CONSULTING ENGINEERS
ABN 91 686 494 280

Level 1 Inspection and Testing Report

Unity Park, Stage 13, Tarneit

Winslow Constructors

16 August 2025

CTCE Ref: 25066.0R_V1

CONSULTING ENGINEERS
ABN 91 686 494 280

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Winslow Constructors

50 Barry Road

Campbellfield, VIC, 3061

Attention: Ryan Spicer

Level 1 Inspection and Testing

Unity Park, Stage 13, Tarneit

C&T Consulting Engineers has prepared this report to summarise the Level 1 Inspection and Testing activities conducted for the Unity Park Stage 13 bulk earthworks, located in Tarneit.

Distribution

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1 electronic copy	C&T Geotechnical (Melbourne)
1 electronic copy	Winslow Constructors

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For an on behalf of C&T Consulting Engineers

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Director

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1. Introduction

This report presents the results of the Level 1 inspection activities, compaction control services and laboratory testing services for the Unity Park Stage 13 project, located in Tarneit (the site).

2. Project Background

C&T Geotechnical was engaged to provide Level 1 Inspection and testing services for the bulk earthworks component of the project. Authorisation to proceed was provided by Winslow Constructors (the 'Client') who were the nominated earthworks contractors.

Level 1 Inspection & Testing, as defined in AS3798 (2007) Guidelines on Earthworks for Commercial and Residential Developments provides for full time inspection of the construction of controlled fill and compaction testing in accordance with AS1289 Methods of Testing Soils for Engineering Purposes and AS1726 (2017) Geotechnical Site Investigations. C&T performed the role of the project Geotechnical Inspection & Testing Authority (GITA) with all Level 1 Inspection and Testing services described in this report undertaken by an experienced GITA site representative.

3. Scope of Works

3.1 Areas & Duration of Works

This report presents the Level 1 Inspection & Testing results which commenced on 5 June 2025 and was completed on 13 June 2025. The filling works generally took place on allotments, Lot 1311, Lot 1312, Lot 1313 and Lot 1338 – Lot 1342. It should be noted that other areas of the works required < 300 mm of fill, and did not require Level 1 Inspection & Testing services.

3.2 Placement Methodology

A geotechnical bulk earthworks specification was not available for the project. The placement of the controlled fill on the above-mentioned areas was carried out in general accordance with the guidelines presented in AS3798 (2007) Guidelines on Earthworks for Commercial & Residential Developments. The fill placement methodology adopted for the works generally involved the following:

1. the site surface to be adequately stripped of all topsoil and organic matter, with the subgrade approved by the Geotechnical Inspection and Testing Authority (GITA) prior to fill placement
2. fill material, whether imported or site-won, to consist of naturally occurring, clean material free from deleterious substances. The fill is to comply with Section 4.4 of AS 3798 (2007), with:
    - a maximum particle size not exceeding two-thirds of the compacted layer thickness
    - no more than 20 % of the material comprising particles exceeding 37.5 mm in diameter
3. fill is to be moisture conditioned to within + / - 3 % of optimum moisture content (OMC)
4. fill is to be placed in horizontal layers not exceeding 150 mm
5. fill to be compacted to a dry density ratio of at least 95 % Standard Compaction in accordance with AS 1289.5.1.1
6. completing field density testing at a frequency for large scale developments (Type 1 AS3798) which nominates a frequency of:
    - one test per layer or 200 mm per 2500 m^2
    - one test per 500 m^3 distributed reasonably evenly throughout the full depth and area, or
    - three tests per site visit; whichever requires the most tests.

4. Level 1 Inspection & Testing Results

4.1 Subgrade Preparation

The fill placement zones generally required stripping of topsoil, vegetation and organics. Scrapers and graders were used to carry out the site stripping until a base comprising residual Newer Volcanic Group CLAY (CH), high plasticity, dark brown was achieved. The subgrade was moisture conditioned and compacted, followed by a proof roll using a fully loaded water cart which showed no deflections, springing or rutting. The subgrade was then ripped to allow keying in with the subsequent fill layers. The subgrade was deemed suitable for subsequent fill placement.

Figure 1: Subgrade Test Rolled & Moisture Conditioned (Source: C&T)

Figure 2: Subgrade Ripped (Source: C&T)

4.2 Fill Source Materials

Fill source materials were nominated by the project contractors and sourced predominantly from on site cut to fill works.

4.3 Inspection of Fill Source Materials

C&T performed an assessment of the fill source materials for the following:

1. identifying fill material suitability (engineering properties) including cohesion and composition
2. observing building debris and vegetative matter
3. observing oversize rock particles
4. examining the fill moisture.

4.3.1. Material Suitability

The fill materials were noted to be compliant with AS3798 Section 4.0 for the intent and purpose of general filling. The materials typically comprised CLAY (CH), high plasticity, dark brown, trace fine to medium grained sand, with fine to coarse gravel.

4.3.2. Building Debris & Vegetative Matter

Building debris and vegetative matter were not observed in the nominated fill material.

4.3.3. Oversize Particles

Cobbles and boulders were frequently observed in the fill source and instructions were provided to the site foreman to remove all oversize particles from the fill placement zones.

4.3.4. Fill Moisture

The fill was assessed to be dry of the inferred OMC. Water carts were used to moisture condition the fill during placement.

4.4 Fill Construction

The contractor had the following plant available for the construction of the engineered fill platform:

1. water carts
2. dump trucks & trailers
3. 815 compactors
4. bulldozer
5. grader / scrapers.

4.4.1 Climate

Weather conditions were typically cloudy, windy with occasional rain, with a temperature range of between 10 to 15 degrees Celsius.

4.4.2 Filling Process

The filling process was generally consistent throughout the project. The process typically involved the fill materials carted to the site by dump trucks and trailers and stockpiled adjacent to the fill placement zones.

The fill materials were spread into loose layers, to form a composite layer measuring around 150 mm thick. Each layer was compacted using the 815 compactor, applying a minimum of 10 to 15 passes per layer observed. A water cart was used to moisture condition the fill material during placement. Field density testing was carried out on each composite 150 mm thick layer.

Figure 3: Fill Compaction (Source: C&T)

4.5 Compaction Control & Moisture Testing Results

Throughout the filling process and/or at the completion of the day's production, compaction control testing was performed to assess the achieved density ratio of each layer. The onsite GITA nominated the location and performed each test. Testing comprised field density tests using a nuclear moisture-density gauge and rapid HILF compaction tests in C&T Geotechnical's NATA accredited testing laboratory (AS1289 5.8.1 and AS1289 5.7.1).

A summary of the field density tests performed for the project is presented in **Appendix A**. Field density and compaction control testing report sheets are presented in **Appendix B** which also includes test location plans. It should be noted that the tests are a representation of the fill placed and support the visual assessment of the works completed.

In general, all tests achieved the minimum target density ratio of 95 % Standard Compaction and moisture variation within + / - 3 % of OMC.

5. Compliance Statement

C&T Geotechnical (Melbourne) has undertaken Level 1 Inspection and Testing services for the construction of the controlled fill for the Unity Park Stage 13 bulk earthworks. It has also been observed that the prepared subgrade provided an adequate base for the subsequent placement of controlled fill.

Based on observations made and the results of density tests (including all re-tests), it is considered that the controlled fill placed has been constructed in accordance with the guidelines provided by AS3798 (2007).

6. Post-Earthworks Maintenance & Operational Considerations

6.1 Post-Filling Condition Monitoring & Maintenance

Upon completion of earthworks and issuance of this Level 1 Inspection & Testing report, the following considerations must be observed by the built form team to ensure the long-term performance of the fill platform:

1. soft spot development: localised softening or disturbances may occur due to:
    - climatic influences
    - temporary water ponding (e.g. in footings, road boxing or similar)
    - construction traffic
    - inadequate surface drainage.

These are not indicative of fill performance failure but are typically the result of environmental or construction operational factors. The remediation of soft spots caused by insufficient maintenance is to be managed by the site operator/owner in accordance with their geotechnical engineer's guidance.

2. maintenance responsibility: any softening or surface degradation observed after completion of the works is considered a maintenance element
    - it is the responsibility of the site operator/owner and/or subsequent contractors to manage and rectify maintenance issues
3. drainage management: it is strongly advised that surface drainage be established and maintained effectively to prevent water ingress into the fill materials
    - proper grading and runoff management are essential to preserve the integrity of the fill
    - the engineered fill pad does not have any drainage provisions incorporated into the final as-constructed pad
    - the incoming site operator will need to manage site drainage based on the proposed site layout
4. intrusive investigations: any post-completion intrusive geotechnical investigations (e.g. trial pits or boreholes completed by other consultants) may compromise the compaction and integrity of the fill
    - such activities must be carefully planned and documented, particularly if undertaken by third parties
    - the integrity of fill material performance is null and void where intrusive fill investigations are completed and the engineered fill is compromised.

6.2 As Built Survey Requirements

1. an as-built survey of engineered fill levels is a critical component of the handover documentation
2. this survey must be provided by the contractor, as it falls outside the scope of the Level 1 Inspection & Testing report.

7. Statement of Limitations

This report has been prepared by C&T Consulting Engineers exclusively for the commissioning client and the project described. The scope of work was limited to the services outlined herein and does not include investigation of all possible site conditions or risks.

Findings, opinions, and recommendations are based on conditions observed during limited sampling, testing, and fieldwork at the time of investigation. Subsurface conditions may vary across the site, and changes can occur after the investigation. No warranty is given that conditions described are representative of the entire site or future conditions.

If site conditions encountered during works differ from those described, C&T Consulting Engineers must be contacted promptly for reassessment and advice. Reliance on this report without such consultation is at the user's risk.

Where information has been provided by the client or third parties, it is assumed to be correct unless otherwise stated. C&T Consulting Engineers accepts no liability for errors, omissions, or misinterpretations arising from such information.

The advice in this report is based on information available at the time of preparation. C&T Consulting Engineers has no ongoing obligation to update or revise this document unless separately engaged.

Plans, diagrams, and sketches included are for illustrative purposes only and should not be used for construction or detailed design without independent verification.

This report is intended for the commissioning client's use for the stated project only. No responsibility is accepted for use by other parties or for other purposes. This report must not be altered or reproduced except in full without written approval.

8. REFERENCES

- AS3798 (2007) Guidelines on Earthworks for Residential and Commercial Developments.
- AS1289 Methods of Testing Soils for Engineering Purposes.
- AS1726 (2017): Geotechnical Site Investigations

APPENDIX A

Field Density Test Summary

Project Summary Report

Report Date: 18/07/2025
Client: WINSLOW CONSTRUCTORS (CAMPBELLFIELD, VIC)
50 Barry Road, Campbellfield Victoria 3061
Project Number: CTG0072
Project Name: UNITY PARK - STAGE 13 (LEVEL 1)
Project Location: TARNEIT
Specification: 95% Standard Compaction & +/- 3% Moisture Variation
Test Methods: AS 1289 5.7.1 STD & 5.8.1 & 2.1.1

GEOTECHNICAL

C & T Geotechnical (Melbourne) Pty Ltd
47A Assembly Drive Tullamarine VIC 3043
Phone: 0410 530 191
Email: Tim@ctgeotech.com.au

Lot #	Sample #	Date Sampled	Location	Easting	Northing	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	0072-S1	05/06/2025	Lot 1340	292078	5810051	**	1	99.5	-1.0	30.7	1.87
**	0072-S2	05/06/2025	Lot 1338/1339	292085	5810040	**	FSL	100.0	0.0	28.9	1.86
**	0072-S3	05/06/2025	Lot 1341/1342	292092	5810032	**	FSL	100.0	-1.0	29.6	1.87
**	0072-S4	12/06/2025	Lot 1311	291912	5809983	**	FSL	101.5	0.0	26.6	1.86
**	0072-S5	13/06/2025	Lot 1312	291937, 5809840 (Zone 55H), 59 m	**	**	FSL	103.0	2.5	22.8	1.86
**	0072-S6	13/06/2025	Lot 1313	291938, 5809849 (Zone 55H), 59 m	**	**	FSL	102.5	2.5	23.0	1.85

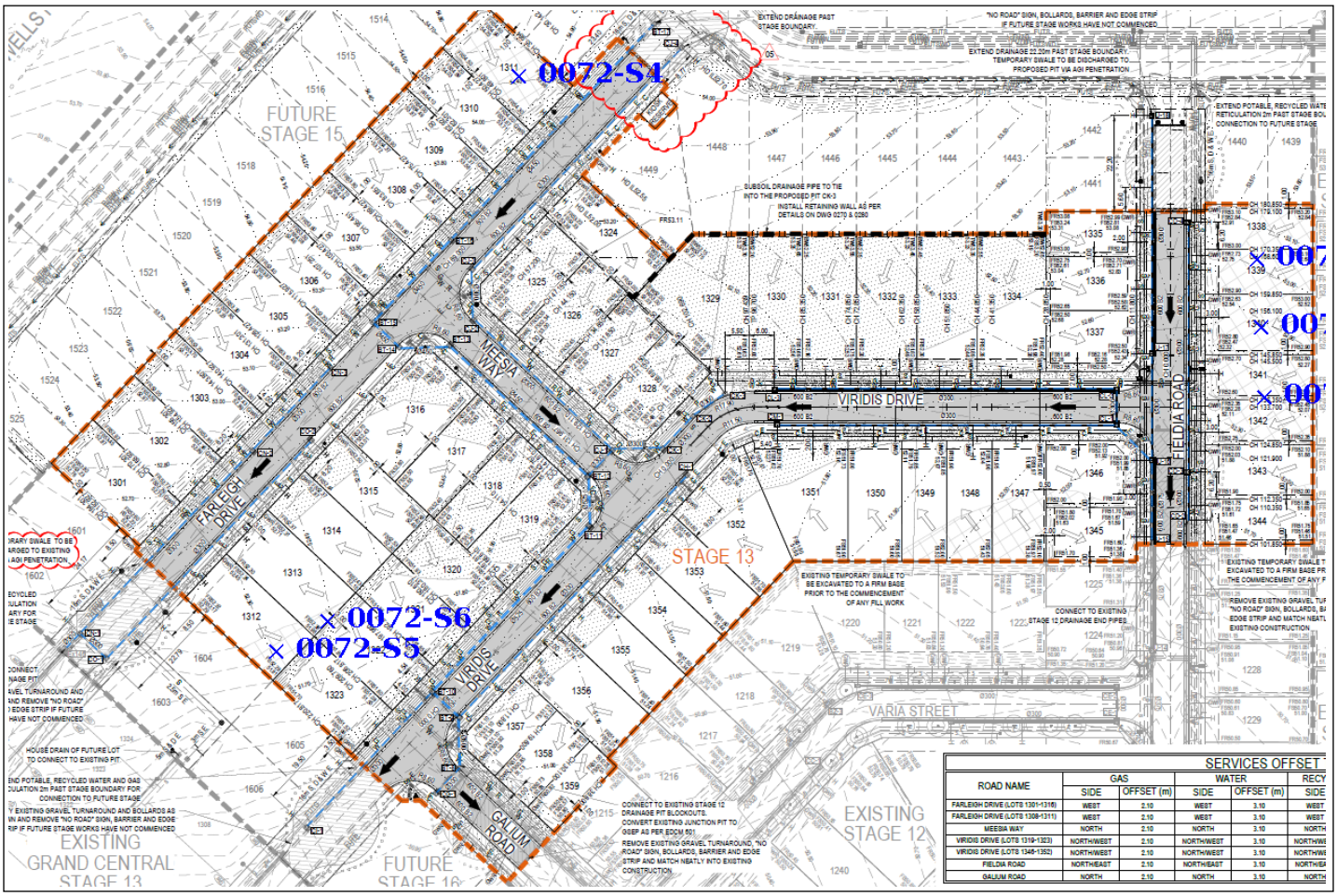
Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Sample Locations Plan

x - approximate test location



APPENDIX B

Field Density Test Reports

Material Test Report

Report Number: **CTG0072-3**
Issue Number: 1
Date Issued: 10/06/2025
Client: WINSLOW CONSTRUCTORS (CAMPBELLFIELD, VIC)
50 Barry Road, Campbellfield Victoria 3061
Project Number: CTG0072
Project Name: UNITY PARK - STAGE 13 (LEVEL 1)
Project Location: TARNEIT
Work Request: 163
Date Sampled: 29/05/2025 11:00
Dates Tested: 04/06/2025 - 10/06/2025
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction & +/- 3% Moisture Variation
Site Selection: Selected by Client
Location: Tarneit
Material: gravelly CLAY, med-high plasticity, red/brown
Material Source: On site cut to fill

GEOTECHNICAL
C & T Geotechnical (Melbourne) Pty Ltd
47A Assembly Drive Tullamarine VIC 3043
Phone: 0410 530 191
Email: Tim@ctgeotech.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

NATA
WORLD RECOGNISED ACCREDITATION

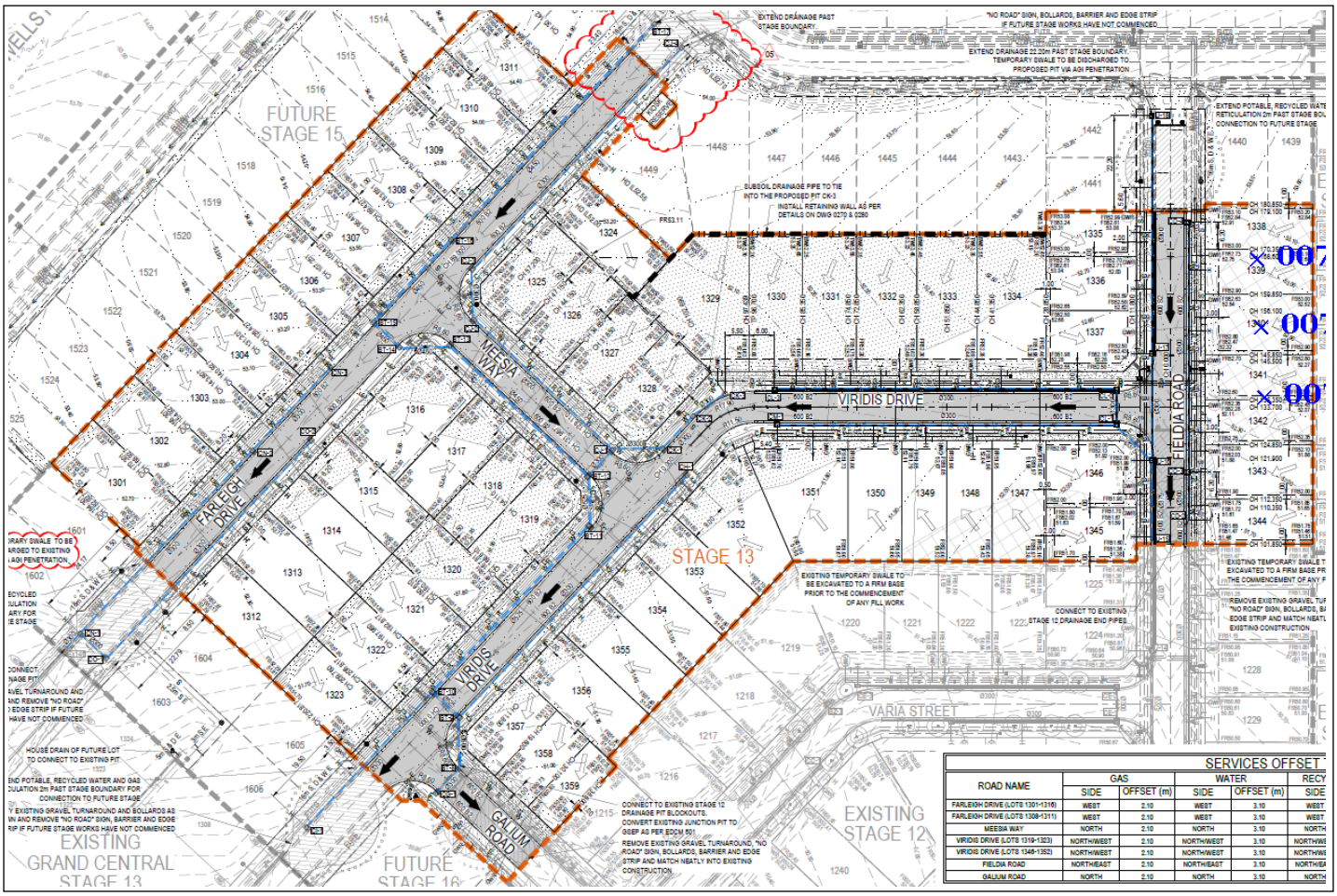
Approved Signatory: Tim Senserrick
Managing Director
NATA Accredited Laboratory Number: 21552

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	0072-S1	0072-S2	0072-S3
Date Tested	05/06/2025	05/06/2025	05/06/2025
Time Tested	11:00	14:40	14:50
Test Request #/Location	Lot 1340	Lot 1338/1339	Lot 1341/1342
Easting	292078	292085	292092
Northing	5810051	5810040	5810032
Layer / Reduced Level	1	FSL	FSL
Thickness of Layer (mm)	200	200	200
Soil Description	gravelly CLAY, med-high plast, red/brown	gravelly CLAY, med-high plast, red/brown	gravelly CLAY, med-high plast, red/brown
Test Depth (mm)	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Field Wet Density (FWD) t/m^3	1.87	1.86	1.87
Field Moisture Content %	30.7	28.9	29.6
Field Dry Density (FDD) t/m^3	1.43	1.45	1.44
Peak Converted Wet Density t/m^3	1.88	1.86	1.87
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Moisture Variation (Wv) %	-1.0	0.0	-1.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**99.5**	**100.0**	**100.0**
Compaction Method	**Standard**	**Standard**	**Standard**
Remarks	**	**	**

Moisture Variation Note:
Positive values = test is dry of OMC
Negative values = test is wet of OMC

Sample Locations Plan

x - approximate test location



Material Test Report

Report Number: **CTG0072-4**
Issue Number: 1
Date Issued: 15/06/2025
Client: WINSLOW CONSTRUCTORS (CAMPBELLFIELD, VIC)
50 Barry Road, Campbellfield Victoria 3061
Project Number: CTG0072
Project Name: UNITY PARK - STAGE 13 (LEVEL 1)
Project Location: TARNEIT
Work Request: 195
Date Sampled: 12/06/2025 14:00
Dates Tested: 12/06/2025 - 13/06/2025
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction & +/- 3% Moisture Variation
Site Selection: Selected by Client
Location: Tarneit
Material: gravelly CLAY, med-high plasticity, brown
Material Source: On site cut to fill

GEOTECHNICAL
C & T Geotechnical (Melbourne) Pty Ltd
47A Assembly Drive Tullamarine VIC 3043
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NATA
WORLD RECOGNISED ACCREDITATION

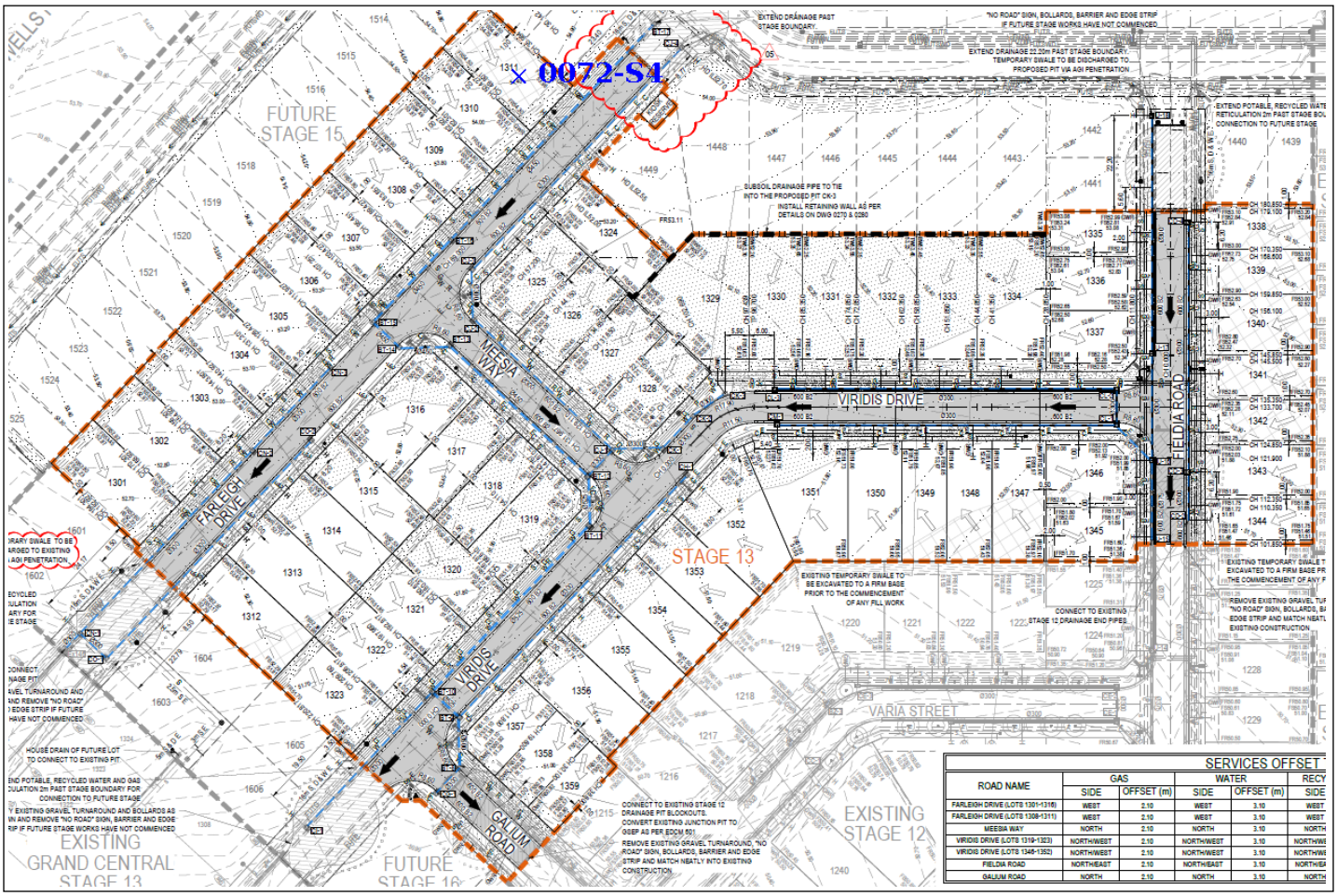
Approved Signatory: Tim Senserrick
Managing Director
NATA Accredited Laboratory Number: 21552

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	0072-S4		
Date Tested	12/06/2025		
Time Tested	14:00		
Test Request #/Location	Lot 1311		
Easting	291912		
Northing	5809983		
Layer / Reduced Level	FSL		
Thickness of Layer (mm)	200		
Soil Description	gravelly CLAY, med-high plast, brown		
Test Depth (mm)	175		
Sieve used to determine oversize (mm)	19.0		
Percentage of Wet Oversize (%)	0		
Field Wet Density (FWD) t/m^3	1.86		
Field Moisture Content %	26.6		
Field Dry Density (FDD) t/m^3	1.47		
Peak Converted Wet Density t/m^3	1.83		
Adjusted Peak Converted Wet Density t/m^3	**		
Moisture Variation (Wv) %	0.0		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	**101.5**		
Compaction Method	**Standard**		
Remarks	**		

Moisture Variation Note:
Positive values = test is dry of OMC
Negative values = test is wet of OMC

Sample Locations Plan

x - approximate test location



SERVICES OFFSET

ROAD NAME	GAS		WATER		RECY
	SIDE	OFFSET (m)	SIDE	OFFSET (m)	SIDE
FARLEIGH DRIVE (LOTS 1301-1318)	WEST	2.10	WEST	3.10	WEST
FARLEIGH DRIVE (LOTS 1308-1311)	WEST	2.10	WEST	3.10	WEST
MEESIA WAY	NORTH	2.10	NORTH	3.10	NORTH
VIRIDIS DRIVE (LOTS 1319-1323)	NORTHWEST	2.10	NORTHWEST	3.10	NORTHW
VIRIDIS DRIVE (LOTS 1348-1352)	NORTHWEST	2.10	NORTHWEST	3.10	NORTHW
FIELDIA ROAD	NORTHEAST	2.10	NORTHEAST	3.10	NORTHEA
GALIUM ROAD	NORTH	2.10	NORTH	3.10	NORTH

Material Test Report

Report Number: **CTG0072-5**
Issue Number: 1
Date Issued: 18/06/2025
Client: WINSLOW CONSTRUCTORS (CAMPBELLFIELD, VIC)
50 Barry Road, Campbellfield Victoria 3061
Project Number: CTG0072
Project Name: UNITY PARK - STAGE 13 (LEVEL 1)
Project Location: TARNEIT
Work Request: 199
Date Sampled: 13/06/2025 08:00
Dates Tested: 13/06/2025 - 17/06/2025
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% Standard Compaction & +/- 3% Moisture Variation
Site Selection: Selected by Client
Location: Tarneit
Material: gravelly CLAY, med-high plasticity, brown
Material Source: On site cut to fill

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WORLD RECOGNISED ACCREDITATION

Approved Signatory: Tim Senserrick
Managing Director
NATA Accredited Laboratory Number: 21552

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	0072-S5	0072-S6	
Date Tested	13/06/2025	13/06/2025	
Time Tested	12:00	12:10	
Test Request #/Location	Lot 1312	Lot 1313	
Easting	291937, 5809840 (Zone 55H), 59 m	291938, 5809849 (Zone 55H), 59 m	
Northing	**	**	
Layer / Reduced Level	FSL	FSL	
Thickness of Layer (mm)	200	200	
Soil Description	gravelly CLAY, med-high plast, brown	gravelly CLAY, med-high plast, brown	
Test Depth (mm)	175	175	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Field Wet Density (FWD) t/m^3	1.86	1.85	
Field Moisture Content %	22.8	23.0	
Field Dry Density (FDD) t/m^3	1.51	1.50	
Peak Converted Wet Density t/m^3	1.80	1.80	
Adjusted Peak Converted Wet Density t/m^3	**	**	
Moisture Variation (Wv) %	2.5	2.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	**103.0**	**102.5**	
Compaction Method	**Standard**	**Standard**	
Remarks	**	**	

Moisture Variation Note:
Positive values = test is dry of OMC
Negative values = test is wet of OMC

Sample Locations Plan

x - approximate test location