Viewpoint Estate Stage E2
Huntly

Earthworks Supervision Report for
Dunlop & Pitson

Report 20C 0150
March, 2020

GTS
GEOTECHNICAL TESTING SERVICES

Viewpoint Estate Stage E2
Huntly

Earthworks Supervision Report

for

Dunlop & Pitson

Revision

Revision	Date	Authorised
20C 0150	12/03/2020	BAB

Distribution (this revision only)

Recipient	Format	Date
GTSS	On file	12/03/2020
Dunlop & Pitson Contact: Darren Pitson	Email PDF	12/03/2020

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1 INTRODUCTION

Dunlop & Pitson commissioned Geotechnical Testing Services (GTS) to undertake Level 1 Supervision and testing (AS3798-2007) for the earthworks for the residential subdivision Viewpoint Estate Stage E2, Huntly.

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 in Lots 401 to 405 and 426 to 428.

The depth of fill across the site varied from none to around 600mm with the approximate locations shown on the attached site plan. It is noted that sites with less than 300mm were not included in the controlled fill.

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 filling may be considered a large scale (greater than 1500m^2) and therefore a minimum of 1 test per 2500m^2 or 3 tests per visit are required. It is noted that under this scale, not every lot required testing, however, the testing was generally conducted at 1 test per residential lot per layer which exceeds the minimum requirements.

3 INSPECTION AND TESTING

Inspection of the excavated bases were conducted by a Senior Geotechnical Engineer and it was observed that the unsuitable material (vegetation, topsoil/silt) had been removed with the base consisting of a Gravelly 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 Bendigo 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.

Project No.	Sample No.	Test Date	Location	Reduced Level (mm)	Moisture Variation %O.M.C	Hilf Density Ratio %
1	B19-5339A	11/11/2019	Lot 428	-300	5.5 dry	99.0
2	B19-5339B	11/11/2019	Lot 427	-300	5.0 dry	104.0
3	B19-5339C	11/11/2019	Lot 426	-300	5.0 dry	106.0
4	B19-5374A	14/11/2019	Lot 428	FSL	2.5 dry	106.5
5	B19-5374B	14/11/2019	Lot 427	FSL	2.0 dry	104.5
6	B19-5374C	14/11/2019	Lot 426	FSL	2.0 dry	101.5
7	B20-5710A	17/01/2020	Lot 401	-100	2.5 dry	99.5
8	B20-5710B	17/01/2020	Lot 402	-100	2.0 dry	99.5
9	B20-5710C	17/01/2020	Lot 403	-100	2.5 dry	103.0
10	B20-5710D	17/01/2020	Lot 404	-100	2.5 dry	99.5
11	B20-5710E	17/01/2020	Lot 405	-200	2.5 dry	107.0

5 STATEMENT OF COMPLIANCE

GTS personnel have provided Level 1 inspection and testing services during the placement of material for the filling in Lots 401 to 405 and 426 to 428. 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. It is noted that topsoil material may be spread across the sites following completion of these earthworks and that this topsoil material is not considered controlled fill.

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APPENDIX

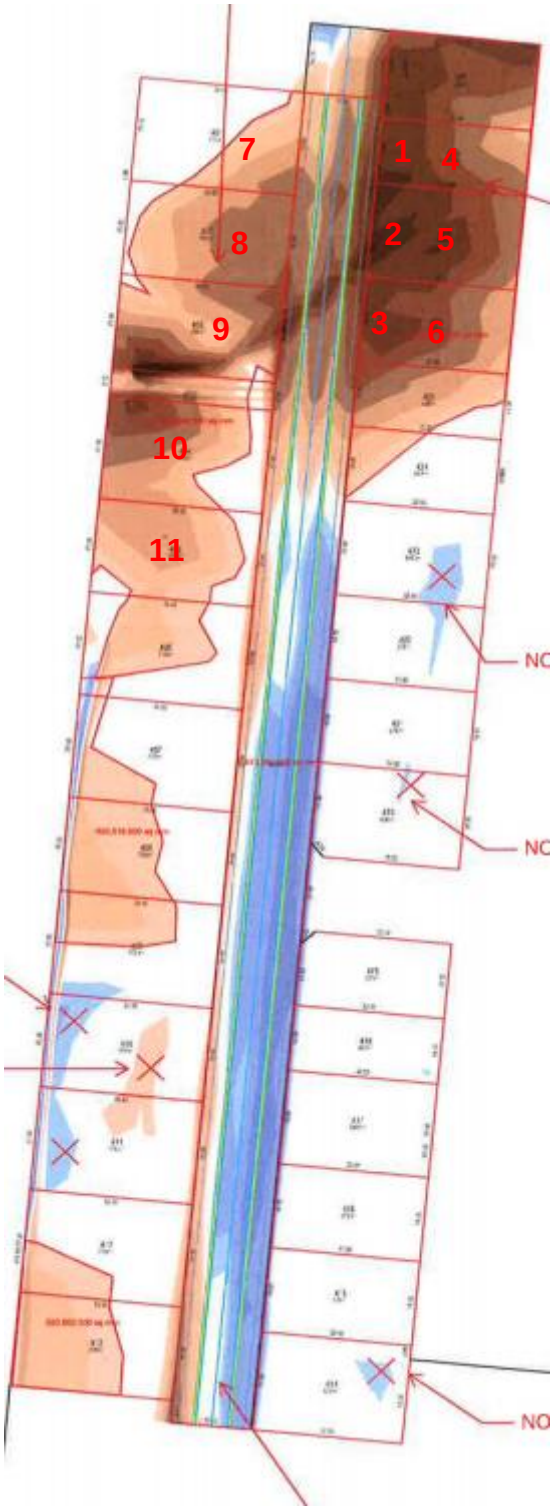

Fig 1 Site Plan

Material Test Report

Report Number: **P18615-13**
Issue Number: 1
Date Issued: 13/11/2019
Client: Dunlop & Pitson
24 Jewell Court , Bendigo VIC 3550
Project Number: P18615
Project Name: View Point Estate
Project Location: Huntly
Work Request: 5339
Date Sampled: 11/11/2019
Dates Tested: 11/11/2019 - 12/11/2019
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Site Selection: Selected by Client
Material Source: Test Location

Geotechnical Testing Services (Southern)
Bendigo Soil and Concrete Testing Laboratory
Gate 7, Sharon Street Bendigo VIC 3550
Phone: (03) 5441 4881
Email: joshl@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Josh Lagodzki
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	B19-5339A	B19-5339B	B19-5339C
Date Tested	11/11/2019	11/11/2019	11/11/2019
Time Tested	09:56	10:03	10:11
Test Request #/Location	House Block	House Block	House Block
Chainage (m)	Lot 428 3m from Road	Lot 427 3m from Road	Lot 426 3m from Road
Location Offset (m)	Centre	Centre	Centre
Elevation (m)	Gravelly Silty Clay Brown	**	**
Layer / Reduced Level	-300	-300	-300
Thickness of Layer (mm)	300	300	300
Soil Description	Gravelly Silty Clay Brown	Gravelly Silty Clay Brown	Gravelly Silty Clay Brown
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	4.6	14.2	4.3
Field Wet Density (FWD) t/m^3	1.99	2.07	2.11
Field Dry Density (FDD) t/m^3	**	**	**
Peak Converted Wet Density t/m^3	**	**	**
Adjusted Peak Converted Wet Density t/m^3	2.00	2.00	1.99
Moisture Variation (Wv) %	**	**	**
Adjusted Moisture Variation %	5.5	5.0	5.0
Hilf Density Ratio (%)	**99.0**	**104.0**	**106.0**
Compaction Method	**Standard**	**Standard**	**Standard**

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

Material Test Report

Report Number: **P18615-14**
Issue Number: 1
Date Issued: 18/11/2019
Client: Dunlop & Pitson
24 Jewell Court , Bendigo VIC 3550
Project Number: P18615
Project Name: View Point Estate
Project Location: Huntly
Work Request: 5374
Date Sampled: 14/11/2019 13:00
Dates Tested: 14/11/2019 - 23/11/2019
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Site Selection: Selected by Client
Material Source: Test Location

Geotechnical Testing Services (Southern)
Bendigo Soil and Concrete Testing Laboratory
Gate 7, Sharon Street Bendigo VIC 3550
Phone: (03) 5441 4881
Email: joshl@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Josh Lagodzki
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	B19-5374A	B19-5374B	B19-5374C
Date Tested	14/11/2019	14/11/2019	14/11/2019
Time Tested	13:12	13:13	13:17
Test Request #/Location	House Block	House Block	House Block
Chainage (m)	428	427	426
Location Offset (m)	Center of Block	Center of Block	Center of Block
Layer / Reduced Level	FSL	FSL	FSL
Thickness of Layer (mm)	300	300	300
Soil Description	Gravelly Silty Clay	Gravelly Silty Clay	Gravelly Silty Clay
Test Depth (mm)	250	250	250
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	2.28	2.21	2.19
Field Dry Density (FDD) t/m^3	**	**	**
Peak Converted Wet Density t/m^3	2.14	2.12	2.16
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Moisture Variation (Wv) %	2.5	2.0	2.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**106.5**	**104.5**	**101.5**
Compaction Method	**Standard**	**Standard**	**Standard**

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

Material Test Report

Report Number: **P18615-16**
Issue Number: 1
Date Issued: 20/01/2020
Client: Dunlop & Pitson
24 Jewell Court , Bendigo VIC 3550
Project Number: P18615
Project Name: View Point Estate
Project Location: Huntly
Work Request: 5710
Date Sampled: 17/01/2020
Dates Tested: 17/01/2020 - 20/01/2020
Sampling Method: AS1289 1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Site Selection: Selected by Client
Material Source: Test Location

Geotechnical Testing Services (Southern)
Bendigo Soil and Concrete Testing Laboratory
Gate 7, Sharon Street Bendigo VIC 3550
Phone: (03) 5441 4881
Email: joshl@gts.com.au
Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Josh Lagodzki
NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1					
Sample Number	B20-5710A	B20-5710B	B20-5710C	B20-5710D	B20-5710E
Date Tested	17/01/2020	17/01/2020	17/01/2020	17/01/2020	17/01/2020
Time Tested	12:46	12:50	12:56	13:02	13:07
Test Request #/Location	Housing Estate	Housing Estate	Housing Estate	Housing Estate	Housing Estate
Chainage (m)	Block 401	Block 402	Block 403	Block 404	Block 405
Location Offset (m)	Center	Center	Center	Center	Center
Layer / Reduced Level	-100	-100	-100	-100	-200
Thickness of Layer (mm)	300	300	300	300	200
Soil Description	Clayey Silty Gravel	Clayey Silty Gravel	Clayey Silty Gravel	Clayey Silty Gravel	Clayey Silty Gravel
Test Depth (mm)	250	250	250	250	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	0.0	0.0	0.0	0.0
Field Wet Density (FWD) t/m^3	2.10	2.05	2.13	2.09	2.21
Field Dry Density (FDD) t/m^3	**	**	**	**	**
Peak Converted Wet Density t/m^3	2.11	2.06	2.06	2.09	2.07
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**	**
Moisture Variation (Wv) %	2.5	2.0	2.5	2.5	2.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	**99.5**	**99.5**	**103.0**	**99.5**	**107.0**
Compaction Method	**Standard**	**Standard**	**Standard**	**Standard**	**Standard**

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