

**SEE Civil Pty Ltd**  
**24A Ozone Street**  
**Chinderah NSW 2487**

Project 672803.00  
6 February 2018  
R.001.Rev1  
JB:AJM

Attention: Ronan Brady

Email: Ronan.Brady@seecivil.com.au

Dear Sirs

**Level 1 Geotechnical Inspection and Testing**  
**Providence Estate Stage 42A**  
**Barrams Road, South Ripley**

## 1. Introduction

This report presents the results of the inspection and testing of earthworks for the allotment filling at Providence Estate Stage 42A, Barrams Road, South Ripley. The fill was placed and tested during the period of 28 November 2017 to 30 January 2018.

The scope of testing and inspections provided by Douglas Partners Pty Ltd (DP) comprised 'Level 1' geotechnical inspection and testing as defined in AS 3798:2007 *"Guidelines on Earthworks for Commercial and Residential Developments"*, and as required by the project specification.

This report must be read in conjunction with the attached notes entitled *'About This Inspection Report'* and any other attached information.

## 2. Earthworks Activities

The extent of filling placed at the development, as covered by this report, is shown within the test locations noted in the Insitu Dry Density Test Results and test locations plan, attached to this report.

The specification shown on earthworks plan No. 790400-042A-CI-1120 prepared by Cardno Pty Ltd and supplied by SEE Civil Pty Ltd, required compaction to a minimum of 95% Standard dry density in accordance with the requirements of AS 3798:2007 *"Guidelines on Earthworks for Commercial and Residential Developments"*. No moisture specification was noted on the supplied drawings.

In general, the bulk earthworks operations comprised of stripping and grubbing of the existing surface, removal of pockets of unsuitable soils within areas of filling, then placement and compaction of cut to fill won from onsite to bring the ground level up to design surface level for the required works

The filling materials predominantly comprised sandy silty clays won from onsite cuts.

Filling materials were placed and spread by several scrapers and an 825 Compactor. Compaction was achieved using the 825 compactor, with loose layer thickness typically ranging from approximately 250 mm to 300 mm.

Inspections were made by a senior geotechnician from DP, who was present during the placement of filling. Following the compaction of each layer, where possible, the layer was tested to assess if the specified minimum dry density ratio had been achieved. All layers, including where density testing was not carried out, were proof rolled with a fully loaded water truck under the observation of the senior technician.

Testing was carried using the nuclear gauge method outlined in test method AS 1289 5.8.1. The relative compaction was determined using the Hilf Density Ratio method outlined in test method AS 1289 5.7.1. A total of 48 density tests were carried out during the earthworks. A summary of the test results is presented in Table 1.

**Table 1: Summary of Density Testing**

Item	Compaction	Moisture Variation
Specification	95% Std	N/A
No. of tests	48	48
Range	95.0 to 104.5% Std	1.0% to 4.5% Dry of OMC
No of tests outside specification	0	0
Mean	99.3% Std	2.2% dry of OMC

Note: OMC – Optimum Moisture Content for Standard compaction

### 3. Comments

DP undertook inspection and testing of earthworks in accordance with a 'Level 1' standard as defined in AS 3798:2007 "Guideline on Earthworks for Commercial and Residential Developments".

It is considered that the placement and compaction of the filling placed by SEE Civil Pty Ltd during the period of 28 November to 30 January 2018 has been carried out in general accordance with the requirements of the specification. DP does not undertake to guarantee the work of the contractor nor relieve their responsibility to produce a complete product conforming to the requirements of the specification.

For building on the controlled fill areas, consideration should be given by the user to the following:

- )] Possible disruption of the compacted filling by the installation of services;
- )] The possibility that additional filling has been placed before and after the dates of field density tests or at times when DP has not been notified that filling operations are in progress;
- )] Adequate containment of the filled areas;

- J The suitability of the filled land to support structure of various types without excessive deflection, in particular, the shrink-swell properties of the filling and natural soils must be considered in foundation/footing slab design in detailing future structure; and
- J Variation in filling depth.

#### 4. Limitations

Douglas Partners Pty Ltd (DP) has prepared this report for this project at Barrams Road, South Ripley in accordance with DP's proposal GLD170229 dated 17 August 2017. The work was carried out under DP's Conditions of Engagement. This report is provided for the exclusive use of SEE Civil Pty Ltd for this project only and for the purposes as described in the report. It should not be used by or relied upon for other projects or purposes on the same or other site or by a third party. Any party so relying upon this report beyond its exclusive use and purpose as stated above, and without the express written consent of DP, does so entirely at its own risk and without recourse to DP for any loss or damage. In preparing this report DP has necessarily relied upon information provided by the client and/or their agents.

The results provided in the report are indicative of the sub-surface conditions on the site only at the specific sampling and/or testing locations, and then only to the depths investigated and at the time the work was carried out. Sub-surface conditions can change abruptly due to variable geological processes and also as a result of human influences. Such changes may occur after DP's field testing has been completed.

DP's advice is based upon the conditions encountered during this investigation. The accuracy of the advice provided by DP in this report may be affected by undetected variations in ground conditions across the site between and beyond the sampling and/or testing locations. The advice may also be limited by budget constraints imposed by others or by site accessibility.

This report must be read in conjunction with all of the attached and should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion stated in this report.

This report, or sections from this report, should not be used as part of a specification for a project, without review and agreement by DP. This is because this report has been written as advice and opinion rather than instructions for construction.

Please contact the undersigned if you have any questions on this matter.

Yours faithfully  
**Douglas Partners Pty Ltd**



**Joshua Baker**  
Laboratory Manager

Reviewed by

**Andrew Middleton**  
Principal

Attachments:      About this Report  
                         Laboratory Test Results  
                         Test Location Plan

# About this Inspection Report

# Douglas Partners



## Introduction

These notes are provided to amplify DP's inspection report in regard to the limitations of carrying out inspection work. Not all notes are necessarily relevant to this report.

## Standards

This inspection report has been prepared by qualified personnel to current engineering standards of interpretation and analysis.

## Copyright and Limits of Use

This inspection report is the property of DP and is provided for the exclusive use of the client for the specific project and purpose as described in the report. It should not be used by a third party for any purpose other than to confirm that the construction works addressed in the report have been inspected as described. Use of the inspection report is limited in accordance with the Conditions of Engagement for the commission.

DP does not undertake to guarantee the works of the contractors or relieve them of their responsibility to produce a completed product conforming to the design.

## Reports

This inspection report may include advice or opinion that is based on engineering and/or geological interpretation, information provided by the client or the client's agent, and information gained from:

- an investigation report for the project (if available to DP);
- inspection of the work, exposed ground conditions, excavation spoil and performance of excavating equipment while DP was on site;
- investigation and testing that was carried out during the site inspection;
- anecdotal information provided by authoritative site personnel; and

- DP's experience and knowledge of local geology.

Such information may be limited by the frequency of any inspection or testing that was able to be practically carried out, including possible site or cost constraints imposed by the client/contractor(s). For these reasons, the reliability of this inspection report is limited by the scope of information on which it relies.

Every care is taken with the inspection report as it relates to interpretation of subsurface conditions and any recommendations or suggestions for construction or design. However, DP cannot anticipate or assume responsibility for:

- unexpected variations in subsurface conditions that are not evident from the inspection; and
- the actions of contractors responding to commercial pressures.

Should these issues occur, then additional advice should be sought from DP and, if required, amendments made.

This inspection report must be read in conjunction with any attached information. This inspection report should be kept in its entirety without separation of individual pages or sections. DP cannot be held responsible for interpretations or conclusions from review by others of this inspection report or test data, which are not otherwise supported by an expressed statement, interpretation, outcome or conclusion stated in this inspection report.

# Compaction Control Test Report



Douglas Partners Pty Ltd

Gold Coast Laboratory

Unit 7/ 482, Scottsdale Drive Varsity Lakes QLD 4227

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Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Chad Whatley

Senior Technician

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-1  
**Issue Number:** 1  
**Date Issued:** 30/11/2017  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1123  
**Sampling Method:** AS1289 1.2.1 6.4 - Sampling from layers in earthworks or pavement - uncompacted/compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	17-1123A	17-1123B	17-1123C	17-1123D
Test Number	1	2	3	4
Date Tested	28/11/2017	28/11/2017	28/11/2017	28/11/2017
Time Tested	13:30	14:00	14:15	14:45
Test Request #/Location	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Easting	482198	482213	482211	482190
Northing	6936138	6936114	6936092	6936068
Elevation (m)	RL: 83.57	RL: 82.85	RL: 82.36	RL: 82.05
Layer / Reduced Level	**	**	**	**
Thickness of Layer (mm)	300	300	300	300
Soil Description	Sandy Silty Clay	Sandy Silty Clay	Sandy Silty Clay	Sandy Silty Clay
Test Depth (mm)	150	150	150	150
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	2.3	3.5	0.0	0.0
Field Wet Density (FWD) t/m <sup>3</sup>	1.92	1.93	1.90	1.91
Field Moisture Content %	11.7	12.8	12.5	13.1
Field Dry Density (FDD) t/m <sup>3</sup>	1.72	1.71	1.69	1.69
Peak Converted Wet Density t/m <sup>3</sup>	**	**	1.95	1.93
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	1.94	1.96	**	**
Moisture Variation (Wv) %	**	**	1.0	1.0
Adjusted Moisture Variation %	1.0	2.0	**	**
Hilf Density Ratio (%)	<b>99.0</b>	<b>98.5</b>	<b>98.0</b>	<b>98.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

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Gold Coast Laboratory

Unit 7/ 482, Scottsdale Drive Varsity Lakes QLD 4227

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Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Chad Whatley

Senior Technician

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-2  
**Issue Number:** 1  
**Date Issued:** 04/12/2017  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1131  
**Date Sampled:** 29/11/2017  
**Sampling Method:** AS1289 1.2.1 6.4 - Sampling from layers in earthworks or pavement - uncompacted/compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	17-1131A	17-1131B	17-1131C
Test Number	5	6	7
Date Tested	29/11/2017	29/11/2017	29/11/2017
Time Tested	14:00	14:20	14:40
Test Request #/Location	Allotment Fill	Allotment Fill	Allotment Fill
Easting	482190	482199	482199
Northing	6936126	6936081	6936048
Elevation (m)	RL: 83.8	RL: 83.2	RL: 82.81
Layer / Reduced Level	**	**	**
Thickness of Layer (mm)	300	300	300
Soil Description	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay
Test Depth (mm)	150	150	150
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 <sup>3</sup>	1.93	1.96	1.99
Field Moisture Content %	9.6	7.6	9.6
Field Dry Density (FDD) t/m <sup>3</sup>	1.76	1.82	1.82
Peak Converted Wet Density t/m <sup>3</sup>	1.98	2.01	2.00
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	2.0	1.0	2.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>98.0</b>	<b>97.0</b>	<b>99.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Compaction Control Test Report



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-8  
**Issue Number:** 1  
**Date Issued:** 15/12/2017  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1174  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	17-1174A	17-1174B	17-1174C	17-1174D
Test Number	21	22	23	24
Date Tested	06/12/2017	06/12/2017	06/12/2017	06/12/2017
Time Tested	14:00	14:15	14:30	14:45
Test Request #/Location	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Easting	482187	482190	482173	482183
Northing	6936134	6936156	6936164	6936167
Elevation (m)	**	**	**	**
Layer / Reduced Level	RL: 83.44	RL: 83.77	RL: 82.09	RL: 82.48
Thickness of Layer (mm)	300	300	300	300
Soil Description	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay
Test Depth (mm)	150	150	150	150
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	0.0	0.0	2.7
Field Wet Density (FWD) t/m <sup>3</sup>	1.98	2.01	1.93	1.90
Field Moisture Content %	8.3	8.6	8.3	8.7
Field Dry Density (FDD) t/m <sup>3</sup>	1.83	1.85	1.78	1.75
Peak Converted Wet Density t/m <sup>3</sup>	2.07	2.07	2.03	**
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	2.00
Moisture Variation (Wv) %	4.5	4.5	4.5	**
Adjusted Moisture Variation %	**	**	**	3.5
Hilf Density Ratio (%)	<b>96.0</b>	<b>97.0</b>	<b>95.0</b>	<b>95.0</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC



# Compaction Control Test Report



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-9  
**Issue Number:** 1  
**Date Issued:** 15/12/2017  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1181  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	17-1181A	17-1181B	17-1181C	17-1181D
Test Number	31	32	33	34
Date Tested	07/12/2017	07/12/2017	07/12/2017	07/12/2017
Time Tested	10:30	10:45	11:00	11:15
Test Request #/Location	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Easting	482178	482178	482197	482196
Northing	6936007	6936017	6936015	6936003
Elevation (m)	**	**	**	**
Layer / Reduced Level	RL: 82.12	RL: 82.60	RL: 84.19	RL: 84.65
Thickness of Layer (mm)	300	300	300	300
Soil Description	Sandy Silty Clay	Sandy Silty Clay	Sandy Silty Clay	Sandy Silty Clay
Test Depth (mm)	150	150	150	150
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 <sup>3</sup>	2.10	2.04	2.06	2.10
Field Moisture Content %	11.5	10.3	9.6	9.9
Field Dry Density (FDD) t/m <sup>3</sup>	1.89	1.85	1.88	1.91
Peak Converted Wet Density t/m <sup>3</sup>	2.01	2.01	1.98	2.00
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	2.5	3.5	4.5	4.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	<b>104.5</b>	<b>101.5</b>	<b>104.0</b>	<b>104.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Compaction Control Test Report



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-23  
**Issue Number:** 1  
**Date Issued:** 09/01/2018  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1261  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	18-1261A	18-1261B	18-1261C	18-1261D	18-1261E
Test Number	108	109	110	111	112
Date Tested	21/12/2017	21/12/2017	21/12/2017	21/12/2017	21/12/2017
Time Tested	10:10	10:20	10:30	13:00	13:10
Test Request #/Location	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling
Easting	482114	482136	482162	482263	482252
Northing	6936172	6936183	6936185	6936065	6936046
Elevation (m)	**	**	**	**	**
Layer / Reduced Level	RL: 82.5	RL: 83.4	RL: 82.9	RL: 83.4	RL: 83.6
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay
Test Depth (mm)	150	150	150	150	150
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 <sup>3</sup>	2.02	1.99	2.00	2.02	2.00
Field Moisture Content %	9.6	8.9	9.1	9.3	9.8
Field Dry Density (FDD) t/m <sup>3</sup>	1.84	1.83	1.84	1.85	1.82
Peak Converted Wet Density t/m <sup>3</sup>	2.07	1.97	1.98	1.97	1.98
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	2.0	2.0	2.0	2.0	2.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	<b>97.5</b>	<b>101.0</b>	<b>101.5</b>	<b>102.5</b>	<b>101.0</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Compaction Control Test Report



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-23  
**Issue Number:** 1  
**Date Issued:** 09/01/2018  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1261  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1	
Sample Number	18-1261F
Test Number	113
Date Tested	21/12/2017
Time Tested	13:20
Test Request #/Location	Stage 42A Filling
Easting	482247
Northing	6936031
Elevation (m)	**
Layer / Reduced Level	RL: 82.8
Thickness of Layer (mm)	300
Soil Description	Silty Sandy Clay
Test Depth (mm)	150
Sieve used to determine oversize (mm)	19.0
Percentage of Wet Oversize (%)	0.0
Field Wet Density (FWD) t/m <sup>3</sup>	1.99
Field Moisture Content %	9.0
Field Dry Density (FDD) t/m <sup>3</sup>	1.82
Peak Converted Wet Density t/m <sup>3</sup>	1.98
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**
Moisture Variation (Wv) %	2.0
Adjusted Moisture Variation %	**
Hilf Density Ratio (%)	<b>100.5</b>
Compaction Method	<b>Standard</b>

**Moisture Variation Note:**

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

# Compaction Control Test Report



Douglas Partners Pty Ltd

Gold Coast Laboratory

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Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-24  
**Issue Number:** 1  
**Date Issued:** 09/01/2018  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1262  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	18-1262A	18-1262B	18-1262C	18-1262D	18-1262E
Test Number	114	115	116	117	118
Date Tested	22/12/2017	22/12/2017	22/12/2017	22/12/2017	22/12/2017
Time Tested	10:00	10:10	10:20	10:30	13:00
Test Request #/Location	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling
Easting	482217	482207	482197	482183	482178
Northing	6936084	6936089	6936111	6936077	6936055
Elevation (m)	**	**	**	**	**
Layer / Reduced Level	RL: 82.1	RL: 81.8	RL: 82.2	RL: 81.9	RL: 82.0
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay
Test Depth (mm)	150	150	150	150	150
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 <sup>3</sup>	2.01	1.99	2.02	2.01	2.00
Field Moisture Content %	9.6	9.2	9.0	8.8	9.1
Field Dry Density (FDD) t/m <sup>3</sup>	1.84	1.82	1.86	1.84	1.83
Peak Converted Wet Density t/m <sup>3</sup>	1.99	1.99	1.98	1.99	1.99
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	2.0	2.0	2.0	2.0	2.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	<b>101.0</b>	<b>100.0</b>	<b>102.0</b>	<b>101.0</b>	<b>100.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Compaction Control Test Report



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-24  
**Issue Number:** 1  
**Date Issued:** 09/01/2018  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1262  
**Sampling Method:** AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1	
Sample Number	18-1262F
Test Number	119
Date Tested	22/12/2017
Time Tested	13:10
Test Request #/Location	Stage 42A Filling
Easting	482258
Northing	6936030
Elevation (m)	**
Layer / Reduced Level	RL: 82.7
Thickness of Layer (mm)	300
Soil Description	Silty Sandy Clay
Test Depth (mm)	150
Sieve used to determine oversize (mm)	19.0
Percentage of Wet Oversize (%)	0.0
Field Wet Density (FWD) t/m <sup>3</sup>	2.02
Field Moisture Content %	9.4
Field Dry Density (FDD) t/m <sup>3</sup>	1.85
Peak Converted Wet Density t/m <sup>3</sup>	1.99
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**
Moisture Variation (Wv) %	2.0
Adjusted Moisture Variation %	**
Hilf Density Ratio (%)	<b>101.0</b>
Compaction Method	<b>Standard</b>

**Moisture Variation Note:**

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

# Compaction Control Test Report



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-40  
**Issue Number:** 1  
**Date Issued:** 30/01/2018  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1358  
**Sampling Method:** AS1289 1.2.1 6.4 - Sampling from layers in earthworks or pavement - uncompacted/compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	18-1358A	18-1358B	18-1358C	18-1358D	18-1358E
Test Number	218	219	220	221	222
Date Tested	23/01/2018	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Time Tested	10:00	10:10	10:20	10:30	10:40
Test Request #/Location	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling
Easting	482124	482127	482117	482133	482151
Northing	6936225	6936223	6936215	6936217	6936209
Elevation (m)	**	**	**	**	**
Layer / Reduced Level	RL: 81.30	RL: 79.90	RL: 79.60	RL: 79.30	RL: 79.10
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Clayey Gravel	Clayey Gravel	Clayey Gravel	Clayey Gravel	Clayey Gravel
Test Depth (mm)	150	150	150	150	150
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 <sup>3</sup>	2.07	2.06	2.01	2.06	1.87
Field Moisture Content %	7.4	6.3	6.7	7.0	6.8
Field Dry Density (FDD) t/m <sup>3</sup>	1.93	1.94	1.88	1.93	1.75
Peak Converted Wet Density t/m <sup>3</sup>	2.09	2.05	2.05	2.07	1.94
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	1.5	2.0	2.0	2.0	2.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	<b>99.0</b>	<b>100.5</b>	<b>98.0</b>	<b>99.5</b>	<b>96.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Compaction Control Test Report



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-40  
**Issue Number:** 1  
**Date Issued:** 30/01/2018  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1358  
**Sampling Method:** AS1289 1.2.1 6.4 - Sampling from layers in earthworks or pavement - uncompacted/compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	18-1358F	18-1358G	18-1358H	18-1358I	18-1358J
Test Number	223	224	225	226	227
Date Tested	23/01/2018	23/01/2018	23/01/2018	23/01/2018	23/01/2018
Time Tested	10:50	11:00	11:10	11:20	11:30
Test Request #/Location	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling	Stage 42A Filling
Easting	482156	482163	482156	482573	482571
Northing	6936215	6936205	6936207	6936099	6936080
Elevation (m)	**	**	**	**	**
Layer / Reduced Level	RL: 79.50	RL: 80.00	RL: 81.30	RL: 75.80	RL: 76.20
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Clayey Gravel	Clayey Gravel	Clayey Gravel	Clayey Gravel	Clayey Gravel
Test Depth (mm)	150	150	150	150	150
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 <sup>3</sup>	1.92	2.05	2.06	1.98	1.94
Field Moisture Content %	7.8	6.1	5.9	9.8	9.2
Field Dry Density (FDD) t/m <sup>3</sup>	1.78	1.94	1.94	1.81	1.77
Peak Converted Wet Density t/m <sup>3</sup>	1.93	2.08	2.06	2.00	1.97
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	2.0	2.0	2.0	2.0	1.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	<b>99.5</b>	<b>98.5</b>	<b>100.0</b>	<b>99.0</b>	<b>98.0</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Compaction Control Test Report



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-44  
**Issue Number:** 1  
**Date Issued:** 01/02/2018  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1382  
**Sampling Method:** AS1289 1.2.1 6.4 - Sampling from layers in earthworks or pavement - uncompacted/compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	18-1382F	18-1382G	18-1382H	18-1382I	18-1382J
Test Number	279	280	281	282	283
Date Tested	30/01/2018	30/01/2018	30/01/2018	30/01/2018	30/01/2018
Time Tested	11:50	12:00	12:10	12:20	12:30
Test Request #/Location	Park Area Filling	Park Area Filling	Park Area Filling	Park Area Filling	Park Area Filling
Easting	482510	482489	482497	482221	482227
Northing	6935967	6935949	6935966	6936127	6936128
Elevation (m)	**	**	**	**	**
Layer / Reduced Level	RL: 81.72	RL: 81.40	RL: 78.56	RL: 78.52	RL: 78.32
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Clayey Gravel	Clayey Gravel	Clayey Gravel	Clayey Gravel	Clayey Gravel
Test Depth (mm)	150	150	150	150	150
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 <sup>3</sup>	2.00	2.05	1.91	1.91	2.00
Field Moisture Content %	7.9	6.0	7.1	9.4	9.1
Field Dry Density (FDD) t/m <sup>3</sup>	1.86	1.93	1.79	1.75	1.83
Peak Converted Wet Density t/m <sup>3</sup>	2.04	2.08	1.94	1.95	2.02
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	2.0	2.0	2.0	2.0	1.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	98.5	98.5	98.5	98.0	98.5
Compaction Method	Standard	Standard	Standard	Standard	Standard

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC



# Compaction Control Test Report



Approved Signatory: Joshua Baker

Laboratory Manager

NATA Accredited Laboratory Number: 828

**Report Number:** 672803.00-44  
**Issue Number:** 1  
**Date Issued:** 01/02/2018  
**Client:** See Civil Pty Ltd  
 24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1382  
**Sampling Method:** AS1289 1.2.1 6.4 - Sampling from layers in earthworks or pavement - uncompacted/compacted

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	18-1382K	18-1382L	18-1382M	18-1382N	18-1382O
Test Number	284	285	286	287	288
Date Tested	30/01/2018	30/01/2018	30/01/2018	30/01/2018	30/01/2018
Time Tested	12:40	12:50	13:00	13:10	13:20
Test Request #/Location	Park Area Filling	Park Area Filling	Park Area Filling	Park Area Filling	Park Area Filling
Easting	482197	482185	482195	482208	482198
Northing	6936026	6936025	6936010	6936010	6935999
Elevation (m)	**	**	**	**	**
Layer / Reduced Level	RL: 78.02	RL: 79.62	RL: 79.32	RL: 78.00	RL: 77.79
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Clayey Gravel	Clayey Gravel	Clayey Gravel	Clayey Gravel	Clayey Gravel
Test Depth (mm)	150	150	150	150	150
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 <sup>3</sup>	2.02	2.04	2.01	2.08	2.00
Field Moisture Content %	8.7	9.2	9.3	7.2	9.6
Field Dry Density (FDD) t/m <sup>3</sup>	1.85	1.86	1.84	1.94	1.82
Peak Converted Wet Density t/m <sup>3</sup>	2.06	2.05	2.05	2.11	2.03
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	2.0	1.5	2.0	2.0	1.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	<b>98.0</b>	<b>99.5</b>	<b>98.0</b>	<b>98.5</b>	<b>98.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Compaction Control Test Report



Approved Signatory: Joshua Baker  
Laboratory Manager  
NATA Accredited Laboratory Number: 828

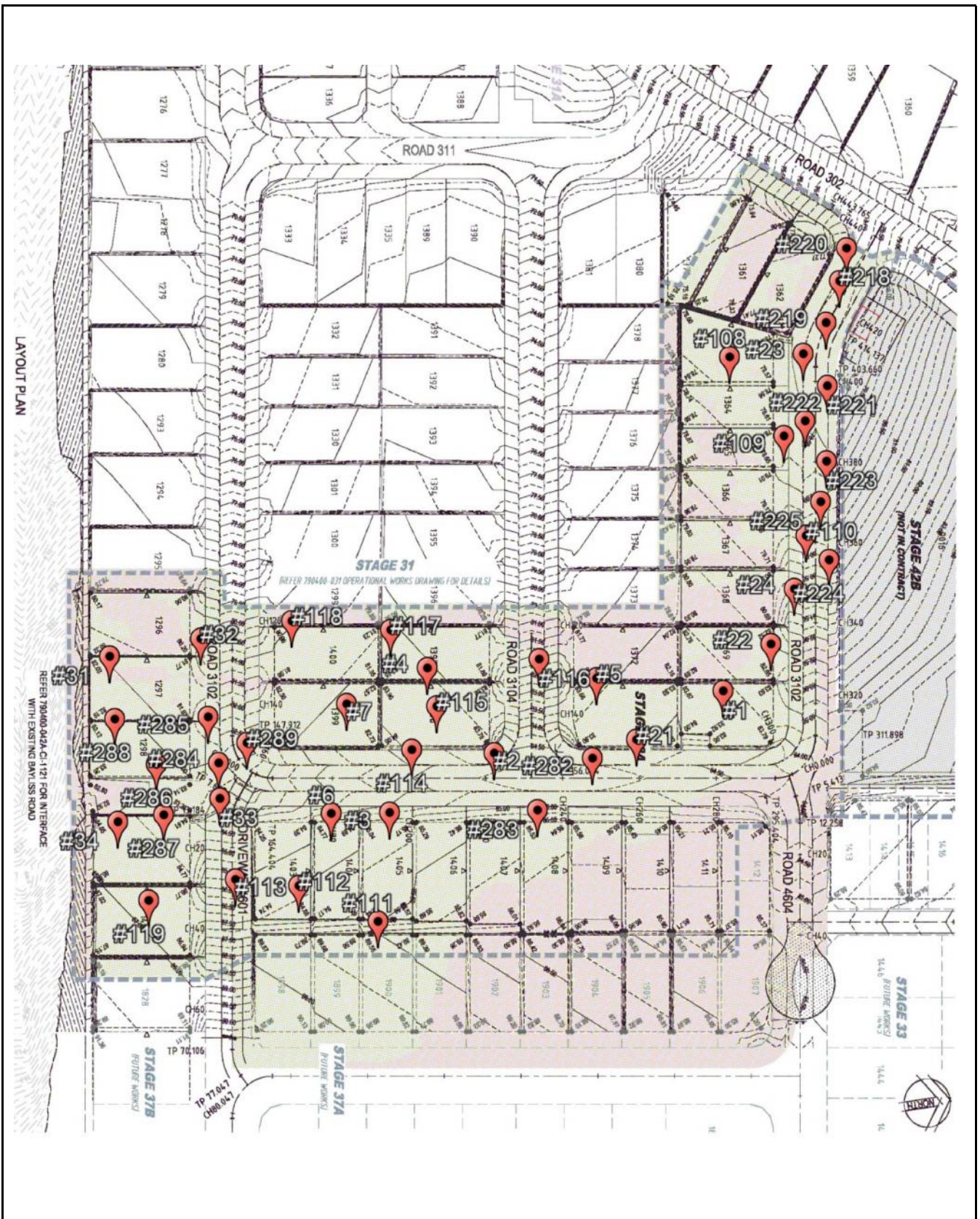
**Report Number:** 672803.00-44  
**Issue Number:** 1  
**Date Issued:** 01/02/2018  
**Client:** See Civil Pty Ltd  
24A Ozone Street, Chinderah NSW 2487  
**Contact:** Nicholas Philp  
**Project Number:** 672803.00  
**Project Name:** Providence Estate - Stages 42A & 33  
**Project Location:** Barrams Road, South Ripley  
**Work Request:** 1382  
**Sampling Method:** AS1289 1.2.1 6.4 - Sampling from layers in earthworks or pavement - uncompacted/compacted


Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1	
Sample Number	18-1382P
Test Number	289
Date Tested	30/01/2018
Time Tested	13:30
Test Request #/Location	Park Area Filling
Easting	482193
Northing	6936034
Elevation (m)	**
Layer / Reduced Level	RL: 77.45
Thickness of Layer (mm)	300
Soil Description	Clayey Gravel
Test Depth (mm)	150
Sieve used to determine oversize (mm)	19.0
Percentage of Wet Oversize (%)	0.0
Field Wet Density (FWD) t/m <sup>3</sup>	2.02
Field Moisture Content %	9.7
Field Dry Density (FDD) t/m <sup>3</sup>	1.84
Peak Converted Wet Density t/m <sup>3</sup>	2.06
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**
Moisture Variation (Wv) %	1.5
Adjusted Moisture Variation %	**
Hilf Density Ratio (%)	<b>98.0</b>
Compaction Method	<b>Standard</b>

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC



 <b>Douglas Partners</b> Geotechnics   Environment   Groundwater	<b>Location of Tests</b>	PROJECT: 672803.00
	Providence Estate - Stage 42A	DWG No: 1
	Barrams Road, South Ripley	REV: A
	CLIENT: SEE Civil Pty Ltd	DATE: 06-Feb-18