CHADWICK GEOTECHNICS

REPORT

Level One Inspection and Testing Services

Meridian Central Estate Stage 32, Clyde
Lot's 3203 to 3210 & Lot's 3218 to 3228

Prepared for:

Grosvenor Lodge Pty Ltd

22 April 2022

Our Ref: 3807351.032.v1

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

Title: Level One Inspection and Testing Services					
Date	Version	Description	Prepared by:	Reviewed by:	Authorised by:
22 April 2022	1	3807351.032.V1	RHB	RHB	TJJC

Distribution:

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

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1 Introduction

As part of the construction of the Meridian Central Estate development in Clyde North, Chadwick Geotechnics Pty Ltd (Chadwick Geotechnics), has been engaged by Grosvenor Lodge Pty Ltd to provide Geotechnical Inspection and Testing Authority (GITA) services for the earthworks within Stage 32 of the Estate.

This report presents the earthworks supervision methods and density testing results for the residential lot's 3203 to 3210 and 3218 to 3228 within the Stage 32 site. The earthworks were completed between 25 May 2021 and 15 December 2021.

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

2 Project details

2.1 Location

The Meridian Central Estate is in Clyde North, the Stage 32 site is located North of Stage 31 and East of the Retirement village within the Meridian Central site. The stage is being developed as a residential development.

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

2.2 Fill specification

A summary of the specification is shown below:

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

2.3 Roles

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

Table 2.1 Project roles

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

2.4 Source of material

The material used on site was imported from locally sources.

2.5 General

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

2.6 Subgrade inspection

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

2.7 Earthwork supervision

Full time Level 1 inspection and testing of the Stage 32 filling operations commenced on 25 May 2021 and was completed on 15 December 2021. During this period Chadwick Geotechnics was on site all the time (except when there were no earthworks) and observed the earthworks, the placing of fill including the supply of material, conditioning of material (moisture conditioning and oversize removal), placement and compaction of the fill material.

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

Below are two photographs of typical earthwork operations completed during earthworks, See Photographs 2.7.1 and 2.7.2 below.

Photograph 2.7.1:

Material compaction

Photograph 2.7.2:

Material conditioning

2.8 Earthwork equipment

The fill was placed and compacted using vibrating Pad foot rollers. Water trucks with water cannons attached were used to moisture condition the soil materials.

2.9 Geotechnical sampling and testing

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

A total of 29 tests were performed across the Stage 32 area during the filling process.

The results show that 1 test failed to meet the specification requirements for the project. The earthworks contractor was advised of the test that failed and the fill relevant to the area was reworked, reconditioned, re-compacted and subsequently retested. The result showed that the test achieved the specification requirements for the project so far.

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

3 Conclusion

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

- The materials used by the earthworks contractor met the geotechnical property requirements of the specification.
- The fill material placed was tested at a suitable frequency in accordance with AS 3798-2007- Table 8.1 and the results indicate the compacted material achieved the minimum density requirement of the specification.

- Given the consistent construction practices followed by the earthworks contractor, and as witnessed by Chadwick Geotechnics, combined with the satisfactory verification of test results achieved, it is inferred that areas of the site between test locations were performed to the same standard as those areas that have been tested.

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

4 Applicability

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

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

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

Chadwick Geotechnics Pty Ltd

Report prepared by:

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Robert Barden
Project Manager

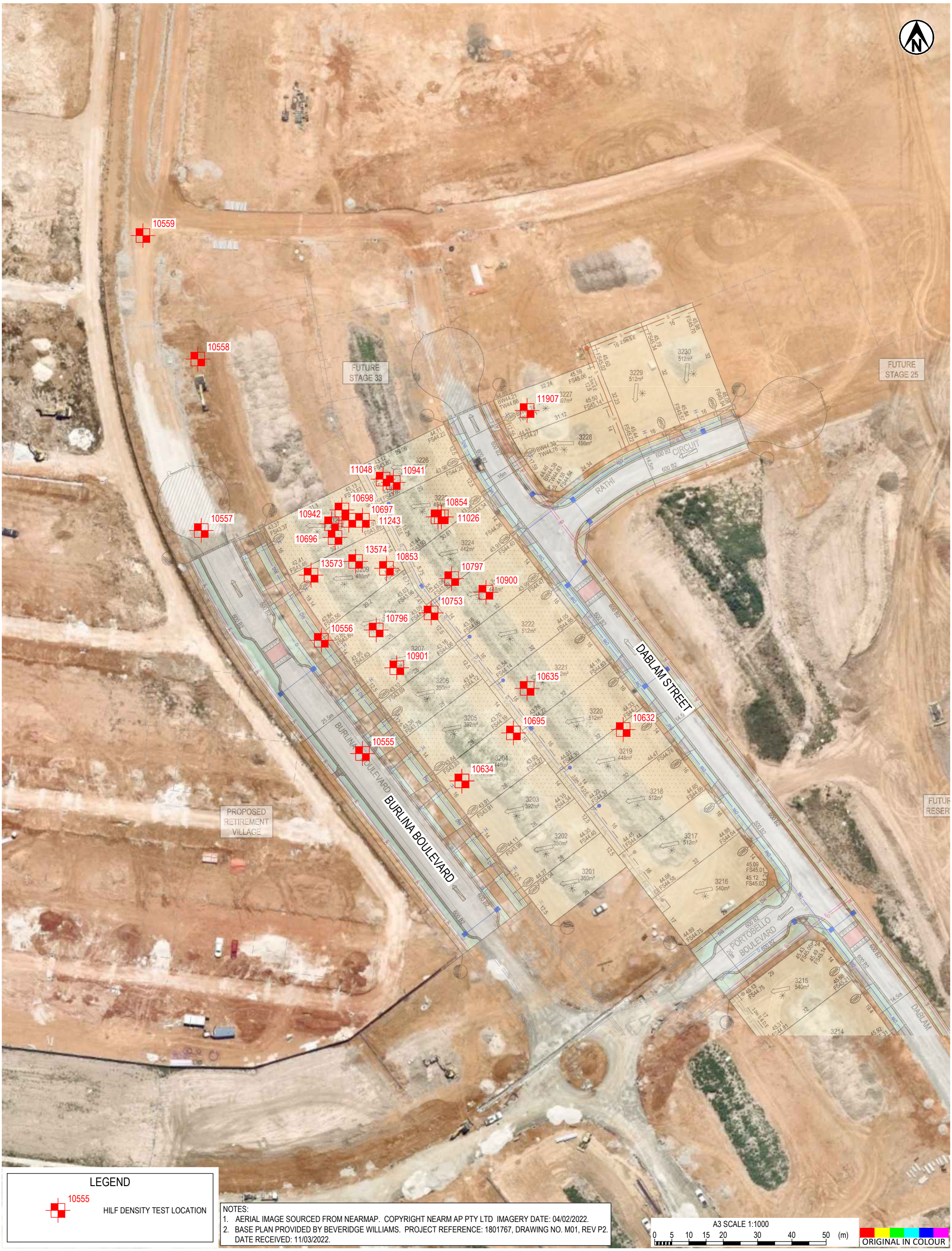
Authorised for Chadwick Geotechnics Pty Ltd by:

.....

Tim Chadwick
Project Director

22-Apr-22
\\ttgroup.local\corporate\dandenong\geo projects\3807351\32 stage 32\workingmaterial\3807351.032.r1 level one report.docx

Appendix A: Site plan



LEGEND

10555 HILF DENSITY TEST LOCATION

NOTES:
1. AERIAL IMAGE SOURCED FROM NEARMAP. COPYRIGHT NEARM AP PTY LTD IMAGERY DATE: 04/02/2022.
2. BASE PLAN PROVIDED BY BEVERIDGE WILLIAMS. PROJECT REFERENCE: 1801767, DRAWING NO. M01, REV P2. DATE RECEIVED: 11/03/2022.

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

ORIGINAL IN COLOUR

CHADWICK GEOTECHNICS
www.chadwickgeotechnics.com.au

PROJECT No.	3807351	
DESIGNED	SKPW	Mar.22
DRAWN	KMJA	Mar.22
CHECKED		
APPROVED		DATE

CLIENT **GROSVENOR LODGE PTY LTD**
PROJECT **MERIDIAN ESTATE - STAGE 32**
TITLE LEVEL ONE HILF DENSITY TESTING
HILF DENSITY TEST LOCATION PLAN
UNDER REVISION 1
SCALE (A3) 1:1000 FIG No. FIGURE 01 REV 1

Appendix B: Hilf density test summary

CHADWICK GEOTECHNICS

3807351.032 - Meridian Estate Stage 32 - HILF Summary

Chadwick Geotechnics
25 Metcalf Street
Dandenong South
Tel : (03) 8796 7900
Fax: (03) 8796 7944

Report No	Sample No	Date	Test Number	Location [E]	Location [N]	RL	Layer	Density Ratio HILF test (≥95%)	Moisture Variation	Pass / Fail	Remarks
HDR:W21DS01907	7050	25/05/2021	1	355985	5781477	41.59	2	102.5	omc	Pass	
HDR:W21DS02822	10555	24/08/2021	1	355995	5781417	42.320	FSL	102	omc	Pass	
HDR:W21DS02822	10556	24/08/2021	2	355983	5781450	43.158	FSL	102.5	0.5 dry	Pass	
HDR:W21DS02822	10557	24/08/2021	3	355948	5781482	42.735	FSL	103.5	2.5 dry	Pass	
HDR:W21DS02822	10558	24/08/2021	4	355947	5781532	42.662	FSL	103	2.0 dry	Pass	
HDR:W21DS02822	10559	24/08/2021	5	355931	5781568	43.220	FSL	101	0.5 dry	Pass	
HDR:W21DS02841	10632	26/08/2021	1	356071	5781424	44.076	1	104	2.5 dry	Pass	
HDR:W21DS02841	10633	26/08/2021	2	356024	5781409	43.694	1	102	0.5 dry	Pass	
HDR:W21DS02841	10634	26/08/2021	3	356024	5781409	43.694	1	100.5	0.5 dry	Pass	
HDR:W21DS02841	10635	26/08/2021	4	356043	5781436	43.123	1	102.5	0.5 dry	Pass	
HDR:W21DS02852	10695	27/08/2021	1	356039	5781423	43.773	2	102.5	1.0 dry	Pass	
HDR:W21DS02853	10696	28/08/2021	1	355987	5781480	41.942	4	99	3.0 wet	Pass	
HDR:W21DS02853	10697	28/08/2021	2	355991	5781485	42.354	6	97	0.5 wet	Pass	
HDR:W21DS02853	10698	28/08/2021	3	355989	5781488	42.584	FSL	97	0.5 wet	Pass	
HDR:W21DS02871	10753	30/08/2021	1	356015	5781458	43.273	2	95.5	omc	Pass	
HDR:W21DS02882	10796	31/08/2021	1	355999	5781453	43.303	3	100	omc	Pass	
HDR:W21DS02882	10797	31/08/2021	2	356021	5781468	43.637	3	97.5	omc	Pass	
HDR:W21DS02900	10853	1/09/2021	1	356002	5781471	43.074	1	96.5	omc	Pass	
HDR:W21DS02900	10854	1/09/2021	2	356017	5781486	43.329	1	98	0.5 wet	Pass	
HDR:W21DS02915	10900	2/09/2021	1	356031	5781464	44.035	4	97	omc	Pass	
HDR:W21DS02915	10901	2/09/2021	2	356005	5781442	43.569	4	104.5	2.0 dry	Pass	
HDR:W21DS02926	10941	3/09/2021	1	356004	5781496	43.273	2	94	omc	Fail	See Re-Test 11048
HDR:W21DS02926	10942	3/09/2021	2	355986	5781484	43.053	2	97.5	0.5 wet	Pass	
HDR:W21DS02951	11026	8/09/2021	1	356018	5781486	43.600	3	101	2.0 dry	Pass	
HDR:W21DS02959	11048	9/09/2021	1	356001	5781497	43.156	2	97.5	omc	Pass	Re-Test of 10941
HDR:W21DS03018	11243	17/09/2021	1	355995	5781485	43.238		107	3.0 dry	Pass	
HDR:W21DS03235	11907	21/10/2021	1	356043	5781517	44.667	2	102.5	1.0 dry	Pass	
HDR:W21DS03692	13573	15/12/2021	1	355980	5781469	43.444	5	99	2.0 dry	Pass	
HDR:W21DS03692	13574	15/12/2021	2	355993	5781473	43.671	5	103	2.5 dry	Pass	
											no further testing

Appendix C: Hilf density testing reports

CHADWICK GEOTECHNICS

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

Ph: + 61 3 8796 7900
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Report No: HDR:W21DS01907
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

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

Sample Details

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

Sample Data

Sample ID	S21DS-07050					
Field Sample ID	1					
Date Tested	25/05/2021					
E:	2162.074					
N:	638.330					
EL:	41.589					
Lot:	3210					
Layer:	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 Wet Density (t/m³)	2.13					
Peak Converted Wet Density (t/m³)	2.08					
Compactive Effort	Standard					
Moisture Variation (%)	0.0					
Hilf Density Ratio (%)	**102.5**					

Comments

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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:W21DS02822
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 6/09/2021

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:	Sandy Clay

Sample Data

Sample ID	S21DS-10555	S21DS-10556	S21DS-10557	S21DS-10558	S21DS-10559	
Field Sample ID	1	2	3	4	5	
Date Tested	24/08/2021	24/08/2021	24/08/2021	24/08/2021	24/08/2021	
E:	2109.604 (355995)	2169.688 (355983)	2124.290 (355948)	2120.673 (355947)	2157.309 (355931)	
N:	725.817 (5781417)	573.788 (781450)	640.793 (5781482)	689.520 (5781532)	607.025 (5781568)	
EL / Layer:	42.320 / FSL	43.158 / FSL	42.735 / FSL	42.662 / FSL	43.220 / FSL	
Other:	Burina Boulevard	Nature Strip	Burina Boulevard	Nature Strip	Burina Boulevard	
Sample No:	#2	#3	#4	#5	#6	
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)	2.10	2.09	2.12	2.14	2.09	
Peak Converted Wet Density (t/m³)	2.06	2.03	2.04	2.08	2.07	
Compactive Effort	Standard	Standard	Standard	Standard	Standard	
Moisture Variation (%)	0.0	0.5 dry	2.5 dry	2.0 dry	0.5 dry	
Hilf Density Ratio (%)	**102.0**	**102.5**	**103.5**	**103.0**	**101.0**	

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS02841
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 6/09/2021

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:	Silty Clay

Sample Data

Sample ID	S21DS-10632	S21DS-10633	S21DS-10634	S21DS-10635		
Field Sample ID	1	2	3	4		
Date Tested	26/08/2021	26/08/2021	26/08/2021	26/08/2021		
E:	2248.512 (356071)	2201.528 (356024)	2222.511 (356024)	2188.413 (356043)		
N:	582.954 (5781424)	567.137 (5781409)	567.137 (5781409)	596.761 (781436)		
EL / Layer:	44.076 / 1	43.694 / 1	43.694 / 1	43.123 / 1		
Lot:	3219	3204	3221	3206		
Other:	Sample: 6	Sample: 7	Sample: 8	Sample: 9		
Field and Laboratory Data						
Depth of Test (mm)	175	175	175	175		
Depth of Layer (mm)	200	200	200	200		
AS Sieve Size (mm)	19.0	19.0	19.0	19.0		
Oversize Wet (%)	0	0	0	0		
Field Wet Density (t/m³)	2.04	2.09	2.07	2.11		
Peak Converted Wet Density (t/m³)	1.96	2.05	2.06	2.06		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Variation (%)	2.5 dry	0.5 dry	0.5 dry	0.5 dry		
Hilf Density Ratio (%)	**104.0**	**102.0**	**100.5**	**102.5**		

Comments

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Report No: HDR:W21DS02852
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 6/09/2021

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	S21DS-10695					
Field Sample ID	1					
Date Tested	27/08/2021					
E:	2217.008 (356039)					
N:	581.699 (5781423)					
EL / Layer:	43.773 / 2					
Lot:	3220					
Other:	Sample: 10					

Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	2.08					
Peak Converted Wet Density (t/m³)	2.04					
Compactive Effort	Standard					
Moisture Variation (%)	1.0 dry					
Hilf Density Ratio (%)	**102.5**					

Comments

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Report No: HDR:W21DS02853
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 6/09/2021

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	S21DS-10696	S21DS-10697	S21DS-10698			
Field Sample ID	1	2	3			
Date Tested	28/08/2021	28/08/2021	28/08/2021			
E:	2163.43 (355987)	2164.13 (355991)	2165.537 (355989)			
N:	637.05 (5781480)	641.21 (5781485	643.794 (5781488)			
EL / Layer:	41.942 / 4	42.354 / 6	42.584 / FSL			
Lot:	3210	3210	3210			
Other:	Sample: 11	Sample: 12	Sample: 13			

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)	1.97	2.02	1.99			
Peak Converted Wet Density (t/m³)	1.98	2.09	2.05			
Compactive Effort	Standard	Standard	Standard			
Moisture Variation (%)	3.0 wet	0.5 wet	0.5 wet			
Hilf Density Ratio (%)	**99.0**	**97.0**	**97.0**			

Comments

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Report No: HDR:W21DS02871
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 6/09/2021

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:	Sandy Clay

Sample Data

Sample ID	S21DS-10753					
Field Sample ID	1					
Date Tested	30/08/2021					
E:	2191.719 (356015)					
N:	616.521 (5781458)					
EL / Layer:	43.273 / 2					
Lot:	3223					
Other:	Sample: 14					

Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	1.94					
Peak Converted Wet Density (t/m³)	2.03					
Compactive Effort	Standard					
Moisture Variation (%)	0.0					
Hilf Density Ratio (%)	**95.5**					

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS02882
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 6/09/2021

Sample Details

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

Sample Data

Sample ID	S21DS-10796	S21DS-10797				
Field Sample ID	1	2				
Date Tested	31/08/2021	31/08/2021				
E:	2175.707 (355999)	2197.063 (356021)				
N:	610.658 (5781453)	625.902 (5781468)				
EL / Layer:	43.303 / 3	43.637 / 3				
Lot:	3208	3224				
Other:	Sample: 15	Sample: 16				

Field and Laboratory Data

Depth of Test (mm)	175	175				
Depth of Layer (mm)	200	200				
AS Sieve Size (mm)	19.0	19.0				
Oversize Wet (%)	0	0				
Field Wet Density (t/m³)	2.10	2.06				
Peak Converted Wet Density (t/m³)	2.10	2.11				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	0.0				
Hilf Density Ratio (%)	**100.0**	**97.5**				

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS02900
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 6/09/2021

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:	Silty Clay

Sample Data

Sample ID	S21DS-10853	S21DS-10854				
Field Sample ID	1	2				
Date Tested	1/09/2021	1/09/2021				
E:	2179.097 (356002)	2194.153 (356017)				
N:	630.161 (5781471)	647.476 (5781486)				
EL / Layer:	43.074 / 1	43.329 / 1				
Lot:	3209	3225				
Other:	Sample: 17	Sample: 18				

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	2.03				
Peak Converted Wet Density (t/m³)	2.07	2.07				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	0.5 wet				
Hilf Density Ratio (%)	**96.5**	**98.0**				

Comments

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Report No: HDR:W21DS02915
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
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: 6/09/2021

Sample Details

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

Sample Data

Sample ID	S21DS-10900	S21DS-10901				
Field Sample ID	1	2				
Date Tested	2/09/2021	2/09/2021				
E:	2209.775 (3560331)	2183.725 (356005)				
N:	620.904 (5781464)	602.122 (5781442)				
RL / Layer:	44.035 / 4	43.569 / 4				
Lot:	3223	3207				
Other:	Sample: 19	Sample: 20				
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)	2.05	2.06				
Peak Converted Wet Density (t/m³)	2.12	1.97				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	2.0 dry				
Hilf Density Ratio (%)	**97.0**	**104.5**				

Comments

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Report No: HDR:W21DS02926
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
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: 6/09/2021

Sample Details

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

Sample Data

Sample ID	S21DS-10941	S21DS-10942				
Field Sample ID	1	2				
Date Tested	3/09/2021	3/09/2021				
E:	2180.531 (356004)	2162.225 (355986)				
N:	653.478 (5781496)	641.278 (5781484)				
RL / Layer:	43.273 / 2	43.053 / 2				
Lot:	3226	3210				
Other:	Sample: 21	Sample: 22				

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	2.08				
Peak Converted Wet Density (t/m³)	2.13	2.14				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	0.0	0.5 wet				
Hilf Density Ratio (%)	**94.0**	**97.5**				

Comments

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Report No: HDR:W21DS02951
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
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: 9/09/2021

Sample Details

Location:
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: Sandy Clay

Sample Data

Sample ID	S21DS-11026					
Field Sample ID	1					
Date Tested	8/09/2021					
E:	2192.92 (356018)					
N:	643.96 (5781486)					
EL / Layer:	43.60 / 3					
Lot:	3225					
Other:	Sample: 23					

Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	1.95					
Peak Converted Wet Density (t/m³)	1.93					
Compactive Effort	Standard					
Moisture Variation (%)	2.0 dry					
Hilf Density Ratio (%)	**101.0**					

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS02959
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
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: 13/09/2021

Sample Details

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

Sample Data

Sample ID	S21DS-11048					
Field Sample ID	1					
Date Tested	9/09/2021					
E:	2179.492 (356001)					
N:	655.686 (5781497)					
EL / Layer:	43.156 / 2					
Lot:	3226					
Other:	Sample: 24 / Retest S21DS-10941					

Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	2.06					
Peak Converted Wet Density (t/m³)	2.11					
Compactive Effort	Standard					
Moisture Variation (%)	0.0					
Hilf Density Ratio (%)	**97.5**					

Comments

CHADWICK GEOTECHNICS

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Report No: HDR:W21DS03018
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 17/09/2021

Sample Details

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

Sample Data

Sample ID	S21DS-11243					
Field Sample ID	25					
Date Tested	17/09/2021					
E:	2152.179					
N:	634.302					
Lot:	3210					
Elv:	43.238					

Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
Field Wet Density (t/m³)	2.02					
Peak Converted Wet Density (t/m³)	1.89					
Compactive Effort	Standard					
Moisture Variation (%)	3.0 dry					
Hilf Density Ratio (%)	**107.0**					

Comments

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Report No: HDR:W21DS03235
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 4/11/2021

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:	Sandy Clay

Sample Data

Sample ID	S21DS-11907					
Field Sample ID	1					
Date Tested	21/10/2021					
E:	2220.773 (356043)					
N:	674.473 (5781517)					
RL / Layer:	44.667 / 2					
Lot:	3227					
Other:	Sample: 26					

Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Wet Density (t/m³)	2.04					
Peak Converted Wet Density (t/m³)	2.00					
Compactive Effort	Standard					
Moisture Variation (%)	1.0 dry					
Hilf Density Ratio (%)	**102.5**					

Comments

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Report No: HDR:W21DS03692
Issue No: 1

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Estate - Stage 32
Project No.: 3807351.032
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: M. Robinson (Team Leader)
Date of Issue: 16/12/2021

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:	Silty Clay

Sample Data

Sample ID	S21DS-13573	S21DS-13574				
Field Sample ID	1	2				
Date Tested	15/12/2021	15/12/2021				
E:	2156.882 (355980)	2164.876 (355993)				
N:	626.641 (5781469)	647.560 (5781473)				
RL / Layer:	43.444 / 5	43.671 / 5				
Lot:	3209	3210				
Other:	Sample 27	Sample 28				
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	2.08				
Peak Converted Wet Density (t/m³)	2.01	2.02				
Compactive Effort	Standard	Standard				
Moisture Variation (%)	2.0 dry	2.5 dry				
Hilf Density Ratio (%)	**99.0**	**103.0**				

Comments

Appendix D: Controlled Fill certificate

CONTROLLED FILL CERTIFICATE - LEVEL 1 INSPECTION & TESTING

PROJECT	: Lot No's: 3203 to 3210 and 3218 to 3228 Meridian Central Estate Stage 32	Chadwick Geotechnics REF: 3807351.032.v1
CLIENT	: Grosvenor Lodge Pty Ltd PO Box 4136 DANDENONG SOUTH VIC 3164	DATE : 22 April 2022

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 (25 May 2021 and was completed on 15 December 2021). No responsibility or liability will be accepted and Chadwick Geotechnics Pty Ltd is indemnified to the full extent permitted by law in respect of the use of this Certificate where there has been a change in the nature of the project, or in the site conditions since the site testing.

CHADWICK GEOTECHNICS PTY LTD

Robert Barden
Project Manager

Timothy Chadwick
Project Director

CHADWICK
GEOTECHNICS