



# **REPORT**

## **Level 1 Geotechnical Testing and Inspection Authority Services**

**Meridian Central Estate Stage 39  
Clyde North  
Lots 3901 to 3929 & 3935 to 3939**

**Prepared for:**

**Grosvenor Lodge Pty Ltd.**

**14 April 2023**

**Our Ref: 3807351.039.v1**

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## Document Control

Title: Level One Inspection and testing Services.					
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by
14 April 2023	1	3807351.039.V1 Level One Report Stage 39	SP and RHB	RWMC	TJC

## 1 Introduction

Chadwick Geotechnics Pty Ltd (Chadwick Geotechnics), was engaged by Grosvenor Lodge Pty Ltd (Grosvenor Lodge), to provide Level 1 Geotechnical Inspection and Testing Authority (GITA) services for the earthworks conducted within Stage 39 of the Meridian Central Estate in Clyde North, between 27 January 2022 and 29 November 2022.

Level 1 GITA services as defined in AS3798-2007 "Guidelines on Earthworks for Commercial and Residential Development," requires full time inspection and field and laboratory testing of earthworks in accordance with AS1289 "Methods of Testing Soils for Engineering Purposes."

## 2 Project details

The Stage 39 site is located North of Ponwar Road, and East and West of Burlina Boulevard in Clyde North. The site is to the North of Stage 38, and East of Stage 31 located within the same general area.

The included works are shown on the Site Plan in **Appendices A**. Figure 2.1 below is an extract from Nearmap taken at the time of writing this report.

**Figure 2: extract from Nearmap**





## 2.2 Roles

The organisations and their roles are presented in Table 2.1 below

**Table 2: Roles on the Project**

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

Chadwick Geotechnics undertook the field density testing, and the compaction control laboratory testing was conducted in our NATA accredited laboratories.

## 2.3 Dates on Site

Geotechnical technical and engineering staff from Chadwick Geotechnics were onsite for the duration of the earthworks program on the days shown in Table 2.2 below.

**Table 2.2: Level 1 GITA – onsite presence**

Month	Dates on site
January 2022	27, 28
July 2022	2, 6, 7, 12, 15, 21, 22, 23
August 2022	2, 4, 8, 9, 10, 11
November 2022	29

## 2.4 Included Areas

This report is applicable to material placed by the contractor on the residential lots within Stage 39, as shown on the Site Plan in **Appendix A**, and with reference to Section 2.6 (Excluded Areas) of this report.

The following Lots were filled (or partially filled) during the Level 1 GITA supervision:

- Lot 3901 to 3929 and 3935 to 3939.

## 2.5 Excluded Areas

This report does not include fill outside the general boundary of the filled areas as shown in **Appendix A** of this report. No fill was placed on the lots not mentioned in Section 2.4 of this report.

Backfill of trenches for the underground services, fill on footpaths, driveways and roads, or placement of topsoil, were not part of the scope for the works supervised by Chadwick Geotechnics.

### 3 Specification

Project specifications were prepared by Beveridge Williams Pty Ltd for the project. The works were to be conducted in general accordance with the 'Guidelines on earthworks for commercial and residential developments' of AS 3798-2007.

The following items were adopted as part of the project earthworks specifications:

- All Filling, in excess, of 200mm depth within the residential lots shall be undertaken to specifications satisfying the requirements of AS 3798-2007 "Guidelines on Earthworks for Commercial and Residential Development".
- 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 prior to placement of an engineered fill.
- Fill to be compacted in near horizontal layers not exceeding 250mm loose thickness.
- Compaction to achieve a ratio of at least 95% Standard Maximum Dry Density (SMDD).
- Frequency of testing to be in accordance with Table 8.1 of AS3798-2007.
- Finished fill surface to be surveyed prior to placement of topsoil.

### 4 Inspection and Testing

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 Table 8.1 (explained in Section 4.5 of this report). Compaction control laboratory testing was performed in a Chadwick Geotechnics' NATA accredited laboratory in accordance with AS1289 'Methods of Testing Soils for Engineering Purposes'.

#### 4.1 Earthworks

The earthworks for the project comprised of the following phases:

- Stripping of topsoil from the proposed fill areas.
- Assessment, remediation, and proof rolling of subgrade.
- Geotechnical compliance testing of the soils used for fill, and,
- Placement and compaction of engineered fill.

## 4.2 Fill Material

Material used for the construction of the fill comprised of local gravelly and silty clays won from the road boxing and trench excavations on this and the surrounding sites.

A sample taken from the site comprising local material used for fill was taken for geotechnical compliance testing during the works. The material compliance test results are summarised in Table 3.1 The laboratory test certificates are attached in **Appendix C**.

**Table 3.1: Compliance test result summary**

Sample #	Particle Size Distribution (PSD)						Liquid Limit %	Plastic Limit %	Plasticity Index %
	37.5 mm	13.2 mm	4.75 mm	1.18 mm	425 µm	0.75 µm			
<b>S22DS-05600/1</b>	100	100	96	91	82	66	55	20	35
<b>S22DS-05762/1</b>	100	100	94	88	82	44	46	17	29
<b>S22DS-06244/1</b>	100	98	94	88	81	56	46	18	28
<b>S22DS-06372/1</b>	100	98	97	95	83	38	42	16	26

The laboratory test results indicated material is silty /sandy clay of medium to high plasticity.

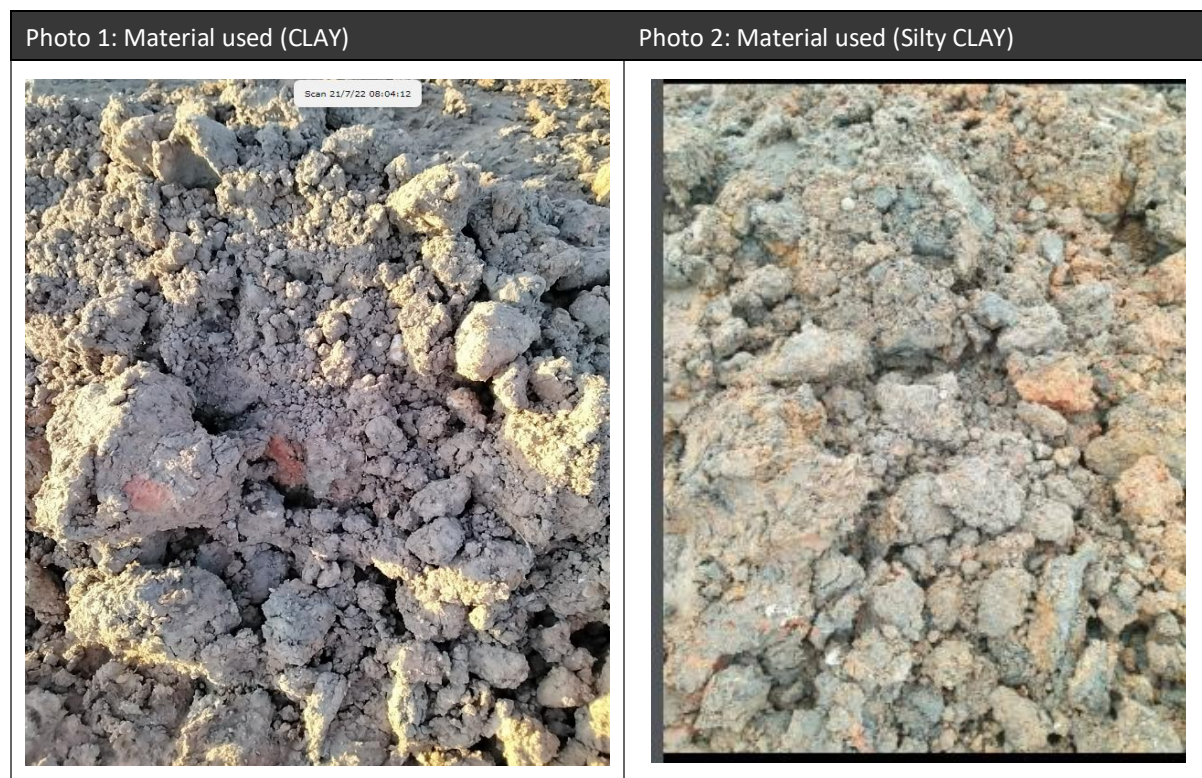
The material was deemed as being derived from natural soils. The soil is considered as 'Suitable Material' in accordance with Section 4.4 of the AS3798-2007.

The fill material was not tested for classification of 'Fill Material' as defined in EPA Publication IWRG621. Environmental testing is not within the Chadwick Geotechnics scope.

Any observed organic or deleterious matter including any oversize cobbles or boulders were removed from the tested areas during the fill placement.

Below are two photographs of typical materials used during construction.

*Figure 3.1: Photographs of the material used on site*



### 4.3 Subgrade Assessment / Proof Roll

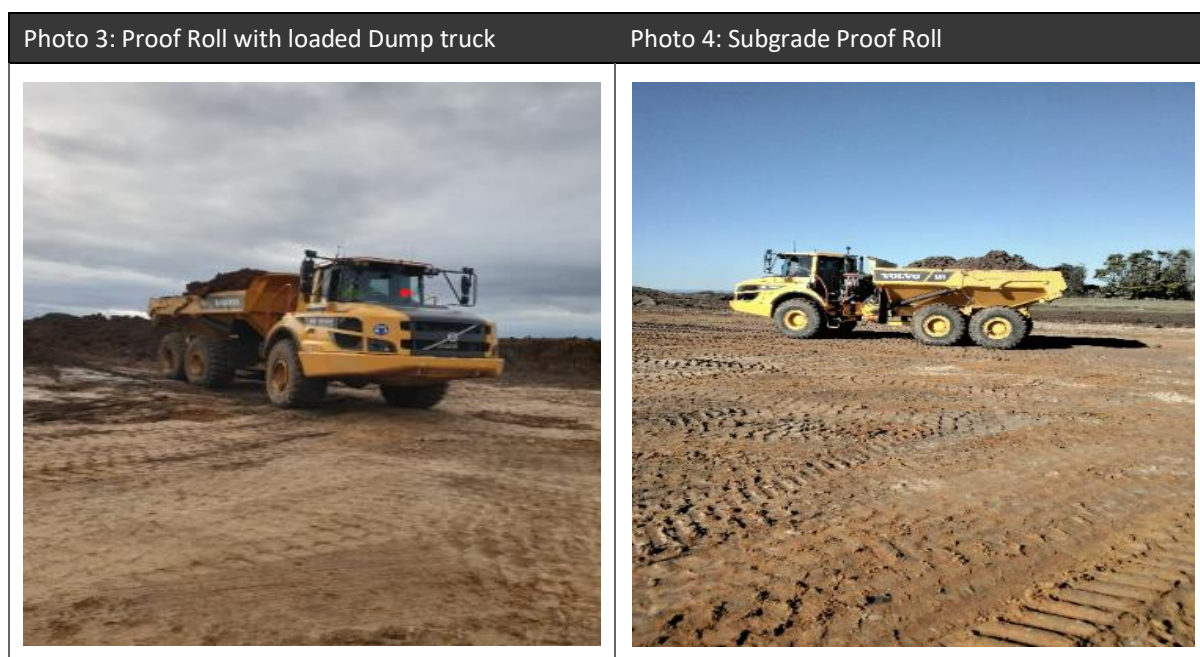
The Subgrade of the site was progressively assessed during the period Chadwick Geotechnics personnel were on site.

Subgrade assessments were conducted following the removal of the topsoil and natural soils that were present on site.

The subgrade inspections were performed in accordance with the Level 1 guidelines presented in AS 3798–2007 Section 5.5. No soft spots or deflections were encountered during the inspections and the area was found to be firm and free of vegetation and other deleterious material.

Below are two photographs of the subgrade assessment phase at the project.

*Figure 3.2: Subgrade assessment photographs*



#### 4.4 Engineered Fill Construction

All fill material was brought by dump trucks from the local stockpiles, spread with a bulldozer and compacted with a pad foot roller. A water cart was present onsite during the works for moisture conditioning of the materials.

All fill material was placed in lift sequences comprising horizontal layers. 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. Once the placed fill was approved, the layer was compacted accordingly.

Chadwick Geotechnics personnel were on site on a fulltime basis during the placement, moisture conditioning, compaction, and testing of the fill on the dates noted in Table 2.2 of this report.

The following machinery was on site during earthworks.

**Table 3.1: Earthworks plant On-site**

Equipment type	Model
Dozer	Caterpillar D6 Dozer
Pad foot roller	Caterpillar compactor B15K Pad-Foot Roller
Water cart	Off-Road Water Cart with spray bars
Dump Trucks	Volvo Dump Truck
Excavator	Caterpillar



Below are four photographs of typical machinery on site during construction.

*Figure 3.3: General Earthwork machinery and fill construction photographs*

Photo 5: Dump Truck used on site



Photo 6: D6 Dozer



Photo 7: CAT Pad Foot



Photo 8: Scraper



## 4.5 Density testing

Field density and moisture content testing was undertaken progressively during construction on the compacted fill 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**.

Testing was undertaken under the frequencies listed below, subject to the area and volume worked on the day of testing:

- 1 test per material type per layer per 2500m<sup>2</sup> or 1 test per 500m<sup>3</sup> distributed reasonably evenly or 3 tests per lot – whichever requires the most tests in accordance with Type 1 Earthworks (large scale operations) as defined in Table 8.1 of the AS 3798-2007;
- Fill to be compacted in near horizontal layers.
- Compaction to achieve a ratio of at least 95% Standard MDD (maximum dry density).

Forty-Seven (47) tests were performed during the filling process. Two (2) of the tests did not achieve the required density and or moisture ratio initially. The failed area was reworked and retested accordingly. The retests returned passing density and moisture test results.

A summary table of HILF density tests is provided in **Appendix B** and the laboratory test reports are provided in **Appendix C**.

## 5 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 to be determined, that:

- The materials, used by the earth-works contractor met the geotechnical property requirements of the specification.
- The sourced fill was, considered to be natural, 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.
- Based on observations made by Chadwick Geotechnics Level 1 personal and the results of field and laboratory tests, we consider that the engineered fill within the site (noted in Section 2.5), as far as we have been able to reasonably determine, have been placed in general accordance with the intent of the specification.
- 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.

After our last day on site the Contractor is responsible to maintain the engineered fill in satisfactory condition. Should the fill be not maintained or protected with a sacrificial layer of topsoil or other fill, the uppermost layers of the engineered fill may deteriorate from the weather causing shrink/swell cracking and may need to be remediated prior to further construction on the site. Chadwick Geotechnics have not provided supervision since this date and are not responsible for any deterioration that may have occurred.



## 6 Applicability

This report has been prepared for the exclusive use of our client 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 27 January 2022 and 29 November 2022. 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:



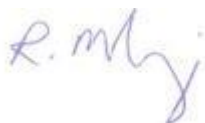
.....  
Robert Barden  
Project Manager

Authorised for Chadwick Geotechnics Pty Ltd by:



.....  
Timothy Chadwick  
Project Director

Report reviewed by:



.....  
Robert McKenzie  
Senior Associate Geotechnical Engineer  
PE0005222


## **Appendix A : Location Plan**

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LEGEND

 S22DS-06410  
HILF DENSITY TEST LOCATION

NOTES:  
1. AERIAL IMAGE SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD. IMAGERY DATE: 15/02/2023.

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

 ORIGINAL IN COLOUR

PROJECT No. 3807351			CLIENT GROSVENOR LODGE PTY LTD	
DESIGNED STPA Apr.23			PROJECT MERIDIAN ESTATE - STAGE 39	
DRAWN KMJA Apr.23			TITLE LEVEL ONE HILF DENSITY TESTING HILF DENSITY TEST LOCATION PLAN	
CHECKED			SCALE (A3) 1:1000	
APPROVED			FIG No. 3807351-F01	
DATE			REV 1	



## **Appendix B : Hilf Density Test Summary**

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## 3807351.039 Meridian Estate Stage 39



### HILF Density Testing - Field Summary

Report No	Sample No	Date	Test Number	Easting	Northing	Layer/RL	Density Ratio ( $\geq 95\%$ )	Moisture Variation OMC	Pass / Fail	Comments (Retest No) Compliance test taken ect
HDR:W22DS00141	S22DS-00490	27/01/2022	1	356074	5781250	39.931	96	3 dry	Pass	
HDR:W22DS00162	S22DS-00534	28/01/2022	1	356093	5781242	43.799	93.5	2.5 dry	Fail	See Retest S22DS-06146
HDR:W22DS01415	S22DS-05319	2/07/2022	1	356089	5781191		99	0.5 wet	Pass	
HDR:W22DS01415	S22DS-05320	2/07/2022	2	356100	5781174		99	0 dry	Pass	
HDR:W22DS01436	S22DS-05440	6/07/2022	1	356101	5781193	42.915	99	0.5 wet	Pass	
HDR:W22DS01453	S22DS-05536	7/07/2022	1	356106	5781207	43.38	104	0 dry	Pass	
HDR:W22DS01453	S22DS-05537	7/07/2022	2	356146	5781185	43.11	98.5	0 wet	Pass	
HDR:W22DS01453	S22DS-05538	7/07/2022	3	356157	5781183	43.285	97.5	3 wet	Pass	
HDR:W22DS01453	S22DS-05539	7/07/2022	4	356171	5781182	43.321	99	1.5 wet	Pass	
HDR:W22DS01468	S22DS-05597	12/07/2022	1	356144	5781180	43.03	97.5	2.5 wet	Pass	
HDR:W22DS01468	S22DS-05598	12/07/2022	2	356160	5781178	43.275	98.5	0 wet	Pass	
HDR:W22DS01468	S22DS-05599	12/07/2022	3	356174	5781172	43.18	98	0.5 wet	Pass	
HDR:W22DS01488	S22DS-05659	15/07/2022	1	356098	5781212	43.17	98	0.5 wet	Pass	
HDR:W22DS01513	S22DS-05759	21/07/2022	1	356174	5781148	44.09	96.5	2.5 wet	Pass	
HDR:W22DS01513	S22DS-05760	21/07/2022	2	356161	5781206	44.02	100.5	0.5 wet	Pass	
HDR:W22DS01513	S22DS-05761	21/07/2022	3	356150	5781206	43.93	98.5	2.5 wet	Pass	
HDR:W22DS01520	S22DS-05776	22/07/2022	1	356155	5781070	40.348	98.5	1.5 wet	Pass	



## 3807351.039 Meridian Estate Stage 39



### HILF Density Testing - Field Summary

Report No	Sample No	Date	Test Number	Easting	Northing	Layer/RL	Density Ratio ( $\geq 95$ %)	Moisture Variation OMC	Pass / Fail	Comments (Retest No) Compliance test taken ect
HDR:W22DS01520	S22DS-05777	22/07/2022	2	356168	5781103	41.305	99.5	1.5 wet	Pass	
HDR:W22DS01520	S22DS-05778	22/07/2022	3	356191	5781110	41.67	98	2.5 wet	Pass	
HDR:W22DS01520	S22DS-05779	22/07/2022	4	356214	5781098	41.77	95	2.5 wet	Pass	
HDR:W22DS01521	S22DS-05780	23/07/2022	1	356143	5781176	43.206	100	1.5 wet	Pass	
HDR:W22DS01521	S22DS-05781	23/07/2022	2	356173	5781176	43.579	96.5	2.5 wet	Pass	
HDR:W22DS01578	S22DS-06146	2/08/2022	1	356093	5781242	-	95	2.5 wet	Pass	Retest of S22DS-00534
HDR:W22DS01578	S22DS-06147	2/08/2022	2	356190	5781163	42.961	95.5	2 wet	Pass	
HDR:W22DS01600	S22DS-06239	4/08/2022	1	356146	5781155	42.355	96.5	0.5 wet	Pass	
HDR:W22DS01600	S22DS-06240	4/08/2022	2	356158	5781153	42.38	96	2 wet	Pass	
HDR:W22DS01600	S22DS-06241	4/08/2022	3	356168	5781146	42.435	96.5	0.5 wet	Pass	
HDR:W22DS01600	S22DS-06242	4/08/2022	4	356181	5781153	42.62	98	0.5 wet	Pass	
HDR:W22DS01600	S22DS-06243	4/08/2022	5	356195	5781144	42.53	93.5	0 wet	Fail	See Retest S22DS-06317
HDR:W22DS01618	S22DS-06304	8/08/2022	1	356203	5781110	41.87	98.5	0 wet	Pass	
HDR:W22DS01618	S22DS-06305	8/08/2022	2	356176	5781120	41.85	99	2 wet	Pass	
HDR:W22DS01618	S22DS-06306	8/08/2022	3	356159	5781093	41.23	97.5	0 dry	Pass	
HDR:W22DS01625	S22DS-06315	9/08/2022	1	356159	5781177	43.645	98	0 wet	Pass	
HDR:W22DS01625	S22DS-06316	9/08/2022	2	356193	5781174	43.76	98.5	0.5 wet	Pass	

[illegible]

## **Appendix C : NATA Endorsed Laboratory Reports**

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# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 31/01/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## 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	S22DS-00490				
Field Sample ID	1				
Date Tested	27/01/2022				
Lot No:	3929				
E:	2251.040				
N:	410.959				
Elv:	3.931				
	Layer 1				

## 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)	1.83				
Peak Converted Wet Density (t/m³)	1.90				
Compactive Effort	Standard				
Moisture Variation (%)	3.0 dry				
Hilf Density Ratio (%)	96.0				

## 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:W22DS00162

Issue No: 1

## HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 3/02/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

### 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	S22DS-00534				
Field Sample ID	1				
Date Tested	28/01/2022				
Lot No:	3928				
E:	2269.742				
N:	403.127				
Elv:	43.799				

### 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/m <sup>3</sup> )	1.90				
Peak Converted Wet Density (t/m <sup>3</sup> )	2.04				
Compactive Effort	Standard				
Moisture Variation (%)	2.5 dry				
Hilf Density Ratio (%)	93.5				

### Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039

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



Accredited for compliance with ISO/IEC 17025  
– Testing



Accreditation Number: 12719 Approved Signatory: M. Robinson

Site Number: 12712 Date of Issue: 5/07/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## 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 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** CLAY

## Sample Data

Sample ID	S22DS-05319	S22DS-05320			
Field Sample ID	1	2			
Date Tested	2/07/2022	2/07/2022			
Lot No:	3925	3924			
E:	356089	356100			
N:	5781191	5781174			
	Layer 1	Layer 1			

## 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 Moisture Content (%)	8.1	20.6			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m <sup>3</sup> )	2.06	2.01			
Field Dry Density (t/m <sup>3</sup> )	1.90	1.67			
Peak Converted Wet Density (t/m <sup>3</sup> )	2.08	2.03			
Optimum Moisture Content (%)	8.0	20.5			
Compactive Effort	Standard	Standard			
Moisture Ratio (%)	103.5	100.0			
Moisture Variation (%)	0.5 wet	0.0			
Hilf Density Ratio (%)	<b>99.0</b>	<b>99.0</b>			

## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039

**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: 7/07/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## Sample Details

**Location:** AM Testing  
**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 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Clay

## Sample Data

Sample ID	S22DS-05440				
Field Sample ID	1				
Client Sample ID	8				
Date Tested	6/07/2022				
Time Tested	09:45				
E:	2275.150 (356101)				
N:	351.690 (5781193)				
EL:	42.915				
Lot / Layer:	3925 / 2				

## Field and Laboratory Data

Depth of Test (mm)	175				
Depth of Layer (mm)	200				
AS Sieve Size (mm)	19.0				
Oversize Wet (%)	0				
Field Moisture Content (%)	21.0				
Field Moisture Content Method	AS 1289.2.1.1				
Field Wet Density (t/m <sup>3</sup> )	2.03				
Field Dry Density (t/m <sup>3</sup> )	1.68				
Peak Converted Wet Density (t/m <sup>3</sup> )	2.05				
Optimum Moisture Content (%)	20.5				
Compactive Effort	Standard				
Moisture Ratio (%)	102.5				
Moisture Variation (%)	0.5 wet				
Hilf Density Ratio (%)	99.0				

## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 11/07/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## 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 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Silty/Gravelly Clay

## Sample Data

Sample ID	S22DS-05536	S22DS-05537	S22DS-05538	S22DS-05539		
Field Sample ID	1	2	3	4		
Client Sample ID	9	10	11	12		
Date Tested	7/07/2022	7/07/2022	7/07/2022	7/07/2022		
Time Tested	08:45	15:10	15:24	15:31		
E:	2283.140 (356106)	2321.140 (356146)	2333.570 (356157)	2348.260 (356171)		
N:	367.930 (5781207)	343.305 (5781185)	343.050 (5781183)	341.980 (5781182)		
EL:	43.380	43.110	43.285	43.321		
Lot / Layer:	3926 / 1	3923 / 1	3922 / 1	3921 / 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 Moisture Content (%)	20.7	23.6	26.2	25.4		
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1		
Field Wet Density (t/m <sup>3</sup> )	2.12	1.95	1.94	1.93		
Field Dry Density (t/m <sup>3</sup> )	1.75	1.58	1.54	1.54		
Peak Converted Wet Density (t/m <sup>3</sup> )	2.03	1.98	1.99	1.96		
Optimum Moisture Content (%)	21.0	23.5	23.0	24.0		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Ratio (%)	99.0	101.0	113.5	106.5		
Moisture Variation (%)	0.0	0.0	3.0 wet	1.5 wet		
Hilf Density Ratio (%)	<b>104.0</b>	<b>98.5</b>	<b>97.5</b>	<b>99.0</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 39 <b>Project No.:</b> 3807351.039 <b>Order No.:</b> <b>TRN:</b>	<b>CG Request No.:</b> <b>Lot No.:</b>	  <p>Accreditation Number: 12719 Site Number: 12712 THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL</p>	<p>Accredited for compliance with ISO/IEC 17025 – Testing</p>  <p>Approved Signatory: M. Longfield (Senior Technician) Date of Issue: 18/04/2023</p>
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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 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Silty Clay

## Sample Data

Sample ID	S22DS-05597	S22DS-05598	S22DS-05599			
Field Sample ID	1	2	3			
Client Sample ID	13	14	15			
Date Tested	12/07/2022	12/07/2022	12/07/2022			
Time Tested	08:21	08:32	08:39			
E:	2319.820 (356144)	2337.120 (356160)	2351.940 (356174)			
N:	339.740 (5781180)	335.999 (5781178)	331.670 (5781172)			
EL:	43.030	43.275	43.180			
Lot / Layer:	3923 / 2	3922 / 2	3921 / 2			

## 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 Moisture Content (%)	25.9	21.9	23.8			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.95	1.98	1.97			
Field Dry Density (t/m³)	1.55	1.62	1.59			
Peak Converted Wet Density (t/m³)	2.00	2.01	2.01			
Optimum Moisture Content (%)	23.5	21.5	23.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	111.0	101.0	102.0			
Moisture Variation (%)	2.5 wet	0.0	0.5 wet			
Hilf Density Ratio (%)	97.5	98.5	98.0			

## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 22/07/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## 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 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Silty Clay

## Sample Data

Sample ID	S22DS-05659				
Field Sample ID	1				
Client Sample ID	16				
Date Tested	15/07/2022				
Time Tested	09:48				
E:	2275.240 (356098)				
N:	368.290 (5781212)				
EL:	43.170				
Lot / Layer:	3926 / 2				

## Field and Laboratory Data

Depth of Test (mm)	175				
Depth of Layer (mm)	200				
AS Sieve Size (mm)	19.0				
Oversize Wet (%)	0				
Field Moisture Content (%)	19.7				
Field Moisture Content Method	AS 1289.2.1.1				
Field Wet Density (t/m <sup>3</sup> )	2.01				
Field Dry Density (t/m <sup>3</sup> )	1.68				
Peak Converted Wet Density (t/m <sup>3</sup> )	2.06				
Optimum Moisture Content (%)	19.5				
Compactive Effort	Standard				
Moisture Ratio (%)	101.5				
Moisture Variation (%)	0.5 wet				
Hilf Density Ratio (%)	98.0				

## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039

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

Accredited for compliance with ISO/IEC 17025  
– Testing



Accreditation Number: 12719  
Site Number: 12712  
Date of Issue: 29/07/2022  
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Approved Signatory: M. Robinson



## Sample Details

**Location:** Clyde  
**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 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite Clay  
**Material:**

## Sample Data

Sample ID	S22DS-05759	S22DS-05760	S22DS-05761			
Field Sample ID	1	2	3			
Client Sample ID	17	18	19			
Date Tested	21/07/2022	21/07/2022	21/07/2022			
Time Tested	09:52	10:01	10:09			
E:	2350.925	2337.487	2326.570			
N:	308.930	366.717	366.610			
RL:	44.090	44.020	43.930			
Lot:	3938	3937	3936			

## Field and Laboratory Data

Depth of Test (mm)	175	175	175			
Depth of Layer (mm)	200	200	200			
Field Moisture Content (%)	25.3	25.0	24.3			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m <sup>3</sup> )	1.96	1.99	1.99			
Field Dry Density (t/m <sup>3</sup> )	1.57	1.59	1.60			
Peak Converted Wet Density (t/m <sup>3</sup> )	2.04	1.99	2.02			
Optimum Moisture Content (%)	23.0	24.5	22.0			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	110.5	102.5	111.0			
Moisture Variation (%)	2.5 wet	0.5 wet	2.5 wet			
Hilf Density Ratio (%)	<b>96.5</b>	<b>100.5</b>	<b>98.5</b>			

## Comments



# HILF Density Ratio Report

<b>Client:</b> Greenridge Properties Pty Ltd	 Accredited for compliance with ISO/IEC 17025 – Testing  Accreditation Number: 12719 Approved Signatory: M. Robinson Site Number: 12712 Date of Issue: 29/07/2022 THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL
<b>Address:</b> PO Box 3131 AUBURN VIC 3123	
<b>Project:</b> Meridian Estate - Stage 39	
<b>Project No.:</b> 3807351.039	
<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 1289.2.1.1, AS 1289.5.7.1

**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)

**Source:** Onsite

**Material:** Silty Clay

## Sample Data

Sample ID	S22DS-05776	S22DS-05777	S22DS-05778	S22DS-05779		
Field Sample ID	1	2	3	4		
Client Sample ID	20	21	22	23		
Date Tested	22/07/2022	22/07/2022	22/07/2022	22/07/2022		
Time Tested	10:00	10:30	11:00	11:30		
E:	2331.571	2345.020	2368.035	2390.450		
N:	231.105	263.910	271.400	259.406		
R:	40.348	41.305	41.670	41.770		
Lot / Layer:	3914 / 1	3912 / 1	3910 / 1	39108 / 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 Moisture Content (%)	22.4	19.9	19.6	19.1		
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1		
Field Wet Density (t/m <sup>3</sup> )	2.01	2.05	2.03	2.02		
Field Dry Density (t/m <sup>3</sup> )	1.64	1.71	1.70	1.69		
Peak Converted Wet Density (t/m <sup>3</sup> )	2.03	2.06	2.08	2.13		
Optimum Moisture Content (%)	21.0	18.5	17.5	16.5		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Ratio (%)	107.0	108.0	113.5	114.0		
Moisture Variation (%)	1.5 wet	1.5 wet	2.5 wet	2.5 wet		
Hilf Density Ratio (%)	<b>98.5</b>	<b>99.5</b>	<b>98.0</b>	<b>95.0</b>		

## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

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



Accredited for compliance with ISO/IEC 17025  
– Testing



Accreditation Number: 12719 Approved Signatory: M. Robinson

Site Number: 12712 Date of Issue: 29/07/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## 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 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Clay

## Sample Data

Sample ID	S22DS-05780	S22DS-05781			
Field Sample ID	1	2			
Client Sample ID	1				
Date Tested	23/07/2022	23/07/2022			
Time Tested	10:00	10:30			
E:	2319.661	2349.9947			
N:	337.209	337.095			
RL:	43.206	43.579			
Lot / Layer	3923 / 3	3921 / 3			

## 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 Moisture Content (%)	22.1	21.4			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m <sup>3</sup> )	2.04	2.01			
Field Dry Density (t/m <sup>3</sup> )	1.67	1.65			
Peak Converted Wet Density (t/m <sup>3</sup> )	2.04	2.07			
Optimum Moisture Content (%)	20.5	19.0			
Compactive Effort	Standard	Standard			
Moisture Ratio (%)	107.0	113.0			
Moisture Variation (%)	1.5 wet	2.5 wet			
Hilf Density Ratio (%)	100.0	96.5			

## 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 39 <b>Project No.:</b> 3807351.039 <b>Order No.:</b> <b>TRN:</b>	<b>CG Request No.:</b> <b>Lot No.:</b>	  <p>Accredited for compliance with ISO/IEC 17025 – Testing</p> <p>Accreditation Number: 12719 Site Number: 12712</p> <p>Approved Signatory: M. Longfield (Senior Technician) Date of Issue: 8/08/2022</p> <p>THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL</p>
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## Sample Details

**Location:**  
**Client Request ID:**  
**Specification Requirements:** Minimum Hilf Density Ratio of 95% (OMC to 3% Wet)  
**Field Test procedures:** AS 1289.5.8.1  
**Laboratory Test procedures:** AS 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Sandy Clay

## Sample Data

Sample ID	S22DS-06146	S22DS-06147			
Field Sample ID	1	2			
Client Sample ID	23	24			
Date Tested	2/08/2022	2/08/2022			
Time Tested	11:00	13:50			
E:	-	2360.173 (356190)			
N:	-	322.219 (5781163)			
EL	-	42.961			
Lot / Layer:	3928 / 1	3920 / 1			
	Retest of S22DS-00534				

## 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 Moisture Content (%)	19.0	24.4			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	2.01	1.96			
Field Dry Density (t/m³)	1.69	1.57			
Peak Converted Wet Density (t/m³)	2.12	2.04			
Optimum Moisture Content (%)	16.5	22.0			
Compactive Effort	Standard	Standard			
Moisture Ratio (%)	114.0	110.0			
Moisture Variation (%)	2.5 wet	2.0 wet			
Hilf Density Ratio (%)	<b>95.0</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 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 8/08/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## Sample Details

**Location:**  
**Client Request ID:**  
**Specification Requirements:** Minimum Hilf Density Ratio of 95% (OMC to 3% Wet)  
**Field Test procedures:** AS 1289.5.8.1  
**Laboratory Test procedures:** AS 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Silty Clay

## Sample Data

Sample ID	S22DS-06239	S22DS-06240	S22DS-06241	S22DS-06242	S22DS-06243
Field Sample ID	1	2	3	4	5
Client Sample ID	25	26	27	28	29
Date Tested	4/08/2022	4/08/2022	4/08/2022	4/08/2022	4/08/2022
Time Tested	13:02	13:15	13:21	13:28	13:35
E:	2321.270 (356146)	2333.950 (356158)	356170 (2344.980)	2355.522 (356181)	2371.290 (356195)
N:	313.320 (5781155)	308.850 (5781153)	307.410 (5781152)	309.164 (5781153)	302.300 (5781144)
EL:	42.355	42.380	42.435	42.620	42.530
Lot / Layer:	3915 / 1	3916 / 1	3917 / 1	3918 / 1	3919 / 1

## 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 Moisture Content (%)	19.7	18.3	18.1	19.0	16.7
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m <sup>3</sup> )	2.01	2.00	2.05	2.04	1.99
Field Dry Density (t/m <sup>3</sup> )	1.68	1.69	1.74	1.72	1.70
Peak Converted Wet Density (t/m <sup>3</sup> )	2.08	2.09	2.12	2.09	2.13
Optimum Moisture Content (%)	19.0	16.0	17.5	19.0	16.5
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	103.5	114.0	102.0	101.5	100.0
Moisture Variation (%)	0.5 wet	2.0 wet	0.5 wet	0.5 wet	0.0
Hilf Density Ratio (%)	<b>96.5</b>	<b>96.0</b>	<b>96.5</b>	<b>98.0</b>	<b>93.5</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 39 <b>Project No.:</b> 3807351.039 <b>Order No.:</b> <b>TRN:</b>	<b>CG Request No.:</b> <b>Lot No.:</b>	 <p>Accredited for compliance with ISO/IEC 17025 – Testing</p> <p>Accreditation Number: 12719 Site Number: 12712</p> <p>Approved Signatory: M. Longfield (Senior Technician) Date of Issue: 12/08/2022</p> <p>THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL</p>
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## Sample Details

**Location:**  
**Client Request ID:**  
**Specification Requirements:** Minimum Hilf Density Ratio of 95% (OMC to 3% Wet)  
**Field Test procedures:** AS 1289.5.8.1  
**Laboratory Test procedures:** AS 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Silty Clay

## Sample Data

Sample ID	S22DS-06304	S22DS-06305	S22DS-06306		
Field Sample ID	1	2	3		
Client Sample ID	30	31	32		
Date Tested	8/08/2022	8/08/2022	8/08/2022		
E:	2376.430 (356203)	2350.800 (356176)	2333.705 (356159)		
N:	269.040 (5781110)	278.170 (5781120)	249.946 (5781093)		
EL:	41.870	41.850	41.230		
Lot / Layer:	3909 / 2	3911 / 2	3913 / 2		

## 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 Moisture Content (%)	18.2	22.3	20.6		
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1		
Field Wet Density (t/m³)	2.06	2.04	1.99		
Field Dry Density (t/m³)	1.74	1.67	1.65		
Peak Converted Wet Density (t/m³)	2.09	2.05	2.05		
Optimum Moisture Content (%)	18.0	20.0	20.5		
Compactive Effort	Standard	Standard	Standard		
Moisture Ratio (%)	101.0	110.5	99.5		
Moisture Variation (%)	0.0	2.0 wet	0.0		
Hilf Density Ratio (%)	98.5	99.0	97.5		

## 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 39 <b>Project No.:</b> 3807351.039 <b>Order No.:</b> <b>TRN:</b>	<b>CG Request No.:</b> <b>Lot No.:</b>	 <p>Accredited for compliance with ISO/IEC 17025 – Testing</p> <p>Accreditation Number: 12719          Site Number: 12712          Approved Signatory: M. Longfield (Senior Technician)          Date of Issue: 12/08/2022          THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL</p>
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## Sample Details

**Location:**  
**Client Request ID:**  
**Specification Requirements:** Mean Density Ratio of 98% Standard  
**Field Test procedures:** AS 1289.5.8.1  
**Laboratory Test procedures:** AS 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Sandy/Silty Clay

## Sample Data

Sample ID	S22DS-06315	S22DS-06316	S22DS-06317	S22DS-06318	S22DS-06319	
Field Sample ID	1	2	3	4	5	
Client Sample ID	33	34	35	36	37	
Date Tested	9/08/2022	9/08/2022	9/08/2022	9/08/2022	9/08/2022	
Time Tested	08:45					
E:	2337.575 (356159)	2369.260 (356193)	-	2356.740 (356181)	2334.210 (356158)	
N:	337.040 (5781177)	330.400 (5781174)	-	307.360 (5781152)	307.990 (5781151)	
EL:	43.645	43.760	-	42.730	42.430	
Lot / Layer:	3922 / 4	3920 / 3	3919 / 1	3918 / 2	3916 / 2	
			Retest of S22DS-06243			

## 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 Moisture Content (%)	18.0	20.6	21.6	21.0	16.9	
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	
Field Wet Density (t/m³)	2.06	2.03	2.02	2.07	2.09	
Field Dry Density (t/m³)	1.74	1.69	1.66	1.71	1.79	
Peak Converted Wet Density (t/m³)	2.10	2.06	2.06	2.05	2.11	
Optimum Moisture Content (%)	18.0	20.0	21.0	20.5	16.5	
Compactive Effort	Standard	Standard	Standard	Standard	Standard	
Moisture Ratio (%)	100.5	103.5	103.5	101.5	101.5	
Moisture Variation (%)	0.0	0.5 wet	0.5 wet	0.5 wet	0.5 wet	
Hilf Density Ratio (%)	<b>98.0</b>	<b>98.5</b>	<b>98.0</b>	<b>101.0</b>	<b>99.0</b>	


## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

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

Accredited for compliance with ISO/IEC 17025  
– Testing



Accreditation Number: 12719  
Site Number: 12712  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

Approved Signatory: M. Longfield  
(Senior Technician)  
Date of Issue: 12/08/2022

## Sample Details

**Location:**  
**Client Request ID:**  
**Specification Requirements:** Minimum Hilf Density Ratio of 95% (OMC to 3% Wet)  
**Field Test procedures:** AS 1289.5.8.1  
**Laboratory Test procedures:** AS 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Sandy Clay/Mudstone

## Sample Data

Sample ID	S22DS-06359	S22DS-06360	S22DS-06361	S22DS-06362	S22DS-06363	S22DS-06364
Field Sample ID	1	2	3	4	5	6
Client Sample ID	38	39	40	41	42	43
Date Tested	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022	10/08/2022
Time Tested	11:55	12:05	12:15	12:25	12:50	15:25
E:	2411.215 (356236)	2399.050 (356224)	2407.520 (356232)	2390.200 (356214)	2364.160 (356188)	2348.370 (356172)
N:	342.550 (5781186)	317.790 (5781160)	299.900 (5781142)	267.860 (5781110)	259.720 (5781101)	260.915 (5781103)
EL:	43.900	43.243	43.090	42.290	41.725	41.630
Lot / Layer:	3903 / 1	3905 / 1	3907 / 1	3908 / 3	3910 / 3	3912 / 3

## Field and Laboratory Data

Depth of Test (mm)	275	275	275	175	175	175
Depth of Layer (mm)	300	300	300	200	200	200
AS Sieve Size (mm)	19.0	19.0	19.0	19.0	19.0	19.0
Oversize Wet (%)	0	0	0	0	0	0
Field Moisture Content (%)	13.9	20.2	20.1	18.4	16.3	20.2
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m <sup>3</sup> )	2.14	2.05	2.06	2.02	2.06	2.01
Field Dry Density (t/m <sup>3</sup> )	1.88	1.70	1.71	1.71	1.77	1.67
Peak Converted Wet Density (t/m <sup>3</sup> )	2.09	2.06	2.04	2.08	2.06	2.04
Optimum Moisture Content (%)	14.0	19.5	20.0	18.0	16.5	20.0
Compactive Effort	Standard	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	98.5	102.5	101.5	102.0	98.0	102.0
Moisture Variation (%)	0.0	0.5 wet	0.5 wet	0.5 wet	0.5 dry	0.5 wet
Hilf Density Ratio (%)	<b>102.0</b>	<b>99.5</b>	<b>100.5</b>	<b>97.5</b>	<b>100.0</b>	<b>98.5</b>

## Comments



# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 12/08/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## Sample Details

**Location:**  
**Client Request ID:**  
**Specification Requirements:** Minimum Hilf Density Ratio of 95% (OMC to 3% Wet)  
**Field Test procedures:** AS 1289.5.8.1  
**Laboratory Test procedures:** AS 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Sandy Clay/Mudstone

## Sample Data

Sample ID	S22DS-06365				
Field Sample ID	7				
Client Sample ID	44				
Date Tested	10/08/2022				
Time Tested	15:37				
E:	2327.640 (356152)				
N:	228.300 (5781071)				
EL:	40.685				
Lot / Layer:	3914 / 3				

## Field and Laboratory Data

Depth of Test (mm)	175				
Depth of Layer (mm)	200				
AS Sieve Size (mm)	19.0				
Oversize Wet (%)	0				
Field Moisture Content (%)	19.9				
Field Moisture Content Method	AS 1289.2.1.1				
Field Wet Density (t/m <sup>3</sup> )	2.01				
Field Dry Density (t/m <sup>3</sup> )	1.68				
Peak Converted Wet Density (t/m <sup>3</sup> )	2.07				
Optimum Moisture Content (%)	20.0				
Compactive Effort	Standard				
Moisture Ratio (%)	100.5				
Moisture Variation (%)	0.0				
Hilf Density Ratio (%)	97.5				

## Comments



# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039

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



Accredited for compliance with ISO/IEC 17025  
– Testing



Accreditation Number: 12719  
Approved Signatory: M. Longfield  
(Senior Technician)

Site Number: 12712 Date of Issue: 22/08/2022

THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## Sample Details

**Location:**  
**Client Request ID:**  
**Specification Requirements:** Minimum Hilf Density Ratio of 95% (OMC to 3% Wet)  
**Field Test procedures:** AS 1289.5.8.1  
**Laboratory Test procedures:** AS 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Sandy Clay with Traces of Gravel

## Sample Data

Sample ID	S22DS-06410				
Field Sample ID	1				
Client Sample ID	45				
Date Tested	11/08/2022				
Time Tested	09:40				
E:	2392.530 (356217)				
N:	375.160 (5781218)				
EL:	44.450				
Lot / Layer:	3901 / 1				

## Field and Laboratory Data

Depth of Test (mm)	275				
Depth of Layer (mm)	300				
AS Sieve Size (mm)	19.0				
Oversize Wet (%)	0				
Field Moisture Content (%)	14.9				
Field Moisture Content Method	AS 1289.2.1.1				
Field Wet Density (t/m <sup>3</sup> )	2.07				
Field Dry Density (t/m <sup>3</sup> )	1.80				
Peak Converted Wet Density (t/m <sup>3</sup> )	2.05				
Optimum Moisture Content (%)	15.5				
Compactive Effort	Standard				
Moisture Ratio (%)	96.0				
Moisture Variation (%)	0.5 dry				
Hilf Density Ratio (%)	101.0				

## Comments

# HILF Density Ratio Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 2/12/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## 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 1289.2.1.1, AS 1289.5.7.1  
**Sampling Method:** AS1289.1.2.1 Clause 6.4 (b)  
**Source:** Onsite  
**Material:** Clay with traces of Gravel

## Sample Data

Sample ID	S22DS-09531	S22DS-09532			
Field Sample ID	1	2			
Client Sample ID	46	47			
Date Tested	29/11/2022	29/11/2022			
Time Tested	14:17	14:24			
E:	2409.36 (356220)	2407.60 (356230)			
N:	356.65 (35781201)	328.07 (5781169)			
EL:	44.14	43.57			
Lot / Layer:	3902 / 2	3904 / 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 Moisture Content (%)	18.2	18.6			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m <sup>3</sup> )	1.99	2.04			
Field Dry Density (t/m <sup>3</sup> )	1.68	1.72			
Peak Converted Wet Density (t/m <sup>3</sup> )	2.07	2.03			
Optimum Moisture Content (%)	18.5	19.0			
Compactive Effort	Standard	Standard			
Moisture Ratio (%)	98.0	97.0			
Moisture Variation (%)	0.5 dry	0.5 dry			
Hilf Density Ratio (%)	96.0	100.5			

## Comments

# Material Test Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 21/07/2022  
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## Sample Details

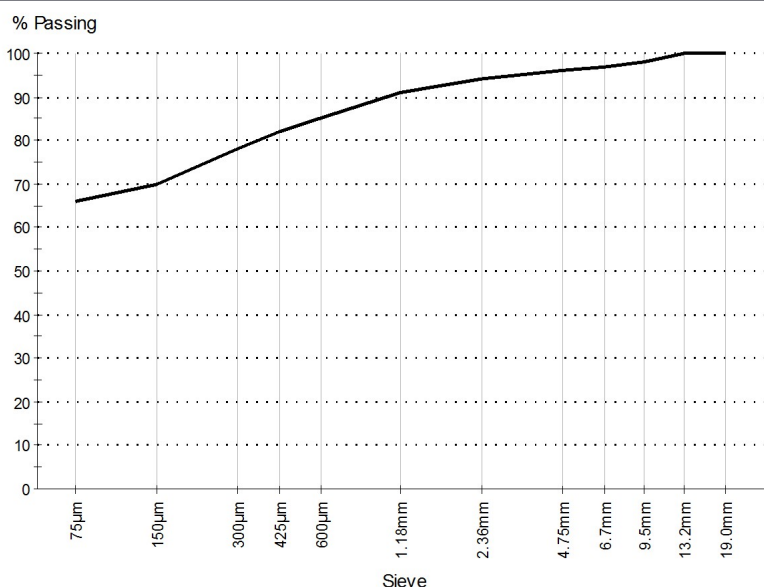
**Sample Location**  
**Field Sample ID** 1  
**Date Sampled** 12/07/2022  
**Time Sampled** 08:21  
**Source** Onsite  
**Material** Silty Clay  
**Specification** AS Grading  
**Sampling Method** AS1289.1.2.1 Clause 6.4 (b)  
**Sample ID** S22DS-05600

## Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	23.5	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	13.5	
Mould Length (mm)		250	
Crumbling		No	

## Particle Size Distribution

AS 1289.3.6.1



**Drying by:** Oven  
**Date Tested:** 14/07/2022

**Note:** Sample Washed

Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	100	
9.5mm	98	
6.7mm	97	
4.75mm	96	
2.36mm	94	
1.18mm	91	
600µm	85	
425µm	82	
300µm	78	
150µm	70	
75µm	66	

## Comments

N/A



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ACN 143 009 330  
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Report No: MAT:S22DS-05600/1

Issue No: 1

## Material Test Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039

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

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



Accredited for compliance with ISO/IEC 17025  
– Testing

Accreditation Number: 12719  
Approved Signatory: M. Longfield  
(Senior Technician)

Site Number: 12712  
Date of Issue: 21/07/2022

THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

### Other Test Results

Description	Method	Result	Limits
Curling		No	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.2	55	
Plastic Limit (%)	AS 1289.3.2.1	20	
Plasticity Index (%)	AS 1289.3.3.1	35	
Date Tested		15/07/2022	

### Comments

N/A

# Material Test Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 3/08/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## Sample Details

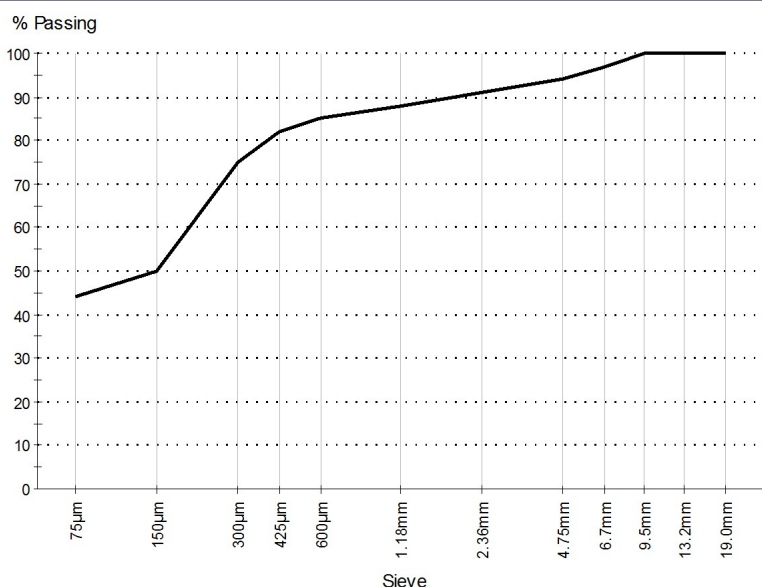
**Location** Clyde  
**Sample Location** E:235.0925, N:368.930, RL:44.090, Lot:3938, Layer:1  
**Field Sample ID** 1  
**Date Sampled** 21/07/2022  
**Time Sampled** 09:52  
**Source** Onsite Clay  
**Specification** AS Grading  
**Sampling Method** AS1289.1.2.1 Clause 6.4 (b)  
**Sample ID** S22DS-05762

## Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	22.0	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	9.5	
Mould Length (mm)		250	
Crumbling		No	

## Particle Size Distribution

AS 1289.3.6.1



**Drying by:** Oven  
**Date Tested:** 26/07/2022

**Note:** Sample Washed

Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	100	
9.5mm	100	
6.7mm	97	
4.75mm	94	
2.36mm	91	
1.18mm	88	
600µm	85	
425µm	82	
300µm	75	
150µm	50	
75µm	44	

## Comments

N/A



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Report No: MAT:S22DS-05762/1

Issue No: 1

## Material Test Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039

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

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



Accredited for compliance with ISO/IEC 17025  
– Testing

Accreditation Number: 12719  
Approved Signatory: M. Longfield  
(Senior Technician)

Site Number: 12712  
Date of Issue: 3/08/2022

THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

### Other Test Results

Description	Method	Result	Limits
Curling		No	
Cracking		Yes	
Liquid Limit (%)	AS 1289.3.1.2	46	
Plastic Limit (%)	AS 1289.3.2.1	17	
Plasticity Index (%)	AS 1289.3.3.1	29	
Date Tested		27/07/2022	

### Comments


N/A

# Material Test Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 19/08/2022  
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## Sample Details

**Sample Location** 2321.270 (356146), 313.320 (5781155), 42.355, 3915 / 1  
**Field Sample ID** 1  
**Date Sampled** 5/08/2022  
**Time Sampled** 13:02  
**Source** Onsite  
**Material** Silty Clay  
**Specification** AS Grading  
**Sampling Method** AS1289.1.2.1 Clause 6.4 (b)  
**Sample ID** S22DS-06244

## Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	19.6	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	10.0	
Mould Length (mm)		250	
Crumbling		No	
Curling		Yes	
Cracking		Yes	
Liquid Limit (%)	AS 1289.3.1.2	46	
Plastic Limit (%)	AS 1289.3.2.1	18	
Plasticity Index (%)	AS 1289.3.3.1	28	
Date Tested		16/08/2022	

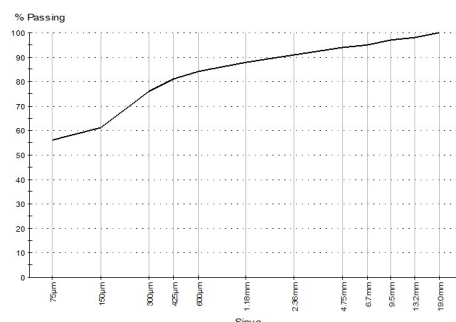
## Particle Size Distribution

**Method:** AS 1289.3.6.1  
**Drying By:** Oven  
**Date Tested:** 10/08/2022

**Note:** Sample Washed

Sieve Size	% Passing	Limits
19.0mm	100	
13.2mm	98	
9.5mm	97	
6.7mm	95	
4.75mm	94	
2.36mm	91	
1.18mm	88	
600µm	84	
425µm	81	
300µm	76	
150µm	61	
75µm	56	

## Chart



## Comments

N/A




# Material Test Report

**Client:** Greenridge Properties Pty Ltd  
**Address:** PO Box 3131  
AUBURN VIC 3123  
**Project:** Meridian Estate - Stage 39  
**Project No.:** 3807351.039  
**Order No.:**  
**TRN:**

**CG Request No.:**  
**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: 19/08/2022  
THIS DOCUMENT SHALL NOT BE REPRODUCED EXCEPT IN FULL

## Sample Details

**Sample Location** 2411.215 (356236), 342.550 (5781186), 43.900, 3903 / 1  
**Field Sample ID** 1  
**Date Sampled** 10/08/2022  
**Time Sampled** 11:55  
**Source** Onsite  
**Material** Sandy Clay/Mudstone  
**Specification** AS Grading  
**Sampling Method** AS1289.1.2.1 Clause 6.4 (b)  
**Sample ID** S22DS-06372

## Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	13.2	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	11.5	
Mould Length (mm)		250	
Crumbling		No	
Curling		Yes	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.2	42	
Plastic Limit (%)	AS 1289.3.2.1	16	
Plasticity Index (%)	AS 1289.3.3.1	26	
Date Tested		16/08/2022	

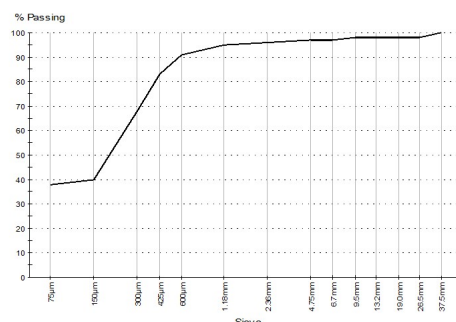
## Particle Size Distribution

**Method:** AS 1289.3.6.1  
**Drying By:** Oven  
**Date Tested:** 17/08/2022

**Note:** Sample Washed

Sieve Size	% Passing	Limits
37.5mm	100	
26.5mm	98	
19.0mm	98	
13.2mm	98	
9.5mm	98	
6.7mm	97	
4.75mm	97	
2.36mm	96	
1.18mm	95	
600µm	91	
425µm	83	
300µm	68	
150µm	40	
75µm	38	

## Chart



## Comments

N/A

## **Appendix D : Controlled Fill Certificate**

---



## CONTROLLED FILL CERTIFICATE - LEVEL 1 INSPECTION & TESTING

**PROJECT** : Meridian Central Estate Stage 39  
Lots 3901 to 3929 and 3935 to 3939

**Chadwick Geotechnics REF:** 3807351.039v1

**CLIENT** : Grosvenor Lodge Property  
PO Box 4136  
Dandenong South VIC 3164

**DATE:** 14 April 2023

### 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 can 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 topsoil).

This report is based on the conditions present and factors affecting the soil at the time of inspection (27 January 2022 and was completed on 29 November 2022). 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**

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