

Lakeview Estate Stages 9to 11 Moama

Earthworks Supervision Report for Midland Contracting

Report 18C 0521
July 2018

Lakeview Estate Stages 9 to 11 Moama

Earthworks Supervision Report for Midland Contracting

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Midland Contracting Contact: Shane Houlahan Cc: Terraco Attn: Neil Bowe	Email PDF admin@midlandcontracting.com.au nbowe@terrace.com.au	11/7/18

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1 INTRODUCTION

Midland Contracting commissioned Geotechnical Testing Services (GTS) to undertake Level 1 Supervision and testing (AS3798-2007) for the earthworks at Lakeview Estate Stage 9 to 11, Moama. This report covers the fill that was placed up until June 2018.

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

Geotechnical Testing Services provided Level 1 inspection and testing of the engineered fill placed across Lots 171 to 189, 198 to 217.

The depth of fill across the site varied from none to 1500mm with the approximate locations shown on the attached site plan. It is noted that fill was placed and compacted some time ago (more than 5 years) with retrospective testing conducted in test pits along with recent fill placed throughout the site.

2.2 PLACEMENT SPECIFICATION

Whilst there was no earthworks specification compiled for this project, 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 site would be considered large scale (greater than 1500m²) and therefore a minimum of 1 test per 2500m², 1 test per 500m³ or 3 tests per visit

are required. It is noted that for the fill to raise the lots, not every lot requires testing under the large scale format.

3 INSPECTION AND TESTING

Inspection of the excavated base was conducted by a geotechnician and it was observed that the unsuitable material (vegetation, top soil/silt, tree roots) had been removed with the base consisting of a Silty Clay material of good strength.

Level 1 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 Echuca 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 full NATA accredited reports included in the Appendix. It is noted that following the testing, the allotments were adjusted, hence the new lot numbers are included in the table below with the original numbers that are on the test reports in brackets.

Project No.	Sample No.	Test Date.	Location.	Reduced Level (mm)	Moisture Variation %O.M.C	Hilf Density Ratio %
1	E18-860A	7/2/18	Lot 181 TS	600	0.0	97.0
2	E18-860B	7/2/18	Lot 180	300	1.0 wet	98.5
3	E18-860C	7/2/18	Lot 179	300	1.5 wet	97.0
4	E18-860D	7/2/18	Lot 178	300	2.0 dry	95.5
5	E18-867A	7/2/18	Lot 181 TS	300	1.5 dry	100.0
6	E18-908A	14/2/18	Lot 215	900	1.0 dry	98.5
7	E18-908B	14/2/18	Lot 214	900	0.0	97.5
8	E18-908C	14/2/18	Lot 206	600	3.5 dry	95.5
9	E18-908D	14/2/18	Lot 206	300	3.0 dry	97.0
10	E18-908E	14/2/18	Lot 207	600	4.0 dry	93.0
11	E18-908F	14/2/18	Road	300	6.0 dry	91.5
12	E18-908G	14/2/18	Lot 200	200	5.0 dry	85.5
13	E18-908H	14/2/18	Lot 201	600	1.5 dry	99.5

Project No.	Sample No.	Test Date.	Location.	Reduced Level (mm)	Moisture Variation %O.M.C	Hilf Density Ratio %
14	E18-908I	14/2/18	Lot 213		5.0 dry	99.5
15	E18-900A	13/2/18	Lot 184	FSL	4.0 dry	101.5
16	E18-900B	13/2/18	Lot 182	FSL	3.0 dry	101.5
17	E18-900C	13/2/18	Lot 180	FSL	1.5 dry	98.5
18	E18-900D	13/2/18	Lot 177/178	FSL	3.5 dry	102.0
19	E18-900E	13/2/18	Lot 176	FSL	3.0 dry	101.5
20	E18-938A	20/2/18	Lot 217	600	1.5 dry	101.5
21	E18-938B	20/2/18	Lot 215	600	1.0 dry	102.0
22	E18-938C	20/2/18	Lot 214	600	0.5 dry	98.5
23	E18-932A	19/2/18	Road	500	6.5 dry	90.5
24 (RT10)	E18-932B	19/2/18	Lot 207	500	5.5 dry	103.5
25	E18-932C	19/2/18	Lot 211	300	6.0 dry	101.0
26	E18-932D	19/2/18	Lot 210	400	6.5 dry	102.0
27	E18-932E	19/2/18	Lot 208	150	5.0 dry	104.5
28	E18-932F	19/2/18	Lot 205	300	7.5 dry	90.5
29	E18-932G	19/2/18	Lot 189	300	5.0 dry	103.5
30	E18-932H	19/2/18	Lot 188 road	300	8.0 dry	108.0
31 (RT12)	E18-932I	19/2/18	Lot 200	100	4.0 dry	101.0
32	E18-932J	19/2/18	Lot 202	200	5.0 dry	104.5
33	E18-951A	21/2/18	Lot 201	300	1.5 dry	102.0
34	E18-951B	21/2/18	Lot 214	300	1.5 dry	101.5
35	E18-951C	21/2/18	Lot 216	300	0.0	95.0
36	E18-963A	22/2/18	Lot 201/213	FSL	3.0 dry	102.5
37	E18-963B	22/2/18	Lot 215	FSL	3.0 dry	98.5
38	E18-963C	22/2/18	Lot 216	FSL	2.0 dry	98.5
39	E18-969A	23/2/18	Lot 203	900	2.0 dry	99.5
40	E18-969B	23/2/18	Lot 208	900	2.5 dry	98.5
41	E18-976A	23/2/18	Lot 205	600	0.5 dry	95.5
42	E18-976B	23/2/18	Lot 204	600	0.5 wet	98.5
43	E18-979A	26/2/18	Lot 172	300	3.0 dry	99.0
44	E18-979B	26/2/18	Lot 203	300	3.5 dry	98.5
45 (RT28)	E18-979C	26/2/18	Lot 205	300	0.0	96.5
46	E18-993A	27/2/18	Lot 205	FSL	2.0 dry	100.0
47	E18-993B	27/2/18	Lot 203	FSL	1.5 dry	99.5
48	E18-993C	27/2/18	Lot 204	FSL	2.5 dry	101.0
49	E18-1016A	1/3/18	Lot 205	FSL	2.5 dry	101.5
50	E18-1016B	1/3/18	Lot 172	FSL	1.5 dry	103.0
51	E18-1050A	6/3/18	Lot 204	500	4.0 dry	98.5
52	E18-1050B	6/3/18	Lot 203	200	5.5 dry	97.5

Project No.	Sample No.	Test Date.	Location.	Reduced Level (mm)	Moisture Variation %O.M.C	Hilf Density Ratio %
53	E18-1050C	6/3/18	Lot 208	500	4.0 dry	104.0
54	E18-1050D	6/3/18	Lot 209	200	4.5 dry	98.5
55	E18-1054A	7/3/18	Lot 186	300	0.0	96.5
56	E18-1054B	7/3/18	Lot 173	300	0.5 wet	99.5

5 STATEMENT OF COMPLIANCE

GTS personnel have provided Level 1 inspection and testing services during the placement of material for the filling of 171 to 189, 198 to 217. It is noted that the top 300mm in Lots 173 to 175, 185 to 187 and 207 to 212 has not been tested and therefore cannot be considered to be controlled fill unless further work and testing is conducted.. The placement of fill and construction techniques adopted was observed throughout the project.

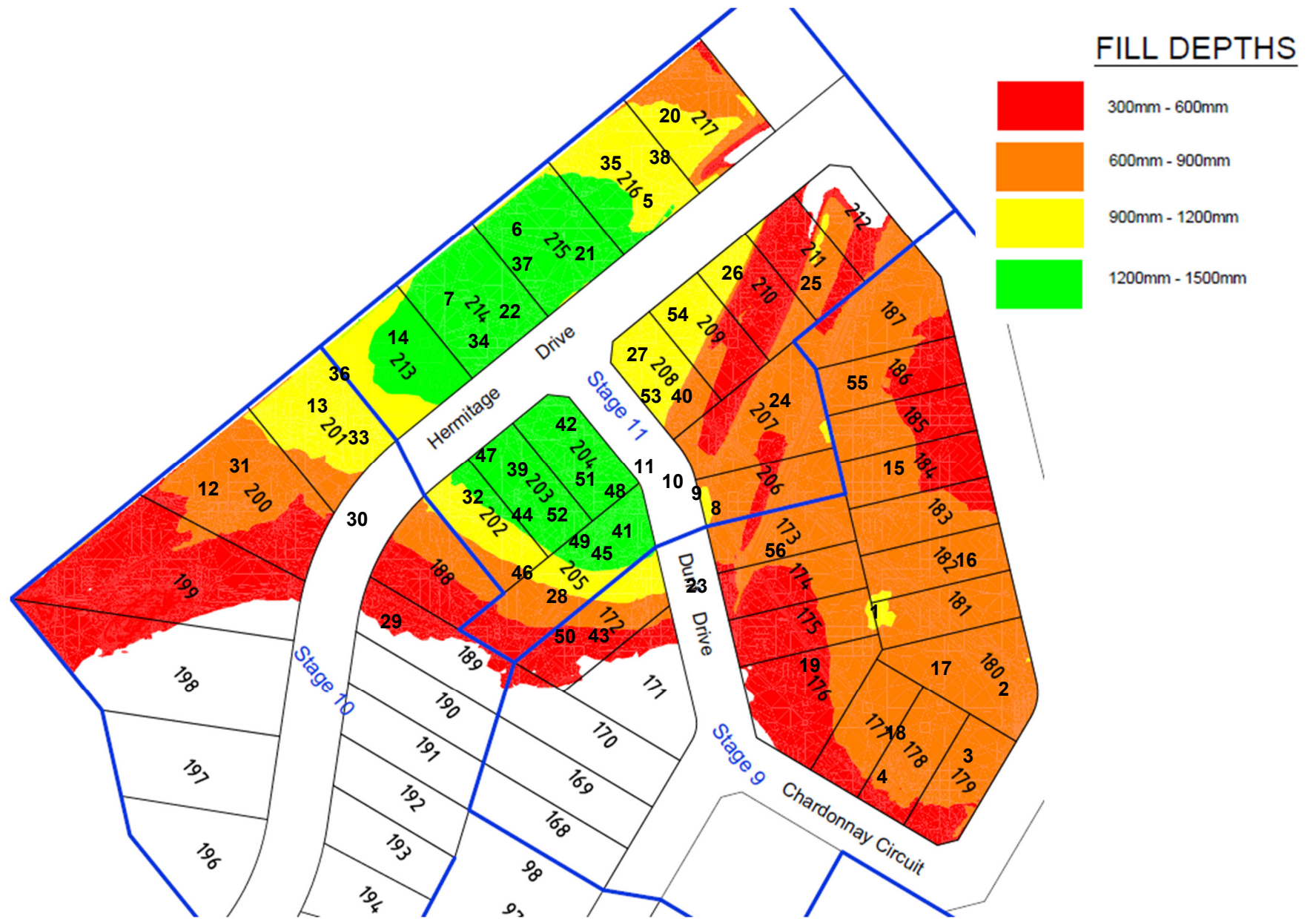
Based on observations made by GTS personnel and the results of field and laboratory tests, we consider that the fill has been placed and compacted and is considered to be engineered or controlled fill. Therefore, subject to residential site classifications, the controlled fill material is deemed a suitable founding medium for future residential buildings.



Shane Hampton (BE (Hons))
Senior Geotechnical Engineer

Telephone: (03) 5441 4881
Mobile: 0437 496 215
Email: shaneh@gts.com.au

APPENDIX



Compaction Control Test Report

Report Number: P17078-16
Issue Number: 1
Date Issued: 12/02/2018
Client: Midland Contractors



Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564

Phone: (03) 5480 0601

Email: bryanm@gts.com.au

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 860
Date Sampled: 07/02/2018 8:50
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Site Selection: Selected by Client
Material: Brown Silty Clay

Accredited for compliance with ISO/IEC 17025 - Testing



Bryan Mott

Approved Signatory: Bryan Mott

NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-860A	E18-860B	E18-860C	E18-860D
Date Tested	07/02/2018	07/02/2018	07/02/2018	07/02/2018
Time Tested	09:02	09:07	09:13	09:17
Test Request #/Location	Tree Stump Backfill	House Pads	House Pads	House Pads
Easting	55 296334	55 296407	55 296395	55 296379
Northing	6003409	6003333	6003316	6003309
Elevation (m)	-600	-300	-300	-300
Layer / Reduced Level	Layer1	Layer1	Layer1	Layer1
Thickness of Layer (mm)	300	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	0.0	0.0
Field Wet Density (FWD) t/m ³	1.99	2.01	2.00	1.98
Field Dry Density (FDD) t/m ³	**	**	**	**
Peak Converted Wet Density t/m ³	2.05	2.04	2.06	2.07
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	0.0	-1.0	-1.5	2.0
Adjusted Moisture Variation %	**	**	**	**
Hill Density Ratio (%)	97.0	98.5	97.0	95.5
Compaction Method	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

Report Number: P17078-17
Issue Number: 1
Date Issued: 12/02/2018
Client: Midland Contractors

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 867
Date Sampled: 07/02/2018 14:00
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



Geotechnical Testing Services (Southern)
Echuca Soil and Concrete Testing Laboratory
Shed 3, 140 Ogilvie Avenue Echuca VIC 3564

Phone: (03) 5480 0601

Email: bryanm@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Bryan Mott

NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-867A	E18-867B
Date Tested	07/02/2018	07/02/2018
Time Tested	14:05	14:10
Test Request #/Location	Tree Stump Backfill	Trench Backfill
Easting	55 296329	55 296400
Northing	6003419	6003437
Elevation (m)	-300	-600
Layer / Reduced Level	Layer2	Layer 1
Thickness of Layer (mm)	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275
Sieve used to determine oversize (mm)	19.0	19.0
Percentage of Wet Oversize (%)	0.0	0.0
Field Wet Density (FWD) t/m ³	1.98	2.03
Field Dry Density (FDD) t/m ³	**	**
Peak Converted Wet Density t/m ³	1.98	2.01
Adjusted Peak Converted Wet Density t/m ³	**	**
Moisture Variation (Wv) %	1.5	1.0
Adjusted Moisture Variation %	**	**
Hilf Density Ratio (%)	100.0	101.0
Compaction Method	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Compaction Control Test Report

Report Number: P17078-19
Issue Number: 1
Date Issued: 15/02/2018
Client: Midland Contractors



Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
 Phone: (03) 5480 0601
 Email: bryanm@gts.com.au

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 908
Date Sampled: 14/02/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



Accredited for compliance with ISO/IEC 17025 - Testing

Bryan Mott

Approved Signatory: Bryan Mott
 NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1						
Sample Number	E18-908A	E18-908B	E18-908C	E18-908D	E18-908E	E18-908F
Date Tested	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018	14/02/2018
Time Tested	15:48	15:58	16:20	16:30	16:40	16:54
Test Request #/Location	Lot Backfill	Lot Backfill	Butch's 1	Butch's 2	Butch's 3	Butch's 4
Easting	55296260	55296251	55296306	55296295	55296298	55296302
Northing	6003487	6003475	6003391	6003394	6003394	6003393
Elevation (m)	**	**	**	**	**	**
Layer / Reduced Level	-900	-900	N/A	N/A	N/A	N/A
Thickness of Layer (mm)	300	300	300	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown 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 (%)	**	**	**	**	**	**
Field Wet Density (FWD) t/m ³	2.01	2.01	1.82	1.93	1.81	1.74
Field Dry Density (FDD) t/m ³	**	**	**	**	**	**
Peak Converted Wet Density t/m ³	2.04	2.06	1.91	1.99	1.95	1.90
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**	**
Moisture Variation (Wv) %	1.0	0.0	3.5	3.0	4.0	6.0
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	98.5	97.5	95.5	97.0	93.0	91.5
Compaction Method	Standard	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

Report Number: P17078-19
Issue Number: 1
Date Issued: 15/02/2018
Client: Midland Contractors

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 908
Date Sampled: 14/02/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
 Phone: (03) 5480 0601
 Email: bryanm@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



Bryan Mott

Approved Signatory: Bryan Mott
 NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-908G	E18-908H	E18-908I
Date Tested	14/02/2018	14/02/2018	14/02/2018
Time Tested	17:07	17:15	17:22
Test Request #/Location	Butch's 5	Butch's 6	Butch's 7
Easting	55296135	55296177	55296186
Northing	6003395	6003433	6003441
Elevation (m)	**	**	**
Layer / Reduced Level	N/A	N/A	N/A
Thickness of Layer (mm)	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	1.66	2.01	1.92
Field Dry Density (FDD) t/m ³	**	**	**
Peak Converted Wet Density t/m ³	1.94	2.02	1.93
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	5.0	1.5	5.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	85.5	99.5	99.5
Compaction Method	Standard	Standard	Standard

Moisture Variation Note:

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

Compaction Control Test Report

Report Number: P17078-20
Issue Number: 1
Date Issued: 15/02/2018
Client: Midland Contractors



Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564

Phone: (03) 5480 0601

Email: bryanm@gts.com.au

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 900
Date Sampled: 13/02/2018 11:00
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



Accredited for compliance with ISO/IEC 17025 - Testing

Bryan Mott

Approved Signatory: Bryan Mott

NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1					
Sample Number	E18-900A	E18-900B	E18-900C	E18-900D	E18-900E
Date Tested	13/02/2018	13/02/2018	13/02/2018	13/02/2018	13/02/2018
Time Tested	11:10	11:15	11:21	11:27	11:33
Test Request #/Location	House Pad	House Pad	House Pad	House Pad	House Pad
Easting	55 296348	55 296364	55 296370	55 296356	55 296333
Northing	6003433	6003413	6003377	6003347	6003358
Elevation (m)	**	**	**	**	**
Layer / Reduced Level	FSL	FSL	FSL	FSL	FSL
Thickness of Layer (mm)	300	300	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	**	**	**	**
Field Wet Density (FWD) t/m ³	1.99	2.00	1.98	1.98	1.98
Field Dry Density (FDD) t/m ³	**	**	**	**	**
Peak Converted Wet Density t/m ³	1.96	1.97	2.02	1.95	1.96
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**
Moisture Variation (Wv) %	4.0	3.0	1.5	3.5	3.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	101.5	101.5	98.5	102.0	101.5
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

Report Number: P17078-21
Issue Number: 1
Date Issued: 21/02/2018
Client: Midland Contractors

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 938
Date Sampled: 20/02/2018 14:45
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



Geotechnical Testing Services (Southern)
Echuca Soil and Concrete Testing Laboratory
Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
Phone: (03) 5480 0601
Email: bryanm@gts.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved
Signatory:

Bryan Mott

NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-938A	E18-938B	E18-938C
Date Tested	20/02/2018	20/02/2018	20/02/2018
Time Tested	14:52	14:57	15:03
Test Request #/Location	House Pads	House Pads	House Pads
Easting	55 296285	55 296251	55 296227
Northing	6003516	6003489	6003481
Elevation (m)	-600	-600	-600
Layer / Reduced Level	Layer2	Layer2	Layer2
Thickness of Layer (mm)	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	2.06	2.11	2.03
Field Dry Density (FDD) t/m ³	**	**	**
Peak Converted Wet Density t/m ³	2.04	2.07	2.06
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	1.5	1.0	0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	101.5	102.0	98.5
Compaction Method	Standard	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Compaction Control Test Report

Report Number: P17078-22
Issue Number: 1
Date Issued: 21/02/2018
Client: Midland Contractors



Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 932
Date Sampled: 19/02/2018 14:00
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay

Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
 Phone: (03) 5480 0601
 Email: bryanm@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



Bryan Mott

Approved Signatory: Bryan Mott
 NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1				
Sample Number	E18-932A	E18-932F	E18-932H	E18-932I
Date Tested	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Time Tested	14:09	14:37	14:47	14:53
Test Request #/Location	Butch 1	Butch 6	Butch 8	Butch 9
Easting	55 296288	55 296248	55 296186	55 296161
Northing	6003366	6003368	6003379	6003410
Elevation (m)	-500	-300	-300	-100
Layer / Reduced Level	**	**	**	**
Thickness of Layer (mm)	300	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275	275	275
Oversize (wet basis) %	0	0	0	0
Oversize (dry basis) %	0	0	0	0
Fraction Tested (mm)	19.0	19.0	19.0	19.0
Field Wet Density t/m ³	1.65	1.56	1.93	1.94
Field Moisture Content %	4.2	9.4	8.2	13.1
Field Dry Density t/m ³	1.58	1.43	1.79	1.72
Maximum Dry Density t/m ³	1.75	1.58	1.66	1.70
Adjusted Maximum Dry Density t/m ³	**	**	**	**
Optimum Moisture Content (OMC) %	11.0	16.5	16.0	17.0
Adjusted Optimum Moisture Content (OMC) %	**	**	**	**
Moisture Variation %	6.5	7.5	8.0	4.0
Moisture Ratio %	38.5	56.5	50.5	77.0
Density Ratio %	90.5	90.5	108.0	101.0
Compaction Method	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

Report Number: P17078-22
Issue Number: 1
Date Issued: 21/02/2018
Client: Midland Contractors



Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
 Phone: (03) 5480 0601
 Email: bryanm@gts.com.au

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 932
Date Sampled: 19/02/2018 14:00
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



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Bryan Mott

Approved Signatory: Bryan Mott
 NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1						
Sample Number	E18-932B	E18-932C	E18-932D	E18-932E	E18-932G	E18-932J
Date Tested	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018	19/02/2018
Time Tested	14:16	14:21	14:26	14:31	14:42	14:59
Test Request #/Location	Butch 2	Butch 3	Butch 4	Butch 5	Butch 7	Butch 10
Easting	55 296323	55 29634	55 296298	55 296290	55 29620	55 296224
Northing	6003431	6003481	6003478	6003439	6003331	6003397
Elevation (m)	-500	-300	-400	-150	-300	-200
Layer / Reduced Level	**	**	**	**	**	**
Thickness of Layer (mm)	300	300	300	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown 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 (%)	**	**	**	**	**	**
Field Wet Density (FWD) t/m ³	1.90	1.80	1.85	1.92	1.94	1.90
Field Dry Density (FDD) t/m ³	**	**	**	**	**	**
Peak Converted Wet Density t/m ³	1.84	1.78	1.81	1.84	1.87	1.82
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**	**
Moisture Variation (Wv) %	5.5	6.0	6.5	5.0	5.0	5.0
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	103.5	101.0	102.0	104.5	103.5	104.5
Compaction Method	Standard	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

Report Number: P17078-23
Issue Number: 1
Date Issued: 22/02/2018
Client: Midland Contractors



Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564

Phone: (03) 5480 0601

Email: bryanm@gts.com.au

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 951
Date Sampled: 21/02/2018 12:26
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Site Selection: Selected by Client
Material: Brown Silty Clay



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Bryan Mott

Approved Signatory: Bryan Mott

NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-951A	E18-951B	E18-951C
Date Tested	21/02/2018	21/02/2018	21/02/2018
Time Tested	12:34	12:45	12:55
Test Request #/Location	Lot Fill , 3rd Layer	Lot Fill , 3rd Layer	Lot Fill , 3rd Layer
Easting	55296185	55296239	55296279
Northing	6003446	6003474	6003505
Elevation (m)	**	**	**
Layer / Reduced Level	-300	-300	-300
Thickness of Layer (mm)	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	2.05	2.11	1.96
Field Dry Density (FDD) t/m ³	**	**	**
Peak Converted Wet Density t/m ³	2.01	2.07	2.07
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	1.5	1.5	0.0
Adjusted Moisture Variation %	**	**	**
Hill Density Ratio (%)	102.0	101.5	95.0
Compaction Method	Standard	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Compaction Control Test Report

Report Number: P17078-24
Issue Number: 1
Date Issued: 23/02/2018
Client: Midland Contractors

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 963
Date Sampled: 22/02/2018 12:05
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Orange Brown Silty Clay



Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564

Phone: (03) 5480 0601

Email: bryanm@gts.com.au

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Bryan Mott

Approved Signatory: Bryan Mott

NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-963A	E18-963B	E18-963C
Date Tested	22/02/2018	22/02/2018	22/02/2018
Time Tested	12:15	12:25	12:35
Test Request #/Location	Lot Fill, Layer 4	Lot Fill, Layer 4	Lot Fill, Layer 4
Easting	55296198	55296241	55296257
Northing	6003455	6003493	6003514
Elevation (m)	**	**	**
Layer / Reduced Level	FSL	FSL	FSL
Thickness of Layer (mm)	300	300	300
Soil Description	Orange Brown Silty Clay	Orange Brown Silty Clay	Orange Brown Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	1.95	1.92	1.93
Field Dry Density (FDD) t/m ³	**	**	**
Peak Converted Wet Density t/m ³	1.90	1.95	1.95
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	3.0	3.0	2.0
Adjusted Moisture Variation %	**	**	**
Hill Density Ratio (%)	102.5	98.5	98.5
Compaction Method	Standard	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Compaction Control Test Report

Report Number: P17078-25
Issue Number: 1
Date Issued: 23/02/2018
Client: Midland Contractors



Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
 Phone: (03) 5480 0601
 Email: bryanm@gts.com.au

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 969
Date Sampled: 23/02/2018 07:15
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Orange Brown Silty Clay



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Bryan Mott

Approved Signatory: Bryan Mott
 NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-969A	E18-969B
Date Tested	23/02/2018	23/02/2018
Time Tested	07:20	07:28
Test Request #/Location	Lot Fill, Layer 1	Lot Fill, Layer 1
Easting	55296245	55296270
Northing	6003442	6003468
Elevation (m)	**	**
Layer / Reduced Level	-900	-900
Thickness of Layer (mm)	300	300
Soil Description	Orange Brown Silty Clay	Orange Brown Silty Clay
Test Depth (mm)	275	275
Sieve used to determine oversize (mm)	19.0	19.0
Percentage of Wet Oversize (%)	**	**
Field Wet Density (FWD) t/m ³	1.99	1.98
Field Dry Density (FDD) t/m ³	**	**
Peak Converted Wet Density t/m ³	2.00	2.02
Adjusted Peak Converted Wet Density t/m ³	**	**
Moisture Variation (Wv) %	2.0	2.5
Adjusted Moisture Variation %	**	**
Hill Density Ratio (%)	99.5	98.5
Compaction Method	Standard	Standard

Moisture Variation Note:

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

Compaction Control Test Report

Report Number: P17078-26
Issue Number: 1
Date Issued: 26/02/2018
Client: Midland Contractors

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 976
Date Sampled: 23/02/2018 14:50
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



Geotechnical Testing Services (Southern)
Echuca Soil and Concrete Testing Laboratory
Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
Phone: (03) 5480 0601
Email: bryanm@gts.com.au

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Approved Signatory: Bryan Mott
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-976A	E18-976B
Date Tested	23/02/2018	23/02/2018
Time Tested	14:55	14:57
Test Request #/Location	Lot Fill, Layer 2	Lot Fill, Layer 2
Easting	55296270	55296262
Northing	6003436	6003443
Elevation (m)	**	**
Layer / Reduced Level	-600	-600
Thickness of Layer (mm)	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275
Sieve used to determine oversize (mm)	19.0	19.0
Percentage of Wet Oversize (%)	**	**
Field Wet Density (FWD) t/m ³	1.98	2.03
Field Dry Density (FDD) t/m ³	**	**
Peak Converted Wet Density t/m ³	2.07	2.06
Adjusted Peak Converted Wet Density t/m ³	**	**
Moisture Variation (Wv) %	0.5	-0.5
Adjusted Moisture Variation %	**	**
Hilf Density Ratio (%)	95.5	98.5
Compaction Method	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Compaction Control Test Report

Report Number: P17078-27
Issue Number: 1
Date Issued: 27/02/2018
Client: Midland Contractors

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 979
Date Sampled: 26/02/2018 13:45
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



Geotechnical Testing Services (Southern)
Echuca Soil and Concrete Testing Laboratory
Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
Phone: (03) 5480 0601
Email: bryanm@gts.com.au

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Approved Signatory: Bryan Mott
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-979A	E18-979B	E18-979C
Date Tested	26/02/2018	26/02/2018	26/02/2018
Time Tested	13:49	13:53	14:00
Test Request #/Location	House Pads	House Pads	House Pads
Easting	55 296251	55 296238	55 296274
Northing	6003425	6003437	6003433
Elevation (m)	-300	-300	-300
Layer / Reduced Level	Layer 3	Layer 3	Layer 3
Thickness of Layer (mm)	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	2.02	1.99	1.99
Field Dry Density (FDD) t/m ³	**	**	**
Peak Converted Wet Density t/m ³	2.04	2.02	2.06
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	3.0	3.5	0.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	99.0	98.5	96.5
Compaction Method	Standard	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Compaction Control Test Report

Report Number: P17078-28
Issue Number: 1
Date Issued: 28/02/2018
Client: Midland Contractors

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 993
Date Sampled: 27/02/2018 13:55
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



Geotechnical Testing Services (Southern)
Echuca Soil and Concrete Testing Laboratory
Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
Phone: (03) 5480 0601
Email: bryanm@gts.com.au

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Bryan Mott

Approved Signatory: Bryan Mott
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-993A	E18-993B	E18-993C
Date Tested	27/02/2018	27/02/2018	27/02/2018
Time Tested	14:01	14:06	14:11
Test Request #/Location	House Pads	House Pads	House Pads
Easting	55 296244	55 296236	55 296274
Northing	6003429	6003446	6003444
Elevation (m)	**	**	**
Layer / Reduced Level	FSL	FSL	FSL
Thickness of Layer (mm)	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	0.0	0.0
Field Wet Density (FWD) t/m ³	2.00	1.99	2.03
Field Dry Density (FDD) t/m ³	**	**	**
Peak Converted Wet Density t/m ³	2.00	2.00	2.02
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	2.0	1.5	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	100.0	99.5	101.0
Compaction Method	Standard	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Compaction Control Test Report

Report Number: P17078-29
Issue Number: 1
Date Issued: 02/03/2018
Client: Midland Contractors

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 1016
Date Sampled: 01/03/2018 14:24
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



Geotechnical Testing Services (Southern)
Echuca Soil and Concrete Testing Laboratory
Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
Phone: (03) 5480 0601
Email: bryanm@gts.com.au

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Bryan Mott

Approved Signatory: Bryan Mott
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-1016A	E18-1016B
Date Tested	01/03/2018	01/03/2018
Time Tested	14:26	14:30
Test Request #/Location	House Pad	House Pad
Easting	55 296255	55 296248
Northing	6003396	6003378
Elevation (m)	**	**
Layer / Reduced Level	FSL	FSL
Thickness of Layer (mm)	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275
Sieve used to determine oversize (mm)	19.0	19.0
Percentage of Wet Oversize (%)	**	**
Field Wet Density (FWD) t/m ³	2.02	2.02
Field Dry Density (FDD) t/m ³	**	**
Peak Converted Wet Density t/m ³	1.99	1.97
Adjusted Peak Converted Wet Density t/m ³	**	**
Moisture Variation (Wv) %	2.5	1.5
Adjusted Moisture Variation %	**	**
Hilf Density Ratio (%)	101.5	103.0
Compaction Method	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Compaction Control Test Report

Report Number: P17078-30
Issue Number: 1
Date Issued: 08/03/2018
Client: Midland Contractors



Geotechnical Testing Services (Southern)
 Echuca Soil and Concrete Testing Laboratory
 Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
 Phone: (03) 5480 0601
 Email: bryanm@gts.com.au

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 1050
Date Sampled: 06/03/2018 14:30
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



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Bryan Mott

Approved Signatory: Bryan Mott
 NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-1050A	E18-1050B	E18-1050C	E18-1050D
Date Tested	06/03/2018	06/03/2018	06/03/2018	06/03/2018
Time Tested	15:10	15:20	15:30	15:40
Test Request #/Location	Shane GTS retests	Shane GTS retests	Shane GTS retests	Shane GTS retests
Easting	55296245	55296251	55296299	55296300
Northing	6003404	6003403	6003468	6003467
Elevation (m)	**	**	**	**
Layer / Reduced Level	-500	-200	-500	-200
Thickness of Layer (mm)	300	300	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**	**
Field Wet Density (FWD) t/m ³	1.86	1.83	2.00	1.92
Field Dry Density (FDD) t/m ³	**	**	**	**
Peak Converted Wet Density t/m ³	1.89	1.88	1.92	1.96
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	4.0	5.5	4.0	4.5
Adjusted Moisture Variation %	**	**	**	**
Hill Density Ratio (%)	98.5	97.5	104.0	98.5
Compaction Method	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

Report Number: P17078-31
Issue Number: 1
Date Issued: 08/03/2018
Client: Midland Contractors



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Echuca Soil and Concrete Testing Laboratory
Shed 3, 140 Ogilvie Avenue Echuca VIC 3564
Phone: (03) 5480 0601
Email: bryanm@gts.com.au

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 1054
Date Sampled: 07/03/2018 11:30
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Material: Brown Silty Clay



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Approved Signatory: Bryan Mott
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-1054A	E18-1054B
Date Tested	07/03/2018	07/03/2018
Time Tested	11:40	11:50
Test Request #/Location	Slot Fill	Slot Fill
Easting	55296327	55296303
Northing	6003474	6003429
Elevation (m)	**	**
Layer / Reduced Level	-300	-300
Thickness of Layer (mm)	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275
Sieve used to determine oversize (mm)	19.0	19.0
Percentage of Wet Oversize (%)	**	**
Field Wet Density (FWD) t/m ³	2.02	2.04
Field Dry Density (FDD) t/m ³	**	**
Peak Converted Wet Density t/m ³	2.09	2.06
Adjusted Peak Converted Wet Density t/m ³	**	**
Moisture Variation (Wv) %	0.0	-0.5
Adjusted Moisture Variation %	**	**
Hilf Density Ratio (%)	96.5	99.5
Compaction Method	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Compaction Control Test Report

Report Number: P17078-32
Issue Number: 1
Date Issued: 11/04/2018
Client: Midland Contractors

Project Number: P17078
Project Name: Lakeview Estate Moama
Work Request: 1217
Date Sampled: 11/04/2018
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard



Geotechnical Testing Services (Southern)
Echuca Soil and Concrete Testing Laboratory
Shed 3, 140 Ogilvie Avenue Echuca VIC 3564

Phone: (03) 5480 0601
Email: bryanm@gts.com.au

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Bryan Mott

Approved Signatory: Bryan Mott
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	E18-1217A	E18-1217B
Date Tested	11/04/2018	11/04/2018
Time Tested	10:21	10:31
Test Request #/Location	Trench Backfill	Pump Station Pad
Chainage (m)	Opposite Lot 135 boundary	Centre
Location Offset (m)	C/L	C/L
Elevation (m)	**	**
Layer / Reduced Level	FSL	FSL
Thickness of Layer (mm)	300	300
Soil Description	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	275	275
Sieve used to determine oversize (mm)	19.0	19.0
Percentage of Wet Oversize (%)	0.0	**
Field Wet Density (FWD) t/m ³	1.96	1.98
Field Dry Density (FDD) t/m ³	**	**
Peak Converted Wet Density t/m ³	2.03	2.07
Adjusted Peak Converted Wet Density t/m ³	**	**
Moisture Variation (Wv) %	2.0	1.0
Adjusted Moisture Variation %	**	**
Hilf Density Ratio (%)	96.5	95.5
Compaction Method	Standard	Standard

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC