



Australian Geotechnical Testing

Level One Inspection and Testing

Project No: AGTE21935
Project: Lucas Estate Stage M3
Suburb: Lucas



Client: Hamowil Group

Date: 11th October 2022

Geotechnical	Pavement	Environmental	Residential	Design
Slope Stability Assessment	Land Capability Assessments	Erosion and Sediment Control Plan		
Retaining Walls	Level 1 Supervision	Earthworks Specification's	Percolation	

Adelaide | Brisbane | Ballarat | Melbourne | Warrnambool

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1 Introduction

Australian Geotechnical Testing (AGT) has been engaged by Hamowil Group to provide Level 1 Geotechnical Supervision for the Lucas Estate Stage M3 project. The Estate is located in Lucas.

This Level 1 report presents the results of supervision activities, compaction and moisture control, material placement and laboratory testing for ground works undertaken for the project. This report covers construction activities carried out from **18/2/2022 to 4/10/2022**.

2 Scope of Works

The scope of works involved the placement of on-site General Fill. Fill Material was placed in Level one fill areas, in accordance with **AS 3798-2007, *Guidelines on earthworks for commercial and residential developments and project specifications***. The level of FILL to be placed is less than 5m as per AS3798 Section 1.1.

The fill material is required as per AS3798 and the project specification to achieve:

- **95% Standard Maximum Dry Density (Compaction)**

General fill material used for the construction was locally sourced and predominantly comprising of **CLAY**.

3 Inspections / Supervision

Full-time Level 1 supervision and inspection was undertaken including the supervision and inspections regarding the stripping and removal as per AS3798 Section 3 shall have removed:

- Organic soils, such as topsoils, severely root affected subsoils and peat;
- Contaminated soils are part of the brief;
- Materials which undergo volume change or loss of strength when disturbed and exposed to moisture;
- Silts, or materials that have deleterious engineering properties of silt;
- Other materials with properties that are unsuitable for the forming of structural fill;
- Fill that contains wood, metal plastic, boulders or other deleterious material, in sufficient proportions to affect the required performance of the fill.
- The maximum particle size of any rocks or other lumps, within the layer, has not exceeded two-thirds ($\frac{2}{3}$) of the compacted layer thickness.

The lots inspected were essentially homogeneous in relation to material type and moisture condition, rolling response and compaction technique and which has been used for the assessment of relative compaction of an area of work (AS3798 Section 1.2.8).

Prior to placement any existing filled ground, for which the conditions of the placement are not adequately documented have not been assumed to have been of either standard compaction or of the composition adequate to support fill or any loads has been removed (AS3798 Section 2).

4 Testing

The project was classified as **Residential**, thereby requiring a minimum compaction result of **95%** density ratio Standard Compaction for the **cohesive soils** (AS 1289 5.7.1 & 5.1.1) throughout the Level 1 Fill and in accordance with AS 3798-2007 – Table 5.2. The test was performed using a Nuclear Density Gauge for field density determination AS 1289.5.8.1.

As a minimum testing was undertaken either 3 tests per lot, 1 test per 2,500m² per layer, or 1 test per 500m³ throughout the placement of fill as per AS3798 Table 8.1.

The material was site derived salvaged CLAY with silt. The material was placed in approximately 250mm loose layers, rolling effort with on-site Compactor (to seal of each layer of placed General Fill material) to a compacted 150mm layer that achieved 95% Standard Compaction which met Australian Standards specifications. This was considered the best method to achieve compaction using the plant and machinery available.

The NATA compaction reports verify the achievement of the minimum density requirement of 95% Standard Compaction throughout the full depth area, with each layer tested accordingly. All test results were provided to our client: Hamowil Group for inclusion within their internal quality system.

At the completion of the structural layers and material within 150mm of permanent subgrade level in cuttings, test rolling was undertaken, and the layers withstood test rolling without visible deformation or springing (AS 3798 Section 5.5).

The area covered by this Level 1 Supervision report is shown in the Site Plan (Refer to Appendix A). The results of the laboratory Testing are indicated in Appendix B.

5 Conclusion

On the completion of the earthworks and after analysing the materials used, it has been concluded that the filling procedure conducted by our client '**Hamowil Group**' satisfied the general requirements of AS 3798 regards to the placement of fill materials on a project under Level 1 Supervision and in accordance with the project specification as provided to AGT.

The fill meets the requirements for “structural fill for residential applications” in accordance with AS3798. The fill has been placed, compacted and tested in accordance with AS3798 and the fill meets the requirements for controlled fill in accordance with AS2870 (2011) “Residential Slabs and Footings”.

This report has been prepared for the benefit of our client with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement. No responsibility for this report will be taken by AGT if it is altered in any way, or not reproduced in full.

6 Applicability

The findings and conclusions contained in this Report are made based on site conditions that existed at the time this work was conducted. The conclusions presented in this report are relevant to the conditions of the site and the state of legislation currently enacted as at the date of this report.

Findings and conclusions are made assuming that the soil, groundwater, geological and chemical conditions detailed within this report are accurate and remain applicable to the site at the time of writing. The conclusions of this report may become invalid if filling or excavation occurs after the boreholes and test pits referred to in this report were drilled or excavated. No other warranties are made or intended.

AGT has used a degree of skill and care ordinarily exercised by reputable members of our profession practicing in the same or similar locality.

AGT does not make any representation or warranty that the conclusions in this report will be applicable in the future as there may be changes in the condition of the site, applicable legislation or other factors that would affect the conclusions contained in this report. This report has been prepared exclusively for use by our client. This report cannot be reproduced without the written authorisation of AGT and then can only be reproduced in its entirety.

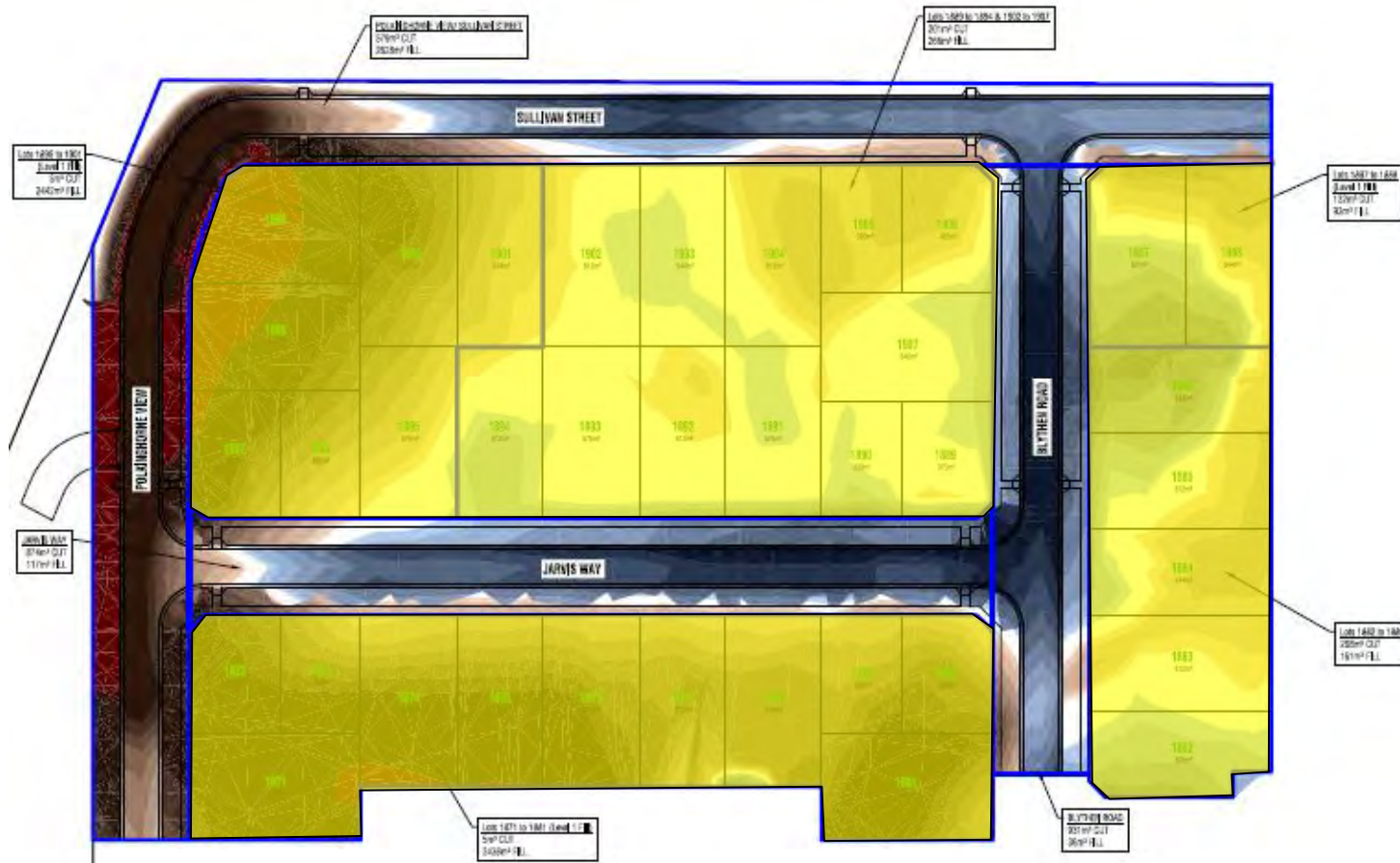


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Appendix A – Site Plan



Key

 Level 1 Site



SITE PLAN - NOT TO SCALE



Report No

AGT21935

Lucas Estate Stage M3

Lucas
Hamowil Group

Appendix B – Laboratory Testing

Material Test Report

Report Number: AGT60087-1
Issue Number: 1
Date Issued: 21/02/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 832
Date Sampled: 18/02/2022
Dates Tested: 18/02/2022 - 18/02/2022
Sampling Method: AS 1289.1.3.1 3.1.4 (b) - Open-drive samplers - piston samplers - floating type
Specification: 95% Standard
Site Selection: Selected by Client
Location: 210805 - LUM 3, Lucas
Material: Brown Silty Clay
Material Source: In Situ



Australian Geotechnical Testing
 Ballarat Laboratory
 2/55 Heinz Road Delacombe VIC 3356
 Phone: 1300 026 583
 Email: PaulF@ausgeotest.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Paul Francis
 Laboratory Manager - Ballarat
 NATA Accredited Laboratory Number: 20457

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	60087-1	60087-2	60087-3
Date Tested	18/02/2022	18/02/2022	18/02/2022
Time Tested	08:30	08:40	08:50
Test Request #/Location	Lucas LUM3 Estate Lot 1900	Lucas LUM3 Estate Lot 1899	Lucas LUM3 Estate Lot 1898
Latitude	-37.53648	-37.53793	-37.53826
Longitude	143.77470	143.77589	143.77561
Layer / Reduced Level	Subgrade - 1.2m Below FSL	Subgrade - 2.4m Below FSL	Subgrade - 1.8m Below FSL
Thickness of Layer (mm)	150	150	150
Soil Description	Brown Silty Clay	Brown Silty Clay	Brown Silty Clay
Test Depth (mm)	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	1.82	1.78	1.83
Field Moisture Content %	11.4	12.6	6.7
Field Dry Density (FDD) t/m ³	1.63	1.58	1.72
Peak Converted Wet Density t/m ³	1.84	1.83	1.87
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	12.5	13.0	12.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	98.5	97.0	98.0
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: AGT60087-2
Issue Number: 1
Date Issued: 28/02/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 837
Date Sampled: 24/02/2022 8:00
Dates Tested: 24/02/2022 - 24/02/2022
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 Client
Location: 210805 - LUM 3, Lucas
Material: Brown Silty Clay
Material Source: In Situ



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	60087-4	60087-5	60087-6
Date Tested	24/02/2022	24/02/2022	24/02/2022
Time Tested	10:40	10:50	11:00
Test Request #/Location	LUM 3 Level One Lot 1899	LUM 3 Level One Lot 1899	LUM 3 Level One Lot 1899
Latitude	-37.537974	-37.538020	-37.537987
Longitude	143.775846	143.788720	143.775741
Layer / Reduced Level	1.2 Below FSL	1.2 Below FSL	1.2 Below FSL
Thickness of Layer (mm)	150	150	150
Soil Description	Salvaged CLAY	Salvaged CLAY	Salvaged CLAY
Test Depth (mm)	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	1.92	2.08	2.14
Field Moisture Content %	22.2	22.3	19.6
Field Dry Density (FDD) t/m ³	1.57	1.70	1.79
Peak Converted Wet Density t/m ³	1.95	2.03	2.09
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	3.0	3.0	2.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	98.0	102.5	102.0
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: AGT60087-3
Issue Number: 1
Date Issued: 28/02/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 838
Date Sampled: 25/02/2022
Dates Tested: 25/02/2022 - 28/02/2022
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 Client
Location: 210805 - LUM 3, Lucas
Material: Salvage Clay
Material Source: In Situ



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	60087-7	60087-8	60087-9
Date Tested	25/02/2022	25/02/2022	25/02/2022
Time Tested	12:05	12:10	12:15
Test Request #/Location	LUM 3 Level 1 Lot 1898	LUM 3 Level 1 Lot 1897	LUM 3 Level 1 Pulkingtorne View RD fill
Latitude	-37.53832	-37.53835	-37.53829
Longitude	143.77538	143.77544	143.77548
Layer / Reduced Level	700mm Below FSL	700mm Below FSL	700mm Below FSL
Thickness of Layer (mm)	150	150	150
Soil Description	Salvaged CLAY	Salvaged CLAY	Salvaged CLAY
Test Depth (mm)	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	2.04	2.12	2.15
Field Moisture Content %	17.8	19.7	17.9
Field Dry Density (FDD) t/m ³	1.73	1.78	1.82
Peak Converted Wet Density t/m ³	2.06	2.11	2.13
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	2.0	2.5	1.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	98.5	100.5	101.0
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: AGT60087-4
Issue Number: 1
Date Issued: 28/02/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 839
Date Sampled: 26/02/2022
Dates Tested: 26/02/2022 - 28/02/2022
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 Client
Location: 210805 - LUM 3, Lucas
Material: Salvage Clay
Material Source: In Situ



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	60087-10	60087-11	60087-12
Date Tested	26/02/2022	26/02/2022	26/02/2022
Time Tested	12:30	12:35	12:40
Test Request #/Location	LUM 3 Level 1 Lot1897	LUM 3 Level 1 Lot 1896	LUM 3 Level 1 Lot1897
Latitude	-37.53883	-37.53940	-37.53830
Longitude	143.77516	143.77509	143.77527
Layer / Reduced Level	700 Below	700 Below	700 Below
Thickness of Layer (mm)	150	150	150
Soil Description	Salvaged CLAY	Salvaged CLAY	Salvaged CLAY
Test Depth (mm)	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	2.17	2.10	2.14
Field Moisture Content %	18.3	17.6	17.3
Field Dry Density (FDD) t/m ³	1.83	1.79	1.83
Peak Converted Wet Density t/m ³	2.16	2.09	2.10
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	3.5	2.0	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	100.5	101.0	102.5
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: AGT60087-5
Issue Number: 1
Date Issued: 04/03/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 841
Date Sampled: 28/02/2022
Dates Tested: 28/02/2022 - 01/03/2022
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 Client
Location: 210805 - LUM 3, Lucas
Material: Salvage Clay
Material Source: insitu



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	60087-13	60087-14	60087-15
Date Tested	28/02/2022	28/02/2022	28/02/2022
Time Tested	17:00	17:10	17:15
Test Request #/Location	LUM 3 Level 1 Lot 1897	LUM 3 Level 1 Lot1897	LUM 3 Level 1 Lot 1898
Latitude	-37.53902	-37.53867	-37.53859
Longitude	143.77534	143.77516	143.77518
Layer / Reduced Level	700mm Below FSL	700mm Below FSL	700mm Below FSL
Thickness of Layer (mm)	150	150	150
Soil Description	Salvaged CLAY	Salvaged CLAY	Salvaged CLAY
Test Depth (mm)	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	2.07	2.18	2.20
Field Moisture Content %	16.2	16.9	14.9
Field Dry Density (FDD) t/m ³	1.78	1.86	1.91
Peak Converted Wet Density t/m ³	2.04	2.14	2.17
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	3.5	4.5	4.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	101.5	102.0	101.0
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: AGT60087-6
Issue Number: 1
Date Issued: 02/04/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 880
Date Sampled: 28/03/2022
Dates Tested: 28/03/2022 - 30/03/2022
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 Client
Location: 210805 - LUM 3, Lucas
Material: Salvage Clay
Material Source: Onsite



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1						
Sample Number	60087-16	60087-17	60087-18	60087-19	60087-20	60087-21
Date Tested	28/03/2022	28/03/2022	28/03/2022	28/03/2022	28/03/2022	28/03/2022
Time Tested	09:30	09:40	09:50	03:40	03:50	04:00
Test Request #/Location	LUM 3 Lot 1872	LUM 3 Lot 1875	LUM 3 Lot 1878	LUM 3 Lot 1871	LUM 3 Lot 1874	LUM 3 Lot 1875
Latitude	-37.53860	-37.77562	-37.53897	-37.54043	-37.53914	-37.53903
Longitude	143.77534	143.77562	143.77596	143.7742	143.77534	143.77564
Layer / Reduced Level	Natural ground	Natural ground	Natural ground	900 below	900 below	900 below
Thickness of Layer (mm)	150	150	150	150	150	150
Soil Description	Salvage Clay	Salvage Clay	Salvage Clay	Salvage Clay	Salvage Clay	Salvage Clay
Test Depth (mm)	125	125	125	125	125	125
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	2.17	2.00	1.74	2.00	2.00	2.10
Field Moisture Content %	14.9	**	**	**	**	**
Field Dry Density (FDD) t/m ³	1.89	**	**	**	**	**
Peak Converted Wet Density t/m ³	2.05	1.96	1.68	2.06	2.04	2.07
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**	**
Moisture Variation (Wv) %	5.0	4.5	6.0	0.0	0.5	0.0
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	106.0	102.0	103.0	97.5	98.0	101.5
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: AGT60087-7
Issue Number: 1
Date Issued: 09/04/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 884
Date Sampled: 29/03/2022
Dates Tested: 29/03/2022 - 09/04/2022
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 Client
Location: 210805 - LUM3, Lucas
Material: Brown Silty Clay
Material Source: Onsite



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	60087-22	60087-23	60087-24
Date Tested	29/03/2022	29/03/2022	29/03/2022
Time Tested	03:20	03:30	03:40
Test Request #/Location	LUM 3 Lot 1876	LUM 3 Lot 1877	LUM 3 Lot 1878
Latitude	-37.53902	-37.53942	-37.53904
Longitude	143.77611	143.77630	143.77628
Layer / Reduced Level	600 Below	600 Below	600 Below
Thickness of Layer (mm)	150	150	150
Soil Description	Salvage Clay	Salvage Clay	Salvage Clay
Test Depth (mm)	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	1.99	1.86	1.86
Field Moisture Content %	24.8	19.4	19.6
Field Dry Density (FDD) t/m ³	1.59	1.56	1.55
Peak Converted Wet Density t/m ³	2.01	1.92	1.91
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	0.0	2.5	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	99.0	97.5	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: AGT60087-8
Issue Number: 1
Date Issued: 09/04/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 891
Date Sampled: 31/03/2022
Dates Tested: 31/03/2022 - 09/04/2022
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 Client
Location: 210805 - LUM3, Lucas
Material: Brown Silty Clay
Material Source: Onsite



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	60087-25	60087-26	60087-27	60087-28	60087-29
Date Tested	31/03/2022	31/03/2022	31/03/2022	31/03/2022	31/03/2022
Time Tested	08:30	08:40	08:50	09:00	10:00
Test Request #/Location	LUM 3 Lot 1873	LUM 3 Lot 1874	LUM 3 Lot 1876	LUM 3 Lot 1877	LUM 3 Lot 1879
Latitude	-37.53914	-37.53908	-37.53909	-37.53915	-37.53927
Longitude	143.79593	143.77607	143.77626	143.77633	143.77631
Layer / Reduced Level	300 Below	300 Below	300 Below	300 Below	FSL
Thickness of Layer (mm)	150	150	150	150	150
Soil Description	Salvage Clay	Salvage Clay	Salvage Clay	Salvage Clay	Salvage Clay
Test Depth (mm)	125	125	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**	**	**
Field Wet Density (FWD) t/m ³	2.10	2.10	1.89	1.89	2.02
Field Moisture Content %	24.8	26.3	20.2	23.8	24.8
Field Dry Density (FDD) t/m ³	1.69	1.66	1.57	1.52	1.62
Peak Converted Wet Density t/m ³	2.03	2.03	1.95	1.96	2.00
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**
Moisture Variation (Wv) %	-0.5	0.0	0.0	0.0	0.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	104.0	103.0	97.0	96.5	101.0
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: AGT60087-8
Issue Number: 1
Date Issued: 09/04/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 891
Date Sampled: 31/03/2022
Dates Tested: 31/03/2022 - 09/04/2022
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 Client
Location: 210805 - LUM3, Lucas
Material: Brown Silty Clay
Material Source: Onsite



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Approved Signatory: Paul Francis
 Laboratory Manager - Ballarat
 NATA Accredited Laboratory Number: 20457

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	60087-30	60087-31	60087-32	60087-33	60087-34
Date Tested	31/03/2022	31/03/2022	31/03/2022	31/03/2022	31/03/2022
Time Tested	10:10	10:20	10:30	10:40	10:50
Test Request #/Location	LUM 3 Lot 1880	LUM 3 Lot 1881	LUM 3 Lot 1872	LUM 3 Lot 1871	LUM 3 Lot 1901
Latitude	-37.53931	-37.53932	-37.53885	-37.53893	-37.53893
Longitude	143.77636	143.77658	143.77550	143.77754	143.77624
Layer / Reduced Level	FSL	FSL	FSL	FSL	FSL
Thickness of Layer (mm)	150	150	150	150	150
Soil Description	Salvage Clay	Salvage Clay	Salvage Clay	Salvage Clay	Salvage Clay
Test Depth (mm)	125	125	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**	**	**
Field Wet Density (FWD) t/m ³	1.85	1.88	1.97	1.85	1.99
Field Moisture Content %	23.4	20.8	26.3	23.7	24.9
Field Dry Density (FDD) t/m ³	1.50	1.56	1.56	1.50	1.59
Peak Converted Wet Density t/m ³	1.93	1.94	1.95	1.93	1.95
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**	**
Moisture Variation (Wv) %	2.5	2.5	-0.5	2.5	0.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	96.0	97.0	101.0	96.0	102.0
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: AGT60087-9
Issue Number: 1
Date Issued: 09/04/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 899
Date Sampled: 04/04/2022
Dates Tested: 04/04/2022 - 09/04/2022
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 Client
Location: Lucas, -LUM 3 -210805
Material: Salvage Clay
Material Source: Onsite



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 Laboratory Manager - Ballarat
 NATA Accredited Laboratory Number: 20457

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	60087-35	60087-36	60087-37
Date Tested	04/04/2022	04/04/2022	04/04/2022
Time Tested	12:40	12:50	01:00
Test Request #/Location	LUM 3 Lot 1887	LUM 3 Lot 1899	LUM 3 Lot 1900
Latitude	-37.53895	-37.53811	-37.53814
Longitude	143.77707	143.77589	143.77608
Layer / Reduced Level	300 Below	300 Below	300 Below
Thickness of Layer (mm)	150	150	150
Soil Description	Salvage Clay	Salvage Clay	Salvage Clay
Test Depth (mm)	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	2.07	2.01	2.03
Field Moisture Content %	10.4	8.5	8.2
Field Dry Density (FDD) t/m ³	1.87	1.85	1.88
Peak Converted Wet Density t/m ³	1.97	2.00	2.00
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	3.0	2.0	2.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	105.0	100.5	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

Material Test Report

Report Number: AGT60087-10
Issue Number: 1
Date Issued: 07/10/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 1094
Date Sampled: 04/10/2022
Dates Tested: 04/10/2022 - 04/10/2022
Sampling Method: RMS T100 - AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Site Selection: Selected by Client
Location: LUM 3
Material: (CH) silty CLAY- Brown
Material Source: In Situ



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	60087-38	60087-39	60087-40	60087-41
Date Tested	04/10/2022	04/10/2022	04/10/2022	04/10/2022
Time Tested	11:15	11:25	11:35	11:45
Test Request #/Location	TRN - 10 LUM 3 - Lot 1884	TRN - 10 LUM 3 - Lot 1885	TRN - 10 LUM 3 - Lot 1888	TRN - 10 LUM 3 - Lot 1906
Latitude	-37.53940	-37.53940	-37.53944	-37.538790
Longitude	143.77714	143.77730	143.77707	143.777121
Layer / Reduced Level	FSL	300 Below	300 Below	300 Below
Thickness of Layer (mm)	150	150	150	150
Soil Description	(CH) silty CLAY- Brown	(CH) silty CLAY- Brown	(CH) silty CLAY- Brown	(CH) silty CLAY- Brown
Test Depth (mm)	125	125	125	125
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	2.08	1.93	1.92	1.94
Field Moisture Content %	24.9	19.6	19.6	24.6
Field Dry Density (FDD) t/m ³	1.66	1.61	1.60	1.56
Peak Converted Wet Density t/m ³	2.06	2.02	1.99	1.88
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Moisture Variation (Wv) %	-0.5	0.0	-0.5	1.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	101.0	95.5	96.5	103.5
Compaction Method	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: AGT60087-10
Issue Number: 1
Date Issued: 07/10/2022
Client: Hamowil Group Pty Ltd
 93 Grey St., , Terang Victoria 3264
Project Number: AGT60087
Project Name: 210805 - LUM 3
Project Location: Lucas
Work Request: 1094
Date Sampled: 04/10/2022
Dates Tested: 04/10/2022 - 04/10/2022
Sampling Method: RMS T100 - AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard
Site Selection: Selected by Client
Location: LUM 3
Material: (CH) silty CLAY- Brown
Material Source: In Situ



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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	60087-42	60087-43	60087-44
Date Tested	04/10/2022	04/10/2022	04/10/2022
Time Tested	11:50	11:55	12:00
Test Request #/Location	TRN - 10 LUM 3 - Lot 1905	TRN - 10 LUM 3 - Lot 1909	TRN - 10 LUM 3 - Lot 1895
Latitude	-37.538643	-37.538603	-37.538623
Longitude	143.776982	143.776796	143.775904
Layer / Reduced Level	300 Below	300 Below	300 Below
Thickness of Layer (mm)	150	150	150
Soil Description	(CH) silty CLAY- Brown	(CH) silty CLAY- Brown	(CH) silty CLAY- Brown
Test Depth (mm)	125	125	125
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m ³	1.94	1.94	1.94
Field Moisture Content %	21.8	20.5	21.0
Field Dry Density (FDD) t/m ³	1.59	1.61	1.61
Peak Converted Wet Density t/m ³	2.01	2.02	2.03
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	-0.5	-0.5	-0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	96.0	96.5	95.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

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

Appendix C – Site Photos

