

**ABN 31 105 704 078**

13 Brock Street, Thomastown

Victoria 3074

(P) +61 3 9464 4617

(F) +61 3 9464 4618



# **LEVEL 1 INSPECTION & TESTING FIVE FARMS ESTATE - STAGE 3, CLYDE**

Prepared for Frasers Property Australia

**Report Reference: GS5860.3 AA**

**Date: 11 May 2022**

**ABN 31 105 704 078**

13 Brock Street, Thomastown

Victoria 3074

(P) +61 3 9464 4617

(F) +61 3 9464 4618



## PROJECT DETAILS

Project Reference	GS5860.3	Rev	AA
Project Title	Five Farms Estate - Stage 3		
Project Location	Clyde	State	VIC
Date	11 May 2022		

## CLIENT DETAILS

Prepared For (Client)	Frasers Property Australia
Client Address	Level 9, 484 St Kilda Road, Melbourne VIC, 3004

## DISTRIBUTION

Original Held By	Ground Science Pty Ltd
One (1) Electronic Copy	Frasers Property Australia

This document presents the results of the Level 1 Inspection and Testing performed by Ground Science for the aforementioned project, as the nominated project Geotechnical Inspection & Testing Authority (GITA). This report is detailed for the sole use of the intended recipient(s). Should you have any questions related to this report please do not hesitate to contact the undersigned.

### AUTHOR:



**Anton Manoj**  
Geotechnical Engineer

### REVIEWED:



**Gee Singh, MIEAust (NER)**  
Senior Geotechnical Engineer

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## 1. INTRODUCTION

This report presents the results of the inspection activities, compaction control, and laboratory testing services performed by Ground Science Pty Ltd for the development of Stage 3 at the Five Farms Estate residential development in Clyde, Victoria (the site).

Ground Science was engaged to provide Level 1 Inspection and Testing Services for the construction of building platforms to support proposed residential allotments, as part of the bulk earthworks phase of the project. Authorisation to proceed was provided by Frasers Property Australia (the 'Client').

Level 1 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'. The Level 1 Inspection and Testing services described in this report were undertaken by experienced geotechnicians from Ground Science.

## 2. SCOPE OF WORK

### 2.1 AREAS OF WORK

The areas requiring Level 1 Inspection & Testing are shown in Appendix A, which is based on plans prepared by Beveridge Williams (Project Ref. 1702037, dated 02/07/2021). This report details the Level 1 earthwork process performed on site which commenced on 14<sup>th</sup> September 2021 and was completed on 28<sup>th</sup> February 2022, which included 16 full days of filling operations.

### 2.2 PLACEMENT METHODOLOGY

A technical specification for the works was detailed in the geotechnical investigation report prepared by Ground Science in April 2021 (GS4259.1 AC). The placement of controlled fill on the above-mentioned areas was carried out in accordance with Level 1 fill procedures as detailed in AS3798 (2007) 'Guidelines on Earthworks for Commercial and Residential Developments'. The following fill placement guideline was adopted for the works:

- Prior to filling, the area was stripped of all topsoil, existing fill and sandy silt/silty sand material, vegetation organics, and similar to expose the natural soil subgrade;
- Suitable fill material, sourced by the contractor and approved by Ground Science, was placed in loose horizontal layers not exceeding 250mm in thickness and compacted;
- The controlled fill material was compacted to achieve a target Dry Density Ratio of at least 95% Standard Compaction (AS 1289: 5.1.1, 5.4.1 or 5.7.1);
- The fill was moisture conditioned to within 85% – 115% of the standard optimum moisture content;
- The fill material was sorted and mixed to remove particles greater than 20% by volume, particles coarser than 37.5mm, and no particle over 200mm in any dimension;
- The frequency of field density testing adopted for the project was generally in line with the requirements for large scale developments (Type 1), as detailed in AS3798 (2007), which nominates a frequency of not less than:
  - 1 test per layer or 200mm per 2500m<sup>2</sup>;
  - 1 test per 500m<sup>3</sup> distributed reasonably evenly throughout the full depth and area; or
  - 3 tests per site visit; whichever requires the most tests.

### 3. INSPECTION AND TESTING

#### 3.1 SUBGRADE PREPARATION

Subgrade preparation involves the site stripping of all surface vegetation, topsoil, and sandy silt/silty sand soils to expose suitable natural clay subgrade. Exposed subgrade typically comprised of silty CLAY, medium to high plasticity, brown, moisture varies from dry to wet of plastic limit. The subgrade was then proof rolled with no soft spots observed. In some zones, the upper silty sand residual soil layer was ripped/blended with the underlying silty clay, and compacted, prior to fill placement.

The above stripped subgrade was visually assessed using tactile methods described in AS1726 (2017) and approved by the GITA representative throughout the project. Typically, the exposed subgrade soils were found to be in a stiff or better consistency and approved for subsequent fill placement. The subgrade soils were found to be in naturally occurring residual 'Red Buff Sandstone'. The exposed subgrade soils were observed to be dry were moisture conditioned and were ripped prior to the placement of subsequent fill layers.

#### 3.2 CONSTRUCTION MATERIALS

The fill material used in this project was nominated by the on-site contractor. The nominated fill used for the project was sourced from onsite stockpiles and comprise:

- Silty CLAY/CLAY/sandy CLAY, medium to high plasticity, brown, trace fine to coarse grained gravel;
- Re-worked soils (site won clay soils mixed with stripped silty/sand soils).

The material was carted to the site in dump trucks with trailers and stockpiled adjacent to the fill zones. Ground Science assessed the fill source to identify the following material characteristics:

- Material suitability as an engineering property;
- Cohesiveness;
- Free of building debris and vegetative matter;
- Free of oversize rock particles.

Visual assessments on the above-mentioned properties were conducted on-site and the fill material used was considered acceptable for use on this project. A majority of the imported fill sources were found to be close to or on the dry side of the optimum moisture content.

Ground Science did not perform any chemical or environmental analysis of the above fill sources. Gravels and sand inclusions were observed occasionally in the fill material. Fill materials that were found to be dry were moisture conditioned using a water cart prior to and during placement. All fill materials hauled to the site were however generally considered suitable for use as engineered fill.

#### 3.3 FILL CONSTRUCTION

The contractor had the following plant available on site during the construction period for use in the fill placement;

- Padfoot roller;
- 815 compactor;
- Water cart;
- Dozer;
- Grader;
- Excavator;

- Dump Trucks & Trailers.

During fill placement, the weather conditions were generally fine to overcast with occasional wet/windy conditions.

The filling process was generally consistent throughout the project and involved the approved fill sources stockpiled adjacent to the fill placement zones. The material was spread using the 825 compactor, excavator and a dozer into thin loose layers and moisture conditioned. Each layer was compacted using the 825 Compactor or a pad foot roller applying a minimum of 4 passes, per layer observed. The thin layers of fill were compacted to form a composite layer of up to a maximum of 150mm - 250mm thick, prior to undertaking the field density testing. Generally, up to 5 layers were placed in the deepest sections and compacted. The compacted fill was moisture conditioned prior to the application of subsequent layers of fill where required. This process was adopted for the fill placement works.

Throughout the filling process and/or at the completion of the day's production, compaction testing was performed to assess the achieved density ratio of each layer. Appendix A provides a guide to the fill placement and is limited to the areas described in this report. It is considered that a 100mm to 150mm thick layer of topsoil would be spread at the completion of all works, which does not form part of the Level 1 process. Any fill placed as part of newly constructed drainage, sewer works, or similar does not form part of this Level 1 report.

### 3.4 RESULTS OF COMPACTION CONTROL TESTING

Level 1 Inspection and Testing was undertaken by experienced technicians from Ground Science who attended the site for the duration of the construction phase and nominated the location of the in-situ density tests. Testing comprised a total of 51 in-situ density tests using a nuclear moisture-density gauge in accordance with Australian Standard (AS1289 5.8.1) and 51 "Rapid HILF" Compaction tests (AS1289 5.7.1). The target density ratio of 95% Standard Compaction was expected. All laboratory testing was undertaken in our NATA accredited Thomastown laboratory.

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. It should be noted that the tests are a representation of the fill placed and support the visual assessment of the works completed.

All tests were noted to achieve the required target density ratio of 95% Standard Compaction and the moisture condition of the compacted fill material was noted to be generally within the recommended moisture ratio of 85% - 115% of OMC.

### 3.5 FINAL SURFACE LEVELS

Observations were made by a Ground Science staff member that filling had been completely up to the nominated finished levels as per confirmation provided by the contractor's site foreman. The observed final levels are the constructed finished surface levels of the controlled fill. It should be noted that the overall fill depths are estimated using onsite visual tactile methods and may not be a true representation of fill depths given that conditions on site may change over time. True fill depths should be obtained from the contractor's survey data.

## 4. COMPLIANCE

Ground Science Staff have undertaken Level 1 Inspection and Testing Services for the construction of the controlled fill in the areas designated in Appendix A. Ground Science field staff have also observed that the prepared subgrade provided an adequate base for the subsequent placement of controlled fill.

Based on observations made by the Ground Science staff and the results of density tests, we consider that the controlled fill placed has been constructed in accordance with the guidelines provided by AS3798 (2007) and AS2870 (2011).

It should be noted that the final fill layers may be subjected to adverse weather conditions resulting in either surface softening or drying and cracking over time; regardless of the compactive efforts and moisture conditioning applied during the works. The integrity of the top 200mm to 300mm of the fill will deteriorate with time and should be taken into account by the foundation engineer prior to the construction of dwellings or buildings. The levels nominated in this report are a guide to the amounts of fill placed and do not necessarily reflect an accurate survey of the fill levels.

## 5. UNDERSTANDING LEVEL 1 INSPECTION & TESTING

The purpose of performing Level 1 Inspection and Testing is to ensure compliance of the fill with the specification. The engagement of a Geotechnical Inspection Testing Authority (GITA) allows the contractor to perform their role in the construction of the filling operation while the GITA monitors the quality control process of the fill placement. The visual observations of thorough processes and work practices by the contractor allow the GITA to approve the subsequent placement of fill without having to wait for the completion of testing and the extended time it takes to get a test result back. The GITA will, however, carry out random spot checks of the filling operations throughout the day's production as confirmation that the placement procedures and the fill moisture content are appropriate. At the end of a day's production, the GITA will sign off the completed works as satisfactory. Any failed tests will result in that particular area of operation requiring rectification in the following mornings' activities. This may be as simple as extra rolling with a compaction plant if moisture conditioning is suitable. Sometimes these areas may be retested if the GITA feels it is necessary.

While AS3798 (2007) is a guideline on the minimum requirements of filling on commercial and residential developments, some projects require a more detailed project specification to deal with site specific issues. While moisture conditioning of fill sources aids in the ease with which compaction is achieved, it is not necessarily a physical characteristic that determines if the placed fill is acceptable. In some situations, the moisture requirement is an extremely important function of the final constructed product. In these situations, a specific project specification should apply to the project as detailed by the designing geotechnical engineer. These are typical of clay liners for wetlands, dams, landfill liners, and caps, and an array of other engineering situations. Creating a consolidated platform of which is similar to equivalent surrounding natural conditions is the primary aim of level one processes, preventing the occurrence of differential ground movements to footing structures.

Level 1 Inspection & Testing requires full-time inspection and testing of the fill placement undertaken on a site. Ground Science (project GITA), is notified daily (or at the completion of each day's work) by the project foreman where subsequent days of fill placement under Level 1 are to occur. On projects that rely upon the importation of a fill source, there can be delays in the receipt of sufficient materials to warrant fill placement works which may result in periods of time where a GITA representative is not required on site. It is the contractor's responsibility to notify the GITA when works proceed and their attendance on site is required again. A GITA relies upon the integrity of the contractor to advise when site attendance is required and makes all reasonable visual attempts to assess if the works are the same as the previous days' attendance.



## 6. LIMITATIONS

This type of investigation (as per our commission) is not designed or capable of locating all soil conditions, (which can vary even over short distances). The advice given in this report is based on the assumption that the test results are representative of the overall soil conditions. However, it should be noted that actual conditions in some parts of the Site might differ from those found. If further sampling reveals soil conditions significantly different from those shown in our findings, Ground Science must be consulted. Maintenance and upkeep of finished fill placement must be regularly monitored as exposure to extended weather periods/other elements may cause surface drying which may lead to cracking. Conversely, excessive exposure to moisture may cause heaving/softening in the soils.

It is recognised that the passage of time affects the information and assessment provided in this document. Ground Science's assessment is based on information that existed at the time of the preparation of this document. It is understood that the services provided allowed Ground Science to form no more than an opinion of the actual site conditions observed during sampling and observations of the site visit and cannot be used to assess the effects of any subsequent changes in the quality of the site, or its surroundings, or any laws or regulations.

The scope and the period of Ground Science services are described in the proposal and are subject to restrictions and limitations. Ground Science did not perform a complete assessment of all possible conditions or 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 Ground Science in regards to it.

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 Ground Science for incomplete or inaccurate data supplied by others.

Any drawings or figures 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.

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## 7. 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 and Test Locations

# Project Summary Report



**Report Date:** 23/03/2022  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Specification:** 95% Standard Compaction  
**Test Methods:** AS 1289 5.7.1 STD & 5.8.1 & 2.1.1

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: chris@groundscience.com.au

Lot #	Sample #	Date Sampled	Location	Chainage (m)	Location Offset (m)	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	58603-S1	14/09/2021	From the SW corner of lot 307	10mE	12mN	**	1	99.0	0.0	14.3	2.07
**	58603-S2	15/09/2021	From the SW corner of lot 306	8mN	8mE	**	2	101.5	0.5	18.5	2.07
**	58603-S3	15/09/2021	From the SW corner of lot 305	10mN	15mE	**	2	99.5	0.5	6.9	2.06
**	58603-S4	15/09/2021	From the SW corner of lot 308	6mN	10mE	**	3	100.0	0.0	18.5	2.06
**	58603-S5	15/09/2021	From the SW corner of lot 307	8mN	11mE	**	3	99.5	0.5	13.5	2.10
**	58603-S6	16/09/2021	From the SW corner of lot 308	7mN	8mE	**	4	98.0	0.5	17.1	2.04
**	58603-S7	16/09/2021	From the SW corner of lot 306	8mN	10mE	**	4	101.5	0.5	26.1	2.06
**	58603-S8	12/10/2021	8 From NE corner of lot 304	21m SE	5m SW	**	1	99.5	-0.5	16.1	2.10
**	58603-S9	12/10/2021	9 From NW corner of Lot 303	12m NE	8m SE	**	1	99.5	-1.5	14.1	2.16
**	58603-S10	12/10/2021	10 From NW corner of lot 301	6m NE	14m SE	**	1	98.5	-2.0	18.3	2.12
**	58603-S11	12/10/2021	11 From NE corner of lot 304	8m SE	10m SW	**	2	98.5	-0.5	16.1	2.06
**	58603-S12	13/10/2021	From the NW corner of lot 302	4mE	12mS	**	2	100.0	0.5	15.8	2.08
**	58603-S13	13/10/2021	From the NW corner of lot 301	7mE	5mS	**	2	103.0	0.0	16.7	2.11
**	58603-S14	13/10/2021	From the NW corner of lot 304	2mE	10mS	**	3	107.5	1.0	17.5	2.12
**	58603-S15	13/10/2021	From the NW corner of lot 303	6mE	4mS	**	3	103.0	0.0	17.4	2.10
**	58603-S16	27/10/2021	From the NW corner of lot 304	5mN	10mS	**	4	101.0	0.5	29.3	2.07
**	58603-S17	27/10/2021	From the NW corner of lot 303	7mNE	5mSE	**	4	102.5	-0.5	18.0	2.11
**	58603-S18	28/10/2021	From the NW corner of lot 301	7mE	10mS	**	5	106.0	1.0	15.3	2.07
**	58603-S19	28/10/2021	From the NW corner of lot 302	5mE	4mS	**	5	107.0	1.5	14.4	2.15
**	58603-S20	13/12/2021	20 Lot 222	356986	5780601	**	1	97.5	2.5	11.5	2.07
**	58603-S21	13/12/2021	21 Lot 326	356966	5780585	**	1	95.5	3.0	16.5	1.96
**	58603-S22	13/12/2021	22 Lot 329	356942	5780562	**	1	96.5	0.0	15.1	1.99
**	58603-S23	14/12/2021	23 Lot 327	356960	5780578	**	2	98.5	2.0	14.5	2.07
**	58603-S24	14/12/2021	24 Lot 330	356922	5780554	**	2	96.0	3.0	19.1	1.94
**	58603-S25	15/12/2021	25 Lot 323	356986	5780548	**	2	100.5	-0.5	18.8	2.08
**	58603-S26	15/12/2021	26 Lot 320	356944	5780514	**	2	99.5	0.0	18.4	2.06
**	58603-S27	15/12/2021	27 Lot 315	356901	5780506	**	2	99.5	-0.5	18.1	2.07
**	58603-S28	15/12/2021	28 Lot 127	357021	5780532	**	1	99.0	0.5	18.7	2.05
**	58603-S29	16/12/2021	29 Lot 323	357001	5780536	**	1	97.0	-0.5	15.8	2.02
**	58603-S30	16/12/2021	30 Lot 320	356965	5780509	**	1	96.5	0.5	27.5	1.83
**	58603-S31	16/12/2021	31 Lot 302	356992	5780447	**	3	101.5	-0.5	17.6	2.11
**	58603-S32	16/12/2021	32 Lot 330	356916	5780554	**	3	101.0	0.0	17.1	2.10
**	58603-S33	16/12/2021	33 Lot 125	357520	5780125	**	3	95.0	-0.5	18.1	1.97
**	58603-S34	17/12/2021	34 Lot 322	356989	5780534	**	2	100.0	1.0	17.9	2.00
**	58603-S35	17/12/2021	35 Lot 315	356937	5780495	**	2	99.0	1.5	20.4	1.96
**	58603-S36	17/12/2021	36 Lot 310	356953	5780484	**	2	99.5	0.5	16.7	2.02
**	58603-S37	20/12/2021	37 Lot 324	357008	5780554	**	4	100.5	0.5	16.7	2.11
**	58603-S38	20/12/2021	38 Lot 320	356960	5780527	**	3	102.5	1.0	17.6	2.06
**	58603-S39	20/12/2021	39 Lot 316	356904	5780506	**	4	101.5	0.0	15.5	2.15
**	58603-S40	20/12/2021	40 Lot 312	356931	5780467	**	4	99.0	0.0	15.6	2.10
**	58603-S41	20/12/2021	41 Lot 310	356959	5780477	**	3	99.0	2.0	14.5	2.02
**	58603-S42	21/12/2021	42 Lot 325	356978	5780325	**	4	104.0	2.5	16.5	2.09
**	58603-S43	21/12/2021	43 Lot 328	356587	5780328	**	4	97.0	-1.5	17.0	2.06
**	58603-S44	21/01/2022	From the W corner of lot 333	15mS	8mE	**	1	96.5	-0.5	16.5	2.05
**	58603-S45	21/01/2022	From the W corner of lot 335	6mS	5mE	**	1	97.5	-0.5	20.3	1.99
**	58603-S46	21/01/2022	From the W corner of lot 337	10mS	12mE	**	2	101.5	-1.0	18.2	2.14

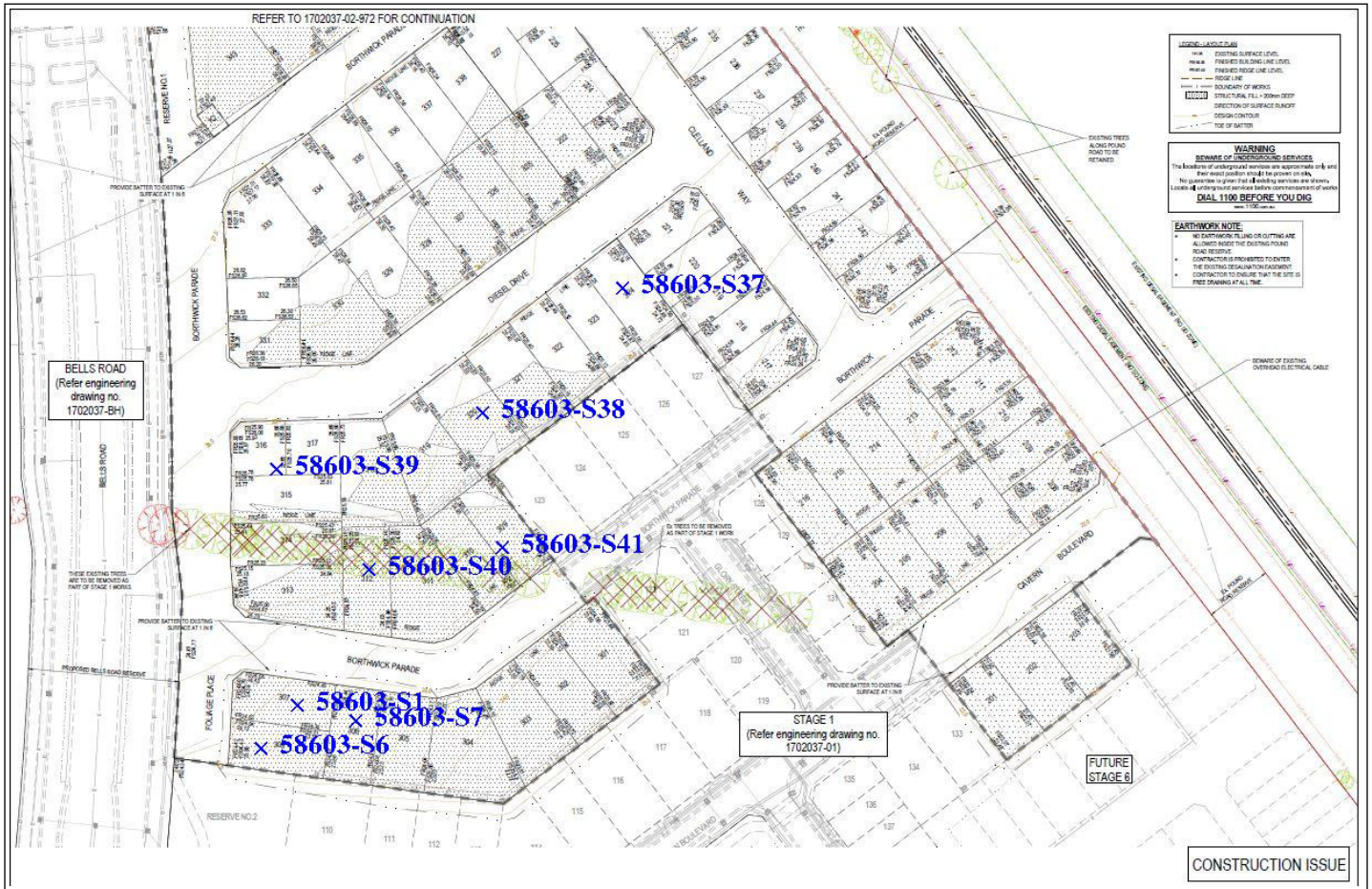
Lot #	Sample #	Date Sampled	Location	Chainage (m)	Location Offset (m)	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	58603-S47	21/01/2022	From the W corner of lot 338	7mS	3mE	**	2	97.5	-1.5	**	2.05
**	58603-S48	24/01/2022	From the W corner of lot 334	15mS	6mE	**	3	103.5	2.0	17.8	2.05
**	58603-S49	24/01/2022	From the W corner of lot 336	5mS	10mE	**	3	99.0	0.5	14.6	2.11
**	58603-S50	28/02/2022	50 Lot 343	356886	356919	**	1	95.0	2.5	9.9	1.95
**	58603-S51	28/02/2022	51 Lot 340	5780625	U5780650	**	1	99.0	2.0	14.4	2.01

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

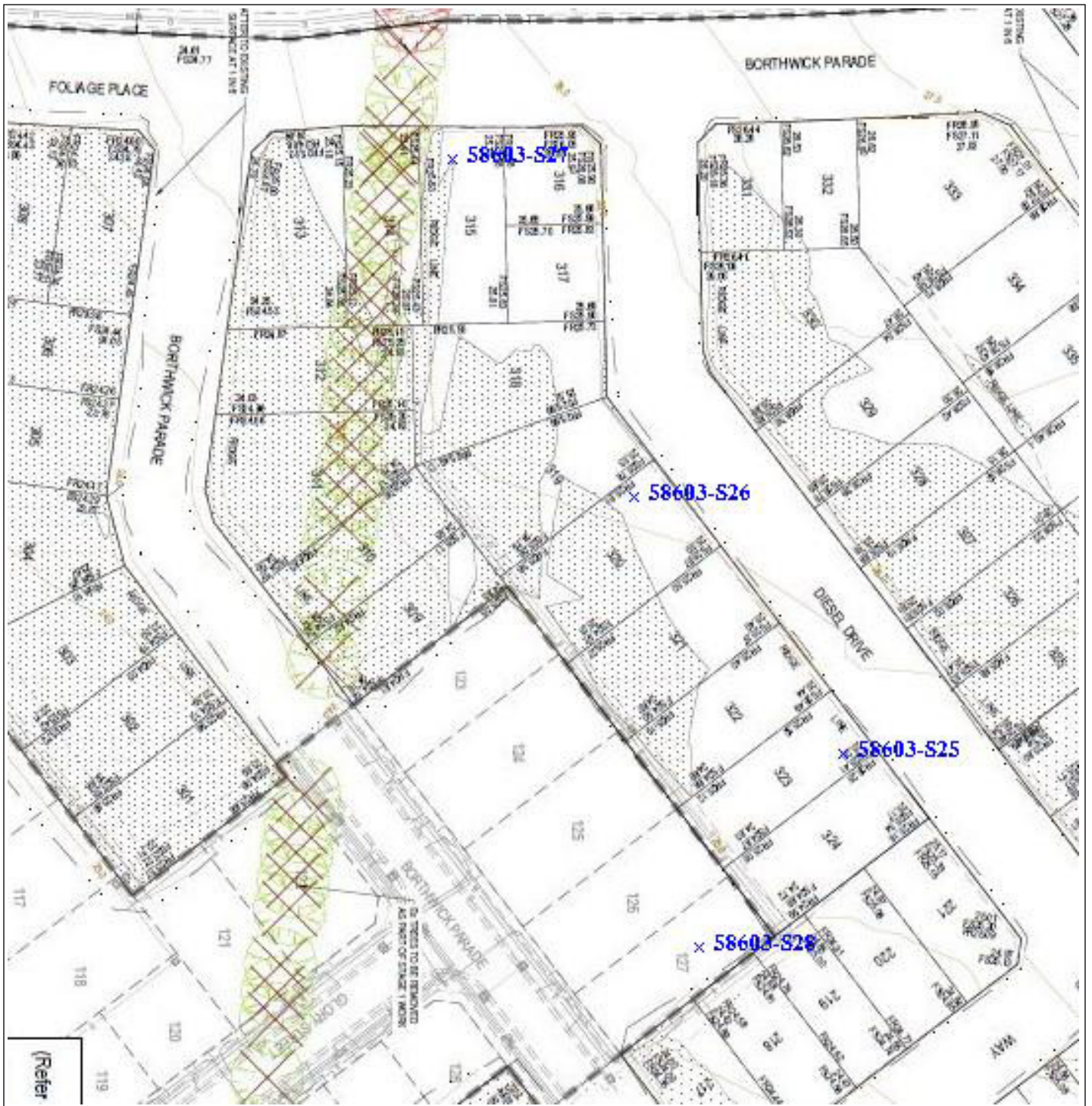
# Sample Locations Plan



# Sample Locations Plan



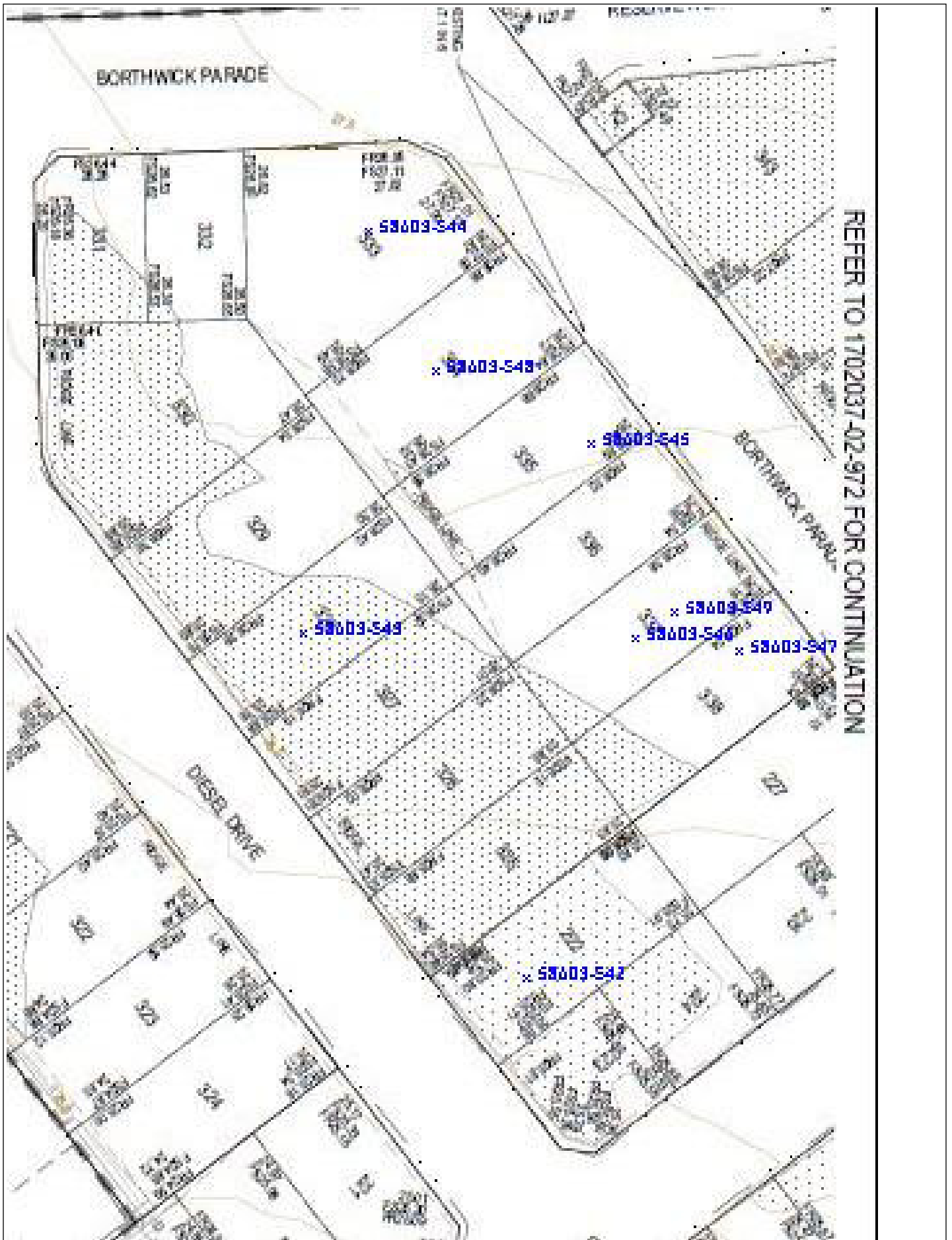
# Sample Locations Plan

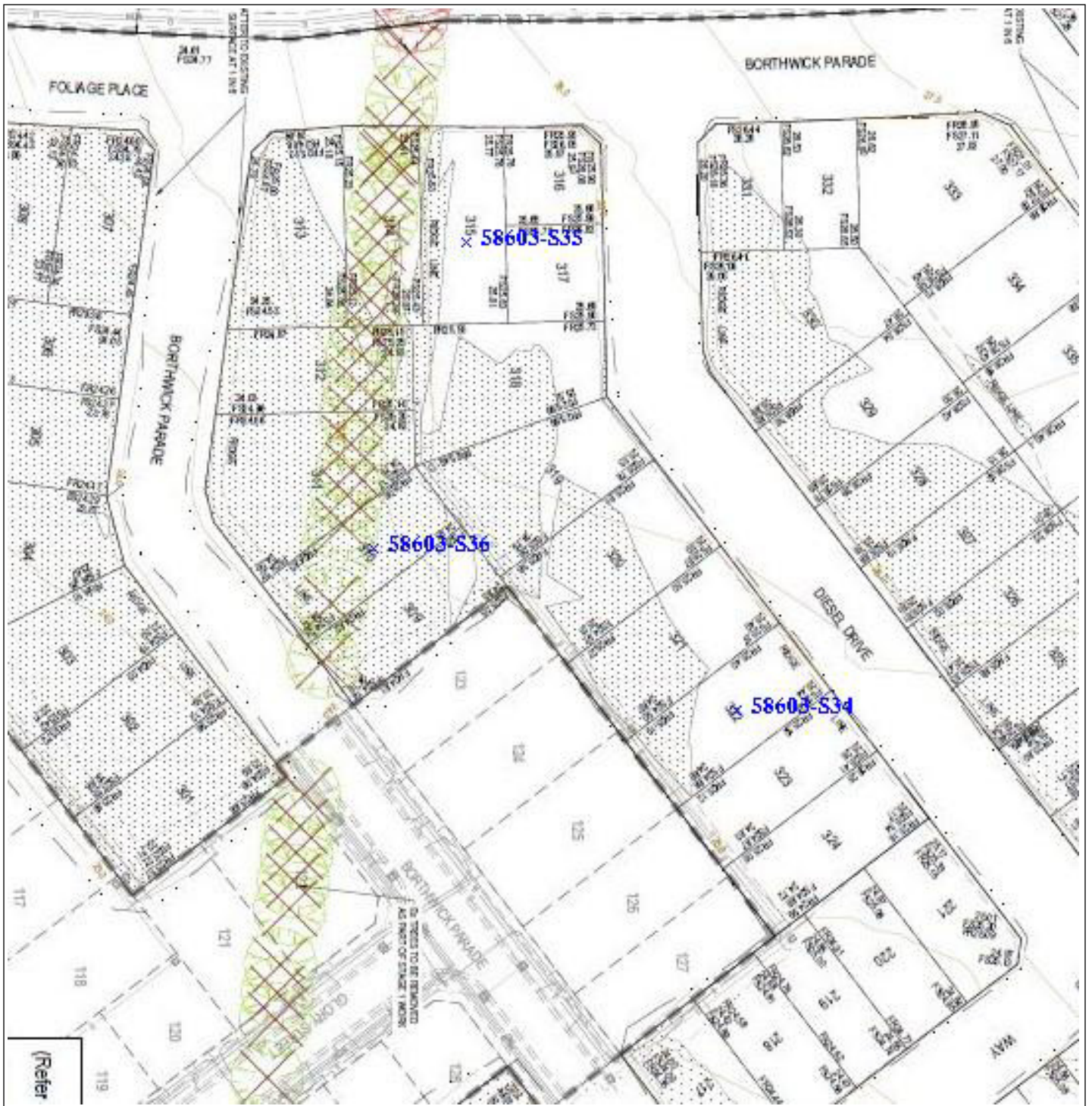


# Sample Locations Plan

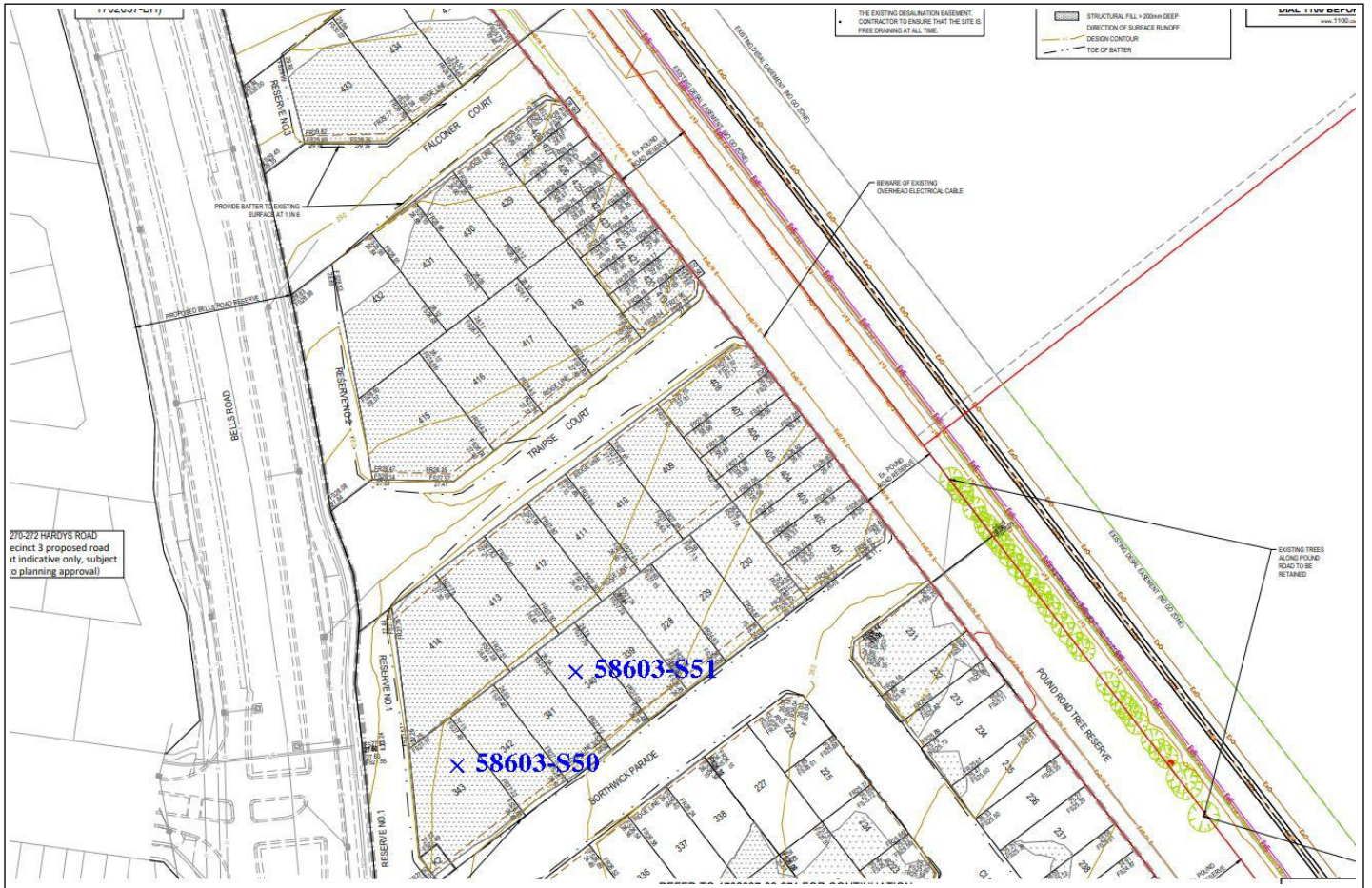








# Sample Locations Plan



## **APPENDIX B**

Field Density Test Report Sheets

# Material Test Report



**Report Number:** GS5860/3-1  
**Issue Number:** 1  
**Date Issued:** 16/09/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5355  
**Date Sampled:** 14/09/2021  
**Dates Tested:** 14/09/2021 - 15/09/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North  
**Material:** Silty CLAY, medium to high plasticity, brown

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Brent Elliott  
 Senior Field Technician  
 NATA Accredited Laboratory Number: 15055

## Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	58603-S1		
Date Tested	14/09/2021		
Time Tested	13:00		
Test Request #/Location	From the SW corner of lot 307		
Chainage (m)	10mE		
Location Offset (m)	12mN		
Layer / Reduced Level	1		
Thickness of Layer (mm)	200		
Soil Description	Silty CLAY, medium to high plasticity, brown		
Test Depth (mm)	175		
Sieve used to determine oversize (mm)	19.0		
Percentage of Wet Oversize (%)	0		
Field Wet Density (FWD) t/m <sup>3</sup>	2.07		
Field Moisture Content %	14.3		
Field Dry Density (FDD) t/m <sup>3</sup>	1.81		
Peak Converted Wet Density t/m <sup>3</sup>	2.09		
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**		
Moisture Variation (Wv) %	0.0		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	99.0		
Compaction Method	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:** GS5860/3-2  
**Issue Number:** 1  
**Date Issued:** 17/09/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5372  
**Date Sampled:** 15/09/2021  
**Dates Tested:** 15/09/2021 - 16/09/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North  
**Material:** Silty CLAY, medium to high plasticity, brown

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

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*Brent Elliott*

Approved Signatory: Brent Elliott  
 Senior Field Technician  
 NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	58603-S2	58603-S3	58603-S4	58603-S5
Date Tested	15/09/2021	15/09/2021	15/09/2021	15/09/2021
Time Tested	09:32	09:41	12:15	12:21
Test Request #/Location	From the SW corner of lot 306	From the SW corner of lot 305	From the SW corner of lot 308	From the SW corner of lot 307
Chainage (m)	8mN	10mN	6mN	8mN
Location Offset (m)	8mE	15mE	10mE	11mE
Layer / Reduced Level	2	2	3	3
Thickness of Layer (mm)	200	200	200	200
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown
Test Depth (mm)	175	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m <sup>3</sup>	2.07	2.06	2.06	2.10
Field Moisture Content %	18.5	6.9	18.5	13.5
Field Dry Density (FDD) t/m <sup>3</sup>	1.75	1.92	1.74	1.85
Peak Converted Wet Density t/m <sup>3</sup>	2.04	2.07	2.06	2.11
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	0.5	0.5	0.0	0.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	101.5	99.5	100.0	99.5
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:** GS5860/3-3  
**Issue Number:** 1  
**Date Issued:** 20/09/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5394  
**Date Sampled:** 16/09/2021  
**Dates Tested:** 16/09/2021 - 17/09/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North  
**Material:** Silty CLAY, medium to high plasticity, brown

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

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*Brent Elliott*

Approved Signatory: Brent Elliott  
 Senior Field Technician  
 NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58603-S6	58603-S7	
Date Tested	16/09/2021	16/09/2021	
Time Tested	09:36	09:44	
Test Request #/Location	From the SW corner of lot 308	From the SW corner of lot 306	
Chainage (m)	7mN	8mN	
Location Offset (m)	8mE	10mE	
Layer / Reduced Level	4	4	
Thickness of Layer (mm)	250	250	
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	
Test Depth (mm)	225	225	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Field Wet Density (FWD) t/m <sup>3</sup>	2.04	2.06	
Field Moisture Content %	17.1	26.1	
Field Dry Density (FDD) t/m <sup>3</sup>	1.74	1.64	
Peak Converted Wet Density t/m <sup>3</sup>	2.08	2.03	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Moisture Variation (Wv) %	0.5	0.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	<b>98.0</b>	<b>101.5</b>	
Compaction Method	<b>Standard</b>	<b>Standard</b>	
Report Remarks	**	**	

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report




**Report Number:** GS5860/3-4  
**Issue Number:** 1  
**Date Issued:** 14/10/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5538  
**Date Sampled:** 12/10/2021  
**Dates Tested:** 12/10/2021 - 14/10/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: tim@groundscience.com.au

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 Approved Signatory: Tim Senserrick  
 Laboratory 21C

NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	58603-S8	58603-S9	58603-S10	58603-S11
Date Tested	12/10/2021	12/10/2021	12/10/2021	12/10/2021
Time Tested	10:45	10:55	11:10	14:40
Test Request #/Location	8 From NE corner of lot 304	9 From NW corner of Lot 303	10 From NW corner of lot 301	11 From NE corner of lot 304
Chainage (m)	21m SE	12m NE	6m NE	8m SE
Location Offset (m)	5m SW	8m SE	14m SE	10m SW
Layer / Reduced Level	1	1	1	2
Thickness of Layer (mm)	250	250	250	200
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	Sandy CLAY, low to medium plasticity, orange, grey
Test Depth (mm)	225	225	225	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m <sup>3</sup>	2.10	2.16	2.12	2.06
Field Moisture Content %	16.1	14.1	18.3	16.1
Field Dry Density (FDD) t/m <sup>3</sup>	1.81	1.89	1.79	1.78
Peak Converted Wet Density t/m <sup>3</sup>	2.11	2.16	2.15	2.10
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	-0.5	-1.5	-2.0	-0.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	99.5	99.5	98.5	98.5
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:** GS5860/3-5  
**Issue Number:** 1  
**Date Issued:** 15/10/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5562  
**Date Sampled:** 13/10/2021  
**Dates Tested:** 13/10/2021 - 15/10/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North  
**Material:** Silty CLAY, medium to high plasticity, brown  
**Material Source:** Onsite

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: tim@groundscience.com.au



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Approved Signatory: Tim Senserrick  
 Laboratory 21C

NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	58603-S12	58603-S13	58603-S14	58603-S15
Date Tested	13/10/2021	13/10/2021	13/10/2021	13/10/2021
Time Tested	09:25	09:34	13:17	13:25
Test Request #/Location	From the NW corner of lot 302	From the NW corner of lot 301	From the NW corner of lot 304	From the NW corner of lot 303
Chainage (m)	4mE	7mE	2mE	6mE
Location Offset (m)	12mS	5mS	10mS	4mS
Layer / Reduced Level	2	2	3	3
Thickness of Layer (mm)	250	250	250	250
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown
Test Depth (mm)	225	225	225	225
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m <sup>3</sup>	2.08	2.11	2.12	2.10
Field Moisture Content %	15.8	16.7	17.5	17.4
Field Dry Density (FDD) t/m <sup>3</sup>	1.79	1.81	1.81	1.79
Peak Converted Wet Density t/m <sup>3</sup>	2.07	2.05	1.98	2.04
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	0.5	0.0	1.0	0.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	100.0	103.0	107.5	103.0
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:** GS5860/3-6  
**Issue Number:** 1  
**Date Issued:** 28/10/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5749  
**Date Sampled:** 27/10/2021  
**Dates Tested:** 27/10/2021 - 28/10/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North  
**Material:** Sandy CLAY, medium to high plasticity, brown  
**Material Source:** Onsite

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

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*Brent Elliott*

Approved Signatory: Brent Elliott  
 Senior Field Technician  
 NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58603-S16	58603-S17	
Date Tested	27/10/2021	27/10/2021	
Time Tested	13:22	13:30	
Test Request #/Location	From the NW corner of lot 304	From the NW corner of lot 303	
Chainage (m)	5mN	7mNE	
Location Offset (m)	10mS	5mSE	
Layer / Reduced Level	4	4	
Thickness of Layer (mm)	250	250	
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	
Test Depth (mm)	225	225	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Field Wet Density (FWD) t/m <sup>3</sup>	2.07	2.11	
Field Moisture Content %	29.3	18.0	
Field Dry Density (FDD) t/m <sup>3</sup>	1.60	1.79	
Peak Converted Wet Density t/m <sup>3</sup>	2.05	2.06	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Moisture Variation (Wv) %	0.5	-0.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	<b>101.0</b>	<b>102.5</b>	
Compaction Method	<b>Standard</b>	<b>Standard</b>	
Report Remarks	**	**	

## Moisture Variation Note:

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** GS5860/3-7  
**Issue Number:** 1  
**Date Issued:** 03/11/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5778  
**Date Sampled:** 28/10/2021  
**Dates Tested:** 28/10/2021 - 30/10/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North  
**Material:** Silty CLAY, medium to high plasticity, brown  
**Material Source:** onsite excavation

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

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*Brent Elliott*

Approved Signatory: Brent Elliott  
 Senior Field Technician  
 NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58603-S18	58603-S19	
Date Tested	28/10/2021	28/10/2021	
Time Tested	14:02	14:12	
Test Request #/Location	From the NW corner of lot 301	From the NW corner of lot 302	
Chainage (m)	7mE	5mE	
Location Offset (m)	10mS	4mS	
Layer / Reduced Level	5	5	
Thickness of Layer (mm)	250	250	
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	
Test Depth (mm)	225	225	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Field Wet Density (FWD) t/m <sup>3</sup>	2.07	2.15	
Field Moisture Content %	15.3	14.4	
Field Dry Density (FDD) t/m <sup>3</sup>	1.79	1.88	
Peak Converted Wet Density t/m <sup>3</sup>	1.95	2.00	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Moisture Variation (Wv) %	1.0	1.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	<b>106.0</b>	<b>107.0</b>	
Compaction Method	<b>Standard</b>	<b>Standard</b>	
Report Remarks	**	**	

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** GS5860/3-8  
**Issue Number:** 1  
**Date Issued:** 15/12/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6339  
**Date Sampled:** 13/12/2021  
**Dates Tested:** 13/12/2021 - 15/12/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: chris@groundscience.com.au

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*Chris Senserrick*

Approved Signatory: Chris Senserrick

Laboratory Manager

NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58603-S20	58603-S21	58603-S22
Date Tested	13/12/2021	13/12/2021	13/12/2021
Time Tested	11:37	11:49	11:58
Test Request #/Location	20 Lot 222	21 Lot 326	22 Lot 329
Easting	356986	356966	356942
Northing	5780601	5780585	5780562
Layer / Reduced Level	1	1	1
Thickness of Layer (mm)	250	250	250
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown
Test Depth (mm)	225	225	225
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 <sup>3</sup>	2.07	1.96	1.99
Field Moisture Content %	11.5	16.5	15.1
Field Dry Density (FDD) t/m <sup>3</sup>	1.86	1.69	1.73
Peak Converted Wet Density t/m <sup>3</sup>	2.12	2.05	2.06
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	2.5	3.0	0.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>97.5</b>	<b>95.5</b>	<b>96.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** GS5860/3-9  
**Issue Number:** 1  
**Date Issued:** 16/12/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6378  
**Date Sampled:** 14/12/2021  
**Dates Tested:** 14/12/2021 - 16/12/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: chris@groundscience.com.au

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*Chris Senserrick*

Approved Signatory: Chris Senserrick  
Laboratory Manager

NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58603-S23	58603-S24	
Date Tested	14/12/2021	14/12/2021	
Time Tested	03:29	03:41	
Test Request #/Location	23 Lot 327	24 Lot 330	
Easting	356960	356922	
Northing	5780578	5780554	
Layer / Reduced Level	2	2	
Thickness of Layer (mm)	250	250	
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	
Test Depth (mm)	225	225	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Field Wet Density (FWD) t/m <sup>3</sup>	2.07	1.94	
Field Moisture Content %	14.5	19.1	
Field Dry Density (FDD) t/m <sup>3</sup>	1.81	1.63	
Peak Converted Wet Density t/m <sup>3</sup>	2.10	2.02	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Moisture Variation (Wv) %	2.0	3.0	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	<b>98.5</b>	<b>96.0</b>	
Compaction Method	<b>Standard</b>	<b>Standard</b>	
Report Remarks	**	**	

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report




**Report Number:** GS5860/3-10  
**Issue Number:** 1  
**Date Issued:** 17/12/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6387  
**Date Sampled:** 15/12/2021  
**Dates Tested:** 15/12/2021 - 17/12/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: tim@groundscience.com.au

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 Approved Signatory: Tim Senserrick  
 Laboratory 21C

NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	58603-S25	58603-S26	58603-S27	58603-S28
Date Tested	15/12/2021	15/12/2021	15/12/2021	15/12/2021
Time Tested	08:43	08:51	09:03	09:14
Test Request #/Location	25 Lot 323	26 Lot 320	27 Lot 315	28 Lot 127
Easting	356986	356944	356901	357021
Northing	5780548	5780514	5780506	5780532
Layer / Reduced Level	2	2	2	1
Thickness of Layer (mm)	250	250	250	250
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown
Test Depth (mm)	225	225	225	225
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m <sup>3</sup>	2.08	2.06	2.07	2.05
Field Moisture Content %	18.8	18.4	18.1	18.7
Field Dry Density (FDD) t/m <sup>3</sup>	1.75	1.74	1.75	1.72
Peak Converted Wet Density t/m <sup>3</sup>	2.07	2.07	2.08	2.07
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	-0.5	0.0	-0.5	0.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	<b>100.5</b>	<b>99.5</b>	<b>99.5</b>	<b>99.0</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**	**

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** GS5860/3-11  
**Issue Number:** 1  
**Date Issued:** 21/12/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6417  
**Date Sampled:** 16/12/2021  
**Dates Tested:** 16/12/2021 - 20/12/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: chris@groundscience.com.au

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*Chris Senserrick*

Approved Signatory: Chris Senserrick  
Laboratory Manager

NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	58603-S29	58603-S30	58603-S31	58603-S32	58603-S33
Date Tested	16/12/2021	16/12/2021	16/12/2021	16/12/2021	16/12/2021
Time Tested	02:25	02:34	02:42	02:54	03:04
Test Request #/Location	29 Lot 323	30 Lot 320	31 Lot 302	32 Lot 330	33 Lot 125
Easting	357001	356965	356992	356916	357520
Northing	5780536	5780509	5780447	5780554	5780125
Layer / Reduced Level	1	1	3	3	3
Thickness of Layer (mm)	250	250	250	250	250
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	CLAY, medium to high plasticity, brown	CLAY, medium to high plasticity, brown	CLAY, medium to high plasticity, brown
Test Depth (mm)	225	225	225	225	225
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0	0
Field Wet Density (FWD) t/m <sup>3</sup>	2.02	1.83	2.11	2.10	1.97
Field Moisture Content %	15.8	27.5	17.6	17.1	18.1
Field Dry Density (FDD) t/m <sup>3</sup>	1.75	1.44	1.79	1.79	1.67
Peak Converted Wet Density t/m <sup>3</sup>	2.08	1.89	2.08	2.08	2.08
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	-0.5	0.5	-0.5	0.0	-0.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	<b>97.0</b>	<b>96.5</b>	<b>101.5</b>	<b>101.0</b>	<b>95.0</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**	**	**

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** GS5860/3-12  
**Issue Number:** 2 - This version supersedes all previous issues  
**Reissue Reason:** Plan mark up added  
**Date Issued:** 22/12/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6425  
**Date Sampled:** 17/12/2021  
**Dates Tested:** 17/12/2021 - 21/12/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

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*Brent Elliott*

Approved Signatory: Brent Elliott  
 Senior Field Technician  
 NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58603-S34	58603-S35	58603-S36
Date Tested	17/12/2021	17/12/2021	17/12/2021
Time Tested	08:54	09:06	09:16
Test Request #/Location	34 Lot 322	35 Lot 315	36 Lot 310
Easting	356989	356937	356953
Northing	5780534	5780495	5780484
Layer / Reduced Level	2	2	2
Thickness of Layer (mm)	250	250	250
Soil Description	CLAY, medium to high plasticity, brown,	CLAY, medium to high plasticity, brown	CLAY, medium to high plasticity, brown
Test Depth (mm)	225	225	225
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 <sup>3</sup>	2.00	1.96	2.02
Field Moisture Content %	17.9	20.4	16.7
Field Dry Density (FDD) t/m <sup>3</sup>	1.70	1.63	1.73
Peak Converted Wet Density t/m <sup>3</sup>	2.00	1.98	2.03
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	1.0	1.5	0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>100.0</b>	<b>99.0</b>	<b>99.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC



# Material Test Report



**Report Number:** GS5860/3-13  
**Issue Number:** 1  
**Date Issued:** 22/12/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6447  
**Dates Tested:** 20/12/2021 - 21/12/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

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*Brent Elliott*

Approved Signatory: Brent Elliott  
 Senior Field Technician  
 NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	58603-S37	58603-S38	58603-S39	58603-S40	58603-S41
Date Tested	20/12/2021	20/12/2021	20/12/2021	20/12/2021	20/12/2021
Time Tested	08:36	08:45	08:54	09:07	09:19
Test Request #/Location	37 Lot 324	38 Lot 320	39 Lot 316	40 Lot 312	41 Lot 310
Easting	357008	356960	356904	356931	356959
Northing	5780554	5780527	5780506	5780467	5780477
Layer / Reduced Level	4	3	4	4	3
Thickness of Layer (mm)	250	250	250	250	250
Soil Description	CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	CLAY, medium to high plasticity, brown	CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown
Test Depth (mm)	225	225	225	225	225
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	1	0	1	0
Field Wet Density (FWD) t/m <sup>3</sup>	2.11	2.06	2.15	2.10	2.02
Field Moisture Content %	16.7	17.6	15.5	15.6	14.5
Field Dry Density (FDD) t/m <sup>3</sup>	1.80	1.75	1.86	1.82	1.77
Peak Converted Wet Density t/m <sup>3</sup>	2.10	**	2.12	**	2.04
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	2.01	**	2.12	**
Moisture Variation (Wv) %	0.5	**	0.0	**	2.0
Adjusted Moisture Variation %	**	1.0	**	0.0	**
Hilf Density Ratio (%)	<b>100.5</b>	<b>102.5</b>	<b>101.5</b>	<b>99.0</b>	<b>99.0</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**	**	**

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** GS5860/3-14  
**Issue Number:** 1  
**Date Issued:** 23/12/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6473  
**Date Sampled:** 21/12/2021  
**Dates Tested:** 21/12/2021 - 22/12/2021  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard Compaction  
**Location:** Clyde North

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

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*Brent Elliott*

Approved Signatory: Brent Elliott  
 Senior Field Technician  
 NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58603-S42	58603-S43	
Date Tested	21/12/2021	21/12/2021	
Time Tested	04:22	04:33	
Test Request #/Location	42 Lot 325	43 Lot 328	
Easting	356978	356587	
Northing	5780325	5780328	
Layer / Reduced Level	4	4	
Thickness of Layer (mm)	250	250	
Soil Description	CLAY, medium to high plasticity, brown	CLAY, medium to high plasticity, brown	
Test Depth (mm)	225	225	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	1	0	
Field Wet Density (FWD) t/m <sup>3</sup>	2.09	2.06	
Field Moisture Content %	16.5	17.0	
Field Dry Density (FDD) t/m <sup>3</sup>	1.79	1.77	
Peak Converted Wet Density t/m <sup>3</sup>	**	2.12	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	2.01	**	
Moisture Variation (Wv) %	**	-1.5	
Adjusted Moisture Variation %	2.5	**	
Hilf Density Ratio (%)	<b>104.0</b>	<b>97.0</b>	
Compaction Method	<b>Standard</b>	<b>Standard</b>	
Report Remarks	**	**	

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** GS5860/3-16  
**Issue Number:** 1  
**Date Issued:** 27/01/2022  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6603  
**Dates Tested:** 21/01/2022 - 27/01/2022  
**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  
**Location:** Clyde North  
**Material:** Sandy CLAY, medium to high plasticity, brown  
**Material Source:** Onsite

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

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*Brent Elliott*

Approved Signatory: Brent Elliott  
Laboratory 21C

NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	58603-S44	58603-S45	58603-S46	58603-S47
Date Tested	21/01/2022	21/01/2022	21/01/2022	21/01/2022
Time Tested	10:13	10:19	11:32	11:27
Test Request #/Location	From the W corner of lot 333	From the W corner of lot 335	From the W corner of lot 337	From the W corner of lot 338
Chainage (m)	15mS	6mS	10mS	7mS
Location Offset (m)	8mE	5mE	12mE	3mE
Layer / Reduced Level	1	1	2	2
Thickness of Layer (mm)	250	250	250	250
Soil Description	Sandy CLAY, medium to high plasticity, brown	Sandy CLAY, medium to high plasticity, brown	Sandy CLAY, medium to high plasticity, brown	Sandy CLAY, medium to high plasticity, brown
Test Depth (mm)	225	225	225	225
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0
Field Wet Density (FWD) t/m <sup>3</sup>	2.05	1.99	2.14	2.05
Field Moisture Content %	16.5	20.3	18.2	19.3
Field Dry Density (FDD) t/m <sup>3</sup>	1.76	1.66	1.81	1.71
Peak Converted Wet Density t/m <sup>3</sup>	2.12	2.05	2.11	2.10
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	-0.5	-0.5	-1.0	-1.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	<b>96.5</b>	<b>97.5</b>	<b>101.5</b>	<b>97.5</b>
Compaction Method	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>	<b>Standard</b>
Report Remarks	**	**	**	**

**Moisture Variation Note:**

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** GS5860/3-15  
**Issue Number:** 1  
**Date Issued:** 27/01/2022  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/3  
**Project Name:** Five Farms - Stage 3 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6649  
**Date Sampled:** 24/01/2022  
**Dates Tested:** 24/01/2022 - 27/01/2022  
**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  
**Location:** Clyde North  
**Material:** Sandy CLAY, medium to high plasticity, brown  
**Material Source:** Onsite

Ground Science Pty Ltd  
 Ground Science Laboratory  
 13 Brock Street Thomastown Victoria 3074  
 Phone: (03) 9464 4617  
 Email: brent@groundscience.com.au

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*Brent Elliott*

Approved Signatory: Brent Elliott  
Laboratory 21C

NATA Accredited Laboratory Number: 15055

## Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1

Sample Number	58603-S48	58603-S49	
Date Tested	24/01/2022	24/01/2022	
Time Tested	09:03	08:56	
Test Request #/Location	From the W corner of lot 334	From the W corner of lot 336	
Chainage (m)	15mS	5mS	
Location Offset (m)	6mE	10mE	
Layer / Reduced Level	3	3	
Thickness of Layer (mm)	250	250	
Soil Description	Sandy CLAY, medium to high plasticity, brown	Sandy CLAY, medium to high plasticity, brown	
Test Depth (mm)	225	225	
Sieve used to determine oversize (mm)	19.0	19.0	
Percentage of Wet Oversize (%)	0	0	
Field Wet Density (FWD) t/m <sup>3</sup>	2.05	2.11	
Field Moisture Content %	17.8	14.6	
Field Dry Density (FDD) t/m <sup>3</sup>	1.74	1.84	
Peak Converted Wet Density t/m <sup>3</sup>	1.99	2.14	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Moisture Variation (Wv) %	2.0	0.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	<b>103.5</b>	<b>99.0</b>	
Compaction Method	<b>Standard</b>	<b>Standard</b>	
Report Remarks	**	**	

### Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

## **APPENDIX C**

Site Photographs

20 Jan 2022 3:24:24 pm

55H 356893 5780570

Clyde North

Five Farms stage 3 lots 338 to 333 base inspection, proof roll



14 Sep 2021 8:33:44 am

lots 307-305 rip lines



