Lucas Grange Stage J1 Alfredton

Earthworks Supervision Report for Madica

Report 21C 0069
February 2021

GTS
GEOTECHNICAL TESTING SERVICES

Lucas Grange Stage J1
Alfredton

Earthworks Supervision Report
for
Madica

Revision

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Wayne Sheridan Madica	Email PDF wayne.sheridan@madica.com.au	11/02/2021

TABLE OF CONTENTS

APPENDIX

Site plan
Test reports

1 INTRODUCTION

Madica commissioned Geotechnical Testing Services (GTS) to undertake Level 1 Supervision and testing (*AS3798-2007*) for the earthworks at Lucas Grange Stage J1, Alfredton.

Level 1 testing was generally performed in line with *AS3798-2007 Guidelines on Earthworks for Commercial and Residential Development* and provides inspection of the construction of controlled fill and compaction testing in accordance with *AS1289 Methods of Testing Soils for Engineering Purposes.* The Level 1 testing was undertaken by geotechnicians with supervision provided by a geotechnical engineer from GTS.

2 SCOPE OF WORKS

2.1 Area of Work

GTS provided Level 1 inspection and testing of the engineered fill placed to raise the surface of Lots 18 & 19 and Lots 25 & 26.

The total depth of engineered fill across the sites varied from none to 0.75 metres in Lot 18, with approximate locations shown on the attached site plan. It is noted that the client may subsequently place 0.2 metres of uncontrolled fill (topsoil) over the engineered fill.

It is noted that areas with less than 0.4 metres total fill depth were not included in the controlled fill.

2.2 Placement Specification

The placement of the fill and associated works generally followed the recommendations outlined in *AS3798-2007 Guidelines for Earthworks for Commercial and Residential Developments* and the construction specification.

In summary, the earthworks comply with the following:

- The layers for residential lots are to be compacted to at least 95% of the density ratio in accordance with *AS1289 5.1.1* (or *5.7.1*), based on Standard compaction.

In accordance with Table 8.1 of *AS3798-2007*, the sites would be considered small scale operations (between 500m^2 and 1500m^2). Therefore, a minimum of 1 test per layer per 1000m^2, 1 test per 200m^3 or 1 test per Lot per layer is required. The testing conducted meets the minimum requirement.

3 INSPECTION AND TESTING

Inspection of the excavated base, including supervision of a proof roll with a loaded water truck, was conducted by a geotechnical engineer and it was observed that the unsuitable material (vegetation, topsoil/silt) had been removed with the base consisting of a stiff silty clay material of good strength.

Level 1 supervision, inspection and testing was undertaken by a geotechnician from GTS who nominated the timing and location of the in-situ density tests. The approximate location of each test is recorded on the test reports and attached fill plan.

Laboratory compaction testing was undertaken on a one-to-one basis at our Ballarat laboratory. A summary of the results of the compaction control testing is presented in a table below with the full NATA endorsed test reports included in the Appendix.

4 SUMMARY OF TEST RESULTS

A summary of the test results is included in the following table with the full NATA accredited reports included in the Appendix.

Project No.	Sample No.	Test Date	Location	Reduced Level* (mm)	Moisture Variation % O.M.C.	Hilf Density Ratio %
1	D21-2101A	02/02/2021	Lot 26	-200	2.0 dry	98.0
2	D21-2101B	02/02/2021	Lot 25	-200	1.5 dry	98.0
3	D21-2104A	02/02/2021	Lot 26	-50	0.5 wet	98.0
4	D21-2104B	02/02/2021	Lot 25	-50	0.5 dry	103.0
5	D21-2104C	02/02/2021	Lot 18	-600	1.0 wet	100.0
6	D21-2106A	02/02/2021	Lot 18	-300	2.0 dry	102.5
7	D21-2106B	02/02/2021	Lot 19	-300	2.5 dry	106.5
8	D21-2108A	02/02/2021	Lot 18	FSL	0.0	102.0
9	D21-2108B	02/02/2021	Lot 19	FSL	0.5 wet	104.5

5 STATEMENT OF COMPLIANCE

GTS personnel have provided Level 1 inspection and testing services during the placement of material for the filling of Lots 18 & 19 and Lots 25 & 26. The placement of fill and construction techniques adopted was observed throughout the project.

Based on observations made by GTS personnel and the results of field and laboratory tests, we consider that the fill has been placed and compacted and is considered to be engineered or controlled fill. It is noted that 200mm of topsoil may subsequently be placed over the engineered fill. This topsoil layer is not considered to be controlled fill.

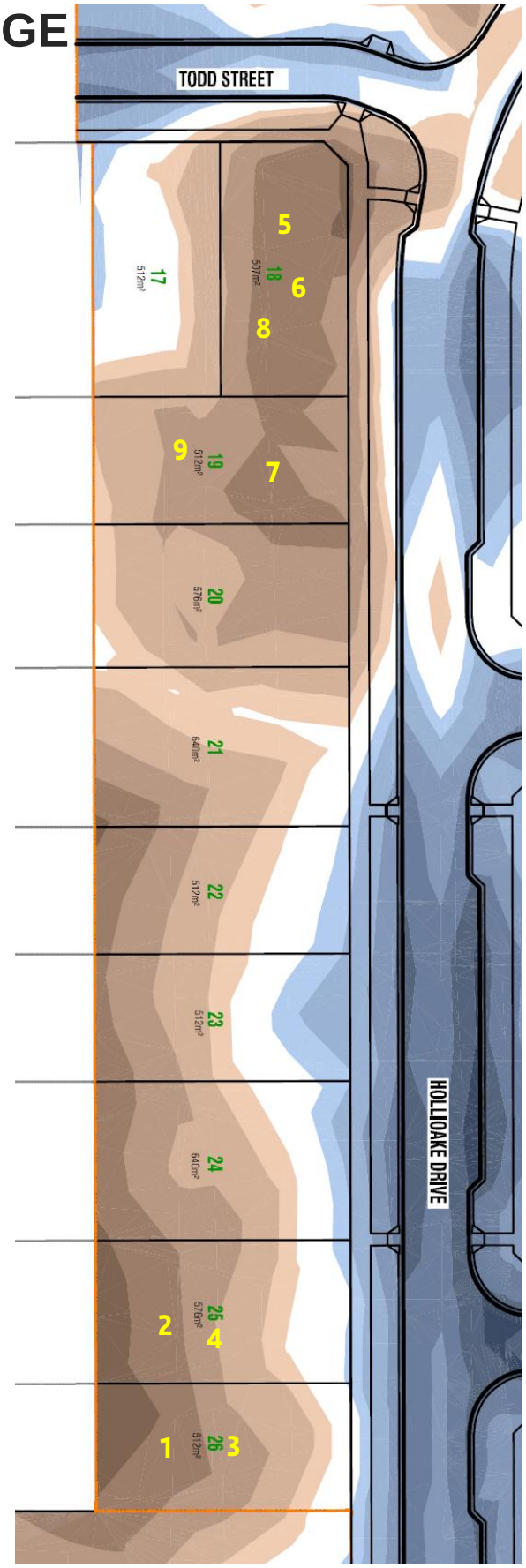
Subject to residential site classifications, the controlled fill material is deemed a suitable founding medium for future residential buildings.

Benj Beatty BA/BSc (Hons), MPA, MAusIMM
Senior Engineering Geologist

APPENDIX

LUCAS GRANGE

STAGE J1



FILL LEGEND	
	DEPTH OF FILL
	-1.220 TO -0.700
	-0.700 TO -0.600
	-0.600 TO -0.500
	-0.500 TO -0.400
	-0.400 TO -0.300
	-0.300 TO -0.200
	-0.200 TO -0.100
	-0.100 TO -0.050
	0.050 TO 0.100
	0.100 TO 0.200
	0.200 TO 0.300
	0.300 TO 0.400
	0.400 TO 0.500
	0.500 TO 0.600
	0.600 TO 1.200

Material Test Report

Report Number: P21359-1
Issue Number: 1
Date Issued: 02/02/2021
Client: Madica Pty Ltd
PO Box 173, Buninyong Victoria 3357
Contact: Wayne Sheridan
Project Number: P21359
Project Name: Lucas Grange Stage -J1 - Level 1
Project Location: Lucas
Work Request: 2101
Date Sampled: 02/02/2021
Dates Tested: 02/02/2021 - 02/02/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Site Selection: Selected By Tester
Material Source: Test Location

Geotechnical Testing Services (Southern)
Ballarat Soil and Concrete Testing Laboratory
Unit 6, 33 Laidlaw Drive Delacombe VIC 3356
Phone: (03) 5335 6494
Email: matthewa@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Matt Allen
Gtss-matt
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	D21-2101A	D21-2101B	
Date Tested	02/02/2021	02/02/2021	
Time Tested	07:55	07:57	
Test Request #/Location	House Lot No 26	House Lot No 25	
Easting	54h 745865	54h 745866	
Northing	5839835	5839840	
Elevation (m)	200mm BFSL	200mm BFSL	
Layer / Reduced Level	Lift 1	Lift 1	
Thickness of Layer (mm)	200	200	
Soil Description	Silty Clay	Silty Clay	
Test Depth (mm)	175	175	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	**	**	
Field Wet Density (FWD) t/m^3	1.90	1.89	
Field Dry Density (FDD) t/m^3	**	**	
Peak Converted Wet Density t/m^3	1.94	1.93	
Adjusted Peak Converted Wet Density t/m^3	**	**	
Moisture Variation (Wv) %	2.0	1.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	**98.0**	**98.0**	
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: P21359-2
Issue Number: 1
Date Issued: 03/02/2021
Client: Madica Pty Ltd
PO Box 173, Buninyong Victoria 3357
Contact: Wayne Sheridan
Project Number: P21359
Project Name: Lucas Grange Stage -J1 - Level 1
Project Location: Lucas
Work Request: 2104
Date Sampled: 03/02/2021
Dates Tested: 03/02/2021 - 03/02/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material Source: Test Location

Geotechnical Testing Services (Southern)
Ballarat Soil and Concrete Testing Laboratory
Unit 6, 33 Laidlaw Drive Delacombe VIC 3356
Phone: (03) 5335 6494
Email: matthewa@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Matt Allen
Gtss-matt
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	D21-2104A	D21-2104B	D21-2104C
Date Tested	03/02/2021	03/02/2021	03/02/2021
Time Tested	07:35	07:37	07:52
Test Request #/Location	Lift 2 House Lot Nos 26	Lift 2 House Lot Nos 25	Lift 1 House Lot Nos 18
Easting	54h 745864	54h 745857	54h 745714
Northing	5839825	5839840	5839866
Elevation (m)	50mm BFSL	50mm BFSL	600mm BFSL
Layer / Reduced Level	Filling	Filling	Filling
Thickness of Layer (mm)	200	200	200
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	0	0
Field Wet Density (FWD) t/m^3	1.96	2.26	1.92
Field Dry Density (FDD) t/m^3	**	**	**
Peak Converted Wet Density t/m^3	2.00	2.20	1.92
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Moisture Variation (Wv) %	-0.5	0.5	-1.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**98.0**	**103.0**	**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: P21359-3
Issue Number: 1
Date Issued: 04/02/2021
Client: Madica Pty Ltd
PO Box 173, Buninyong Victoria 3357
Contact: Wayne Sheridan
Project Number: P21359
Project Name: Lucas Grange Stage -J1 - Level 1
Project Location: Lucas
Work Request: 2106
Date Sampled: 04/02/2021
Dates Tested: 04/02/2021 - 04/02/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Site Selection: Selected By Tester
Material Source: Test Location

Geotechnical Testing Services (Southern)
Ballarat Soil and Concrete Testing Laboratory
Unit 6, 33 Laidlaw Drive Delacombe VIC 3356
Phone: (03) 5335 6494
Email: matthewa@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Matt Allen
Gtss-matt

NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	D21-2106A	D21-2106B	
Date Tested	04/02/2021	04/02/2021	
Time Tested	07:34	07:36	
Test Request #/Location	House Lot Nos: 18	House Lot Nos: 19	
Easting	54h 745727	54h 745748	
Northing	5839871	5839853	
Elevation (m)	300mm BFSL	300mm BFSL	
Layer / Reduced Level	Lift No 2	Lift No 1	
Thickness of Layer (mm)	200	200	
Soil Description	Brown silty clay	Brown silty clay	
Test Depth (mm)	175	175	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	**	**	
Field Wet Density (FWD) t/m^3	2.00	2.06	
Field Dry Density (FDD) t/m^3	**	**	
Peak Converted Wet Density t/m^3	1.95	1.93	
Adjusted Peak Converted Wet Density t/m^3	**	**	
Moisture Variation (Wv) %	2.0	2.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	**102.5**	**106.5**	
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: **P21359-4**
Issue Number: 1
Date Issued: 05/02/2021
Client: Madica Pty Ltd
PO Box 173, Buninyong Victoria 3357
Contact: Wayne Sheridan
Project Number: P21359
Project Name: Lucas Grange Stage -J1 - Level 1
Project Location: Lucas
Work Request: 2108
Date Sampled: 05/02/2021
Dates Tested: 05/02/2021 - 05/02/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Site Selection: Selected By Tester
Material Source: Test Location

Geotechnical Testing Services (Southern)
Ballarat Soil and Concrete Testing Laboratory
Unit 6, 33 Laidlaw Drive Delacombe VIC 3356
Phone: (03) 5335 6494
Email: matthewa@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Matt Allen
Gtss-matt
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	D21-2108A	D21-2108B	
Date Tested	05/02/2021	05/02/2021	
Time Tested	08:03	08:16	
Test Request #/Location	House Lot No18	House Lot No19	
Easting	54H 745725	54H 745743	
Northing	5839869	5839849	
Elevation (m)	FSL	FSL	
Layer / Reduced Level	Lift No 3	Lift No 2	
Thickness of Layer (mm)	200	200	
Soil Description	Orange brown silty clay	Orange brown silty clay	
Test Depth (mm)	175	175	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	**	**	
Field Wet Density (FWD) t/m^3	2.02	2.11	
Field Dry Density (FDD) t/m^3	**	**	
Peak Converted Wet Density t/m^3	1.98	2.02	
Adjusted Peak Converted Wet Density t/m^3	**	**	
Moisture Variation (Wv) %	0.0	-0.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	**102.0**	**104.5**	
Compaction Method	**Standard**	**Standard**	
Report Remarks	**	**	

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