

Kerani Heights Stage 4

GITA Inspection Verification Report

Prepared For:	Ginsan Constructions
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Report Released By	C Caulfield
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Title	Project Manager
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Signature



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1 Introduction

Terra Firma Laboratories was engaged by Ginsan Constructions as the Geotechnical Inspection and Testing Authority (GITA) to provide Level 1 supervision and testing works on the earthworks component for Kerani Heights Stage 4. This work was conducted over the period of 17/09/2021 to 12/10/2021.

This report presents that the allotment earthworks was carried out in accordance with AS3798-2007 *Guidelines for Earthworks for Commercial and Residential Development* and in compliance with the compaction control specifications established by the contractor.

2 Scope of Work

2.1 Area of Work

The areas of work included lots 401 through to 407 and 414 through to 420, bounded by streets English Road, Crown Drive and Story Street. The site will be a Residential development.

The area on which fill was placed is shown on site plan (Appendix 1: *Test Location Plan*) based on drawings prepared by Spiire (Drawing Reference: 305873CR200) and provided by Ginsan Constructions.

The supervision work by the GITA involved both inspection of sub grade preparation work and full time inspection and testing of fill placement.

2.2 Specification

The technical specification (Reference from Drawings) for compaction control requirements was provided by Ginsan Constructions and established that:

Test Rolling is required for all layers of structural fill and materials within 150mm of permanent subgrade level so as to withstand test rolling without visible deformation or springing. Corrective action is required where unstable areas exceed 20% of the area being considered by test rolling.

Section 5.2 of AS3798-2007 (Section 5.2) establishes a specification requirement for a minimum density ratio of not less than 95% noting that soils containing more than 20% of particles coarser than 37.5mm cannot be tested for relative compaction using the procedures of AS1289 5.1.1 and AS1289 5.2.1.

In accordance with Table 8.1 (AS3798), for large scale operations, (greater than 1500m²), the minimum testing frequency is 1 test per layer per material type per 2500m² or 1 test per 500m³ distributed reasonable evenly throughout full depth and area or 3 tests per lot. AS3798 defines a lot as “an area of work that is essentially homogenous in relation to material type and moisture condition, rolling response and compaction technique, and which has been used for the assessment of the relative compaction of an area of work”. All three of these test frequencies must be achieved and this is typically confirmed to have been achieved when 3 tests per visit (day) have been completed.

2.3 Limitations

Terra Firma Laboratories cannot verify any works completed by others outside of the time period specified in the introduction. Uncontrolled works may include, but are not limited to trenching for services, cut and fill works for slab preparation or subsequent removal of vegetation and back fill of holes unless specified in section 2.1 of this report.

Terra Firma Laboratories cannot verify that the material used as a filling medium is free from chemical or other contamination. The scope and the period of Terra Firma Laboratories as described in the introduction are subject to restrictions and limitations. Terra Firma Laboratories did not perform a complete assessment of all possible conditions and circumstances that may exist at the site. If a service is not expressly indicated, do not assume it has been provided. If a matter is not addressed, do not assume that any determination has been made by Terra Firma Laboratories.

Verification of finished surface level to design levels is outside of the scope of the GITA report.

Any drawings or marked locations presented in this report should be considered only as pictorial evidence of our work. Therefore, unless otherwise stated, any dimensions should not be used for accurate calculations or dimensioning.

Where data has been supplied by the client or a third party, it is assumed that the information is correct unless otherwise stated. No responsibility is accepted by Terra Firma Laboratories for incomplete or inaccurate data supplied by others.

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3 Construction Method

3.1 Subgrade Preparation

At the time of subgrade inspection the following was observed:

- Subgrade preparation involved stripping the site of topsoil, vegetation and organic matter to a depth of approximately 200mm below existing levels.
- The site was cleared of all trees and stumps to the extent necessary for the fill placement to proceed
- The roots of all trees and any debris was removed from site prior to any fill placement

The sub-grade area was then proof-rolled to confirm it was capable of withstanding test rolling without visible deformation or springing and any areas observed to be soft or otherwise unsuitable were rectified. The sub-grade was watered and scarified prior to fill placement to aid layer bonding.

3.2 Fill Placement

The contractor was observed to have suitable construction equipment and plant available on-site during the construction period for use in the fill placement.

All fill was placed in layers of thicknesses not exceeding 300mm. At the completion of a placed layer, compaction testing was performed to confirm appropriate compaction had been achieved and supported the observations made. It should be noted that the compaction tests are representative samples of the fill placed and support the visual assessment of the works completed. Each house lot does not necessarily require a compaction test to have been conducted within the house allotment but may have been verified by testing conducted within up to a 2500m² area of the house lot.

Final fill placement levels were verified against design level by others. For the purposes of this report, it was observed that finished levels were in accordance with levels marked on site by survey markers.

The final 300mm of material placed across the site was placed as a topsoil layer or growing medium and should be considered as non-structural, as it was placed in an uncontrolled manner, as allowed by specifications and placement of the final 300mm of material was not observed by the GITA.

4 Construction Verification

Compaction Verification testing is summarized in a detailed test register with test certificates attached provided in Appendix 2: *Compaction Test Register and Test Certificates*. A test location

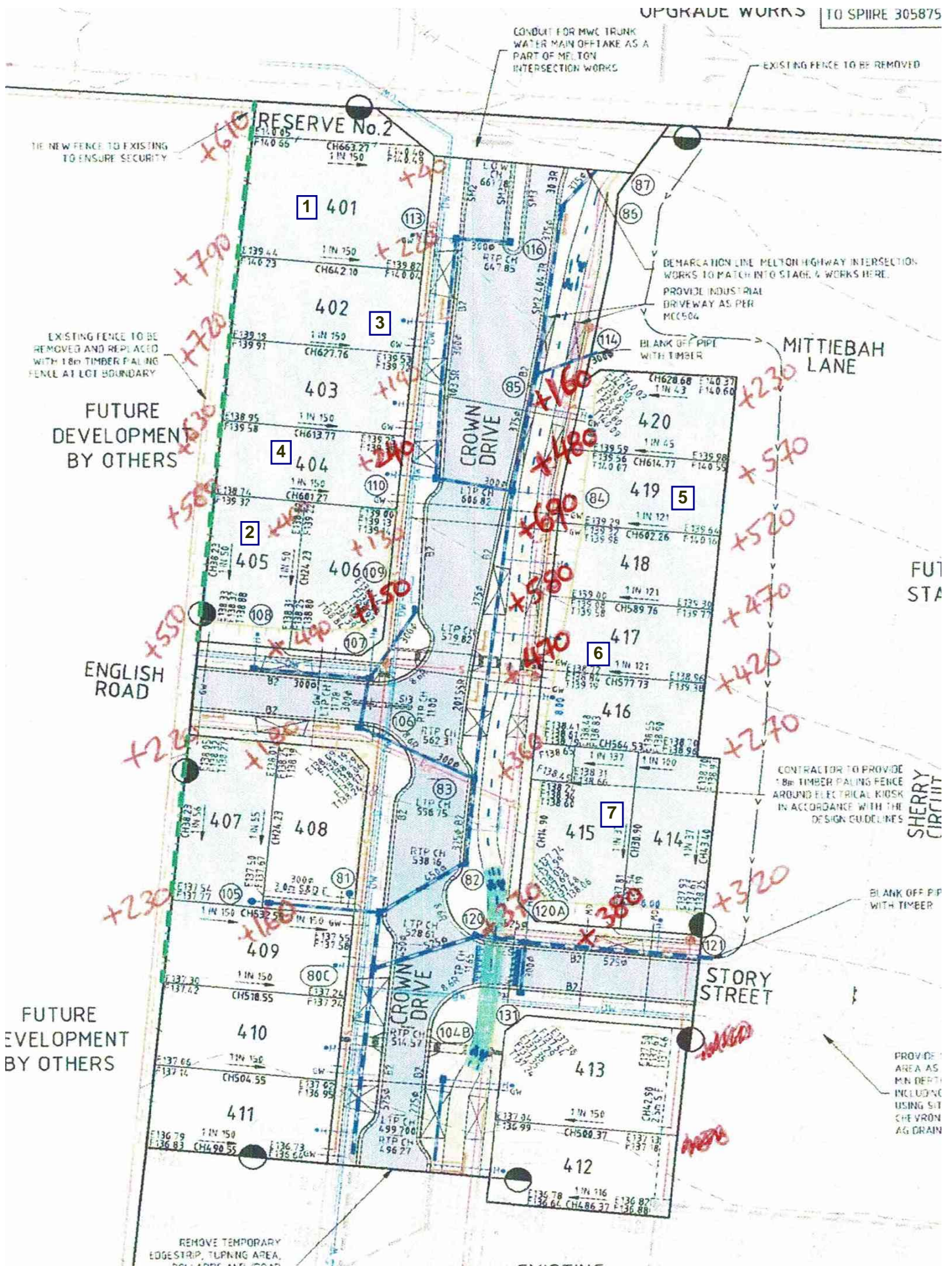
plan (D21627D1, Appendix 1) providing a schematic of test locations across the extent of scope of works for every placed layer of fill is also documented.

A total of 7 density tests (Hilf method in accordance with 1289 5.7.1) were undertaken with 0 failed results. The results summarised in the compaction test register (Appendix 2) confirm that for every layer of fill placed in a specific work area, satisfactory testing was completed.

5 Statement of Compliance

The intention of this report is to provide a description of the earthworks construction for Stage 4 at Kerani Heights. For completed fill areas of greater than 300mm, and for works completed between 17/09/2021 and 12/10/2021, earthworks construction activities were conducted under the full time supervision of the Geotechnical Inspection and Testing Authority. Inspections and testing of the fill areas at this site indicate that both sub grade preparation and fill placement have been conducted in accordance with the specification. The earthworks construction for Stage 4 of Kerani Heights was observed to be constructed in compliance with the requirements of the Technical Specification.

Appendix 1: Test Location Plan



Appendix 2: Compaction Test Register and Test Certificates



Compaction Test Register

Client: Ginsan Constructions
Project: Kerani Heights Stage 4

Project No: D21627
Specification: 95%

Date:	Test No:	Layer:	Retest of:	Density:	Pass/Fail:	Lot No:	Report No:
17/09/2021	1	Layer 1		101.5%	Pass	Lot 401	D21627-1
17/09/2021	2	Layer 1		101.0%	Pass	Lot 405	D21627-1
17/09/2021	3	Layer 2		102.0%	Pass	Lot 402	D21627-1
17/09/2021	4	Layer 2		100.5%	Pass	Lot 404	D21627-1
12/10/2021	5	Layer 1		103.0%	Pass	Lot 419	D21627-2
12/10/2021	6	Layer 2		103.0%	Pass	Lot 417	D21627-2
12/10/2021	7	Layer 1		103.0%	Pass	Lot 415	D21627-2

Material Test Report

Report Number: D21627-1
Issue Number: 1
Date Issued: 22/09/2021
Client: Ginsan Constructions
 1/79 Merola Way , Melbourne Vic 3000
Contact: Mario
Project Number: D21627
Project Name: Kerani heights stage 4 - Level One
Project Location: Plumpton
Work Request: 3763
Date Sampled: 17/09/2021
Dates Tested: 17/09/2021 - 22/09/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Kerani Heights Stage 4 - Level one
Material: Silty Clay
Material Source: On site



Deer Park Laboratory
 Factory 1 80-82 Rebecca Drive Ravenhall VIC 3023
 Phone: 0435 751 756
 Email: ehippola@terrafirmalabs.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Eranda Hippola
 Snr lab Tech

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	D21-3763A	D21-3763B	D21-3763C	D21-3763D
Test Number	1	2	3	4
Date Tested	17/09/2021	17/09/2021	17/09/2021	17/09/2021
Time Tested	16:05	16:05	16:05	16:05
Test Request #/Location	Lot 401	Lot 405	Lot 402	Lot 404
Layer / Reduced Level	Layer 1	Layer 1	Layer 2	Layer 2
Thickness of Layer (mm)	300	300	300	300
Soil Description	Clay	Clay	Clay	Clay
Test Depth (mm)	275	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0	0
Field Wet Density (FWD) t/m ³	1.96	1.94	1.92	1.93
Field Moisture Content %	12.1	20.9	23.6	25.0
Field Dry Density (FDD) t/m ³	1.75	1.60	1.55	1.54
Peak Converted Wet Density t/m ³	1.94	1.92	1.88	1.92
Adjusted Peak Converted Wet Density t/m ³	**	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	14.2	23.0	25.9	27.4
Adj. Field Moisture Content % (AS1289.5.4.1)	12.1	20.9	23.6	25.0
Moisture Ratio % (AS1289.5.4.1)	85.0	91.0	91.5	91.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**	**
Moisture Variation (Wv) %	2.0	2.0	2.0	2.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	101.5	101.0	102.0	100.5
Compaction Method	Standard	Standard	Standard	Standard
Report Remarks	**	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

Material Test Report

Report Number: D21627-2
Issue Number: 1
Date Issued: 14/10/2021
Client: Ginsan Constructions
 1/79 Merola Way , Melbourne Vic 3000
Contact: Mario
Project Number: D21627
Project Name: Kerani heights stage 4 - Level One
Project Location: Plumpton
Work Request: 3809
Date Sampled: 12/10/2021
Dates Tested: 12/10/2021 - 13/10/2021
Sampling Method: AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted
Specification: 95% STD
Location: Kerani heights stage 4 - Level One
Material: Silty Clay
Material Source: On Site



Deer Park Laboratory
 17 Walhalla Way Ravenhall VIC 3023
 Phone: 0435 751 756
 Email: ehippola@terrafirmalabs.com.au



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Approved Signatory: Eranda Hippola
 Laboratory Manager

NATA Accredited Laboratory Number: 15357

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	D21-3809A	D21-3809B	D21-3809C
Test Number	5	6	7
Date Tested	12/10/2021	12/10/2021	12/10/2021
Time Tested	15:51	15:52	15:52
Test Request #/Location	Lot 419	Lot 417	Lot 415
Layer / Reduced Level	Layer 1	Layer 2	Layer 1
Thickness of Layer (mm)	300	300	300
Soil Description	Silty Clay	Silty Clay	Silty Clay
Test Depth (mm)	275	275	275
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0
Percentage of Dry Oversize (%) (AS1289.5.4.1)	0	0	0
Field Wet Density (FWD) t/m ³	1.83	1.82	1.84
Field Moisture Content %	16.2	16.1	22.4
Field Dry Density (FDD) t/m ³	1.57	1.56	1.50
Peak Converted Wet Density t/m ³	1.77	1.77	1.78
Adjusted Peak Converted Wet Density t/m ³	**	**	**
Adj. Optimum Moisture Content % (AS1289.5.4.1)	18.3	18.5	25.0
Adj. Field Moisture Content % (AS1289.5.4.1)	16.2	16.1	22.4
Moisture Ratio % (AS1289.5.4.1)	89.0	87.0	89.5
Adjusted Moisture Ratio % (AS1289.5.4.1)	**	**	**
Moisture Variation (Wv) %	2.0	2.5	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	103.0	103.0	103.0
Compaction Method	Standard	Standard	Standard
Report Remarks	**	**	**

Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC