	300	300
Soil Description	gravelly CLAY	gravelly CLAY	gravelly CLAY	gravelly CLAY	gravelly CLAY	gravelly CLAY
Test Depth (mm)	275	275	275	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	6	5	5	5	2	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**	**	**	0
Field Wet Density (FWD) t/m^3	2.18	2.14	2.15	2.16	2.03	1.88
Field Moisture Content %	9.6	9.7	8.8	8.4	9.5	8.3
Field Dry Density (FDD) t/m^3	2.00	1.96	1.98	2.00	1.86	1.74
Peak Converted Wet Density t/m^3	**	**	**	**	**	1.90
Adjusted Peak Converted Wet Density t/m^3	2.05	2.05	2.06	2.06	2.02	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	12.6	13.0	11.8	11.4	13.0	12.5
Adj. Field Moisture Content % (AS1289.5.4.1)	9.0	9.3	8.4	8.0	9.3	8.3
Moisture Ratio % (AS1289.5.4.1)	**	**	**	**	**	66.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	71.0	71.5	71.0	70.0	71.5	**
Moisture Variation (Wv) %	**	**	**	**	**	4.5
Adjusted Moisture Variation %	3.5	3.5	3.5	3.5	3.5	**
Hilf Density Ratio (%)	**106.5**	**104.5**	**104.0**	**105.0**	**100.5**	**98.5**
Compaction Method	**Standard**	**Standard**	**Standard**	**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: D21568-2
Issue Number: 1
Date Issued: 28/04/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3039
Date Sampled: 22/04/2021
Dates Tested: 22/04/2021 - 27/04/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk Stage 23B - Level one
Material: Clay
Material Source: On Site

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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3039A	D21-3039B	D21-3039C
Test Number	7	8	9
Date Tested	22/04/2021	22/04/2021	22/04/2021
Time Tested	**	**	**
Test Request #/Location	Lot 2303	Lot 2308	Lot 2310
Layer / Reduced Level	Layer 3	Layer 3	Layer 3
Thickness of Layer (mm)	300	300	300
Soil Description	Gravelly CLAY	Gravelly CLAY	Gravelly 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	2.04	2.03	2.05
Field Moisture Content %	10.0	10.2	13.2
Field Dry Density (FDD) t/m^3	1.86	1.84	1.81
Peak Converted Wet Density t/m^3	2.01	2.01	2.01
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	13.9	13.8	17.0
Adj. Field Moisture Content % (AS1289.5.4.1)	10.0	10.2	13.2
Moisture Ratio % (AS1289.5.4.1)	72.0	74.0	77.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	4.0	3.5	3.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**102.0**	**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: **D21568-3**
Issue Number: 1
Date Issued: 28/04/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3047
Date Sampled: 23/04/2021 13:00
Dates Tested: 23/04/2021 - 27/04/2021
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 23B - Level one
Material: Clay
Material Source: On site

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Snr lab Tech
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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3047A	D21-3047B	D21-3047C
Test Number	10	11	12
Date Tested	23/04/2021	23/04/2021	23/04/2021
Time Tested	15:04	15:04	15:04
Test Request #/Location	Lot 2311	Lot 2312	Lot 2313
Layer / Reduced Level	Layer 4	Layer 4	Layer 4
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
Field Wet Density (FWD) t/m^3	1.96	2.21	1.96
Field Moisture Content %	11.1	10.8	10.0
Field Dry Density (FDD) t/m^3	1.76	2.00	1.78
Peak Converted Wet Density t/m^3	1.94	2.15	1.95
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Moisture Variation (Wv) %	4.5	3.5	4.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**101.0**	**102.5**	**100.5**
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: D21568-4
Issue Number: 1
Date Issued: 30/04/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3048
Date Sampled: 24/04/2021
Dates Tested: 24/04/2021 - 29/04/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk stage 23 B - 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	D21-3048A	D21-3048B	D21-3048C
Test Number	13	14	15
Date Tested	24/04/2021	24/04/2021	24/04/2021
Time Tested	10:55	11:00	11:10
Test Request #/Location	Lot 2307	Lot 2308	Lot 2309
Layer / Reduced Level	Layer 5	Layer 5	Layer 5
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
Field Wet Density (FWD) t/m^3	2.07	2.04	2.00
Field Moisture Content %	16.3	18.0	15.9
Field Dry Density (FDD) t/m^3	1.78	1.73	1.72
Peak Converted Wet Density t/m^3	2.11	2.08	2.07
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	**	17.7	15.4
Adj. Field Moisture Content % (AS1289.5.4.1)	16.3	18.0	15.9
Moisture Ratio % (AS1289.5.4.1)	101.0	101.5	103.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	0.0	-0.5	-0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**98.0**	**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: D21568-5
Issue Number: 1
Date Issued: 03/05/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3060
Date Sampled: 27/04/2021
Dates Tested: 27/04/2021 - 30/04/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk stage 23B -Level one
Material: Clay
Material Source: On site

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NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3060A	D21-3060B	D21-3060C
Test Number	19	20	21
Date Tested	27/04/2021	27/04/2021	27/04/2021
Time Tested	14:00	13:55	13:45
Test Request #/Location	Lot 2303	Lot 2305	Lot 2306
Layer / Reduced Level	Layer 6	Layer 6	Layer 6
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)	**	**	**
Field Wet Density (FWD) t/m^3	1.98	2.00	2.08
Field Moisture Content %	13.5	13.3	16.4
Field Dry Density (FDD) t/m^3	1.74	1.76	1.79
Peak Converted Wet Density t/m^3	2.08	2.06	2.13
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	13.0	12.9	15.8
Adj. Field Moisture Content % (AS1289.5.4.1)	13.5	13.3	16.4
Moisture Ratio % (AS1289.5.4.1)	104.0	103.0	104.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	-0.5	-0.5	-0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**95.0**	**97.0**	**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: D21568-6
Issue Number: 1
Date Issued: 04/05/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3068
Date Sampled: 28/04/2021
Dates Tested: 28/04/2021 - 03/05/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk stage 23B -Level one
Material: Clay
Material Source: On site

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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	D21-3068A	D21-3068B	D21-3068C
Test Number	22	23	24
Date Tested	28/04/2021	28/04/2021	28/04/2021
Time Tested	15:26	15:26	15:26
Test Request #/Location	Lot 2308	Lot 2311	Lot 2314
Layer / Reduced Level	Layer 7	Layer 7	Layer 7
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	2.16	2.17	2.07
Field Moisture Content %	13.8	12.1	12.6
Field Dry Density (FDD) t/m^3	1.90	1.94	1.84
Peak Converted Wet Density t/m^3	2.10	2.04	1.99
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	14.4	14.3	15.1
Adj. Field Moisture Content % (AS1289.5.4.1)	13.8	12.1	12.6
Moisture Ratio % (AS1289.5.4.1)	96.0	84.5	83.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	0.5	2.0	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**103.0**	**106.5**	**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: D21568-7
Issue Number: 1
Date Issued: 05/05/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3049
Dates Tested: 26/04/2021 - 04/05/2021
Sampling Method: AS 1012.1 7.2.2 - Sampling for Consistence Test Only
Location: Riverwalk stage 23 B -Level one

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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3049A	D21-3049B	D21-3049C
Test Number	16	17	18
Date Tested	26/04/2021	26/04/2021	26/04/2021
Time Tested	12:35	12:45	13:00
Test Request #/Location	Lot 2313	Lot 2314	Lot 2315
Layer / Reduced Level	Layer 6	Layer 6	Layer 6
Thickness of Layer (mm)	300	300	300
Soil Description	On site	On site	On site
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	2.02	2.03
Field Moisture Content %	11.1	11.7	10.1
Field Dry Density (FDD) t/m^3	1.79	1.80	1.84
Peak Converted Wet Density t/m^3	2.01	1.99	2.03
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	14.3	15.8	14.4
Adj. Field Moisture Content % (AS1289.5.4.1)	11.1	11.7	10.1
Moisture Ratio % (AS1289.5.4.1)	77.5	74.0	70.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	3.0	4.0	4.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**99.0**	**101.5**	**100.0**
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: D21568-8
Issue Number: 1
Date Issued: 06/05/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3077
Date Sampled: 29/04/2021
Dates Tested: 29/04/2021 - 05/05/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk stage 23B - 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	D21-3077A	D21-3077B	D21-3077C
Test Number	25	26	27
Date Tested	29/04/2021	29/04/2021	29/04/2021
Time Tested	**	**	**
Test Request #/Location	Lot 2302	Lot 2303	Lot 2305
Layer / Reduced Level	Layer 8	Layer 8	Layer 8
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	2.09	2.11	2.03
Field Moisture Content %	13.8	11.6	14.1
Field Dry Density (FDD) t/m^3	1.84	1.89	1.78
Peak Converted Wet Density t/m^3	2.06	2.09	2.04
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	15.3	11.2	15.4
Adj. Field Moisture Content % (AS1289.5.4.1)	13.8	11.6	14.1
Moisture Ratio % (AS1289.5.4.1)	90.0	103.5	91.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	1.5	-0.5	1.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**101.5**	**101.0**	**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: D21568-9
Issue Number: 1
Date Issued: 07/05/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3086
Date Sampled: 30/04/2021
Dates Tested: 30/04/2021 - 07/05/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk stage 23B - 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	D21-3086A	D21-3086B	D21-3086C
Test Number	28	29	30
Date Tested	30/04/2021	30/04/2021	30/04/2021
Time Tested	13:30	13:40	13:50
Test Request #/Location	Lot 2314	Lot 2309	Lot 2307
Layer / Reduced Level	Layer 8	Layer 8	Layer 8
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
Field Wet Density (FWD) t/m^3	2.01	2.08	2.09
Field Moisture Content %	10.3	10.2	10.6
Field Dry Density (FDD) t/m^3	1.82	1.88	1.89
Peak Converted Wet Density t/m^3	1.97	2.04	2.08
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	13.2	13.5	13.8
Adj. Field Moisture Content % (AS1289.5.4.1)	10.3	10.2	10.6
Moisture Ratio % (AS1289.5.4.1)	78.0	75.5	77.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	3.0	3.5	3.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**102.0**	**101.5**	**100.5**
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: D21568-10
Issue Number: 1
Date Issued: 07/06/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3257
Date Sampled: 03/06/2021
Dates Tested: 03/06/2021 - 04/06/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk stage 23B - Level one
Material: Clay
Material Source: On site

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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3257A	D21-3257B	D21-3257C
Test Number	34	35	36
Date Tested	03/06/2021	03/06/2021	03/06/2021
Time Tested	12:30	12:30	12:30
Test Request #/Location	LOT 2313	LOT 2312	LOT 2311
Layer / Reduced Level	Layer 09	Layer 09	Layer 09
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	2.10	2.04
Field Moisture Content %	9.9	9.8	10.4
Field Dry Density (FDD) t/m^3	1.87	1.91	1.85
Peak Converted Wet Density t/m^3	2.06	2.10	2.05
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	13.2	12.8	13.6
Adj. Field Moisture Content % (AS1289.5.4.1)	9.9	9.8	10.4
Moisture Ratio % (AS1289.5.4.1)	75.5	77.0	76.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	3.0	3.0	3.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**99.5**	**100.0**	**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: **D21568-11**
Issue Number: 1
Date Issued: 08/06/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3249
Date Sampled: 02/06/2021
Dates Tested: 02/06/2021 - 07/06/2021
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 23B - Level one
Material: Clay
Material Source: On site

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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3249A	D21-3249B	D21-3249C
Test Number	31	32	33
Date Tested	02/06/2021	02/06/2021	02/06/2021
Time Tested	15:44	15:44	15:44
Test Request #/Location	LOT 2317	LOT 2318	LOT 2319
Layer / Reduced Level	Layer 9	Layer 9	Layer 9
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	2.00	2.06	2.03
Field Moisture Content %	15.1	22.8	10.6
Field Dry Density (FDD) t/m^3	1.74	1.68	1.83
Peak Converted Wet Density t/m^3	2.11	2.02	2.08
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	14.9	27.3	13.3
Adj. Field Moisture Content % (AS1289.5.4.1)	15.1	22.8	10.6
Moisture Ratio % (AS1289.5.4.1)	102.0	83.5	80.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	-0.5	4.0	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**94.5**	**102.0**	**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: D21568-12
Issue Number: 1
Date Issued: 28/07/2021
Client: Excell Gray Bruni
12 Allied Drive, Tullamarine Vic 3043
Project Number: D21568
Project Name: Riverwalk Estate Stage 23B - Level one
Project Location: Werribee
Work Request: 3498
Date Sampled: 27/07/2021
Dates Tested: 27/07/2021 - 27/07/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Riverwalk stage 23B -Level one
Material: Clay
Material Source: On site

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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3498A		
Test Number	37		
Date Tested	27/07/2021		
Time Tested	09:55		
Test Request #/Location	Retest of 31		
Chainage (m)	Lot 2317		
Location Offset (m)	**		
Layer / Reduced Level	Layer 9		
Thickness of Layer (mm)	300		
Soil Description	Clay		
Test Depth (mm)	275		
Sieve used to determine oversize (mm)	19.0		
Percentage of Wet Oversize (%)	0		
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0		
Field Wet Density (FWD) t/m^3	2.03		
Field Moisture Content %	29.4		
Field Dry Density (FDD) t/m^3	1.57		
Peak Converted Wet Density t/m^3	2.01		
Adjusted Peak Converted Wet Density t/m^3	**		
Adj. Optimum Moisture Content % (AS1289.5.4.1)	31.5		
Adj. Field Moisture Content % (AS1289.5.4.1)	29.4		
Moisture Ratio % (AS1289.5.4.1)	93.5		
Adjusted Moisture Ratio % (AS1289.5.4.1)	**		
Moisture Variation (Wv) %	2.0		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	**101.0**		
Compaction Method	**Standard**		
Report Remarks	**		

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