

Acacia Estate Stage 9

GITA Inspection Verification Report

Prepared For: Streetworks Pty Ltd

Report Number 10514A V2

Version Release Date 9 May 2019

Report Released By Chris Caulfield

Title Project Manager

Signature



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1 Introduction

Terra Firma Laboratories was engaged by *Streetworks Pty Ltd* as the Geotechnical Inspection and Testing Authority (GITA) to provide Level 1 supervision and testing works on the earthworks component for Acacia Estate Stage 9. This work was conducted over the period of 11/09/2019 to 26/09/2018.

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 901, 902, 917, 918 to 924, 929, 930, 939, and 940 to 955. The site will be a residential estate.

The area on which fill was placed is shown on site plan (Appendix 1: *Test Location Plan*) based on drawings prepared by GPR Consulting, Drawing Reference 0055-09-R02/R03 and provided by *Streetworks Pty Ltd*.

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 (Ref 0055-09-R01) for compaction control requirements was provided by *Streetworks Pty Ltd* 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.

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

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 (10514D1, 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 30 density tests (Hilf method in accordance with 1289 5.7.1) were undertaken with 5 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 9 at Acacia Estate. For completed fill areas of greater than 300mm, and for works completed between 11/09/2018 and 26/09/2018, 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 9 of Acacia Estate was observed to be constructed in compliance with the requirements of the Technical Specification.



Compaction Test Register

Client: Streetworks Pty Ltd **Project No:** 10514
Project: Acacia Estate Stage 9 **Specification:** 95%

Date:	Test No:	Layer:	Retest of:	Density:	Pass/Fail:	Lot No:	Report No:
11/09/2018	1	L1		96	Pass	943	10514-1
11/09/2018	2	L1		92	Fail	944	10514-1
11/09/2018	3	L1		92	Fail	944	10514-1
12/09/2018	4	L1	2	100	Pass	944	10514-4
12/09/2018	5	L1	3	91	Fail	944	10514-4
12/09/2018	6	L1		96.5	Pass	945	10514-4
12/09/2018	7	L1		100	Pass	945	10514-4
12/09/2018	8	L1		97	Pass	946	10514-4
13/09/2018	9	L1		99.5	Pass	940	10514-5
13/09/2018	10	L1		96.5	Pass	941	10514-5
13/09/2018	11	L2		104	Pass	942	10514-5
17/09/2018	12	L1	5	94.5	Fail	944	10514-6
17/09/2018	13	L1		96	Pass	948	10514-6
17/09/2018	14	L1		94	Fail	950	10514-6
17/09/2018	15	L2		97.5	Pass	954	10514-6
18/09/2018	16	L1	12	99	Pass	944	10514-7
18/09/2018	17	L1	14	104.5	Pass	950	10514-7
18/09/2018	18	L3		98.5	Pass	953	10514-7
18/09/2018	19	L3		99.5	Pass	951	10514-7
18/09/2018	20	L2		99	Pass	949	10514-7
19/09/2018	21	L2		97.5	Pass	952	10514-2
19/09/2018	22	L1		102	Pass	918	10514-2
20/09/2018	23	L1		96.5	Pass	922	10514-3
20/09/2018	24	L1		99.5	Pass	923	10514-3
20/09/2018	25	L2		98.5	Pass	947	10514-3
20/09/2018	26	L1		103.5	Pass	901	10514-3
21/09/2018	27	L3		100.5	Pass	921	10514-8
21/09/2018	28	L1		99	Pass	919	10514-8
21/09/2018	29	L1		98	Pass	920	10514-8
26/09/2018	30	L1		98.5	Pass	902	10514-9



COMPACTION ASSESSMENT

BY NUCLEAR GAUGE METHOD

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report No 10514-1
 date of issue 14-Sep-2018

Client	Streetworks
Client address	45 Commercial Drive, Pakenham, 3810
Project	Acacia Stage 9
Location	Cranbourne South

Feature	Block Fill
Layer thickness (mm)	300

tested by	SAP
time	All Day
date	11-Sep-2018
checked by	CC

Field density test procedure AS1289.2.1.1 and 5.8.1

Test No		1	2	3		
location	Lot No	943	944	944		
Sampling procedures AS1289.1.1,1.2.1-Clause 6.4(b)						
depth from F.S.L.	m	Layer 1	Layer 1	Layer 1		
measurement depth	mm	275	275	275		
field wet density	t/m ³	2.00	1.91	1.95		
field dry density	t/m ³	1.48	1.50	1.67		
field moisture content	%	35.5	26.8	16.4		

laboratory compaction procedure AS1289 5.7.1

compactive effort		standard	standard	standard		
oversize material retained on AS sieve	mm	19.0	19.0	19.0		
percent of oversize material	wet	0	0	0		
peak converted wet density	t/m ³	2.08	2.07	2.11		
adjusted peak converted wet density	t/m ³	-	-	-		

moisture variation from OMC (-dry,+wet)%		1.0	3.0	1.0		
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Moisture ratio	%	102.5	114.0	105.0		
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Hilf density ratio (R_{HD})	%	96.0	92.0	92.0		
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material description

Silty CLAY



The results of the tests, calibrations and/or measurements included in this document are traceable to Australian national standards.
 Accredited for compliance with ISO/IEC 17025- Testing

LABORATORY ACCREDITATION No 15357

Approved Signature

C Caulfield

Material Test Report

Report Number: 10514-2
Issue Number: 2 - This version supersedes all previous issues
Date Issued: 29/03/2019
Client: Streetworks Pty Ltd
 45 Commercial Drive, Pakenham Vic 3810
Project Number: 10514
Project Name: Acacia Stage 9
Project Location: Cranbourne South
Client Reference: 05262
Work Request: 154
Date Sampled: 19/09/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95%
Material: silty Clay



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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Chris Caulfield
Project Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

	P18-154A	P18-154B
Sample Number		
Test Number	21	22
Date Tested	19/09/2018	19/09/2018
Time Tested	13:30	13:30
Test Request #/Location	Lot 952	Lot 918
Chainage (m)	**	**
Location Offset (m)	**	**
Layer / Reduced Level	Layer 2	Layer 3
Thickness of Layer (mm)	300	300
Soil Description	Silty Clay	Silty Clay
Test Depth (mm)	275	275
Sieve used to determine oversize (mm)	19.0	19.0
Percentage of Wet Oversize (%)	**	**
Field Wet Density (FWD) t/m ³	1.99	2.08
Field Moisture Content %	16.6	20.7
Field Dry Density (FDD) t/m ³	1.71	1.72
Peak Converted Wet Density t/m ³	2.04	2.03
Adjusted Peak Converted Wet Density t/m ³	**	**
Moisture Ratio % (AS 1289.5.4.1)	103.0	104.0
Adjusted Moisture Ratio % (AS 1289.5.4.1)	**	**
Moisture Variation (Wv) %	-0.5	-0.5
Adjusted Moisture Variation %	**	**
Hilf Density Ratio (%)	97.5	102.0
Compaction Method	Standard	Standard

Moisture Variation Note:

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

Material Test Report

Report Number: 10514-3
Issue Number: 2 - This version supersedes all previous issues
Date Issued: 29/03/2019
Client: Streetworks Pty Ltd
 45 Commercial Drive, Pakenham Vic 3810
Project Number: 10514
Project Name: Acacia Stage 9
Project Location: Cranbourne South
Client Reference: 05264
Work Request: 161
Date Sampled: 20/09/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95%
Material: Silty Clay



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	P18-161A	P18-161B	P18-161C	P18-161D
Test Number	23	24	25	26
Date Tested	20/09/2018	20/09/2018	20/09/2018	20/09/2018
Time Tested	16:00	16:00	16:00	16:00
Test Request #/Location	Lot 922	Lot 923	Lot 947	Lot 901
Chainage (m)	**	**	**	**
Location Offset (m)	**	**	**	**
Layer / Reduced Level	Layer 1	Layer 1	Layer 2	Layer 1
Thickness of Layer (mm)	300	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	0.0	0.0	0.0
Field Wet Density (FWD) t/m ³	1.97	1.99	1.96	2.10
Field Moisture Content %	22.9	22.6	26.2	18.1
Field Dry Density (FDD) t/m ³	1.61	1.62	1.55	1.78
Peak Converted Wet Density t/m ³	2.05	2.00	1.99	2.03
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Ratio % (AS 1289.5.4.1)	105.0	104.5	105.0	106.5
Adjusted Moisture Ratio % (AS 1289.5.4.1)	**	**	**	**
Moisture Variation (Wv) %	-1.0	-1.0	-1.0	-1.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	96.5	99.5	98.5	103.5
Compaction Method	Standard	Standard	Standard	Standard

Moisture Variation Note:

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

Material Test Report

Report Number: 10514-4
Issue Number: 2 - This version supersedes all previous issues
Date Issued: 29/03/2019
Client: Streetworks Pty Ltd
 45 Commercial Drive, Pakenham Vic 3810
Project Number: 10514
Project Name: Acacia Stage 9
Project Location: Cranbourne South
Work Request: 104
Date Sampled: 12/09/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95%
Material: silty Clay



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Approved Signatory: Chris Caulfield
 Project Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	P18-104A	P18-104B	P18-104C	P18-104D	P18-104E
Test Number	4	5	6	7	8
Date Tested	12/09/2018	12/09/2018	12/09/2018	12/09/2018	12/09/2018
Time Tested	14:45	14:45	14:45	14:45	14:45
Test Request #/Location	944 Re-test #2	944 Re-test #3	945	930	946
Chainage (m)	**	**	**	**	**
Location Offset (m)	**	**	**	**	**
Layer / Reduced Level	Layer 1	Layer 1	Layer 2	Layer 1	Layer 2
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	0.0	0.0	0.0	0.0
Field Wet Density (FWD) t/m ³	1.94	1.97	1.97	1.94	1.92
Field Moisture Content %	33.5	14.7	22.1	23.7	27.0
Field Dry Density (FDD) t/m ³	1.45	1.71	1.61	1.57	1.51
Peak Converted Wet Density t/m ³	1.93	2.17	2.04	1.93	1.97
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**
Moisture Ratio % (AS 1289.5.4.1)	111.5	102.0	99.5	103.5	98.5
Adjusted Moisture Ratio % (AS 1289.5.4.1)	**	**	**	**	**
Moisture Variation (Wv) %	-3.0	-0.5	0.0	-0.5	0.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	100.0	91.0	96.5	100.0	97.0
Compaction Method	Standard	Standard	Standard	Standard	Standard

Moisture Variation Note:

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

Material Test Report

Report Number: 10514-5
Issue Number: 1
Date Issued: 24/09/2018
Client: Streetworks Pty Ltd
 45 Commercial Drive, Pakenham Vic 3810
Project Number: 10514
Project Name: Acacia Stage 9
Project Location: Cranbourne South
Client Reference: 05260
Work Request: 113
Date Sampled: 13/09/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95%



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Approved Signatory: Chris Caulfield
Project Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	P18-113A	P18-113B	P18-113C
Test Number	9	10	11
Date Tested	13/09/2018	13/09/2018	13/09/2018
Time Tested	14:30	14:30	14:30
Test Request #/Location	Lot 940	Lot 941	Lot 942
Chainage (m)	**	**	**
Location Offset (m)	**	**	**
Layer / Reduced Level	Layer 1	Layer 1	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	0.0	0.0
Field Wet Density (FWD) t/m ³	1.95	1.92	2.10
Field Moisture Content %	29.5	26.6	27.1
Field Dry Density (FDD) t/m ³	1.51	1.52	1.65
Peak Converted Wet Density t/m ³	1.96	1.99	2.01
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Ratio % (AS 1289.5.4.1)	104.0	104.5	102.5
Adjusted Moisture Ratio % (AS 1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	-1.0	-1.0	-0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	99.5	96.5	104.0
Compaction Method	Standard	Standard	Standard

Moisture Variation Note:

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

Material Test Report

Report Number: 10514-6
Issue Number: 2 - This version supersedes all previous issues
Date Issued: 29/03/2019
Client: Streetworks Pty Ltd
 45 Commercial Drive, Pakenham Vic 3810
Project Number: 10514
Project Name: Acacia Stage 9
Project Location: Cranbourne South
Client Reference: 05261
Work Request: 130
Date Sampled: 17/09/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95%
Material: Silty Clay



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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Chris Caulfield
Project Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	P18-130A	P18-130B	P18-130C	P18-130D
Test Number	12	13	14	15
Date Tested	17/09/2018	17/09/2018	17/09/2018	17/09/2018
Time Tested	15:00	15:00	15:00	15:00
Test Request #/Location	944 Re-test #5	948	950	954
Chainage (m)	**	**	**	**
Location Offset (m)	**	**	**	**
Layer / Reduced Level	Layer 1	Layer 1	Layer 1	Layer 2
Thickness of Layer (mm)	300	300	300	300
Soil Description	SiltyClay	SiltyClay	SiltyClay	SiltyClay
Test Depth (mm)	275	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	0.0	0.0	0.0
Field Wet Density (FWD) t/m ³	1.95	1.93	1.84	1.95
Field Moisture Content %	21.4	22.8	17.4	23.1
Field Dry Density (FDD) t/m ³	1.61	1.57	1.57	1.59
Peak Converted Wet Density t/m ³	2.07	2.01	1.96	2.00
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Ratio % (AS 1289.5.4.1)	105.0	114.0	99.5	105.5
Adjusted Moisture Ratio % (AS 1289.5.4.1)	**	**	**	**
Moisture Variation (Wv) %	-1.0	-2.5	0.0	-1.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	94.5	96.0	94.0	97.5
Compaction Method	Standard	Standard	Standard	Standard

Moisture Variation Note:

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

Material Test Report

Report Number: 10514-7
Issue Number: 1
Date Issued: 24/09/2018
Client: Streetworks Pty Ltd
 45 Commercial Drive, Pakenham Vic 3810
Project Number: 10514
Project Name: Acacia Stage 9
Project Location: Cranbourne South
Client Reference: 5599
Work Request: 141
Date Sampled: 18/09/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95%
Site Selection: AS 1289.1.4.1
Material: Silty Clay



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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Chris Caulfield
Project Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	P18-141A	P18-141B	P18-141C	P18-141D	P18-141E
Test Number	16	17	18	19	20
Date Tested	18/09/2018	18/09/2018	18/09/2018	18/09/2018	18/09/2018
Time Tested	14:00	14:00	14:00	14:00	14:00
Test Request #/Location	Lot 944, retest #12	Lot 950, retest #14	Lot 953	Lot 951	Lot 949
Chainage (m)	**	**	**	**	**
Location Offset (m)	**	**	**	**	**
Layer / Reduced Level	Layer 1	Layer 1	Layer 3	Layer 3	Layer 2
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	silty Clay	silty Clay	silty Clay	silty Clay	silty Clay
Test Depth (mm)	275	275	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	0.0	0.0	0.0	0.0
Field Wet Density (FWD) t/m ³	2.00	2.11	1.99	2.01	2.07
Field Moisture Content %	25.0	24.3	17.0	31.2	18.6
Field Dry Density (FDD) t/m ³	1.60	1.70	1.70	1.53	1.75
Peak Converted Wet Density t/m ³	2.02	2.02	2.03	2.02	2.09
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**
Moisture Ratio % (AS 1289.5.4.1)	113.5	109.5	105.0	111.5	114.0
Adjusted Moisture Ratio % (AS 1289.5.4.1)	**	**	**	**	**
Moisture Variation (Wv) %	-3.0	-2.0	-0.5	-3.0	-2.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	99.0	104.5	98.5	99.5	99.0
Compaction Method	Standard	Standard	Standard	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: 10514-8
Issue Number: 1
Date Issued: 30/09/2018
Client: Streetworks Pty Ltd
 45 Commercial Drive, Pakenham Vic 3810
Project Number: 10514
Project Name: Acacia Stage 9
Project Location: Cranbourne South
Client Reference: 05265
Work Request: 179
Date Sampled: 21/09/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95%
Material: Silty Clay



Pakenham Laboratory
 47 National Avenue Parkenham VIC 3810
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Scott Benbow
Laboratory Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	P18-179A	P18-179B	P18-179C
Test Number	27	28	29
Date Tested	21/09/2018	21/09/2018	21/09/2018
Time Tested	**	**	**
Test Request #/Location	Lot 921	Lot 919	Lot 920
Chainage (m)	**	**	**
Location Offset (m)	**	**	**
Layer / Reduced Level	Layer 3	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	0.0	3.2
Field Wet Density (FWD) t/m ³	2.06	2.08	2.04
Field Moisture Content %	17.0	14.7	16.6
Field Dry Density (FDD) t/m ³	1.76	1.81	1.75
Peak Converted Wet Density t/m ³	2.05	2.10	**
Adjusted Peak Converted Wet Density t/m ³	**	**	2.08
Moisture Ratio % (AS 1289.5.4.1)	105.0	106.0	**
Adjusted Moisture Ratio % (AS 1289.5.4.1)	**	**	108.0
Moisture Variation (Wv) %	-0.5	-0.5	**
Adjusted Moisture Variation %	**	**	-0.5
Hilf Density Ratio (%)	100.5	99.0	98.0
Compaction Method	Standard	Standard	Standard

Moisture Variation Note:

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

Material Test Report

Report Number: 10514-9
Issue Number: 1
Date Issued: 08/10/2018
Client: Streetworks Pty Ltd
 45 Commercial Drive, Pakenham Vic 3810
Project Number: 10514
Project Name: Acacia Stage 9
Project Location: Cranbourne South
Client Reference: 05628
Work Request: 221
Date Sampled: 26/09/2018 09:00
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95%
Material: Silty Clay



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 47 National Avenue Parkenham VIC 3810
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Chris Caulfield
Project Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	P18-221A
Test Number	30
Date Tested	26/09/2018
Time Tested	09:00
Test Request #/Location	Lot 902
Chainage (m)	**
Location Offset (m)	**
Layer / Reduced Level	Layer 1
Thickness of Layer (mm)	300
Soil Description	Silty Clay
Test Depth (mm)	275
Sieve used to determine oversize (mm)	19.0
Percentage of Wet Oversize (%)	0.0
Field Wet Density (FWD) t/m ³	1.99
Field Moisture Content %	22.8
Field Dry Density (FDD) t/m ³	1.62
Peak Converted Wet Density t/m ³	2.01
Adjusted Peak Converted Wet Density t/m ³	**
Moisture Ratio % (AS 1289.5.4.1)	104.5
Adjusted Moisture Ratio % (AS 1289.5.4.1)	**
Moisture Variation (Wv) %	-1.0
Adjusted Moisture Variation %	**
Hilf Density Ratio (%)	98.5
Compaction Method	Standard

Moisture Variation Note:

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