CHADWICK GEOTECHNICS

REPORT

Level 1 Geotechnical Inspection and Testing Authority Services

Meridian Green Estate Clyde North
Stage 51 Lots 5113, 5114 and 5124

Prepared for:

Greenridge Properties Pty Ltd

October 2025

Our Ref: 1091936.51.v1

25 Metcalf Street, Dandenong South, Vic 3175, Melbourne, Australia
www.chadwickgeotechnics.com.au

Table of contents

Document Control

Title:	Level One Inspection and testing Services.				
Date	**Version**	**Description**	**Prepared by:**	**Reviewed by:**	**Authorised by**
8 October 2025	1091936.051.R1.V1	Final Report	RHB	RWMC	RWMC

1 Introduction

Chadwick Geotechnics Pty Ltd (Chadwick Geotechnics), was engaged by Greenridge Properties Pty Ltd, to provide Level 1 Geotechnical Inspection and Testing Authority (GITA), services for the earthworks conducted within Stage 51 of the Meridian Green Estate in Clyde North. This report relates to the Stage 51 works only, the testing was undertaken between 15 September 2023 and the 18 September 2023.

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

2.1 Location

Stage 51 is located North of Hardys Road and the site is on Sandalwood Cresent in Clyde North. Stage 47 and 49 are located to the North of Stage 51.

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

Figure 2.1: Extract from Nearmap 21 August 2025

2.2 Roles

The organisations and their roles are presented in Table 2.1

Table 2.1: Roles on the Project

Role	Organisation
Developer	Greenridge Properties Pty Ltd
Geotechnical Inspection and Testing Authority (GITA)	Chadwick Geotechnics Pty Ltd
Designer / Superintendent	Charlton Degg 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
September 2023	15, 18

2.4 Included Areas

This report is applicable to material placed by the contractor on the residential lots within the Meridian Green Estate Stage 51, as shown on the Site Plan in Appendix A, and with reference to Section 2.5 (Excluded Areas) of this report.

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

- The residential lots filled include Lots 5113, 5114 and 5124.

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 Specifications

The works were to be conducted in general accordance with the 'Guidelines on earthworks for commercial and residential developments' of AS3798-2007.

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 AS3798-2007 "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. Some imported fill was also placed.

A bulk sample was sampled on the 6 September 2023 during the Stage 60 earthworks, the sample was taken for geotechnical compliance testing. The fill material used during filling works on both stages was sourced from the same source.

The material compliance test result is tabulated in Table 4.1 below. The laboratory test certificate is attached in Appendix C.

Table 4.1: Compliance test Result Summary

Sample #	Particle Size Distribution (PSD)						Liquid Limit %	Plastic Limit %	Plasticity Index %	Source
	37.5 mm	19 mm	4.75 mm	1.18 mm	425 µm	0.75 µm				
S23DS-07467	100	100	97	89	81	67	58	20	38	Local

The laboratory test result indicates the fill material is a sandy CLAY of high plasticity and satisfied the requirements of the Specification.

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 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.

Photographs of typical materials used during construction are shown below.

Photograph 4.1: Photographs of the material used on site

Photograph 1: Typical on-site clay material

Photograph 2: Sandy CLAY Mottled Orange Brown

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 that was present on site.

The subgrade inspections were performed in accordance with the Level 1 guidelines presented in AS3798–2007 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.

Two photographs of the subgrade assessment phase at the project are shown below.

Photograph 4.2: Subgrade assessment photographs

Photo 3: Subgrade assessment with Dump truck

Photo 4: Subgrade assessment with pad foot

4.4 Engineered Fill Construction

All fill material was brought from local or imported sources. The fill was 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 at the Meridian Estate.

Table 4.2: Earthworks plant on site

Equipment type	Model
Dozer	**CAT D6 Dozer**
Pad foot roller	**CAT 15 Tonne CP56B**
Water cart	**1 CAT**
Scraper	**1**
Excavator	**1**

Photographs of typical machinery on site used during construction are shown below.

Photograph 4.3: General Earthwork machinery and fill construction photographs

Photograph 5: Pad foot Roller compacting.

Photograph 6: Water cart moisture conditioning

Photograph 7: Bulldozer.

Photograph 8: Scraper

4.5 Density and Moisture 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

AS1289.5.8.1. The HILF rapid compaction test was used for peak converted wet density determinations in accordance with AS1289.5.7.1. 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 2500m² or 1 test per 500m³ 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 AS3798-2007;

Three (3) tests were performed during the filling process. The tests achieved the recommended density or moisture ratio.

A summary table of HILF density tests is provided in Appendix B and the laboratory test reports are provided in Appendix C. Two photographs of field density testing conducted on site are shown below.

Photograph 4.4: Field Density/Moisture Testing photographs

Photo 9: Field density/moisture test

Photo 10: Field density/moisture test

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 earthwork construction works the maintenance of the fill is the sole responsibility of the Contractor. If the fill is not well maintained or protected with a sacrificial layer of topsoil or other fill, the uppermost layers and the exposed faces of the engineered fill may deteriorate as a result from exposure to varying weather conditions which can cause cracking or heaving of the fill. Any deterioration will need to be remediated prior to further construction on the site. Chadwick Geotechnics has not provided supervision since the above date and is not responsible for any subsequent deterioration that may have occurred or may occur since that date.

6 Applicability

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

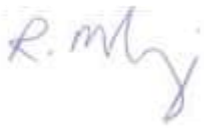
This report is based on the nature of the project and the prevailing conditions between 15 September 2023, and 18 September 2023. No responsibility or liability will be accepted, and Chadwick Geotechnics is indemnified to the full extent permitted by law in respect of the use of this report where there 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:

Authorised for Chadwick Geotechnics Pty Ltd by:

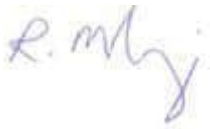


…… ……

Robert Barden Robert McKenzie

Project Manager Project Director

Report reviewed by:



……

Robert McKenzie

Principal Geotechnical Engineer

RPEV Number: PE0005222

p:\1091936\1091936.051 stage 51 merdian greens estate\level 1 report\1091936.051.v1 meridian green st 51 l1 report.docx

Appendix A Test Location Plan

T:\Dandenong\Geo Projects\1091936\1091936.051 Stage 51 Merdian Greens Estate\CAD\FIG\1091936.051-F01.dwg 2025-Oct-09 9:04:46 AM Plotted By: KATHRYN JACKSON

LEGEND

S23DS-06472
HILF DENSITY TEST LOCATION
SITE 51

STAGE 47
STAGE 49
STAGE 51
STAGE 52
STAGE 50A
BAMBUSA WAY
BALCARRA STREET
MONSTERA STREET
SANDALWOOD CRESCENT
S23DS-07756
S23DS-07691
S23DS-07690
TEMPORARY TURNING CIRCLE (150mm DEPTH OF CLASS 3 (GR) WITH POST & WIRE FENCE AROUND TURNING AREA R10.5m
CONCRETE EDGE STRIP AND "NO ROAD" SIGN TEMPORARY AG AT EDGE STRIP
CONNECT RET WALL AGGY TO DRAIN VIA H.D.
FUT. 5214
FUT. 5215
KERB B2 600
450D
525D
300D

City of Casey
Ange Dean
PlnA00900/14.A
0169/24
5
No.: R6263
t to:
arried out in accordance with the
ior to commencement of works.
prior to commencement of works.
uthorities notification and approval.
ns and asset information in electronic
vided to Council's satisfaction.
t be provided for all drainage prior to
mpletion

NOTES:
1. AERIAL IMAGE SOURCED FROM NEARMAP. COPYRIGHT NEARMAP PTY LTD IMAGERY DATE: 29/10/2023.
2. BASE PLAN PROVIDED BY GREENRIDGE PROPERTIES PTY LTD REF: 1669_CPA_R CONCEPT PLAN. DATE RECEIVED: 14/12/2023.

A3 SCALE 1:750
0 5 10 15 20 25 30 35 40 (m)

ORIGINAL IN COLOUR

CHADWICK GEOTECHNICS
www.chadwickgeotechnics.com.au

PROJECT No.	1091936.051	
DESIGNED	STPA	Aug.25
DRAWN	MAMO	Aug.25
CHECKED	RHB	Sep.25
R. BARDEN		30.09.2025
APPROVED		DATE

CLIENT **GREENRIDGE PROPERTIES PTY LTD**
PROJECT **MERIDIAN GREEN ESTATE - STAGE 51**
TITLE LEVEL ONE HILF DENSITY TESTING
HILF DENSITY TEST LOCATION PLAN
SCALE (A3) 1:750 FIG No. 1091936.051-F01 REV 1

Appendix B Hilf Density Test Summary

Meridian Green Estate, 1091936.051

HILF Density Testing - Field Summary

Chadwick Geotechnics
25 Metcalf Street
Dandenong South VIC 3175
Tel : (03) 8796 7900
Fax: (03) 9706 9431
www.chadwickgeotechnics.com.au

Report No	Sample No	Date	Test Number	Easting	Northing	Layer/RL	Density Ratio (≥95 %)	Moisture Variation	Pass / Fail	Comments (Retest No) Compliance test taken ect
HDR:W23DS02211	S23DS-07690	15/09/2023	1	357080	5781543	43.305	102.5	2 dry	PASS	
HDR:W23DS02211	S23DS-07691	15/09/2023	2	357012	5781553	43.224	99	0.5 dry	PASS	
HDR:W23DS02225	S23DS-07756	18/09/2023	1	356986	5781549	43.301	98.5	0.5 dry	PASS	
										no further tests

Appendix C NATA endorsed laboratory reports

CHADWICK GEOTECHNICS

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:W23DS02211
Issue No: 2
This report replaces all previous issues of report no 'HDR:W23DS02211'.

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Green Estate, Stage 51
Project No.: 1091936.051
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: P. Semmel (Quality Co-Ordinator)
Date of Issue: 30/09/2025

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 1289.2.1.1, 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	S23DS-07690	S23DS-07691				
Field Sample ID	1	2				
Client Sample ID	1	2				
Date Tested	15/09/2023	15/09/2023				
Time Tested	12:09	12:17				
E:	357080.258	357012.159				
N:	5781542.986	5781553.210				
EL:	43.305	43.224				
Layer:	1	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 (%)	27.6	24.6				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.91	1.91				
Field Dry Density (t/m³)	1.49	1.53				
Peak Converted Wet Density (t/m³)	1.86	1.93				
Optimum Moisture Content (%)	29.5	25.5				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	93.5	97.5				
Moisture Variation (%)	2.0 dry	0.5 dry				
Hilf Density Ratio (%)	**102.5**	**99.0**				

Comments

Results relate only to the items tested/sampled.

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:W23DS02225
Issue No: 2
This report replaces all previous issues of report no 'HDR:W23DS02225'.

HILF Density Ratio Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Green Estate, Stage 51
Project No.: 1091936.051
Order No.: **CG Request No.:**
TRN: **Lot No.:**

Accredited for compliance with ISO/IEC 17025 – Testing

Accreditation Number: 12719
Site Number: 12712
Approved Signatory: P. Semmel (Quality Co-Ordinator)
Date of Issue: 30/09/2025

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

Sample Data

Sample ID	S23DS-07756					
Field Sample ID	1					
Client Sample ID	3					
Date Tested	18/09/2023					
Time Tested	12:15					
E:	356985.515					
N:	5781549.199					
EL:	43.301					
Layer:	1					

Field and Laboratory Data

Depth of Test (mm)	175					
Depth of Layer (mm)	200					
AS Sieve Size (mm)	19.0					
Oversize Wet (%)	0					
Field Moisture Content (%)	16.1					
Field Moisture Content Method	AS 1289.2.1.1					
Field Wet Density (t/m³)	2.02					
Field Dry Density (t/m³)	1.74					
Peak Converted Wet Density (t/m³)	2.05					
Optimum Moisture Content (%)	16.5					
Compactive Effort	Standard					
Moisture Ratio (%)	98.0					
Moisture Variation (%)	0.5 dry					
Hilf Density Ratio (%)	**98.5**					

Comments

Results relate only to the items tested/sampled.

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: MAT:S23DS-07467/1
Issue No: 1

Material Test Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Green Estate, Stage 60
Project No.: 1091936.060
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: 3/10/2023

Sample Details

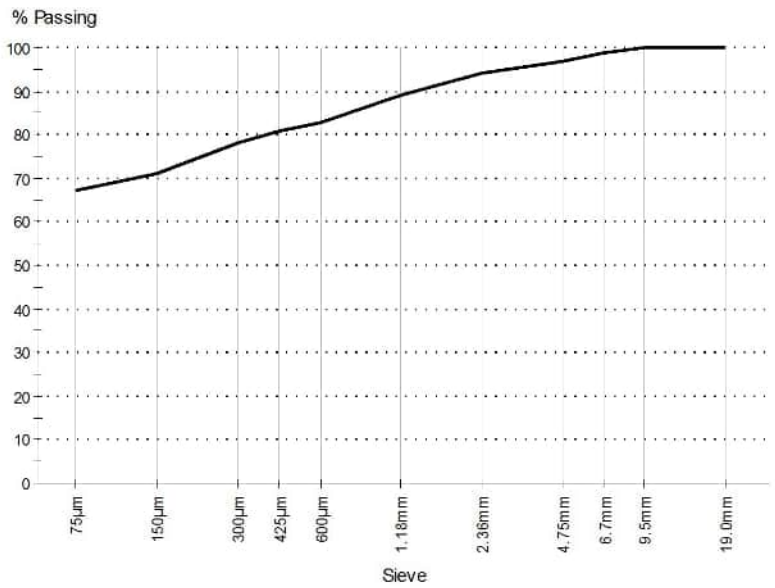
Sample Location	E: 356641.200, N: 57813685.715, EL: 42.563, Lot: 6008, Layer: 4
Field Sample ID	1
Date Sampled	6/09/2023
Time Sampled	14:07
Source	Onsite
Material	Silty Clay
Specification	AS Grading
Sampling Method	AS1289.1.2.1 Clause 6.4 (b)
Sample ID	S23DS-07467

Other Test Results

Description	Method	Result	Limits
Moisture Content (%)	AS 1289.2.1.1	24.3	
Sample History	AS 1289.1.1	Oven-dried	
Preparation	AS 1289.1.1	Dry Sieved	
Linear Shrinkage (%)	AS 1289.3.4.1	16.0	
Mould Length (mm)		250	
Crumbling		No	

Particle Size Distribution

AS 1289.3.6.1



Drying By: Oven
Date Tested: 11/09/2023

Note: Sample Washed

Sieve Size	% Passing	Limits
19.0mm	100	
9.5mm	100	
6.7mm	99	
4.75mm	97	
2.36mm	94	
1.18mm	89	
600µm	83	
425µm	81	
300µm	78	
150µm	71	
75µm	67	

Comments

N/A

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: MAT:S23DS-07467/1
Issue No: 1

Material Test Report

Client: Greenridge Properties Pty Ltd
Address: PO Box 3131
AUBURN VIC 3123
Project: Meridian Green Estate, Stage 60
Project No.: 1091936.060
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: 3/10/2023

Other Test Results

Description	Method	Result	Limits
Curling		Yes	
Cracking		No	
Liquid Limit (%)	AS 1289.3.1.2	58	
Plastic Limit (%)	AS 1289.3.2.1	20	
Plasticity Index (%)	AS 1289.3.3.1	38	
Date Tested		11/09/2023	

Comments

N/A

Appendix D Fill Certificate

CONTROLLED FILL CERTIFICATE - LEVEL 1 INSPECTION & TESTING

PROJECT : Meridian Green Estate
Stage 51
Lots 5113, 5114, 5124

REF: 1091936.051.R1.v1

CLIENT : Greenridge Properties Pty Ltd
P.O Box 4136
Dandenong South Victoria, 3164

DATE: October 2025

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.

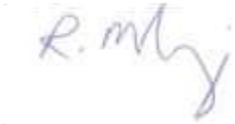
So far as can be determined, the fill was placed in accordance with the Specification that required a minimum density ratio of 95% of HILF Density (AS1289.5.7.1) to be achieved.

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 between 15 September 2023 and was completed 18 September 2025. 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

Robert Mckenzie
Project Director

CHADWICK
GEOTECHNICS