



# REPORT

## Level One Inspection and Testing Services

Meridian Central Estate, Stage 24,  
Lots 2402 to 2419 & 2421 to 2431

Prepared for:

Grosvenor Lodge Pty Ltd

May 2021

Our Ref: 3807351.024.v1

25 Metcalf Street, Dandenong South, Vic 3175, Australia  
[www.chadwickgeotechnics.com.au](http://www.chadwickgeotechnics.com.au)

## Document Control

Title: Level One Inspection and Testing Services					
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by:
14-05-2021	1	Level One report, 3807351.024.V1	RHB	RHB	TJC

### Distribution:

Grosvenor Lodge Pty Ltd

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## 1 Introduction

Chadwick Geotechnics Pty Ltd (Chadwick Geotechnics) was engaged by Grosvenor Lodge Pty Ltd, to provide Level 1 Geotechnical Inspection and Testing Authority (GITA) services for the earthworks within Stage 24 of the Meridian Central Estate in Clyde North.

## 2 Project details

The project included the preparation and filling of lot's 2402 to 2419 and 2421 to 2431. The specification required the earthworks to be completed under Level 1 GITA Supervision, that is, full-time Geotechnical Inspection and Testing of the earthworks. Chadwick Geotechnics were onsite for the duration of the earthworks program.

The location of the site is shown in figure 1 below.



Figure 1: Approximate site location

*(Image sourced from Nearmaps)*

2

### 3 Geology

Published information<sup>1</sup> shows that the site is primarily underlain by Red Bluff Sandstone (Nbr) (Miocene to Pliocene). Sandstone, conglomerate: pale yellow and brown; fine to coarse-grained, massive to well bedded; cross-bedded; local ironstone.

### 4 Specification

A summary of the specification is shown below:

Compaction Requirement	95 % Standard Compaction
------------------------	--------------------------

### 5 Inspection and testing

The inspection and testing of earthworks has 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 one project (large scale operation). Compaction control laboratory testing was undertaken in our NATA accredited laboratories in accordance with AS1289 'Methods of Testing Soils for Engineering Purposes'.

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. No soft spots were encountered during the inspections, the area was found to be firm and free of vegetation and other deleterious material.

Full time Level 1 Inspection and Testing of the filling operations commenced on 22 October 2020 and was completed on 21 November 2020. During this period Chadwick Geotechnics observed the earthworks the earthworks contractor was placing fill. This included 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 area, and that of additional lifts, was thoroughly scarified and moisture conditioned prior to placement of additional layers to prevent delamination at the layer interface.

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 a handheld GPS unit. A site plan showing the field density test locations is provided in Appendix A.

Thirty-Three (33) tests were performed during the filling process.

The results show that two (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 results show the tests achieved the specification requirements for the project.

A summary table of Hilf density tests is provided in Appendix B and the laboratory test reports are provided in Appendix C. The Fill certificate is provided in Appendix D.

<sup>1</sup>. VicGeo Earth Resources (<https://gsv.vic.gov.au>) Geological Unit (250k)

## 6 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 sourced fill was considered to be natural and clean and suitable for use at the site.
- 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 clay achieved the density requirement of the specification.
- Given the consistent construction practices followed by the earthworks contractor and as witnessed by the 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 – Level 1 Inspection and Testing - AS3798-2007 "Guidelines on Earthworks for Commercial and Residential Developments".

## 7 Applicability

This report has been prepared for the exclusive use of our client Grosvenor Lodge Pty Ltd in good faith and in accordance with the Chadwick Geotechnics quality system for the earthworks filling at the site.

This report is based on the nature of the project and the prevailing conditions between 22 October 2020 and 21 November 2020. No responsibility or liability will be accepted, and Chadwick Geotechnics is indemnified to the full extent permitted by law in respect of the use of this report where there has been a change in the nature of the project or the conditions on site that may alter or affect the conclusions of this report.

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:



.....  
Robert Barden  
Geotechnical Engineer

Authorised for Chadwick Geotechnics Pty Ltd by:



.....  
Timothy Chadwick  
Project Director

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[www.chadwickgeotechnics.com.au](http://www.chadwickgeotechnics.com.au)

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## Appendix A: Density Test Location Plan

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## Appendix B: Table of field density results

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CHADWICK  
GEOTECHNICS

3807351.024 - Meridian Estate Stage 24 - 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-W200S05702	S20DS-20570	22/10/2020	1	355587	5781598	36.17	100	OMC	Pass	
HDR-W200S05702	S20DS-20571	22/10/2020	2	355594	5781623	35.92	97	0.5 wet	Pass	
HDR-W200S05730	S20DS-20702	27/10/2020	1	355542	5781601	35.28	99	6.0 wet	Fail	See Retest 20814
HDR-W200S05730	S20DS-20703	27/10/2020	2	355518	5781603	35.03	103	0.5 wet	Pass	
HDR-W200S05758	S20DS-20796	28/10/2020	1	355601	5781668	35.78	101	OMC	Pass	
HDR-W200S05763	S20DS-20813	29/10/2020	1	355588	5781628	36.01	100	OMC	Pass	
HDR-W200S05763	S20DS-20814	29/10/2020	2	355543	5781602	35.30	98	0.5 wet	Pass	Retest of 20702
HDR-W200S05779	S20DS-20872	30/10/2020	1	355543	5781645	35.47	102	0	Pass	
HDR-W200S05779	S20DS-20873	30/10/2020	2	355563	5781674	35.54	100.5	0.5 wet	Pass	
HDR-W200S05799	S20DS-20942	4/11/2020	1	355508	5781606	34.929	95	0.5 dry	Pass	
HDR-W200S05799	S20DS-20943	4/11/2020	2	355533	5781602	35.240	96.5	OMC	Pass	
HDR-W200S05799	S20DS-20944	4/11/2020	3	355563	5781596	35.862	106.5	3.0 dry	Pass	
HDR-W200S05802	S20DS-20953	5/11/2020	1	355595	5781646	36.084	103.5	2.5 dry	Pass	
HDR-W200S05802	S20DS-20954	5/11/2020	2	355594	5781680	35.876	107.0	2.5 dry	Pass	
HDR-W200S05802	S20DS-20955	5/11/2020	3	355559	5781668	35.552	101.5	2.5 dry	Pass	
HDR-W200S05802	S20DS-20956	5/11/2020	4	355528	5781643	35.486	99.5	2.0 dry	Pass	
HDR-W200S05802	S20DS-20957	5/11/2020	5	355530	5781674	35.57	102.5	2.0 dry	Pass	
HDR-W200S05810	S20DS-20982	6/11/2020	1	355521	5781599	35.247	107.5	3.0 dry	Pass	
HDR-W200S05815	S20DS-21002	7/11/2020	1	355587	5781668	36.10	102.0	3.0 dry	Pass	
HDR-W200S05815	S20DS-21003	7/11/2020	2	355560	5781640	35.79	101.0	1.0 dry	Pass	
HDR-W200S05815	S20DS-21004	7/11/2020	3	355544	5781659	35.75	104.5	2.0 dry	Pass	
HDR-W200S05815	S20DS-21005	7/11/2020	4	355517	5781635	35.34	103.0	2.5 dry	Pass	
HDR-W200S05815	S20DS-21006	7/11/2020	5	355516	5781665	35.53	97.5	0.5 wet	Pass	
HDR-W200S05828	S20DS-21063	9/11/2020	1	355586	5781643	36.23	99.0	0.5 dry	Pass	
HDR-W200S05828	S20DS-21064	9/11/2020	2	355595	5781660	36.19	95.5	OMC	Pass	
HDR-W200S05861	S20DS-21185	10/11/2020	1	355550	5781627	36.042	102.5	2.0 dry	Pass	
HDR-W200S05861	S20DS-21186	10/11/2020	2	355550	5781653	36.086	97.5	OMC	Pass	
HDR-W200S05861	S20DS-21187	10/11/2020	3	355513	5781648	35.445	107	3.0 dry	Pass	
HDR-W200S05972	S20DS-21650	16/11/2020	1	355605	5781589	36.803	99.5	2.5 dry	Pass	
HDR-W200S05972	S20DS-21651	16/11/2020	2	355616	5781601	36.416	103	1.5 dry	Pass	
HDR-W200S06004	S20DS-21806	17/11/2020	1	355625	5781664	35.751	93	2.0 dry	Fail	See Retest 22073
HDR-W200S06090	S20DS-22072	21/11/2020	1	355588	5781704	35.994	101	1.0 dry	Pass	
HDR-W200S06090	S20DS-22073	21/11/2020	2	354618	5781646	36.004	98.5	0.5 dry	Pass	Retest of 21806
No further testing. 12-05-2021.										

## Appendix C      NATA endorsed laboratory reports

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# HILF Density Ratio Report

<b>Client:</b> Greenridge Properties Pty Ltd	  <p>Accredited for compliance with ISO/IEC 17025 - Testing</p> <p>Approved Signatory: M. Longfield (Senior Technician)</p> <p>12712 Date of Issue: 4/11/2020</p> <p>THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL</p>
<b>Address:</b> PO Box 3131 AUBURN VIC 3123	
<b>Project:</b> Meridian Estate - Stage 24	
<b>Project No.:</b> 3807351.024	
<b>Order No.:</b>	
<b>TRN:</b>	<b>CG Request No.:</b>
	<b>Lot No.:</b>

## Sample Details

**Location:** Clyde North

**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:** Gravelly Clay

## Sample Data

Sample ID	S20DS-20570	S20DS-20571				
Field Sample ID	1	2				
Date Tested	22/10/2020	22/10/2020				
E:	17642.223	1770.797				
N:	759.425	783.674				
Elv:	36.169	35.920				

## 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)	2.00	1.91				
Peak Converted Wet Density (t/m³)	2.00	1.97				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	0.5 wet				
Hilf Density Ratio (%)	99.5	97.0				

## Comments



Dandenong South  
ACN 143 009 330  
25 Metcalf Street  
DANDENONG SOUTH, VIC 3175

Ph: + 61 3 8796 7900  
Fax: +61 3 9706 9431

Report No: HDR:W20DS05730

Issue No: 1

## HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 24  
**Project No.:** 3807351.024

**Order No.:** **CG Request No.:**  
**TRN:** **Lot No.:**



Accredited for compliance with ISO/IEC 17025  
- Testing

The results of the tests, calibrations and/or  
measurements included in this document are  
traceable to Australian/national standards.

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Approved Signatory: M. Longfield  
(Senior Technician)

Date of Issue: 4/11/2020

### 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:** Submitted by client

**Source:** Onsite

**Material:** Clay

### Sample Data


Sample ID	S20DS-20702	S20DS-20703				
Field Sample ID	1	2				
Date Tested	27/10/2020	27/10/2020				
E:	1718.82	1694.76				
N:	762.43	764.46				
EL:	35.28	35.03				
CH:	Block - 2416	Block - 2418				

### 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/m <sup>3</sup> )	1.91	1.98				
Peak Converted Wet Density (t/m <sup>3</sup> )	1.93	1.93				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	6.0 wet	0.5 wet				
Hilf Density Ratio (%)	98.5	102.5				

### Comments

# HILF Density Ratio Report

<b>Client:</b> Greenridge Properties Pty Ltd	 Accredited for compliance with ISO/IEC 17025 – Testing Approved Signatory: M. Longfield (Senior Technician) Date of Issue: 4/11/2020 12712 THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL
<b>Address:</b> PO Box 3131 AUBURN VIC 3123	
<b>Project:</b> Meridian Estate - Stage 24	
<b>Project No.:</b> 3807351.024	
<b>Order No.:</b>	
<b>TRN:</b>	<b>CG Request No.:</b>
	<b>Lot No.:</b>

## 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:** Clay

## Sample Data

Sample ID	S20DS-20796				
Field Sample ID	1				
Date Tested	28/10/2020				
E:	1777.82				
N:	828.98				
EL:	35.78				
Lot:	Block 2430				
Lift:	1				

## 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)	2.01				
Peak Converted Wet Density (t/m³)	2.00				
Compactive Effort	Standard				
Moisture Variation (%)	0.0				
Hilf Density Ratio (%)	100.5				

## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 24  
**Project No.:** 3807351.024  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**Lot No.:**

Accredited for compliance with ISO/IEC 17025  
- Testing



Accreditation No. 12719

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Approved Signatory: M. Longfield  
(Senior Technician)  
Date of Issue: 4/11/2020

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## Sample Details

**Location:** Clyde North  
**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:** CLAY

## Sample Data

Sample ID	S20DS-20813	S20DS-20814				
Field Sample ID	1	2				
Date Tested	29/10/2020	29/10/2020				
E:	1764.58	1719.50				
N:	788.67	763.05				
Elv:	36.01	35.30				

## 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)	1.93	1.94				
Peak Converted Wet Density (t/m³)	1.93	1.97				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	0.5 wet				
Hilf Density Ratio (%)	100.0	98.0				



## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 24  
**Project No.:** 3807351.024  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**Lot No.:**

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- Testing

Approved Signatory: M. Longfield  
(Senior Technician)  
Date of Issue: 10/11/2020  
12712  
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## 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:** Clay

## Sample Data



Sample ID	S20DS-20872	S20DS-20873				
Field Sample ID	1	2				
Date Tested	30/10/2020	30/10/2020				
E:	1720.04	1739.58				
N:	805.64	835.42				
EL:	35.47	35.54				
Block:	2405	2407				
Lift:	1	1				

## 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)	1.96	1.97				
Peak Converted Wet Density (t/m³)	1.93	1.95				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	0.5 wet				
Hilf Density Ratio (%)	102.0	100.5				

## Comments

# HILF Density Ratio Report

<b>Client:</b> Greenridge Properties Pty Ltd	  Accredited for compliance with ISO/IEC 17025 – Testing Approved Signatory: M. Robinson (Team Leader) Date of Issue: 17/11/2020 THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL
<b>Address:</b> PO Box 3131 AUBURN VIC 3123	
<b>Project:</b> Meridian Estate - Stage 24	
<b>Project No.:</b> 3807351.024	
<b>Order No.:</b>	
<b>CG Request No.:</b>	
<b>TRN:</b>	<b>Lot No.:</b>

## Sample Details

**Location:** Clyde North  
**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:** CLAY

## Sample Data


Sample ID	S20DS-20942	S20DS-20943	S20DS-20944			
Field Sample ID	1	2	3			
Date Tested	4/11/2020	4/11/2020	4/11/2020			
Lot No:	2419	2417	2415			
E:	1685.137	1709.911	1740.067			
N:	767.478	763.334	756.730			
Elv:	34.929	35.240	35.862			

## Field and Laboratory Data

Depth of Test (mm)	175	175	175			
Depth of Layer (mm)	200	200	200			
AS Sieve Size (mm)	19.0	19.0	19.0			
Oversize Wet (%)	0	0	0			
Field Wet Density (t/m³)	1.93	1.93	2.03			
Peak Converted Wet Density (t/m³)	2.03	2.00	1.91			
Compactive Effort	Standard	Standard	Standard			
Moisture Variation (%)	0.5 dry	0.0	3.0 dry			
Hilf Density Ratio (%)	<b>95.0</b>	<b>96.5</b>	<b>106.5</b>			

## Comments

# HILF Density Ratio Report

<b>Client:</b> Greenridge Properties Pty Ltd <b>Address:</b> PO Box 3131 AUBURN VIC 3123 <b>Project:</b> Meridian Estate - Stage 24 <b>Project No.:</b> 3807351.024 <b>Order No.:</b> <b>TRN:</b>	<b>CG Request No.:</b> <b>Lot No.:</b>	  Accredited for compliance with ISO/IEC 17025 - Testing Approved Signatory: M. Longfield (Senior Technician) Date of Issue: 16/11/2020 12712 THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL
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## Sample Details

**Location:** Clyde North  
**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:** CLAY

## Sample Data

Sample ID	S20DS-20953	S20DS-20954	S20DS-20955	S20DS-20956	S20DS-20957
Field Sample ID	1	2	3	4	5
Date Tested	5/11/2020	5/11/2020	5/11/2020	5/11/2020	5/11/2020
Lot No:	2425	2431	2407	2404	2409
E:	1771.477	1770.903	1735.608	1704.658	1707.155
N:	807.280	840.575	828.483	803.805	834.658
Elv:	36.084	35.876	35.552	35.486	35.572

## Field and Laboratory Data

Depth of Test (mm)	175	175	175	175	175
Depth of Layer (mm)	200	200	200	200	200
AS Sieve Size (mm)	19.0	19.0	19.0	19.0	19.0
Oversize Wet (%)	0	0	0	0	0
Field Wet Density (t/m³)	2.00	1.98	1.97	2.01	2.07
Peak Converted Wet Density (t/m³)	1.94	1.85	1.94	2.01	2.02
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Variation (%)	2.5 dry	2.5 dry	2.5 dry	2.0 dry	1.5 dry
Hilf Density Ratio (%)	103.5	107.0	101.5	99.5	102.5

## Comments



Dandenong South  
ACN 143 009 330  
25 Metcalf Street  
DANDENONG SOUTH, VIC 3175

Ph: + 61 3 8796 7900  
Fax: +61 3 9706 9431

Report No: HDR:W20DS05810

Issue No: 1

## HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 24  
**Project No.:** 3807351.024

**Order No.:**  
**TRN:**

**CG Request No.:**  
**Lot No.:**



Accredited for compliance with ISO/IEC 17025  
- Testing

The results of the tests, calibrations and/or  
measurements included in this document are  
traceable to Australian/national standards.

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Approved Signatory: M. Robinson  
(Team Leader)

Date of Issue: 9/11/2020

### 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	S20DS-20982					
Field Sample ID	1					
Date Tested	6/11/2020					
E:	1698.067					
N:	759.881					
EL:	35.247					
Lot:	2418					
Layer:	3					

### Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
Field Wet Density (t/m <sup>3</sup> )	2.03					
Peak Converted Wet Density (t/m <sup>3</sup> )	1.89					
Compactive Effort	Standard					
Moisture Variation (%)	3.0 dry					
Hilf Density Ratio (%)	107.5					

### Comments



Dandenong South  
ACN 143 009 330  
25 Metcalf Street  
DANDENONG SOUTH, VIC 3175

Ph: + 61 3 8796 7900  
Fax: +61 3 9706 9431

Report No: HDR:W20DS05815

Issue No: 1

## HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 24  
**Project No.:** 3807351.024

**Order No.:**  
**TRN:**

**CG Request No.:**  
**Lot No.:**



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- Testing

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measurements included in this document are  
traceable to Australian/national standards.

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Approved Signatory: M. Longfield  
(Senior Technician)

Date of Issue: 11/11/2020

### Sample Details

**Location:** Clyde North  
**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:** CLAY

### Sample Data

Sample ID	S20DS-21002	S20DS-21003	S20DS-21004	S20DS-21005	S20DS-21006
Field Sample ID	1	2	3	4	5
Date Tested	7/11/2020	7/11/2020	7/11/2020	7/11/2020	7/11/2020
Lot No:	2429	2406	2408	2403	2410
E:	1763.906	1737.125	1720.707	1694.012	1692.845
N:	828.700	801.419	419.912	795.664	826.158
Elv:	36.103	35.794	35.753	35.344	35.526

### Field and Laboratory Data

Depth of Test (mm)	175	175	175	175	175
Depth of Layer (mm)	200	200	200	200	200
AS Sieve Size (mm)	19.0	19.0	19.0	19.0	19.0
Oversize Wet (%)	0	0	0	0	0
Field Wet Density (t/m <sup>3</sup> )	1.92	1.92	2.11	1.99	2.00
Peak Converted Wet Density (t/m <sup>3</sup> )	1.88	1.91	2.02	1.93	2.06
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Variation (%)	3.0 dry	1.0 dry	2.0 dry	2.5 dry	0.5 wet
Hilf Density Ratio (%)	102.0	101.0	104.5	103.0	97.5

### Comments

# HILF Density Ratio Report

<b>Client:</b> Greenridge Properties Pty Ltd	 <p>Accredited for compliance with ISO/IEC 17025 - Testing</p> <p>The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.</p> <p>12712</p> <p>THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL</p>
<b>Address:</b> PO Box 3131 AUBURN VIC 3123	
<b>Project:</b> Meridian Estate - Stage 24	
<b>Project No.:</b> 3807351.024	
<b>Order No.:</b>	
<b>CG Request No.:</b>	<p>Approved Signatory: M. Longfield (Senior Technician)</p> <p>Date of Issue: 11/11/2020</p>
<b>Lot No.:</b>	
<b>TRN:</b>	

## Sample Details

**Location:** Clyde North

**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:** gravelly CLAY

## Sample Data

Sample ID	S20DS-21063	S20DS-21064			
Field Sample ID	1	2			
Date Tested	9/11/2020	9/11/2020			
Lot:	2424	2428			
E:	1762.672	1771.529			
N:	803.763	821.250			
Elv:	36.234	36.189			

## 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)	2.02	1.93			
Peak Converted Wet Density (t/m³)	2.04	2.02			
Compactive Effort	Standard	Standard			
Moisture Variation (%)	0.5 dry	0.0			
Hilf Density Ratio (%)	<b>99.0</b>	<b>95.5</b>			


## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 24  
**Project No.:** 3807351.024  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**Lot No.:**

Accredited for compliance with ISO/IEC 17025  
- Testing



Approved Signatory: M. Longfield  
(Senior Technician)  
Date of Issue: 16/11/2020  
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## 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	S20DS-21185	S20DS-21186	S20DS-21187			
Field Sample ID	1	2	3			
Date Tested	10/11/2020	10/11/2020	10/11/2020			
E:	1727.200	1726.399	1690.089			
N:	787.924	813.704	809.263			
EL:	36.042	36.086	35.445			
Lot:	2406	2407	2402			
Layer:	4	4	3			

## Field and Laboratory Data

Depth of Test (mm)	175	175	175			
Depth of Layer (mm)	200	200	200			
AS Sieve Size (mm)	19.0	19.0	19.0			
Oversize Wet (%)	0	0	0			
Field Wet Density (t/m³)	2.02	1.99	2.10			
Peak Converted Wet Density (t/m³)	1.97	2.03	1.96			
Compactive Effort	Standard	Standard	Standard			
Moisture Variation (%)	2.0 dry	0.0	3.0 dry			
Hilf Density Ratio (%)	<b>102.5</b>	<b>97.5</b>	<b>107.0</b>			

## Comments

# HILF Density Ratio Report

<b>Client:</b> Greenridge Properties Pty Ltd	 <p>Accredited for compliance with ISO/IEC 17025 – Testing</p> <p>The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.</p> <p>12712</p> <p>THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL</p>
<b>Address:</b> PO Box 3131 AUBURN VIC 3123	
<b>Project:</b> Meridian Estate - Stage 24	
<b>Project No.:</b> 3807351.024	
<b>Order No.:</b>	
<b>CG Request No.:</b>	<p>Approved Signatory: M. Longfield (Senior Technician)</p> <p>Date of Issue: 26/11/2020</p>
<b>Lot No.:</b>	
<b>TRN:</b>	

## Sample Details

**Location:** Clyde North

**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:** CLAY

## Sample Data

Sample ID	S20DS-21650	S20DS-21651				
Field Sample ID	1	2				
Date Tested	16/11/2020	16/11/2020				
Lot No:	2413	1793.141				
E:	1782.187	762.475				
N:	750.005	36.416				
Elv:	36.803					

## 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)	2.00	1.90				
Peak Converted Wet Density (t/m³)	2.01	1.85				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	2.5 dry	1.5 dry				
Hilf Density Ratio (%)	99.5	103.0				

## Comments



Dandenong South  
ACN 143 009 330  
25 Metcalf Street  
DANDENONG SOUTH, VIC 3175

Ph: + 61 3 8796 7900  
Fax: +61 3 9706 9431

Report No: HDR:W20DS06004

Issue No: 1

## HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 24  
**Project No.:** 3807351.024

**Order No.:**  
**TRN:**

**CG Request No.:**  
**Lot No.:**



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The results of the tests, calibrations and/or  
measurements included in this document are  
traceable to Australian/national standards.

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Approved Signatory: M. Longfield  
(Senior Technician)

Date of Issue: 26/11/2020

### 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	S20DS-21806					
Field Sample ID	1					
Date Tested	17/11/2020					
E:	1801.439					
N:	824.747					
EL:	35.751					
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/m <sup>3</sup> )	1.84					
Peak Converted Wet Density (t/m <sup>3</sup> )	1.98					
Compactive Effort	Standard					
Moisture Variation (%)	2.0 dry					
Hilf Density Ratio (%)	93.0					


### Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 24  
**Project No.:** 3807351.024

**Order No.:** **CG Request No.:**  
**TRN:** **Lot No.:**

Accredited for compliance with ISO/IEC 17025  
- Testing

Approved Signatory: M. Longfield  
(Senior Technician)  
Date of Issue: 2/12/2020

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## 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	S20DS-22072	S20DS-22073				
Field Sample ID	1	2				
Date Tested	21/11/2020	21/11/2020				
E:	1764.903	794.562				
N:	865.462	806.711				
EL:	35.994	36.004				
Layer:	FSL	FSL				

## 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)	2.09	2.02				
Peak Converted Wet Density (t/m³)	2.07	2.06				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	1.0 dry	0.5 dry				
Hilf Density Ratio (%)	101.0	98.5				

## Comments

## Appendix D: Controlled fill certificate

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## CONTROLLED FILL CERTIFICATE - LEVEL 1 INSPECTION & TESTING

PROJECT : Lot No's: 2402 to 2419 & 2421 to 2431 Chadwick Geotechnics REF: 3807351.024.v1  
Meridian Central Estate  
Stage 24

CLIENT : Grosvenor Lodge Pty Ltd DATE : May 2021  
PO Box 4136  
DANDENONG SOUTH VIC 3164

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### 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 (22 October 2020 to 21 November 2020) 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

A handwritten signature in blue ink that reads 'Robert Barden'.

Robert Barden  
Geotechnical Engineer

A handwritten signature in blue ink that appears to be 'Timothy Chadwick'.

Timothy Chadwick  
Project Director

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