

## Octave Estate Stage 3

# GITA Inspection Verification Report

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**Prepared For:** Streetworks Pty Ltd

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**Report Number** P21464A V1

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**Version Release Date** 30 Jul 2021

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**Report Released By** C Caulfield

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**Title** Project Manager

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**Signature**



**Table of Contents**

1 Introduction ..... 3

2 Scope of Work ..... 3

    2.1 Area of Work ..... 3

    2.2 Specification ..... 3

    2.3 Limitations ..... 4

3 Construction Method ..... 5

    3.1 Subgrade Preparation ..... 5

    3.2 Fill Placement ..... 5

4 Construction Verification ..... 5

5 Statement of Compliance ..... 6

**Appendices**

- Appendix 1 Test Location Plan
- Appendix 2 Compaction Test Register and Test Certificates

## 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 Octave Estate Stage 3. This work was conducted over the period of 15/01/2021 to 20/07/2021.

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 301 through to 303, 305, 306, 308 through to 315, 319, 321 through to 336 and 353, bounded by streets Treble Street, Rhythm Lane, Contata Grove, Orchestra Lane and Largo Circuit. 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 GPR Consulting Pty Ltd (Drawing Reference: 0329-03-R02) 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 (Reference from Drawings) 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 1500m<sup>2</sup>), the minimum testing frequency is 1 test per layer per material type per 2500m<sup>2</sup> or 1 test per 500m<sup>3</sup> distributed reasonable evenly throughout full depth and area or 3 tests per lot. AS3798 defines a lot as “an area of work that is essentially homogenous in relation to material type and moisture condition, rolling response and compaction technique, and which has been used for the assessment of the relative compaction of an area of work”. All three of these test frequencies must be achieved and this is typically confirmed to have been achieved when 3 tests per visit (day) have been completed.

### 2.3 Limitations

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

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

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

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

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

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## 3 Construction Method

### 3.1 Subgrade Preparation

At the time of subgrade inspection the following was observed:

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

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

### 3.2 Fill Placement

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

All fill was placed in layers of thicknesses not exceeding 300mm. At the completion of a placed layer, compaction testing was performed to confirm appropriate compaction had been achieved and supported the observations made. It should be noted that the compaction tests are representative samples of the fill placed and support the visual assessment of the works completed. Each house lot does not necessarily require a compaction test to have been conducted within the house allotment but may have been verified by testing conducted within up to a 2500m<sup>2</sup> 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 150mm 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 150mm 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 (P21464D1, 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 36 density tests (Hilf method in accordance with 1289 5.7.1) were undertaken with 3 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 3 at Octave Estate. For completed fill areas of greater than 300mm, and for works completed between 15/01/2021 and 20/07/2021, 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 3 of Octave Estate was observed to be constructed in compliance with the requirements of the Technical Specification.

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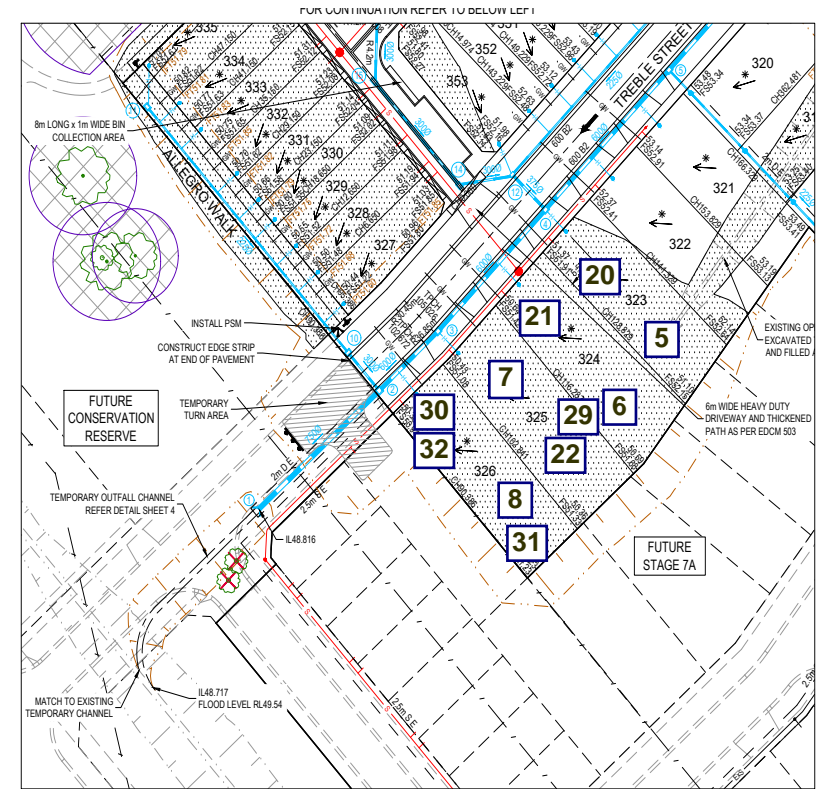
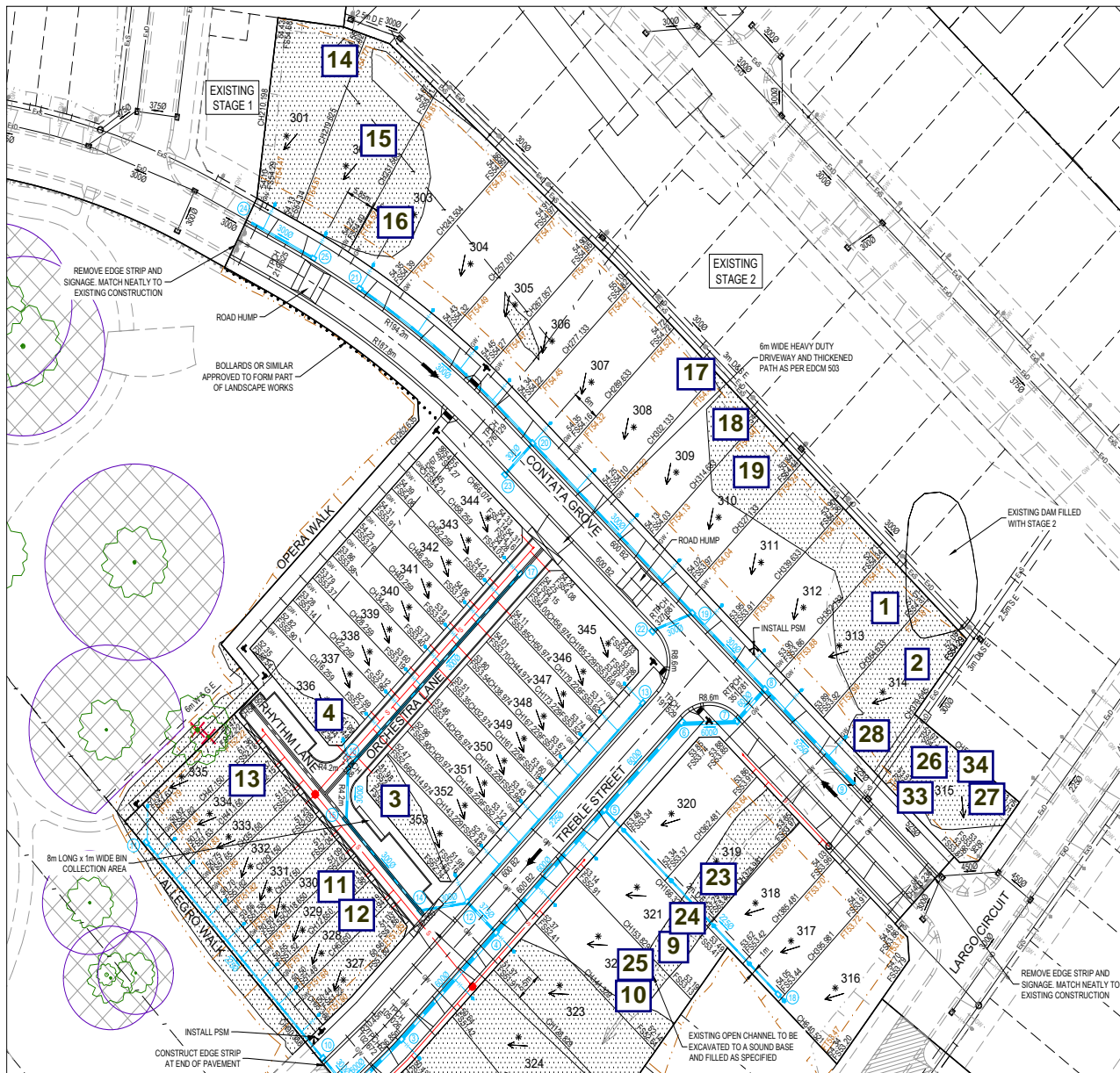
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## Appendix 1: Test Location Plan

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47 National Ave  
Pakenham, VIC 3810

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

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Page 1 of 2



- NOTE: DRIVEWAYS**
1. DRIVEWAYS TO LOTS 327 TO 329 AND 331 TO 335 ARE 4.6m WIDE OFFSET 0.6m FROM SIDE BOUNDARY.
  2. DRIVEWAY TO LOT 330 IS TO BE 4.5m WIDE.
  3. DRIVEWAYS TO LOTS 336 TO 353 TO BE PROVIDED AS PART OF THE BUILDING WORKS.
- NOTE: HOUSE DRAINS**
1. HOUSE DRAIN TO LOTS 338 TO 334, 336 TO 343 AND 346 TO 353 TO BE OFFSET 1.0m FROM SIDE BOUNDARY.
  2. HOUSE DRAIN TO LOT 327 TO BE OFFSET 1.0m FROM SIDE BOUNDARY.
  3. HOUSE DRAINS TO LOTS 305 AND 314 TO BE OFFSET 6.0m FROM SIDE BOUNDARY.
- NOTE: CONSERVATION RESERVE**
1. THE CONSERVATION RESERVE IS TO BE FENCED PRIOR TO CONSTRUCTION COMMENCING.
  2. NO ACCESS IS PERMITTED EXCEPT FOR CONSTRUCTION OF ALLEGRO WALK BATTER.
- NOTE: TREE PROTECTION ZONE**
- TREE PROTECTION ZONES TO BE FENCED PRIOR TO CONSTRUCTION COMMENCING. NO ACCESS IS PERMITTED WITHIN TREE PROTECTION ZONES.
- NOTE: FENCING**
1. VEHICLE EXCLUSION MEASURES WHERE ROADS ADJACENT TO RESERVE ARE TO FORM PART OF THE LANDSCAPE WORKS.
  2. EXISTING FARM FENCING WITHIN THE WORKS AREA ARE TO BE REMOVED AND DISPOSED OFFSITE.



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**Test Location Plan**  
*not to scale*

Client: Streetworks Pty Ltd

Project: Octave Estate, Stage 3

Reference: P21464 D1





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## **Appendix 2: Compaction Test Register and Test Certificates**



## Compaction Test Register

**Client:** Streetworks Pty Ltd  
**Project:** Octave Estate Stage 3

**Project No:** P21464  
**Specification:** 95%

Date:	Test No:	Layer:	Retest of:	Density:	Pass/Fail:	Lot No:	Report No:
15/01/2021	1	Layer 1		100.5%	Pass	Lot 313	P21464-1
15/01/2021	2	Layer 2		97.5%	Pass	Lot 314	P21464-1
5/05/2021	3	Layer 1		99.0%	Pass	Lot 353	P21464-2
5/05/2021	4	Layer 1		95.5%	Pass	Lot 336	P21464-2
7/05/2021	5	Layer 2		98.5%	Pass	Lot 323	P21464-3
7/05/2021	6	Layer 2		97.0%	Pass	Lot 324	P21464-3
7/05/2021	7	Layer 2		100.0%	Pass	Lot 325	P21464-3
8/05/2021	8	Layer 1		99.5%	Pass	Lot 326	P21464-4
8/05/2021	9	Layer 1		99.5%	Pass	Lot 321	P21464-4
8/05/2021	10	Layer 1		99.5%	Pass	Lot 322	P21464-4
10/05/2021	11	Layer 3		100.5%	Pass	Lot 329	P21464-5
10/05/2021	12	Layer 3		105.0%	Pass	Lot 328	P21464-5
10/05/2021	13	Layer 3		99.5%	Pass	Lot 334	P21464-5
11/05/2021	14	Layer 2		96.0%	Pass	Lot 301	P21464-6
11/05/2021	15	Layer 2		95.5%	Pass	Lot 302	P21464-6
11/05/2021	16	Layer 2		96.5%	Pass	Lot 303	P21464-6
12/05/2021	17	Layer 2		101.0%	Pass	Lot 308	P21464-7
12/05/2021	18	Layer 2		101.0%	Pass	Lot 309	P21464-7
12/05/2021	19	Layer 2		108.0%	Pass	Lot 310	P21464-7
14/05/2021	20	Layer 2		99.0%	Pass	Lot 323	P21464-8
14/05/2021	21	Layer 2		98.5%	Pass	Lot 324	P21464-8
14/05/2021	22	Layer 5		100.5%	Pass	Lot 325	P21464-8
3/06/2021	23	Layer 5		96.5%	Pass	Lot 319	P21464-9
3/06/2021	24	Layer 5		96.5%	Pass	Lot 321	P21464-9
3/06/2021	25	Layer 3		98.0%	Pass	Lot 322	P21464-9
8/07/2021	26	Layer 3		93.0%	Fail	Lot 315	P21464-10
8/07/2021	27	Layer 3		94.5%	Fail	Lot 315	P21464-10
8/07/2021	28	Layer 3		96.5%	Pass	Lot 314	P21464-10
8/07/2021	29	Layer 4		97.0%	Pass	Lot 325	P21464-10
8/07/2021	30	Layer 4		94.0%	Fail	Lot 326	P21464-10
8/07/2021	31	Layer 4		96.5%	Pass	Lot 326	P21464-10
20/07/2021	32	Layer 4	Test #30	97.0%	Pass	Lot 326	P21464-11
20/07/2021	33	Layer 3	Test #26	95.0%	Pass	Lot 315	P21464-11
20/07/2021	34	Layer3	Test #27	97.5%	Pass	Lot 315	P21464-11

# Material Test Report

**Report Number:** P21464-1  
**Issue Number:** 1  
**Date Issued:** 02/02/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3  
**Project Location:** Cranbourne  
**Client Reference:** 05923  
**Work Request:** 5174  
**Date Sampled:** 15/01/2021 15:00  
**Dates Tested:** 15/01/2021 - 19/01/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** AS 1289.1.4.1  
**Material:** Sand  
**Material Source:** Onsite



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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	P21-5174A	P21-5174B	
Test Number	1	2	
Date Tested	15/01/2021	15/01/2021	
Time Tested	15:00	15:00	
Test Request #/Location	Lot 313	Lot 314	
Layer / Reduced Level	Layer 1	Layer 2	
Thickness of Layer (mm)	300	300	
Soil Description	Sand	Sand	
Test Depth (mm)	275	275	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	
Field Wet Density (FWD) t/m <sup>3</sup>	2.12	2.05	
Field Moisture Content %	10.1	11.3	
Field Dry Density (FDD) t/m <sup>3</sup>	1.93	1.84	
Peak Converted Wet Density t/m <sup>3</sup>	2.11	2.10	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Adj. Optimum Moisture Content % (AS1289.5.4.1)	12.0	12.7	
Adj. Field Moisture Content % (AS1289.5.4.1)	10.1	11.3	
Moisture Ratio % (AS1289.5.4.1)	84.0	89.0	
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	
Moisture Variation (Wv) %	2.0	1.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	100.5	97.5	
Compaction Method	Standard	Standard	
Report Remarks	**	**	

**Moisture Variation Note:**

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

# Material Test Report

**Report Number:** P21464-2  
**Issue Number:** 1  
**Date Issued:** 07/06/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Work Request:** 5917  
**Date Sampled:** 05/05/2021 9:00  
**Dates Tested:** 05/05/2021 - 07/05/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Estate Stage 3 - Level One  
**Material:** SAND  
**Material Source:** Onsite



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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

	P21-5917A	P21-5917B	
Sample Number			
Test Number	3	4	
Date Tested	05/05/2021	05/05/2021	
Time Tested	15:00	15:15	
Test Request #/Location	353	336	
Layer / Reduced Level	1	1	
Thickness of Layer (mm)	300	300	
Soil Description	Sand	Sand	
Test Depth (mm)	275	275	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	
Field Wet Density (FWD) t/m <sup>3</sup>	1.95	1.87	
Field Moisture Content %	6.6	5.7	
Field Dry Density (FDD) t/m <sup>3</sup>	1.83	1.77	
Peak Converted Wet Density t/m <sup>3</sup>	1.97	1.95	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Adj. Optimum Moisture Content % (AS1289.5.4.1)	**	**	
Adj. Field Moisture Content % (AS1289.5.4.1)	6.6	5.7	
Moisture Ratio % (AS1289.5.4.1)	65.5	60.5	
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	
Moisture Variation (Wv) %	3.5	4.0	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	99.0	95.5	
Compaction Method	Standard	Standard	
Report Remarks	**	**	

### Moisture Variation Note:

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

# Material Test Report


**Report Number:** P21464-3  
**Issue Number:** 1  
**Date Issued:** 07/06/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Client Reference:** 7364  
**Work Request:** 5944  
**Date Sampled:** 07/05/2021 3:00  
**Dates Tested:** 07/05/2021 - 10/05/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Stage 3 Level One  
**Material:** SAND  
**Material Source:** Onsite



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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	P21-5944A	P21-5944B	P21-5944C
Test Number	5	6	7
Date Tested	07/05/2021	07/05/2021	07/05/2021
Time Tested	15:00	15:00	15:00
Test Request #/Location	Lot 323	Lot 324	Lot 325
Layer / Reduced Level	2	2	2
Thickness of Layer (mm)	300	300	300
Soil Description	SAND	SAND	SAND
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 <sup>3</sup>	2.13	2.09	2.16
Field Moisture Content %	15.3	14.4	12.7
Field Dry Density (FDD) t/m <sup>3</sup>	1.85	1.83	1.92
Peak Converted Wet Density t/m <sup>3</sup>	2.16	2.16	2.16
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	**	**	**
Adj. Field Moisture Content % (AS1289.5.4.1)	15.3	14.4	12.7
Moisture Ratio % (AS1289.5.4.1)	115.0	120.0	114.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	-2.0	-2.5	-1.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>98.5</b>	<b>97.0</b>	<b>100.0</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**

**Moisture Variation Note:**

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

# Material Test Report

**Report Number:** P21464-4  
**Issue Number:** 1  
**Date Issued:** 07/06/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Client Reference:** 06097  
**Work Request:** 5948  
**Date Sampled:** 08/05/2021 13:30  
**Dates Tested:** 09/05/2021 - 09/05/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Estate Stage 3 - Level One  
**Material:** Sandy Clay  
**Material Source:** Onsite



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 Project Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	P21-5948A	P21-5948B	P21-5948C
Test Number	8	9	10
Date Tested	08/05/2021	08/05/2021	08/05/2021
Time Tested	13:30	13:30	13:30
Test Request #/Location	Lot 326	Lot 321	Lot 322
Layer / Reduced Level	Layer 1	Layer 1	Layer 1
Thickness of Layer (mm)	300	300	300
Soil Description	sandy CLAY	sandy CLAY	sandy 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 <sup>3</sup>	2.10	2.11	2.10
Field Moisture Content %	14.8	14.3	15.7
Field Dry Density (FDD) t/m <sup>3</sup>	1.83	1.85	1.82
Peak Converted Wet Density t/m <sup>3</sup>	2.11	2.13	2.11
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	**	**	**
Adj. Field Moisture Content % (AS1289.5.4.1)	14.8	14.3	15.7
Moisture Ratio % (AS1289.5.4.1)	97.5	98.5	98.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	0.5	0.0	0.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	99.5	99.5	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:** P21464-5  
**Issue Number:** 1  
**Date Issued:** 07/06/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Client Reference:** 5934  
**Work Request:** 5957  
**Date Sampled:** 10/05/2021 16:30  
**Dates Tested:** 11/05/2021 - 11/05/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Stage 3-Level One  
**Material:** clayey SAND  
**Material Source:** Onsite



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 Project Manager

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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	P21-5957A		
Test Number	11		
Date Tested	10/05/2021		
Time Tested	15:00		
Test Request #/Location	Lot 329		
Layer / Reduced Level	Layer 3		
Thickness of Layer (mm)	300		
Soil Description	clayey SAND		
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 <sup>3</sup>	2.15		
Field Moisture Content %	15.9		
Field Dry Density (FDD) t/m <sup>3</sup>	1.85		
Peak Converted Wet Density t/m <sup>3</sup>	2.14		
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**		
Adj. Optimum Moisture Content % (AS1289.5.4.1)	13.2		
Adj. Field Moisture Content % (AS1289.5.4.1)	15.9		
Moisture Ratio % (AS1289.5.4.1)	120.5		
Adjusted Moisture Ratio % (AS1289.5.4.1)	**		
Moisture Variation (Wv) %	-2.5		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	100.5		
Compaction Method	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:** P21464-5  
**Issue Number:** 1  
**Date Issued:** 07/06/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Client Reference:** 5934  
**Work Request:** 5957  
**Date Sampled:** 10/05/2021 16:30  
**Dates Tested:** 11/05/2021 - 11/05/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Stage 3-Level One  
**Material:** clayey SAND  
**Material Source:** Onsite



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Approved Signatory: Chris Caulfield  
 Project Manager

NATA Accredited Laboratory Number: 15357

## Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1

	P21-5957B	P21-5957C	
Sample Number	P21-5957B	P21-5957C	
Test Number	12	13	
Date Tested	10/05/2021	10/05/2021	
Time Tested	15:00	15:00	
Test Request #/Location	Lot 328	Lot 334	
Layer / Reduced Level	Layer 3	Layer 3	
Thickness of Layer (mm)	300	300	
Soil Description	clayey SAND	clayey SAND	
Test Depth (mm)	275	275	
Fraction Tested (mm)	19.0	19.0	
Oversize (wet basis) %	0	0	
Oversize (dry basis) %	0	0	
Curing Hours	0	0	
Method used to Determine Plasticity	Visual Assessment	Visual Assessment	
Field Wet Density t/m <sup>3</sup>	2.12	2.08	
Field Moisture Content %	25.9	23.2	
Field Dry Density t/m <sup>3</sup>	1.68	1.69	
Maximum Dry Density t/m <sup>3</sup>	1.61	1.70	
Adjusted Maximum Dry Density t/m <sup>3</sup>	**	**	
Optimum Moisture Content (OMC) %	21.0	17.5	
Adjusted Optimum Moisture Content (OMC) %	**	**	
Moisture Variation %	-5.0	-6.0	
Moisture Ratio %	124.0	134.0	
Density Ratio %	<b>105.0</b>	<b>99.5</b>	
Compaction Method	<b>Standard</b>	<b>Standard</b>	

### Moisture Variation Note:

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



# Material Test Report

**Report Number:** P21464-6  
**Issue Number:** 1  
**Date Issued:** 07/06/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Client Reference:** 5935  
**Work Request:** 5969  
**Date Sampled:** 11/05/2021 16:00  
**Dates Tested:** 12/05/2021 - 12/05/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Stage 3 Level One  
**Material:** clayey SAND  
**Material Source:** Onsite



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 Project Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	P21-5969A	P21-5969B	P21-5969C
Test Number	14	15	16
Date Tested	11/05/2021	11/05/2021	11/05/2021
Time Tested	16:00	16:00	16:00
Test Request #/Location	Lot 301	Lot 302	Lot 303
Layer / Reduced Level	Layer 2	Layer 2	Layer 2
Thickness of Layer (mm)	300	300	300
Soil Description	clayey SAND	clayey SAND	clayey SAND
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 <sup>3</sup>	2.13	2.14	2.09
Field Moisture Content %	12.0	11.9	11.9
Field Dry Density (FDD) t/m <sup>3</sup>	1.90	1.91	1.87
Peak Converted Wet Density t/m <sup>3</sup>	2.22	2.24	2.18
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	9.9	9.9	10.1
Adj. Field Moisture Content % (AS1289.5.4.1)	12.0	11.9	11.9
Moisture Ratio % (AS1289.5.4.1)	121.0	120.0	118.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	-2.0	-2.0	-2.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>96.0</b>	<b>95.5</b>	<b>96.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**

**Moisture Variation Note:**

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

# Material Test Report

**Report Number:** P21464-7  
**Issue Number:** 1  
**Date Issued:** 07/06/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Client Reference:** 5937  
**Work Request:** 5976  
**Date Sampled:** 12/05/2021 16:00  
**Dates Tested:** 13/05/2021 - 13/05/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Stage 3 Level One  
**Material:** SAND  
**Material Source:** Onsite



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 Project Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	P21-5976A	P21-5976B	P21-5976C
Test Number	17	18	19
Date Tested	12/05/2021	12/05/2021	12/05/2021
Time Tested	16:00	16:00	16:00
Test Request #/Location	Lot 308	Lot 309	Lot 310
Layer / Reduced Level	Layer 2	Layer 2	Layer 2
Thickness of Layer (mm)	300	300	300
Soil Description	SAND	SAND	SAND
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 <sup>3</sup>	2.17	2.14	2.15
Field Moisture Content %	12.2	10.9	7.0
Field Dry Density (FDD) t/m <sup>3</sup>	1.93	1.92	2.01
Peak Converted Wet Density t/m <sup>3</sup>	2.14	2.11	1.99
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	11.4	10.5	9.8
Adj. Field Moisture Content % (AS1289.5.4.1)	12.2	10.9	7.0
Moisture Ratio % (AS1289.5.4.1)	107.0	104.0	71.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	-1.0	-0.5	3.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	101.0	101.0	108.0
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:** P21464-8  
**Issue Number:** 1  
**Date Issued:** 07/06/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Client Reference:** 5940  
**Work Request:** 5997  
**Date Sampled:** 14/05/2021 15:30  
**Dates Tested:** 17/05/2021 - 17/05/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Estate Stage 3 Level One  
**Material:** SAND  
**Material Source:** Onsite



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NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	P21-5997A	P21-5997B	P21-5997C
Test Number	20	21	22
Date Tested	14/05/2021	14/05/2021	14/05/2021
Time Tested	15:30	15:30	15:30
Test Request #/Location	Lot 323	Lot 324	Lot 325
Layer / Reduced Level	Layer 2	Layer 2	Layer 5
Thickness of Layer (mm)	300	300	300
Soil Description	SAND	SAND	SAND
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 <sup>3</sup>	2.15	2.19	2.22
Field Moisture Content %	12.0	14.0	12.0
Field Dry Density (FDD) t/m <sup>3</sup>	1.92	1.92	1.98
Peak Converted Wet Density t/m <sup>3</sup>	2.16	2.23	2.21
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	9.3	**	9.3
Adj. Field Moisture Content % (AS1289.5.4.1)	12.0	14.0	12.0
Moisture Ratio % (AS1289.5.4.1)	129.0	127.5	129.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	-3.0	-3.0	-3.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>99.0</b>	<b>98.5</b>	<b>100.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**

**Moisture Variation Note:**

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

# Material Test Report

**Report Number:** P21464-9  
**Issue Number:** 1  
**Date Issued:** 08/06/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Client Reference:** 5945  
**Work Request:** 6130  
**Date Sampled:** 03/06/2021 15:00  
**Dates Tested:** 03/06/2021 - 07/06/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Location:** Octave Estate Stage 3 Level One  
**Material:** SAND  
**Material Source:** Onsite - Stockpile



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Approved Signatory: Janaka Somaratne  
 Lab Manager

NATA Accredited Laboratory Number: 15357

## Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

	P21-6130A	P21-6130B	P21-6130C
Sample Number			
Test Number	23	24	25
Date Tested	03/06/2021	03/06/2021	03/06/2021
Time Tested	**	**	**
Test Request #/Location	Lot 319	Lot 321	Lot 322
Layer / Reduced Level	Layer 5	Layer 5	Layer 3
Thickness of Layer (mm)	300	300	300
Soil Description	SAND	SAND	SAND
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 <sup>3</sup>	1.93	1.96	2.10
Field Moisture Content %	8.8	8.8	11.9
Field Dry Density (FDD) t/m <sup>3</sup>	1.77	1.80	1.88
Peak Converted Wet Density t/m <sup>3</sup>	2.00	2.03	2.14
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	10.2	9.5	10.4
Adj. Field Moisture Content % (AS1289.5.4.1)	8.8	8.8	11.9
Moisture Ratio % (AS1289.5.4.1)	86.0	93.0	115.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	1.5	0.5	-1.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>96.5</b>	<b>96.5</b>	<b>98.0</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**

### Moisture Variation Note:

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

# Material Test Report

**Report Number:** P21464-10  
**Issue Number:** 1  
**Date Issued:** 21/07/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Client Reference:** 07702  
**Work Request:** 6332  
**Date Sampled:** 08/07/2021  
**Dates Tested:** 08/07/2021 - 12/07/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave stage 3 level 1  
**Material:** silty Clay  
**Material Source:** Imported



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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	P21-6332A	P21-6332B	P21-6332C	P21-6332D	P21-6332E	P21-6332F
Test Number	26	27	28	29	30	31
Date Tested	08/07/2021	08/07/2021	08/07/2021	08/07/2021	08/07/2021	08/07/2021
Time Tested	16:00	16:00	16:00	16:00	16:00	16:00
Test Request #/Location	Lot 315	Lot 315	Lot 314	Lot 325	Lot 326	Lot 326
Layer / Reduced Level	Layer 3	Layer 3	Layer 3	Layer 4	Layer 4	Layer 4
Thickness of Layer (mm)	300	300	300	300	300	300
Soil Description	sandy silty CLAY	sandy silty CLAY	sandy silty CLAY	sandy silty CLAY	sandy silty CLAY	sandy silty 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 (%)	4	0	0	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**	**	**	**
Field Wet Density (FWD) t/m <sup>3</sup>	2.06	2.06	2.09	2.03	1.93	2.04
Field Moisture Content %	13.3	14.3	13.4	20.4	19.7	19.3
Field Dry Density (FDD) t/m <sup>3</sup>	1.82	1.81	1.84	1.68	1.61	1.71
Peak Converted Wet Density t/m <sup>3</sup>	**	2.18	2.16	2.09	2.04	2.11
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	2.21	**	**	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	10.4	**	**	17.7	**	**
Adj. Field Moisture Content % (AS1289.5.4.1)	12.8	14.3	13.4	20.4	19.7	19.3
Moisture Ratio % (AS1289.5.4.1)	**	127.5	124.5	115.5	109.5	118.0
Adjusted Moisture Ratio % (AS1289.5.4.1)	123.5	**	**	**	**	**
Moisture Variation (Wv) %	**	-3.0	-2.5	-2.5	-1.5	-3.0
Adjusted Moisture Variation %	-2.5	**	**	**	**	**
Hilf Density Ratio (%)	<b>93.0</b>	<b>94.5</b>	<b>96.5</b>	<b>97.0</b>	<b>94.0</b>	<b>96.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**	**	**	**

**Moisture Variation Note:**

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

# Material Test Report

**Report Number:** P21464-11  
**Issue Number:** 1  
**Date Issued:** 22/07/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Work Request:** 6402  
**Date Sampled:** 20/07/2021 8:30  
**Dates Tested:** 20/07/2021 - 20/07/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Estate Stage 3 - Level One  
**Material:** Silty sand  
**Material Source:** Onsite



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 Lab Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	P21-6402B	P21-6402C	
Test Number	33	34	
Date Tested	20/07/2021	20/07/2021	
Time Tested	**	**	
Test Request #/Location	Retest of 26	Retest of 27	
Layer / Reduced Level	Layer 3	Layer3	
Thickness of Layer (mm)	300	300	
Soil Description	Silty sand	Silty sand	
Test Depth (mm)	275	275	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	
Field Wet Density (FWD) t/m <sup>3</sup>	2.09	2.13	
Field Moisture Content %	13.2	14.0	
Field Dry Density (FDD) t/m <sup>3</sup>	1.85	1.87	
Peak Converted Wet Density t/m <sup>3</sup>	2.19	2.18	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Adj. Optimum Moisture Content % (AS1289.5.4.1)	9.9	11.0	
Adj. Field Moisture Content % (AS1289.5.4.1)	13.2	14.0	
Moisture Ratio % (AS1289.5.4.1)	133.0	127.5	
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	
Moisture Variation (Wv) %	-3.5	-3.0	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	<b>95.0</b>	<b>97.5</b>	
Compaction Method	<b>Standard</b>	<b>Standard</b>	
Report Remarks	**	**	

**Moisture Variation Note:**

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

# Material Test Report

**Report Number:** P21464-11  
**Issue Number:** 1  
**Date Issued:** 22/07/2021  
**Client:** Street Works Pty Ltd  
 45 Commercial Drive, Pakenham Vic 3810  
**Project Number:** P21464  
**Project Name:** Octave Estate Stage 3 - Level One  
**Project Location:** Cranbourne  
**Work Request:** 6402  
**Date Sampled:** 20/07/2021 8:30  
**Dates Tested:** 20/07/2021 - 21/07/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95%  
**Site Selection:** Selected by Client  
**Location:** Octave Estate Stage 3 - Level One  
**Material:** Silty sand  
**Material Source:** Onsite



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Approved Signatory: Janaka Somaratne  
 Lab Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1			
Sample Number	P21-6402A		
Test Number	32		
Date Tested	20/07/2021		
Time Tested	**		
Test Request #/Location	Retest of 30		
Layer / Reduced Level	Layer 4		
Thickness of Layer (mm)	300		
Soil Description	Silty clay		
Test Depth (mm)	275		
Fraction Tested (mm)	19.0		
Oversize (wet basis) %	0		
Oversize (dry basis) %	0		
Curing Hours	2.0		
Method used to Determine Plasticity	Visual Assessment		
Field Wet Density t/m <sup>3</sup>	2.01		
Field Moisture Content %	22.9		
Field Dry Density t/m <sup>3</sup>	1.64		
Maximum Dry Density t/m <sup>3</sup>	1.69		
Adjusted Maximum Dry Density t/m <sup>3</sup>	**		
Optimum Moisture Content (OMC) %	20.0		
Adjusted Optimum Moisture Content (OMC) %	**		
Moisture Variation %	-3.0		
Moisture Ratio %	115.0		
Density Ratio %	97.0		
Compaction Method	Standard		

**Moisture Variation Note:**

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