

Elpis Estate Stage 17

GITA Inspection Verification Report

Prepared For: Lojac Civil Pty Ltd

Report Number 10447A V1

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Signature



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1 Introduction

Terra Firma Laboratories was engaged by *Lojac Civil Pty Ltd* as the Geotechnical Inspection and Testing Authority (GITA) to provide Level 1 supervision and testing works on the earthworks component for Elpis Estate Stage 17. This work was conducted on the 1/8/2018.

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 1703, 1704, 1705 also 1709, 1710 and 1711. The site will be a residential estate.

The area on which fill was placed is shown on site plan (Appendix 1: *Test Location Plan*) based on drawings prepared by Reeds Consulting, drawing reference 22562E/18, and provided by *Lojac Civil Pty Ltd*.

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 for compaction control requirements was provided by *Lojac Civil Pty Ltd* 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.

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

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 fill 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 fill was not observed by the GITA.

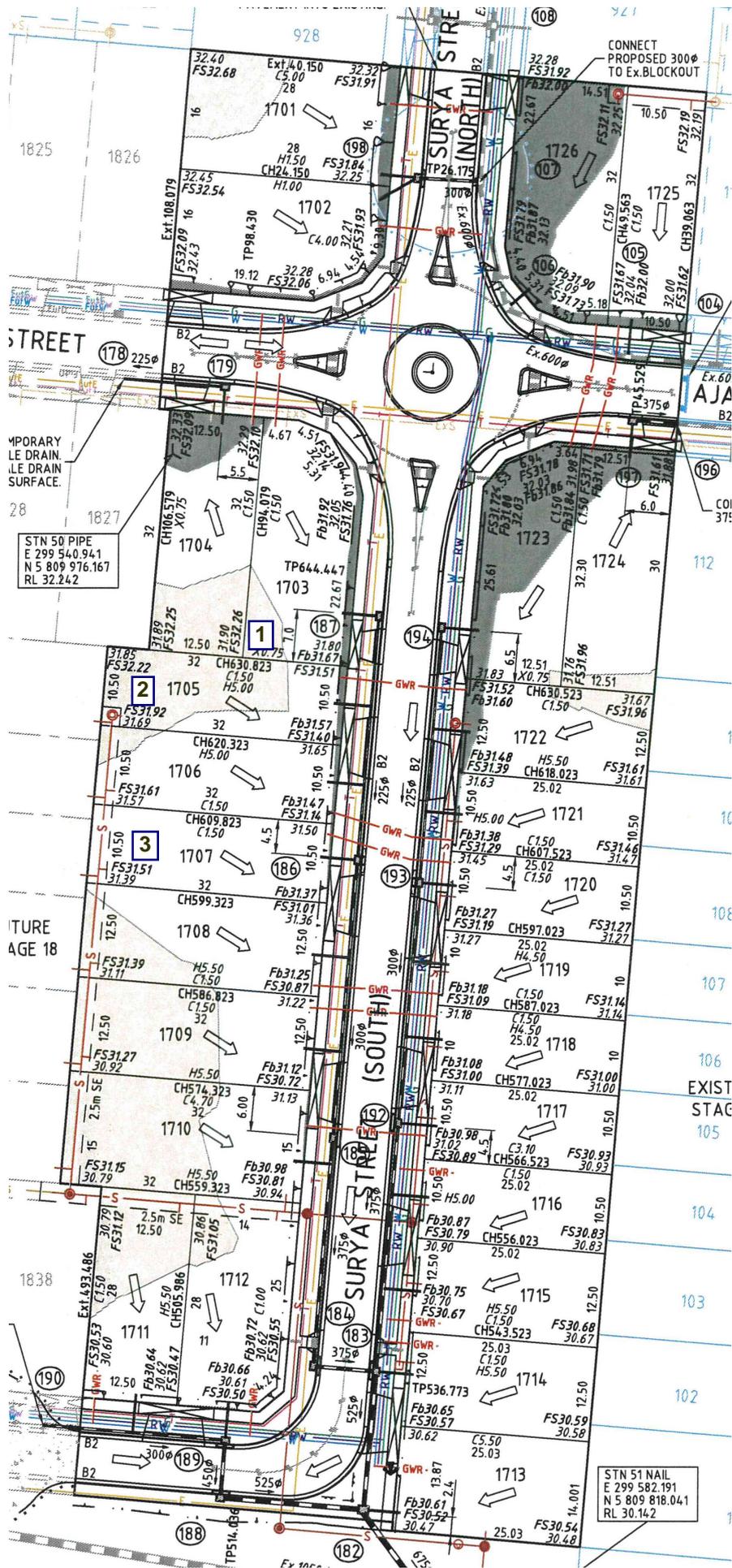
4 Construction Verification

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 (10447D1, 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 3 density tests (Hilf method in accordance with 1289 5.7.1) were undertaken. The contractor was notified of any failed tests and the failed areas were ripped, watered, compacted and then re-tested to confirm compliance with the specification. 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 17 at Elpis Estate Stage 17. For completed fill areas of greater than 300mm, and for works completed on the 1/8/2018, 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 17 of Elpis Estate was observed to be constructed in compliance with the requirements of the Technical Specification.



Test Location Plan
not to scale

Client: Lojac Civil Pty Ltd

Project: Elpis Estate Stage 17

Reference: 10447 D1



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TEST LOCATION PLAN 2024



Compaction Test Register

Client: Lojac Civil Pty Ltd **Project No:** 10447
Project: Elpis Estate Stage 17 **Specification:** 95%

Date:	Test No:	Layer:	Retest of:	Density:	Pass/Fail:	Lot No:	Report No:
1/08/2018	1	L1		99.5	Pass	1703	10447-1
1/08/2018	2	L1		102	Pass	1705	10447-1
1/08/2018	3	L1		102.5	Pass	1709	10447-1



COMPACTION ASSESSMENT

BY NUCLEAR GAUGE METHOD

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report No 10447-1
 date of issue 12-Sep-2018

Client Lojac Civil Pty Ltd
 Client address 35/148 Chesterville Road, Moorabbin,
 Project Elpis Estate Stage 17 (Level One)
 Location Truganina

Location Lot Fill
 Layer thickness (mm) 300

tested by KP
 time All Day
 date 01-Aug-2018
 checked by RS

Field density test procedure AS1289.2.1.1 and 5.8.1

Test No		1	2	3		
location	Lot No	1703	1705	1709		
Sampling procedures AS1289.1.1,1.2.1-Clause 6.4(b)						
depth from F.S.L.	m	Layer 1	Layer 1	Layer 1		
measurement depth	mm	275	275	275		
field wet density	t/m ³	1.89	1.82	1.83		
field dry density	t/m ³	1.73	1.66	1.67		
field moisture content	%	9.3	9.4	9.5		

laboratory compaction procedure AS1289 5.7.1

compactive effort		standard	standard	standard		
oversize material retained on AS sieve	mm	19.0	19.0	19.0		
percent of oversize material	wet	0	0	0		
peak converted wet density	t/m ³	1.9	1.78	1.78		
adjusted peak converted wet density	t/m ³	-	-	-		

moisture variation from OMC (-dry,+wet)%		-2.0	-1.5	-1.5		
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Moisture ratio	%	84.0	87.0	88.0		
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Hilf density ratio (R_{HD})	%	99.5	102.0	102.5		
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material description

Clay



The results of the tests, calibrations and/or measurements included in this document are traceable to Australian national standards requirements.
 Accredited for compliance with ISO/IEC 17025

Approved Signature
 R Schembri