CHADWICK GEOTECHNICS

REPORT

Level One Inspection and Testing Services

Meridian Central Estate Stage 27, Clyde Lot's 2701 to 2713, 2722 to 2725, 2726 to 2731, 2733 to 2740 and Superlot 27A

Prepared for:

Grosvenor Lodge Pty Ltd

September 2021

Our Ref: 3807351.027.v1

25 Metcalf Street, Dandenong South, Vic 3175, Australia
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Document Control

Title: Level One Inspection and Testing Services					
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by:
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Distribution:

Grosvenor Lodge Pty Ltd	1 electronic copy
Chadwick Geotechnics Pty Ltd (FILE)	1 electronic copy

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1 Introduction

As part of the construction of the Meridian Central Estate development in Clyde North, Chadwick Geotechnics Pty Ltd (Chadwick Geotechnics) has been engaged by Grosvenor Lodge Pty Ltd to provide Geotechnical Inspection and Testing Authority (GITA) services for the earthworks within Stage 27 of the Estate.

This report presents the earthworks supervision methods and density testing results for the residential Lot's 2701 to 2713, 2722 to 2731, 2733 to 2740 and the Superlot 27A. The earthworks were completed between 1 April 2021 and 17 June 2021.

The specification required the earthworks to be completed under Level 1 Supervision, that is, full-time Inspection and Testing of the earthworks. Chadwick Geotechnics were onsite for the duration of the earthworks program.

2 Project details

2.1 Location

The Meridian Central Estate is in Clyde North, the Stage 27 site is located North of Hardys Road and East of Tuckers Road within the Meridian Central site. The stage is being developed as a residential development.

A site plan of the site is included in Appendix A.

2.2 Fill specification

A summary of the specification is shown below:

- All filling more than 300mm depth shall be constructed to specifications satisfying the requirements of AS 3798-2007 “Guidelines on Earthworks for Commercial and Residential Developments”.
- All filling works shall be undertaken with supervision to the standard detailed as “Level 1 Inspection and Testing” in AS 3798-2007, such that the supervisor will issue a notice detailing that the works comply with the specifications and drawings.
- The fill soils to comply with the ‘Suitable Material’ in accordance with Section 4.4 of the AS3798-2007, and the following:
  - Maximum particle size of 150mm.
  - Particles over 37.5mm diameter not to exceed 20% of the material.
  - Organic soils, topsoil, silts, or soils containing organic matter, wood, plastics, metal or other deleterious materials are not acceptable.
- Subgrade to be proof rolled in presence of the Level 1 Inspector prior to the placement of engineered fill.
- Fill to be compacted in near horizontal layers.
- Compaction to achieve a ratio of at least 95% Standard MDD (maximum dry density).
- Frequency of testing to be in accordance with Table 8.1 of AS3798-2007.

2.3 Roles

The organisations and their roles are presented in Table 2.1 below.

Table 2.1 Project roles

Role	Organisation
Developer	Grosvenor Lodge Pty Ltd
Geotechnical Inspection and Testing Authority (GITA)	Chadwick Geotechnics Pty Ltd
Civil Designer / Superintendent	Beveridge Williams Pty Ltd
Earthworks Contractor	Brown Property Group Pty Ltd

2.4 Source of material

The material used on site was imported from locally sources.

2.5 General

The inspection and testing of earthworks have been carried out in accordance with AS3798-2007, 'Guidelines on earthworks for commercial and residential developments', with a frequency of field density tests as per a Type 1 project (large scale operation). Compaction control laboratory testing was undertaken within Chadwick Geotechnics NATA accredited laboratories in accordance with AS1289 'Methods of Testing Soils for Engineering Purposes'.

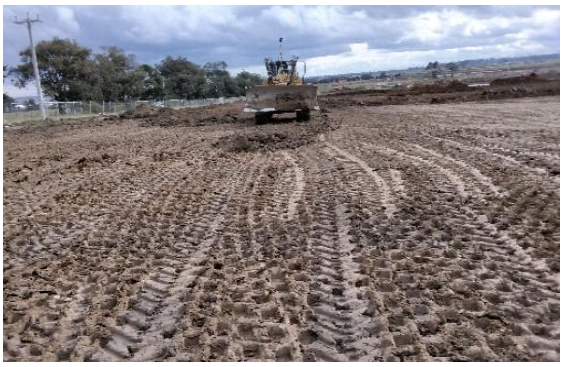
2.6 Subgrade inspection

Prior to fill being placed the subgrade was inspected. The inspections were performed in accordance with the Level 1 guidelines presented in AS 3798–2007 Section 5.5. The stripped surface was stripped to natural clay, and the area was found to be firm and free of vegetation and other deleterious material. All pre-existing uncontrolled fill was removed prior to the placement of engineered fill to achieve the design levels.

2.7 Earthwork supervision

Full time Level 1 inspection and testing of the Stage 27 filling operations commenced on 1 April 2021 and was completed on 17 June 2021. During this period Chadwick Geotechnics was on site all the time (except when there were no earthworks) and observed the earthworks, the placing of fill including the supply of material, conditioning of material (moisture conditioning and oversize removal), placement and compaction of the fill material.

All fill material was placed in lift sequences and Chadwick Geotechnics verified that the surface of the stripped subgrade and additional lifts were thoroughly scarified, and moisture conditioned prior to placement of additional layers to prevent delamination at the layer interface. See Photographs 2.1 and 2.2 below.



Photograph 2.1:

Earthwork operations, June 2021

Photograph 2.2:

Earthwork Testing, June 2021

2.8 Earthwork equipment

The fill was placed and compacted using vibrating Pad foot rollers. Water trucks with water cannons attached were used to moisture condition the soil materials. The layer thicknesses were controlled using earthwork machinery with built-in GPS systems.

2.9 Geotechnical sampling and testing

Field density and moisture content testing was carried out using a calibrated portable density and moisture gauge in accordance with AS 1289.5.8.1. The HILF rapid compaction test was used for peak converted wet density determinations in accordance with AS 1289.5.7.1. Test locations were recorded using hand held GPS units. A site plan showing the field density test locations is provided in Appendix A. A summary of Hilf density testing is presented in Appendix B and the Hilf density test reports are presented in Appendix C.

A total of 37 tests were performed across the Stage 27 area during the filling process.

The results show that (2) tests failed to meet the specification requirements for the project. The earthworks contractor was advised of the tests that failed and the fill relevant to those areas was reworked, reconditioned, re-compacted and subsequently retested. The final test results show that the tests achieved the specification requirements for the project.

A summary of the Hilf density test reports is provided within Appendix B and all the test reports are provided within Appendix C, the controlled fill certificates are provided within Appendix D.

3 Conclusion

On the basis of our inspections and after considering all test results relating to the project, it is our opinion, so far as it is able to be determined, that:

- The materials used by the earthworks contractor met the geotechnical property requirements of the specification.
- The fill material placed was tested at a suitable frequency in accordance with AS 3798-2007- Table 8.1 and the results indicate the compacted material achieved the minimum density requirement of the specification.
- Given the consistent construction practices followed by the earthworks contractor, and as witnessed by Chadwick Geotechnics, combined with the satisfactory verification of test results

achieved, it is inferred that areas of the site between test locations were performed to the same standard as those areas that have been tested.

It is our opinion that the earthworks undertaken have been performed in accordance with the requirements of Section 8.2 of AS3798-2007 - Level 1 Inspection and Testing.

4 Applicability

This report has been prepared for the exclusive use of our client Grosvenor Lodge Pty Ltd , with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Recommendations and opinions in this report are based on data from discrete investigation locations. The nature and continuity of subsoil away from these locations are inferred but it must be appreciated that actual conditions could vary from the assumed model.

Should you require any further information regarding this report, please do not hesitate to contact the undersigned on (03) 8796 7900.

Chadwick Geotechnics Pty Ltd

Report prepared by:	Authorised for Chadwick Geotechnics Pty Ltd by:
	
.....	.....
Robert Barden Project Manager	Tim Chadwick Project Director

14-Sep-21
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Appendix A: Site plan

LEGEND

S21DS-04830 HILF DENSITY TEST LOCATION

NOTES:
1. AERIAL IMAGE SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD IMAGERY DATE: 29/04/2021.
2. BASE PLAN PROVIDED BY GROSVENOR LODGE PTY LTD DRAWING REFERENCE: 1801767-27-BASE 2107247 DATE RECEIVED: 13/08/2021.

A3 SCALE 1:1000
0 5 10 15 20 30 40 50 (m)

CHADWICK GEOTECHNICS
www.chadwickgeotechnics.com.au

ORIGINAL IN COLOUR

PROJECT No.	3807351.027	
DESIGNED	SKPW	Aug.21
DRAWN	KMJA	Aug.21
CHECKED		
APPROVED	DATE	

CLIENT **GROSVENOR LODGE PTY LTD**
PROJECT **MERIDIAN ESTATE - STAGE 27**
TITLE LEVEL ONE HILF DENSITY TESTING
HILF DENSITY TEST LOCATION PLAN

UNDER REVISION 1

SCALE (A3) 1:1000 FIG No. FIGURE 01 REV 1

Appendix B: Hilf density test summary

CHADWICK GEOTECHNICS

3807351.027 - Meridian Estate Stage 27 - HILF Summary

Chadwick Geotechnics
25 Metcalf St
Dandenong S
Tel : (03) 8796 7900
Fax: (03) 8796 7944

Report No	Sample No	Date	Test Number	Location [E]	Location [N]	RL	Density Ratio HILF test (≥95%)	Moisture Variation	Pass / Fail	Remarks
HDR:W21DS01178	S21DS-04627	1/04/2021	1	355498	5781282	34.57	99	2.0 dry	Pass	
HDR:W21DS01178	S21DS-04628	1/04/2021	2	355497	5781236	34.53	102.5	2.5 dry	Pass	
HDR:W21DS01178	S21DS-04629	1/04/2021	3	355540	5781225	34.93	100.5	0.5 dry	Pass	
HDR:W21DS01178	S21DS-04630	1/04/2021	4	355547	5781266	35.36	101	omc	Pass	
HDR:W21DS01184	S21DS-04647	3/04/2021	1	355547	5781285	35.48	104	2.0 dry	Pass	
HDR:W21DS01184	S21DS-04648	3/04/2021	2	355549	5781253	35.52	99	0.5 wet	Pass	
HDR:W21DS01169	S21DS-04597	5/04/2021	1	355506	5781256	34.94	107	2.0 dry	Pass	
HDR:W21DS01169	S21DS-04598	5/04/2021	2	355515	5781294	35.192	99.5	0.5 dry	Pass	
HDR:W21DS01169	S21DS-04599	5/04/2021	3	355544	5781213	35.409	93.5	omc	Fail	Retested see S21DS-04722
HDR:W21DS01169	S21DS-04600	5/04/2021	4	355546	5781258	35.744	93	omc	Fail	Retested see S21DS-04723
HDR:W21DS01202	S21DS-04722	7/04/2021	1	355540	5781214	35.238	99.5	1.5 dry	Pass	Retest of S21DS-04599
HDR:W21DS01202	S21DS-04723	7/04/2021	2	355547	5781256	35.754	99	2.0 dry	Pass	Retest of S21DS-04600
HDR:W21DS01220	S21DS-04781	8/04/2021	1	355486	5781194	34.444	99.5	omc	Pass	
HDR:W21DS01220	S21DS-04782	8/04/2021	2	355507	5781182	34.67	99.5	omc	Pass	
HDR:W21DS01237	S21DS-04830	9/04/2021	1	355489	5781163	34.69	97.5	2.0 wet	Pass	
HDR:W21DS01292	S21DS-05043	15/04/2021	1	355545	5781171	3.51	95.5	0.5 dry	Pass	
HDR:W21DS01454	S21DS-05575	27/04/2021	1	355552	5781155	35.75	99	2.0 dry	Pass	
HDR:W21DS01454	S21DS-05576	27/04/2021	2	355582	5781157	36.40	96	omc	Pass	
HDR:W21DS01454	S21DS-05577	27/04/2021	3	355580	5781188	36.37	95.5	omc	Pass	
HDR:W21DS01479	S21DS-05653	28/04/2021	1	355588	5781244	36.40	97	2.5 dry	Pass	
HDR:W21DS01479	S21DS-05654	28/04/2021	2	355591	5781209	36.638	100.5	2.5 dry	Pass	
HDR:W21DS01498	S21DS-05721	30/04/2021	1	355589	5781145	36.983	101.5	0.5 dry	Pass	
HDR:W21DS01536	S21DS-05842	3/05/2021	1	355568	5781164	36.332	107	2.5 dry	Pass	
HDR:W21DS01536	S21DS-05843	3/05/2021	2	355581	5781232	36.491	96	0.5 dry	Pass	
HDR:W21DS01589	S21DS-06028	6/05/2021	1	355592	5781253	36.715	101.5	0.5 dry	Pass	
HDR:W21DS01589	S21DS-06029	6/05/2021	2	355588	5781198	36.840	96	omc	Pass	
HDR:W21DS01589	S21DS-06030	6/05/2021	3	355576	5781156	36.630	98	omc	Pass	
HDR:W21DS01589	S21DS-06031	6/05/2021	4	355549	5781152	35.95	101	omc	Pass	
HDR:W21DS01620	S21DS-06119	8/05/2021	1	355627	5781144	37.365	100.5	omc	Pass	
HDR:W21DS01732	S21DS-06453	12/05/2021	1	355654	5781136	38.07	105.5	omc	Pass	
HDR:W21DS01732	S21DS-06454	12/05/2021	2	355585	5781148	37.22	96.5	0.5 dry	Pass	
HDR:W21DS01837	S21DS-06825	20/05/2021	1	355639	5781141	39.64	100.5	0.5 dry	Pass	
HDR:W21DS01862	S21DS-06918	24/05/2021	1	355582	5781205	36.84	104	0.6 dry	Pass	
HDR:W21DS01862	S21DS-06919	24/05/2021	2	355582	5781229	36.38	101	0.5 dry	Pass	
HDR:W21DS02168	S21DS-07855	16/06/2021	1	355667	5781144	38.45	101.5	omc	Pass	
HDR:W21DS02179	S21DS-07902	17/06/2021	1	355643	5781137	38.34	102	omc	Pass	
HDR:W21DS02179	S21DS-07903	17/06/2021	2	355621	5781138	37.868	106	2.0 dry	Pass	

Appendix C: Hilf density testing reports

CHADWICK GEOTECHNICS

Think Act Safe Be

Dandenong South
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Ph: + 61 3 8796 7900
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Report No: HDR:W21DS01178
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 12/04/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Silty Clay

Sample Data

Sample ID	S21DS-04627	S21DS-04628	S21DS-04629	S21DS-04630		
Field Sample ID	1	2	3	4		
Date Tested	1/04/2021	1/04/2021	1/04/2021	1/04/2021		
E:	1674.643	1673.515	1716.630	1723.424		
N:	442.619	397.428	385.665	427.425		
EL:	34.573	34.534	34.930	35.357		
Lot:	2705	2702	2711	2708		
Layer:	1	1	1	1		
Field and Laboratory Data						
Depth of Test (mm)	175	175	175	175		
Depth of Layer (mm)	200	200	200	200		
AS Sieve Size (mm)	19.0	19.0	19.0	19.0		
Oversize Wet (%)	0	0	0	0		
Field Wet Density (t/m³)	2.03	2.07	2.00	2.01		
Peak Converted Wet Density (t/m³)	2.05	2.01	1.99	1.99		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Variation (%)	2.0 dry	2.5 dry	0.5 dry	0.0		
Hilf Density Ratio (%)	**99.0**	**102.5**	**100.5**	**101.0**		

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS01184
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 12/04/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Clay

Sample Data

Sample ID	S21DS-04647	S21DS-04648				
Field Sample ID	1	2				
Date Tested	3/04/2021	3/04/2021				
E:	1723.898	1726.139				
N:	445.934	413.964				
EL:	35.480	35.524				
Lot:	2707	2710				
Layer:	2	2				
Field and Laboratory Data						
Depth of Test (mm)	175	175				
Depth of Layer (mm)	200	200				
AS Sieve Size (mm)	19.0	19.0				
Oversize Wet (%)	0	0				
Field Wet Density (t/m³)	1.97	2.00				
Peak Converted Wet Density (t/m³)	1.89	2.02				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	2.0 dry	0.5 wet				
Hilf Density Ratio (%)	**104.0**	**99.0**				

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS01169
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 12/04/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Clay

Sample Data

Sample ID	S21DS-04597	S21DS-04598	S21DS-04599	S21DS-04600		
Field Sample ID	1	2	3	4		
Date Tested	5/04/2021	5/04/2021	5/04/2021	5/04/2021		
E:	1682.449	1691.446	1720.514	1722.550		
N:	416.705	454.951	373.887	418.680		
EL:	34.944	35.192	35.409	35.744		
Lot:	2704	2706	2712	2709		
Layer:	FSL	FSL	FSL	FSL		
Field and Laboratory Data						
Depth of Test (mm)	175	175	175	175		
Depth of Layer (mm)	200	200	200	200		
AS Sieve Size (mm)	19.0	19.0	19.0	19.0		
Oversize Wet (%)	0	0	0	0		
Field Wet Density (t/m³)	2.10	2.05	1.93	1.89		
Peak Converted Wet Density (t/m³)	1.96	2.06	2.06	2.04		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Variation (%)	2.0 dry	0.5 dry	0.0	0.0		
Hilf Density Ratio (%)	**107.0**	**99.5**	**93.5**	**93.0**		

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS01202
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 8/04/2021

Sample Details

Location:	Clyde North
Client Request ID:	
Specification Requirements:	Minimum Hilf Density Ratio of 95%
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	Onsite
Material:	CLAY

Sample Data

Sample ID	S21DS-04722	S21DS-04723				
Field Sample ID	1	2				
Date Tested	7/04/2021	7/04/2021				
Lot No:	2712	2709				
E:	1716.417	1723.657				
N:	375.026	417.274				
Elv	35.238	35.754				
	Retest	Retest				
Field and Laboratory Data						
Depth of Test (mm)	175	175				
Depth of Layer (mm)	200	200				
Field Wet Density (t/m³)	2.03	2.02				
Peak Converted Wet Density (t/m³)	2.04	2.04				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	1.5 dry	2.0 dry				
Hilf Density Ratio (%)	**99.5**	**99.0**				

Comments

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Report No: HDR:W21DS01220
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 12/04/2021

Sample Details

Location:	Clyde North
Client Request ID:	
Specification Requirements:	Minimum Hilf Density Ratio of 95%
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	Onsite
Material:	Gravelly Clay

Sample Data

Sample ID	S21DS-04781	S21DS-04782				
Field Sample ID	1	2				
Date Tested	8/04/2021	8/04/2021				
E:	1662.499	1684.134				
N:	354.665	343.344				
Elv:	34.444	34.674				
Lot:	2740	2739				
Layer:	1	1				

Field and Laboratory Data

AS Sieve Size (mm)	19.0	19.0				
Oversize Wet (%)	0	0				
Field Wet Density (t/m³)	2.09	2.07				
Peak Converted Wet Density (t/m³)	2.10	2.07				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	0.0				
Hilf Density Ratio (%)	**99.5**	**99.5**				

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS01237
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 12/04/2021

Sample Details

Location:	Clyde North
Client Request ID:	
Specification Requirements:	Minimum Hilf Density Ratio of 95%
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	Onsite
Material:	Gravelly Clay

Sample Data

Sample ID	S21DS-04830					
Field Sample ID	1					
Date Tested	9/04/2021					
Lot No:	2736					
E:	1665.563					
N:	324.461					
Elv:	34.691					
Field and Laboratory Data						
Depth of Test (mm)	175					
Depth of Layer (mm)	200					
Field Wet Density (t/m³)	2.04					
Peak Converted Wet Density (t/m³)	2.09					
Compactive Effort	Standard					
Moisture Variation (%)	2.0 wet					
Hilf Density Ratio (%)	**97.5**					

Comments

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Report No: HDR:W21DS01292
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 21/05/2021

Sample Details

Location:
Client Request ID:
Specification Requirements:
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Clay

Sample Data

Sample ID	S21DS-05043					
Field Sample ID	1					
Date Tested	15/04/2021					
E:	1721.24					
N:	332.04					
EL:	3.51					

Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	1.93					
Peak Converted Wet Density (t/m³)	2.03					
Compactive Effort	Standard					
Moisture Variation (%)	0.5 dry					
Hilf Density Ratio (%)	**95.5**					

Comments

CHADWICK GEOTECHNICS

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DANDENONG SOUTH, VIC 3175

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Report No: HDR:W21DS01454
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 21/05/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Silty Clay

Sample Data

Sample ID	S21DS-05575	S21DS-05576	S21DS-05577			
Field Sample ID	1	2	3			
Date Tested	27/04/2021	27/04/2021	27/04/2021			
EL	1728.540	1758.950	1756.510			
N:	315.650	318.240	348.540			
EL:	35.75	36.400	36.368			
Layer:	1	1	1			
CH:	Superlot	Superlot	2726			
Field and Laboratory Data						
Depth of Test (mm)	225	225	225			
Depth of Layer (mm)	250	250	250			
AS Sieve Size (mm)	19.0	19.0	19.0			
Oversize Wet (%)	0	0	0			
Field Wet Density (t/m³)	2.01	2.04	2.01			
Peak Converted Wet Density (t/m³)	2.03	2.13	2.11			
Compactive Effort	Standard	Standard	Standard			
Moisture Variation (%)	2.0 dry	0.0	0.0			
Hilf Density Ratio (%)	**99.0**	**96.0**	**95.5**			

Comments

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Report No: HDR:W21DS01479
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 21/05/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Clay

Sample Data

Sample ID	S21DS-05653	S21DS-05654				
Field Sample ID	1	2				
Date Tested	28/04/2021	28/04/2021				
E:	1764.571	1767.642				
N:	405.138	370.277				
EL:	36.400	36.638				
Lot:	2730	2728				
Layer:	1	1				
Field and Laboratory Data						
Depth of Test (mm)	225	225				
Depth of Layer (mm)	250	250				
AS Sieve Size (mm)	19.0	19.0				
Oversize Wet (%)	0	0				
Field Wet Density (t/m³)	2.01	2.02				
Peak Converted Wet Density (t/m³)	2.07	2.01				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	2.5 dry	2.5 dry				
Hilf Density Ratio (%)	**97.0**	**100.5**				

Comments

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Report No: HDR:W21DS01498
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 21/05/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Silty Clay

Sample Data

Sample ID	S21DS-05721					
Field Sample ID	1					
Date Tested	30/04/2021					
E:	1765.544					
N:	305.570					
EL:	36.983					
Layer:	2					
	Super lot					

Field and Laboratory Data

Depth of Test (mm)	225					
Depth of Layer (mm)	250					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	2.04					
Peak Converted Wet Density (t/m³)	2.01					
Compactive Effort	Standard					
Moisture Variation (%)	0.5 dry					
Hilf Density Ratio (%)	**101.5**					

Comments

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Report No: HDR:W21DS01536
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 21/05/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Silty Clay

Sample Data

Sample ID	S21DS-05842	S21DS-05843				
Field Sample ID	1	2				
Date Tested	3/05/2021	3/05/2021				
E:	1744.299	1757.662				
N:	325.339	392.619				
EL:	36.332	36.491				
Lot:	Superlot	2729				
Layer:	2	2				
Field and Laboratory Data						
Depth of Test (mm)	175	175				
Depth of Layer (mm)	200	200				
AS Sieve Size (mm)	19.0	19.0				
Oversize Wet (%)	0	0				
Field Wet Density (t/m³)	2.15	1.99				
Peak Converted Wet Density (t/m³)	2.01	2.08				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	2.5 dry	0.5 dry				
Hilf Density Ratio (%)	**107.0**	**96.0**				

Comments

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Report No: HDR:W21DS01589
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 21/05/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Silty Clay

Sample Data

Sample ID	S21DS-06028	S21DS-06029	S21DS-06030	S21DS-06031		
Field Sample ID	1	2	3	4		
Date Tested	6/05/2021	6/05/2021	6/05/2021	6/05/2021		
E:	1769.183	1765.065	1752.790	1726.040		
N:	413.835	359.103	316.729	313.255		
EL:	36.715	36.840	36.630	35.950		
Lot:	2721	2727	Superlot	Superlot		
Layer:	3	3	3	3		
Field and Laboratory Data						
Depth of Test (mm)	175	175	175	175		
Depth of Layer (mm)	200	200	200	200		
AS Sieve Size (mm)	19.0	19.0	19.0	19.0		
Oversize Wet (%)	0	0	0	0		
Field Wet Density (t/m³)	2.11	2.01	2.07	2.01		
Peak Converted Wet Density (t/m³)	2.08	2.09	2.11	1.99		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Variation (%)	0.5 dry	0.0	0.0	0.0		
Hilf Density Ratio (%)	**101.5**	**96.0**	**98.0**	**101.0**		

Comments

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Report No: HDR:W21DS01620
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 21/05/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Silty Clay

Sample Data

Sample ID	S21DS-06119					
Field Sample ID	1					
Date Tested	8/05/2021					
E:	1803.300					
N:	304.999					
EL:	37.365					
Lot:	2723					
Layer:	1					

Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	2.02					
Peak Converted Wet Density (t/m³)	2.01					
Compactive Effort	Standard					
Moisture Variation (%)	0.0					
Hilf Density Ratio (%)	**100.5**					

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS01732
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 21/05/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Silty Clay

Sample Data

Sample ID	S21DS-06453	S21DS-06454				
Field Sample ID	1	2				
Date Tested	12/05/2021	12/05/2021				
E:	1831.146	1761.593				
N:	297.286	108.897				
EL:	38.067	37.217				
Lot:	2725	Superlot				
Layer:	2	FSL				
Field and Laboratory Data						
Depth of Test (mm)	175	225				
Depth of Layer (mm)	200	250				
AS Sieve Size (mm)	19.0	19.0				
Oversize Wet (%)	0	0				
Field Wet Density (t/m³)	2.14	2.02				
Peak Converted Wet Density (t/m³)	2.03	2.09				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	0.5 dry				
Hilf Density Ratio (%)	**105.5**	**96.5**				

Comments

CHADWICK GEOTECHNICS

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Fax: +61 3 9706 9431

Report No: HDR:W21DS01837
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 16/06/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Sandy Clay

Sample Data

Sample ID	S21DS-06825					
Field Sample ID	1					
Date Tested	20/05/2021					
E:	355639					
N:	5781141					
RL:	39.636					
Lot:	2723					

Field and Laboratory Data

Depth of Test (mm)	125					
Depth of Layer (mm)	150					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	2.12					
Peak Converted Wet Density (t/m³)	2.11					
Compactive Effort	Standard					
Moisture Variation (%)	0.5 dry					
Hilf Density Ratio (%)	**100.5**					

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS01862
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 16/06/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Clay

Sample Data

Sample ID	S21DS-06918	S21DS-06919				
Field Sample ID	1	2				
Date Tested	24/05/2021	24/05/2021				
E:	E1759.144	E1758.391				
N:	N366.374	N389.698				
EL:	RL:36.840	RL:36.384				
Lot:	2727	2729				
	FSL	FSL				

Field and Laboratory Data

Depth of Test (mm)	150	150				
Depth of Layer (mm)	200	200				
AS Sieve Size (mm)	19.0	19.0				
Oversize Wet (%)	0	0				
Field Wet Density (t/m³)	2.14	2.09				
Peak Converted Wet Density (t/m³)	2.06	2.07				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.5 dry	0.5 dry				
Hilf Density Ratio (%)	**104.0**	**101.0**				

Comments

CHADWICK GEOTECHNICS

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ACN 143 009 330
25 Metcalf Street
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Ph: + 61 3 8796 7900
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Report No: HDR:W21DS02168
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 24/06/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 95% (+- 3% of OMC)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Clay

Sample Data

Sample ID	S21DS-07855					
Field Sample ID	1					
Date Tested	16/06/2021					
E:	1844.160					
N:	304.501					
EL:	38.449					
Lot:	2725					
Layer:	3					

Field and Laboratory Data

Depth of Test (mm)	150					
Depth of Layer (mm)	200					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	2.03					
Peak Converted Wet Density (t/m³)	2.00					
Compactive Effort	Standard					
Moisture Variation (%)	0.0					
Hilf Density Ratio (%)	**101.5**					

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS02179
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 27
Project No.: 3807351.027
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Longfield (Senior Technician)
Date of Issue: 24/06/2021

Sample Details

Location:
Client Request ID:
Specification Requirements: Minimum Hilf Density Ratio of 98% (OMC to 3% Wet)
Field Test procedures: AS 1289.5.8.1
Laboratory Test procedures: AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source: Onsite
Material: Rocky Clay

Sample Data

Sample ID	S21DS-07902	S21DS-07903				
Field Sample ID	1	2				
Date Tested	17/06/2021	17/06/2021				
E:	1819.445	1797.372				
N:	297.708	299.213				
EL:	38.338	37.868				
Lot:	2724	2722				
Layer:	4	4				
Field and Laboratory Data						
Depth of Test (mm)	175	175				
Depth of Layer (mm)	200	200				
AS Sieve Size (mm)	19.0	19.0				
Oversize Wet (%)	0	0				
Field Wet Density (t/m³)	2.10	2.09				
Peak Converted Wet Density (t/m³)	2.06	1.97				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	2.0 dry				
Hilf Density Ratio (%)	**102.0**	**106.0**				

Comments

Appendix D: Controlled Fill certificate

CONTROLLED FILL CERTIFICATE - LEVEL 1 INSPECTION & TESTING

PROJECT	: Lot No's: 2701 to 2713, 2722 to 2731, 2733 to 2740 and Superlot 27A. Meridian Central Estate Stage 27	Chadwick Geotechnics REF: 3807351.027.v1
CLIENT	: Grosvenor Lodge Pty Ltd PO Box 4136 DANDENONG SOUTH VIC 3164	DATE : September 2021

SUMMARY

Chadwick Geotechnics Pty Ltd conducted Level 1 inspection and testing, in accordance with Section 8.2 Level 1 inspection and Testing *AS3798-2007, Guidelines on earthworks for commercial and residential developments,* during the filling of the site.

So far as it is able to be determined, the fill was placed in accordance with the Specification that required a minimum density ratio of 95% of HILF Density (AS1289.5.7.1) to be achieved.

LIMITATIONS

This Certificate has been commissioned for the filling of the area mentioned above. No responsibility or liability will be accepted for the use of this report for any purpose other than that for which Chadwick Geotechnics Pty Ltd was engaged, specifically for Level 1 Inspection and Testing of the structural fill (excluding top soil).

This report is based on the conditions present and factors affecting the soil at the time of inspection (1 April 2021 to the 17 June 2021). No responsibility or liability will be accepted and Chadwick Geotechnics Pty Ltd is indemnified to the full extent permitted by law in respect of the use of this Certificate where there has been a change in the nature of the project, or in the site conditions since the site testing.

CHADWICK GEOTECHNICS PTY LTD

Robert Barden
Project Manager

Timothy Chadwick
Project Director

CHADWICK
GEOTECHNICS