



Australian Geotechnical Testing

Level One Inspection and Testing

Project No: AGTE21674-1
Project: Providence Estate Stages 1
Suburb: Alfredton



Client: Wayne Horne Earthmoving

Date: 9th May 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	

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1 Introduction

Australian Geotechnical Testing (AGT) has been engaged by Wayne Horne Earthmoving to provide Level 1 Geotechnical Supervision for the Providence Estate Stages 1 project. The Estate is located in Alfredton.

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 **22nd March 2022 to 1st April 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 **Silty 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 Sandy Clay fill. The material was placed in approximately 400mm loose layers, rolling effort with on-site Compactor (to seal of each layer of placed General Fill material) to a compacted 300mm 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: Wayne Horne Earthmoving 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 Wayne Horne Earthmoving 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

Appendix B – Laboratory Testing

Material Test Report

Report Number: AGT60089-2
Issue Number: 1
Date Issued: 23/03/2022
Client: Wayne Horne Earthmoving
 3 Trewin Street, Wendouree VIC 3355

Project Number: AGT60089
Project Name: Providence Estate Stage 1
Project Location: Providence Estate Stage 1
Work Request: 859
Date Sampled: 22/03/2022

Dates Tested: 22/03/2022 - 22/03/2022
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
Material: Brown Silty Clay
Material Source: Onsite



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Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Rachel Sproal
 Operations Manager
 NATA Accredited Laboratory Number: 20457

Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	60089-1	60089-2	60089-3
Date Tested	22/03/2022	22/03/2022	22/03/2022
Time Tested	09:45	09:50	09:55
Test Request #/Location	TRN-1 Lot 1	TRN-1 Lot 3	TRN-1 Lot 5
Latitude	-37.562479	-37.562306	-37.562120
Longitude	143.783884	143.783878	1732.783948
Layer / Reduced Level	600mm Below FSL	600mm Below FSL	600mm Below 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 (%)	**	**	**
Field Wet Density (FWD) t/m ³	1.89	1.99	1.99
Field Dry Density (FDD) t/m ³	**	**	**
Peak Converted Wet Density t/m ³	1.95	2.07	2.03
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	3.0	0.0	2.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	97.0	96.0	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: AGT60089-3
Issue Number: 1
Date Issued: 23/03/2022
Client: Wayne Horne Earthmoving
 3 Trewin Street, Wendouree VIC 3355
Project Number: AGT60089
Project Name: Providence Estate Stage 1
Project Location: Providence Estate Stage 1
Work Request: 866
Date Sampled: 23/03/2022
Dates Tested: 23/03/2022 - 23/03/2022
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
Material: Brown Silty Clay
Material Source: Import



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 Laboratory Manager - Ballarat
 NATA Accredited Laboratory Number: 20457

Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	60089-4	60089-5	60089-6
Date Tested	23/03/2022	23/03/2022	23/03/2022
Time Tested	07:30	07:40	07:45
Test Request #/Location	TRN-3 Lot 2	TRN-3 Lot 4	TRN-3 Lot 6
Easting	-37.562535	-37.562296	-37.562078
Northing	143.783932	143.784018	143.784065
Layer / Reduced Level	600mm Below FSL	600mm Below FSL	600mm Below 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 (%)	**	**	**
Field Wet Density (FWD) t/m ³	1.93	1.93	1.92
Field Dry Density (FDD) t/m ³	**	**	**
Peak Converted Wet Density t/m ³	1.96	2.02	1.94
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	1.0	0.0	1.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	99.0	95.5	99.5
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

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

Material Test Report

Report Number: AGT60089-4
Issue Number: 1
Date Issued: 27/03/2022
Client: Wayne Horne Earthmoving
 3 Trewin Street, Wendouree VIC 3355
Project Number: AGT60089
Project Name: Providence Estate Stage 1
Project Location: Providence Estate - Stage 1
Work Request: 870
Dates Tested: 24/03/2022 - 26/03/2022



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 Laboratory Manager - Ballarat
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Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	60089-7	60089-8	60089-9
Date Tested	24/03/2022	24/03/2022	24/03/2022
Time Tested	16:00	16:10	16:20
Test Request #/Location	TRN 3 Lot 1	TRN 3 Lot 2	TRN 3 Lot 3
Latitude	-37.562231	-37.562088	-37.561978
Longitude	143.784098	143.784040	143.784116
Layer / Reduced Level	300 Below FSL	300 Below FSL	300 Below FSL
Thickness of Layer (mm)	300	300	300
Soil Description	Grey Silty CLAY	Grey Silty CLAY	Grey 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	2.00	1.95	2.04
Field Dry Density (FDD) t/m ³	**	**	**
Peak Converted Wet Density t/m ³	2.07	1.94	1.96
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Moisture Variation (Wv) %	2.0	4.0	4.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	96.5	100.5	104.5
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: AGT60089-5
Issue Number: 1
Date Issued: 04/04/2022
Client: Wayne Horne Earthmoving
 3 Trewin Street, Wendouree VIC 3355
Project Number: AGT60089
Project Name: Providence Estate Stage 1
Project Location: Providence Estate Stage 1
Work Request: 888
Date Sampled: 31/03/2022
Dates Tested: 31/03/2022 - 03/04/2022
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
Material: Brown Silty Clay
Material Source: Onsite



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Compaction Control AS 1289 5.7.1 & 5.8.1

	60089-10	60089-11	
Sample Number	60089-10	60089-11	
Date Tested	31/03/2022	31/03/2022	
Time Tested	09:00	09:30	
Test Request #/Location	TRN 5 Providence Estate Stage 1 - Lot 5	TRN 5 Providence Estate Stage 1 - Lot 2	
Latitude	-37.562274	-37.562051	
Longitude	143.784086	143.7484184	
Layer / Reduced Level	300 Below FSL	FSL	
Thickness of Layer (mm)	150	150	
Soil Description	Brown Silty Clay	Brown Silty Clay	
Test Depth (mm)	125	125	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	**	**	
Field Wet Density (FWD) t/m ³	1.94	1.91	
Field Dry Density (FDD) t/m ³	**	**	
Peak Converted Wet Density t/m ³	2.00	1.99	
Adjusted Peak Converted Wet Density t/m ³	**	**	
Moisture Variation (Wv) %	4.5	4.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	97.0	96.5	
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: AGT60089-6
Issue Number: 1
Date Issued: 04/04/2022
Client: Wayne Horne Earthmoving
 3 Trewin Street, Wendouree VIC 3355
Project Number: AGT60089
Project Name: Providence Estate Stage 1
Project Location: Providence Estate Stage 1
Work Request: 894
Date Sampled: 01/04/2022 8:00
Dates Tested: 01/04/2022 - 02/04/2022
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
Material: Brown Silty CLAY
Material Source: Onsite



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 Laboratory Manager - Ballarat
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Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	60089-12	60089-13	
Date Tested	01/04/2022	01/04/2022	
Time Tested	10:20	10:30	
Test Request #/Location	TRN 6 Providence Estate Stage 1 - lot 4	TRN 6 Providence Estate Stage 1 Lot 6	
Latitude	-37.562553	-37.562584	
Longitude	143.784002	143.784134	
Layer / Reduced Level	FSL	FSL	
Thickness of Layer (mm)	150	150	
Soil Description	Brown Silty CLAY	Brown Silty CLAY	
Test Depth (mm)	125	125	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	**	**	
Field Wet Density (FWD) t/m ³	1.77	1.89	
Field Moisture Content %	30.4	36.8	
Field Dry Density (FDD) t/m ³	1.36	1.38	
Peak Converted Wet Density t/m ³	1.78	1.90	
Adjusted Peak Converted Wet Density t/m ³	**	**	
Moisture Variation (Wv) %	5.0	4.0	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	99.5	99.5	
Compaction Method	Standard	Standard	
Report Remarks	**	**	

Moisture Variation Note:

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