

Cobble Springs Estate Stage 3

GITA Inspection Verification Report

Prepared For: Lojac Civil Pty Ltd

Report Number D231084A V1

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Report Released By Eranda Hippola

Title Laboratory Manager

Signature



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1 Introduction

Terra Firma Laboratories was engaged by Lojac Civil Pty Ltd as the Geotechnical Inspection and Testing Authority (GITA) to provide Level 1 supervision and testing works on the earthworks component for Cobble Springs Estate Stage 3. This work was conducted over the period of 20/10/2023 to 09/02/2024.

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 Lot 118 To Lot 161, bounded by streets Stonecrop Drive and Nutans Crescent. 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 Colliers (Drawing Reference: 22-0097-03RD02) and provided by Lojac Civil 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 Lojac Civil 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. 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 150mm 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 200mm 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 200mm of material was not observed by the GITA.

4 Construction Verification

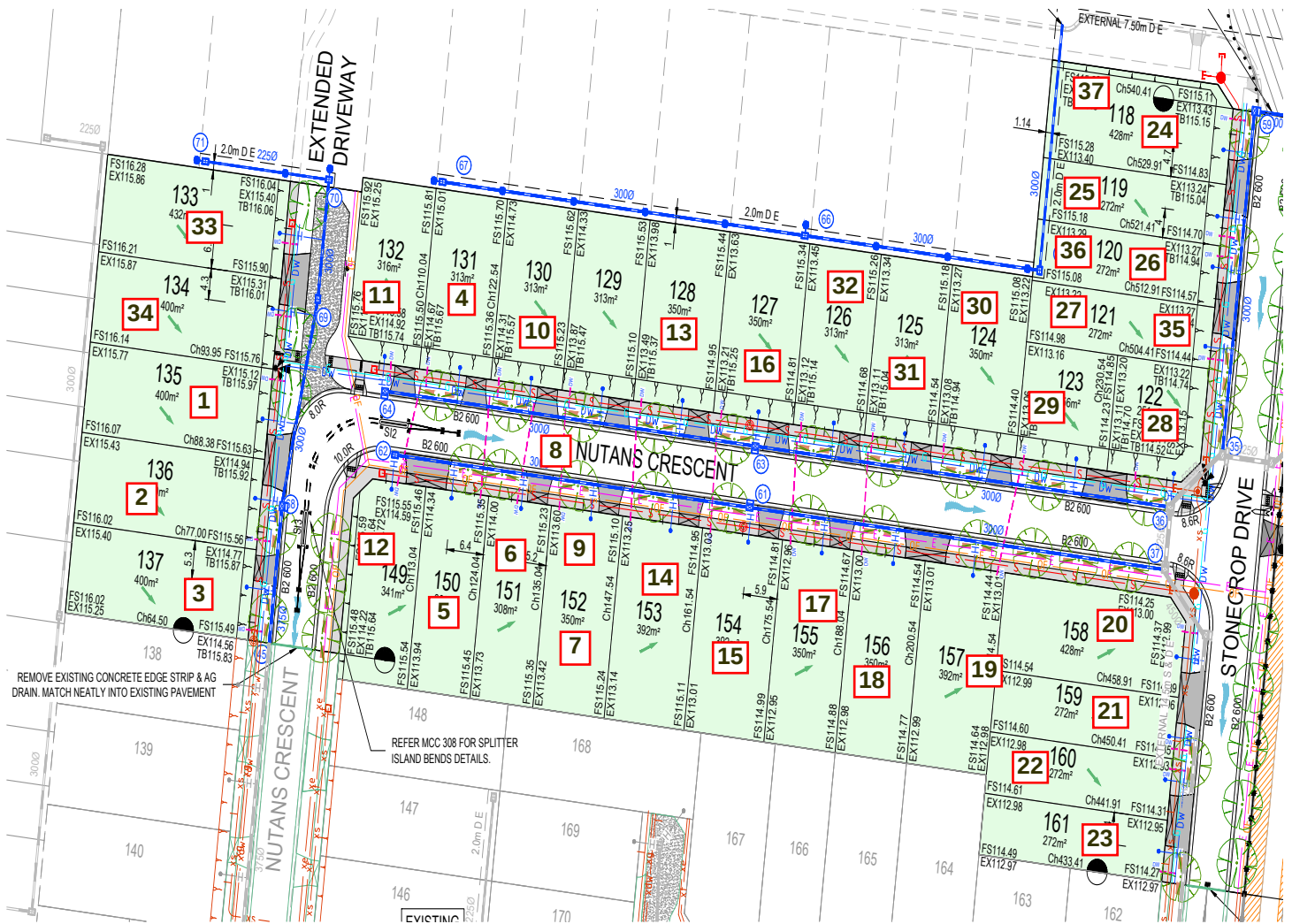
Compaction Verification testing is summarized in a detailed test register with test certificates attached provided in Appendix 2: *Compaction Test Register and Test Certificates*. A test location plan (D231084D1, Appendix 1) providing a schematic of test locations across the extent of scope of works for every placed layer of fill is also documented.

A total of 37 density tests (Hilf method in accordance with 1289 5.7.1) were undertaken with 0 failed results. The results summarised in the compaction test register (Appendix 2) confirm that for every layer of fill placed in a specific work area, satisfactory testing was completed.

5 Statement of Compliance

The intention of this report is to provide a description of the earthworks construction for Stage 3 at Cobble Springs Estate. For completed fill areas of greater than 300mm, and for works completed between 20/10/2023 and 09/02/2024, 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 Cobble Springs Estate was observed to be constructed in compliance with the requirements of the Technical Specification.

Appendix 1: Test Location Plan



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Pakenham, VIC 3860

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

Test Location Plan

not to scale

Client:	Lojac Civil Pty Ltd
Project:	Cobble Springs Estate, Stage 3
Reference:	D231084 D1

Appendix 2: Compaction Test Register and Test Certificates



Compaction Test Register

Client: Lojac Civil Pty Ltd **Project No:** D231084
Project: Cobble Springs Estate Stage 3 **Specification:** 95%

Date:	Test No:	Layer:	Retest of:	Density:	Pass/Fail:	Lot No:	Report No:
25/10/2023	1	Layer 3		97.0%	Pass	Lot 135	D231084-1
25/10/2023	2	Layer 3		97.5%	Pass	Lot 136	D231084-1
25/10/2023	3	Layer 3		96.5%	Pass	Lot 137	D231084-1
01/11/2023	4	Layer 3		101.0%	Pass	Lot 131	D231084-2
01/11/2023	5	Layer 3		101.0%	Pass	Lot 150	D231084-2
01/11/2023	6	Layer 3		100.5%	Pass	Lot 151	D231084-2
02/11/2023	7	Layer 1		97.5%	Pass	Lot 152	D231084-3
02/11/2023	8	Layer 1		98.5%	Pass	Lot 152	D231084-3
02/11/2023	9	Layer 1		98.5%	Pass	Lot 152	D231084-3
03/11/2023	10	Layer 3		101.5%	Pass	Lot 130	D231084-4
03/11/2023	11	Layer 3		101.0%	Pass	Lot 132	D231084-4
03/11/2023	12	Layer 3		101.5%	Pass	Lot 149	D231084-4
10/11/2023	13	Layer 1		97.5%	Pass	Lot 128	D231084-5
10/11/2023	14	Layer 1		96.0%	Pass	Lot 153	D231084-5
10/11/2023	15	Layer 1		97.5%	Pass	Lot 154	D231084-5
13/11/2023	16	Layer 2		101.0%	Pass	Lot 127	D231084-6
13/11/2023	17	Layer 2		101.0%	Pass	Lot 155	D231084-6
13/11/2023	18	Layer 2		100.0%	Pass	Lot 156	D231084-6
21/11/2023	19	Layer 2		101.5%	Pass	Lot 157	D231084-7
21/11/2023	20	Layer 2		100.5%	Pass	Lot 158	D231084-7
21/11/2023	21	Layer 2		100.5%	Pass	Lot 159	D231084-7
21/11/2023	22	Layer 2		100.5%	Pass	Lot 160	D231084-7
21/11/2023	23	Layer 2		100.0%	Pass	Lot 161	D231084-7
23/01/2024	24	Layer 2		101.5%	Pass	Lot 118	D231084-8
23/01/2024	25	Layer 2		101.5%	Pass	Lot 119	D231084-8
23/01/2024	26	Layer 2		101.5%	Pass	Lot 120	D231084-8
23/01/2024	27	Layer 2		102.0%	Pass	Lot 121	D231084-8
23/01/2024	28	Layer 2		102.0%	Pass	Lot 122	D231084-8
23/01/2024	29	Layer 2		102.5%	Pass	Lot 123	D231084-8
23/01/2024	30	Layer 2		103.0%	Pass	Lot 124	D231084-8
23/01/2024	31	Layer 2		101.5%	Pass	Lot 125	D231084-8
23/01/2024	32	Layer 2		98.5%	Pass	Lot 126	D231084-8
23/01/2024	33	Layer 2		99.0%	Pass	Lot 133	D231084-8
23/01/2024	34	Layer 2		99.5%	Pass	Lot 134	D231084-8
09/02/2024	35	Layer 3		98.5%	Pass	Lot 121	D231084-9
09/02/2024	36	Layer 3		99.5%	Pass	Lot 120	D231084-9
09/02/2024	37	Layer 3		101.5%	Pass	Lot 118	D231084-9

Material Test Report

Report Number: D231084-1
Issue Number: 1
Date Issued: 27/10/2023
Client: Lojac Civil Pty Ltd
 35/148 Chesterville Road, Moorabbin Vic 3189
Contact: Shannon
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 6729
Date Sampled: 25/10/2023 08:30
Dates Tested: 25/10/2023 - 26/10/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Spring Estate - Stage 3 - Level one
Material: Clay
Material Source: Import



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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Eranda Hippola
 Laboratory Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D23-6729A	D23-6729B	D23-6729C
Test Number	1	2	3
Date Tested	25/10/2023	25/10/2023	25/10/2023
Time Tested	11:00	11:19	11:30
Test Request #/Location	Lot 135	Lot 136	Lot 137
Layer / Reduced Level	Layer 3	Layer 3	Layer 3
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	12	11	12
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**
Field Wet Density (FWD) t/m ³	1.90	1.89	1.90
Field Moisture Content %	16.7	18.0	16.6
Field Dry Density (FDD) t/m ³	1.66	1.63	1.66
Peak Converted Wet Density t/m ³	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.96	1.94	1.97
Adj. Optimum Moisture Content % (AS1289.5.4.1)	17.1	18.0	16.5
Adj. Field Moisture Content % (AS1289.5.4.1)	14.7	16.1	14.7
Moisture Ratio % (AS1289.5.4.1)	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	86.5	89.0	89.0
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	2.5	2.0	2.0
Hilf Density Ratio (%)	97.0	97.5	96.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D231084-2
Issue Number: 1
Date Issued: 03/11/2023
Client: Lojac Civil Pty Ltd
 35/148 Chesterville Road, Moorabbin Vic 3189
Contact: Shannon
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 6784
Date Sampled: 01/11/2023 8:30
Dates Tested: 01/11/2023 - 02/11/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Springs Estate Stage 3 - Level One
Material: Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	D23-6784A	D23-6784B	D23-6784C
Test Number	4	5	6
Date Tested	01/11/2023	01/11/2023	01/11/2023
Time Tested	13:00	13:15	13:25
Test Request #/Location	Lot 131	Lot 150	Lot 151
Layer / Reduced Level	Layer 3	Layer 3	Layer 3
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	6	6	9
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**
Field Wet Density (FWD) t/m ³	1.92	1.94	1.94
Field Moisture Content %	14.0	17.0	15.9
Field Dry Density (FDD) t/m ³	1.70	1.68	1.70
Peak Converted Wet Density t/m ³	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.90	1.92	1.93
Adj. Optimum Moisture Content % (AS1289.5.4.1)	17.6	21.0	18.8
Adj. Field Moisture Content % (AS1289.5.4.1)	13.1	16.0	14.4
Moisture Ratio % (AS1289.5.4.1)	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	74.5	76.0	76.5
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	4.5	5.0	4.5
Hilf Density Ratio (%)	101.0	101.0	100.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D231084-3
Issue Number: 1
Date Issued: 08/11/2023
Client: Lojac Civil Pty Ltd
 35/148 Chesterville Road, Moorabbin Vic 3189
Contact: Shannon
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 6793
Date Sampled: 02/11/2023
Dates Tested: 02/11/2023 - 03/11/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Springs Estate Stage 3 - Level One
Material: Clay
Material Source: Imported



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Nalaka Bandara

Approved Signatory: Nalaka Bandara
 Lab Tech

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D23-6793A	D23-6793B	D23-6793C
Test Number	7	8	9
Date Tested	02/11/2023	02/11/2023	02/11/2023
Time Tested	**	**	**
Test Request #/Location	LOT 152	Nutans Crescent	LOT 152
Layer / Reduced Level	Layer 1	Layer 1	Layer 1
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	8	9	10
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**
Field Wet Density (FWD) t/m ³	1.91	1.92	1.96
Field Moisture Content %	16.5	17.4	18.0
Field Dry Density (FDD) t/m ³	1.66	1.65	1.69
Peak Converted Wet Density t/m ³	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.96	1.94	1.99
Adj. Optimum Moisture Content % (AS1289.5.4.1)	17.7	17.9	18.9
Adj. Field Moisture Content % (AS1289.5.4.1)	15.2	15.8	16.3
Moisture Ratio % (AS1289.5.4.1)	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	86.0	88.5	86.0
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	2.5	2.0	2.5
Hilf Density Ratio (%)	97.5	98.5	98.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D231084-4
Issue Number: 1
Date Issued: 10/11/2023
Client: Lojac Civil Pty Ltd
 35/148 Chesterville Road, Moorabbin Vic 3189
Contact: Shannon
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 6798
Date Sampled: 03/11/2023 8:30
Dates Tested: 03/11/2023 - 09/11/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Springs Estate Stage 3 - Level One
Material: Clay
Material Source: Imported



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	D23-6798A	D23-6798B	D23-6798C
Test Number	10	11	12
Date Tested	03/11/2023	03/11/2023	03/11/2023
Time Tested	13:30	13:40	13:50
Test Request #/Location	Lot 130	Lot 132	Lot 149
Layer / Reduced Level	Layer 3	Layer 3	Layer 3
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	7	7	9
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**
Field Wet Density (FWD) t/m ³	1.92	1.92	1.93
Field Moisture Content %	18.9	20.1	18.9
Field Dry Density (FDD) t/m ³	1.63	1.62	1.65
Peak Converted Wet Density t/m ³	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.89	1.91	1.90
Adj. Optimum Moisture Content % (AS1289.5.4.1)	22.8	24.0	22.4
Adj. Field Moisture Content % (AS1289.5.4.1)	17.6	18.7	17.2
Moisture Ratio % (AS1289.5.4.1)	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	77.0	78.0	76.5
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	5.0	5.0	5.0
Hilf Density Ratio (%)	101.5	101.0	101.5
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: D231084-5
Issue Number: 1
Date Issued: 14/11/2023
Client: Lojac Civil Pty Ltd
 35/148 Chesterville Road, Moorabbin Vic 3189
Contact: Shannon
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 6827
Date Sampled: 10/11/2023 8:30
Dates Tested: 10/11/2023 - 13/11/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Springs Estate Stage 3 - Level One
Material: Clay
Material Source: Imported



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Signature

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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	D23-6827A	D23-6827B	D23-6827C
Test Number	13	14	15
Date Tested	10/11/2023	10/11/2023	10/11/2023
Time Tested	14:30	14:40	14:55
Test Request #/Location	Lot 128	Lot 153	Lot 154
Layer / Reduced Level	Layer 1	Layer 1	Layer 1
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	10	9	10
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**
Field Wet Density (FWD) t/m ³	1.94	1.90	1.92
Field Moisture Content %	17.0	16.8	16.9
Field Dry Density (FDD) t/m ³	1.68	1.65	1.67
Peak Converted Wet Density t/m ³	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.99	1.98	1.98
Adj. Optimum Moisture Content % (AS1289.5.4.1)	18.1	18.1	18.1
Adj. Field Moisture Content % (AS1289.5.4.1)	15.3	15.4	15.3
Moisture Ratio % (AS1289.5.4.1)	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	85.0	85.0	84.0
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	2.5	2.5	3.0
Hilf Density Ratio (%)	97.5	96.0	97.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D231084-6
Issue Number: 1
Date Issued: 16/11/2023
Client: Lojac Civil Pty Ltd
35/148 Chesterville Road, Moorabbin Vic 3189
Contact: Shannon
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 6836
Date Sampled: 13/11/2023 8:30
Dates Tested: 13/11/2023 - 15/11/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Springs Estate Stage 3 - Level One
Material: Clay
Material Source: Imported



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NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	D23-6836A	D23-6836B	D23-6836C
Test Number	16	17	18
Date Tested	13/11/2023	13/11/2023	13/11/2023
Time Tested	15:00	15:15	15:25
Test Request #/Location	Lot 127	Lot 155	Lot 156
Layer / Reduced Level	Layer 2	Layer 2	Layer 2
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	7	7	7
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**
Field Wet Density (FWD) t/m ³	1.94	1.94	1.94
Field Moisture Content %	22.0	21.7	22.0
Field Dry Density (FDD) t/m ³	1.62	1.61	1.61
Peak Converted Wet Density t/m ³	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.93	1.92	1.94
Adj. Optimum Moisture Content % (AS1289.5.4.1)	20.5	20.4	20.6
Adj. Field Moisture Content % (AS1289.5.4.1)	20.4	20.2	20.4
Moisture Ratio % (AS1289.5.4.1)	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	99.5	99.0	99.5
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	0.0	0.0	0.0
Hilf Density Ratio (%)	101.0	101.0	100.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D231084-7
Issue Number: 1
Date Issued: 27/11/2023
Client: Lojac Civil Pty Ltd
 35/148 Chesterville Road, Moorabbin Vic 3189
Contact: Shannon
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 6896
Date Sampled: 21/11/2023 8:30
Dates Tested: 21/11/2023 - 24/11/2023
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Springs Estate Stage 3 - Level One
Material: Clay
Material Source: Imported



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Nalaka Bandara

Approved Signatory: Nalaka Bandara
 Lab Tech

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	D23-6896A	D23-6896B	D23-6896C	D23-6896D	D23-6896E
Test Number	19	20	21	22	23
Date Tested	21/11/2023	21/11/2023	21/11/2023	21/11/2023	21/11/2023
Time Tested	11:00	11:10	11:15	11:25	11:35
Test Request #/Location	Lot 157	Lot 158	Lot 159	Lot 160	Lot 161
Layer / Reduced Level	Layer 2	Layer 2	Layer 2	Layer 2	Layer 2
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Clay	Clay	Clay	Clay	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 (%)	6	6	7	6	7
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**	**	**
Field Wet Density (FWD) t/m ³	1.86	1.84	1.85	1.84	1.85
Field Moisture Content %	16.6	16.1	16.6	16.2	16.1
Field Dry Density (FDD) t/m ³	1.61	1.60	1.60	1.60	1.61
Peak Converted Wet Density t/m ³	**	**	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.84	1.83	1.84	1.83	1.85
Adj. Optimum Moisture Content % (AS1289.5.4.1)	20.7	19.9	20.2	20.1	19.7
Adj. Field Moisture Content % (AS1289.5.4.1)	15.5	15.0	15.5	15.2	14.9
Moisture Ratio % (AS1289.5.4.1)	**	**	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	75.0	75.5	77.0	75.5	75.5
Moisture Variation (Wv) %	**	**	**	**	**
Adjusted Moisture Variation %	5.0	5.0	4.5	5.0	5.0
Hilf Density Ratio (%)	101.5	100.5	100.5	100.5	100.0
Compaction Method	Standard	Standard	Standard	Standard	Standard
Report Remarks	**	**	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D231084-8
Issue Number: 1
Date Issued: 25/01/2024
Client: Lojac Civil Pty Ltd
35/148 Chesterville Road, Moorabbin Vic 3189
Contact: Shannon
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 7085
Date Sampled: 23/01/2024 8:30
Dates Tested: 23/01/2024 - 25/01/2024
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Springs Estate Stage 3 - Level One
Material: Clay
Material Source: Imported



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Approved Signatory: Eranda Hippola
Laboratory Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	D24-7085A	D24-7085B	D24-7085C	D24-7085D	D24-7085E	D24-7085F
Test Number	24	25	26	27	28	29
Date Tested	23/01/2024	23/01/2024	23/01/2024	23/01/2024	23/01/2024	23/01/2024
Time Tested	11:00	11:15	11:25	11:36	11:49	11:57
Test Request #/Location	Lot 118	Lot 119	Lot 120	Lot 121	Lot 122	Lot 123
Layer / Reduced Level	Layer 2	Layer 2	Layer 2	Layer 2	Layer 2	Layer 2
Thickness of Layer (mm)	300	300	300	300	300	300
Soil Description	Clay	Clay	Clay	Clay	Clay	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 (%)	0	0	6	5	5	6
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	**	**	**	**
Field Wet Density (FWD) t/m ³	1.91	1.91	1.92	1.92	1.93	1.97
Field Moisture Content %	22.2	22.8	23.0	22.2	21.3	22.2
Field Dry Density (FDD) t/m ³	1.56	1.55	1.58	1.58	1.60	1.63
Peak Converted Wet Density t/m ³	1.88	1.88	**	**	**	**
Adjusted Peak Converted Wet Density t/m ³	**	**	1.90	1.88	1.89	1.92
Adj. Optimum Moisture Content % (AS1289.5.4.1)	27.5	27.7	26.1	26.1	24.8	25.7
Adj. Field Moisture Content % (AS1289.5.4.1)	22.2	22.8	21.7	21.1	20.2	20.7
Moisture Ratio % (AS1289.5.4.1)	81.0	82.5	**	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	83.0	81.0	81.5	80.5
Moisture Variation (Wv) %	5.0	4.5	**	**	**	**
Adjusted Moisture Variation %	**	**	4.0	4.5	4.5	4.5
Hilf Density Ratio (%)	101.5	101.5	101.5	102.0	102.0	102.5
Compaction Method	Standard	Standard	Standard	Standard	Standard	Standard
Report Remarks	**	**	**	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D231084-8
Issue Number: 1
Date Issued: 25/01/2024
Client: Lojac Civil Pty Ltd
 35/148 Chesterville Road, Moorabbin Vic 3189
Contact: Shannon
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 7085
Date Sampled: 23/01/2024 8:30
Dates Tested: 23/01/2024 - 25/01/2024
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Springs Estate Stage 3 - Level One
Material: Clay
Material Source: Imported



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Approved Signatory: Eranda Hippola
 Laboratory Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1						
Sample Number	D24-7085G	D24-7085H	D24-7085I	D24-7085J	D24-7085K	
Test Number	30	31	32	33	34	
Date Tested	23/01/2024	23/01/2024	23/01/2024	23/01/2024	23/01/2024	
Time Tested	12:09	12:18	12:31	12:42	12:51	
Test Request #/Location	Lot 124	Lot 125	Lot 126	Lot 133	Lot 134	
Layer / Reduced Level	Layer 2	Layer 2	Layer 2	Layer 2	Layer 2	
Thickness of Layer (mm)	300	300	300	300	300	
Soil Description	Clay	Clay	Clay	Clay	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 (%)	5	4	5	5	6	
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**	**	**	
Field Wet Density (FWD) t/m ³	1.94	1.93	1.96	1.92	1.95	
Field Moisture Content %	22.2	22.2	22.4	21.7	21.6	
Field Dry Density (FDD) t/m ³	1.60	1.59	1.62	1.59	1.62	
Peak Converted Wet Density t/m ³	**	**	**	**	**	
Adjusted Peak Converted Wet Density t/m ³	1.88	1.90	1.99	1.94	1.96	
Adj. Optimum Moisture Content % (AS1289.5.4.1)	26.0	26.7	25.7	24.8	24.5	
Adj. Field Moisture Content % (AS1289.5.4.1)	21.0	21.4	21.3	20.6	20.3	
Moisture Ratio % (AS1289.5.4.1)	**	**	**	**	**	
Adjusted Moisture Ratio % (AS1289.5.4.1)	80.5	80.0	83.0	83.0	83.0	
Moisture Variation (Wv) %	**	**	**	**	**	
Adjusted Moisture Variation %	4.5	5.0	4.0	4.0	4.0	
Hilf Density Ratio (%)	103.0	101.5	98.5	99.0	99.5	
Compaction Method	Standard	Standard	Standard	Standard	Standard	
Report Remarks	**	**	**	Typing error was occurred for mass of mould.	**	

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D231084-9
Issue Number: 1
Date Issued: 14/02/2024
Client: Lojac Civil Pty Ltd
35/148 Chesterville Road, Moorabbin Vic 3189
Project Number: D231084
Project Name: Cobble Springs Estate Stage 3 - Level One
Project Location: Cobble Bank
Work Request: 7168
Date Sampled: 09/02/2024
Dates Tested: 09/02/2024 - 13/02/2024
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Cobble Springs Estate Stage 3 - Level One
Material: Clay
Material Source: Imported



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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	D24-7168A	D24-7168B	D24-7168C
Test Number	35	36	37
Date Tested	09/02/2024	09/02/2024	09/02/2024
Time Tested	15:00	15:15	15:30
Test Request #/Location	Lot 121	Lot 120	Lot 118
Layer / Reduced Level	Layer 3	Layer 3	Layer 3
Thickness of Layer (mm)	300	300	300
Soil Description	Clay	Clay	Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	5	6	6
Percentage of Dry Oversize (%) (AS1289.5.4.1)	**	**	**
Field Wet Density (FWD) t/m ³	1.89	1.90	1.91
Field Moisture Content %	17.1	17.1	18.0
Field Dry Density (FDD) t/m ³	1.63	1.64	1.63
Peak Converted Wet Density t/m ³	**	**	**
Adjusted Peak Converted Wet Density t/m ³	1.92	1.91	1.88
Adj. Optimum Moisture Content % (AS1289.5.4.1)	21.5	19.9	22.3
Adj. Field Moisture Content % (AS1289.5.4.1)	16.2	16.1	16.9
Moisture Ratio % (AS1289.5.4.1)	**	**	**
Adjusted Moisture Ratio % (AS1289.5.4.1)	75.5	81.0	75.5
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	5.0	3.5	5.5
Hilf Density Ratio (%)	98.5	99.5	101.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC