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# **LEVEL 1 INSPECTION & TESTING**

## **FIVE FARMS ESTATE - STAGE 2, CLYDE**

Prepared for Frasers Property Australia

**Report Reference: GS5860.2 AA**

**Date: 19 April 2022**

**ABN 31 105 704 078**

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## PROJECT DETAILS

Project Reference	GS5860.2	Rev	AA
Project Title	Five Farms Estate - Stage 2		
Project Location	Clyde	State	VIC
Date	19 April 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:



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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 2 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 on the site plan, Figure 1, in Appendix A, which is based on plans prepared by Beveridge Williams (Project Ref. 1702037 Rev P2, dated 07/05/2021). This report details the Level 1 earthwork process performed on site which commenced on 19<sup>th</sup> September 2021 and was completed on 21<sup>st</sup> December 2021, which included 15 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) and the general note section of the bulk earthworks plan prepared by Beveridge Williams (Project Ref. 1702037 Rev A, dated 16/07/2021). 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, 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;
- 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 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 7 layers were placed in the deepest sections and compacted. The compacted fill was moisture conditioned prior to the application of subsequent layers of fill. 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. Figure 1 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 53 in-situ density tests using a nuclear moisture-density gauge in accordance with Australian Standard (AS1289 5.8.1) and 53 "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 B. Field density and compaction control testing report sheets are presented in Appendix C. It should be noted that the tests are a representation of the fill placed and support the visual assessment of the works completed.

Test #3 failed to meet the required target moisture ratio and the areas of these tests were subsequently reworked, recompacted, and retested with compliant test results achieved.

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 Figure 1. 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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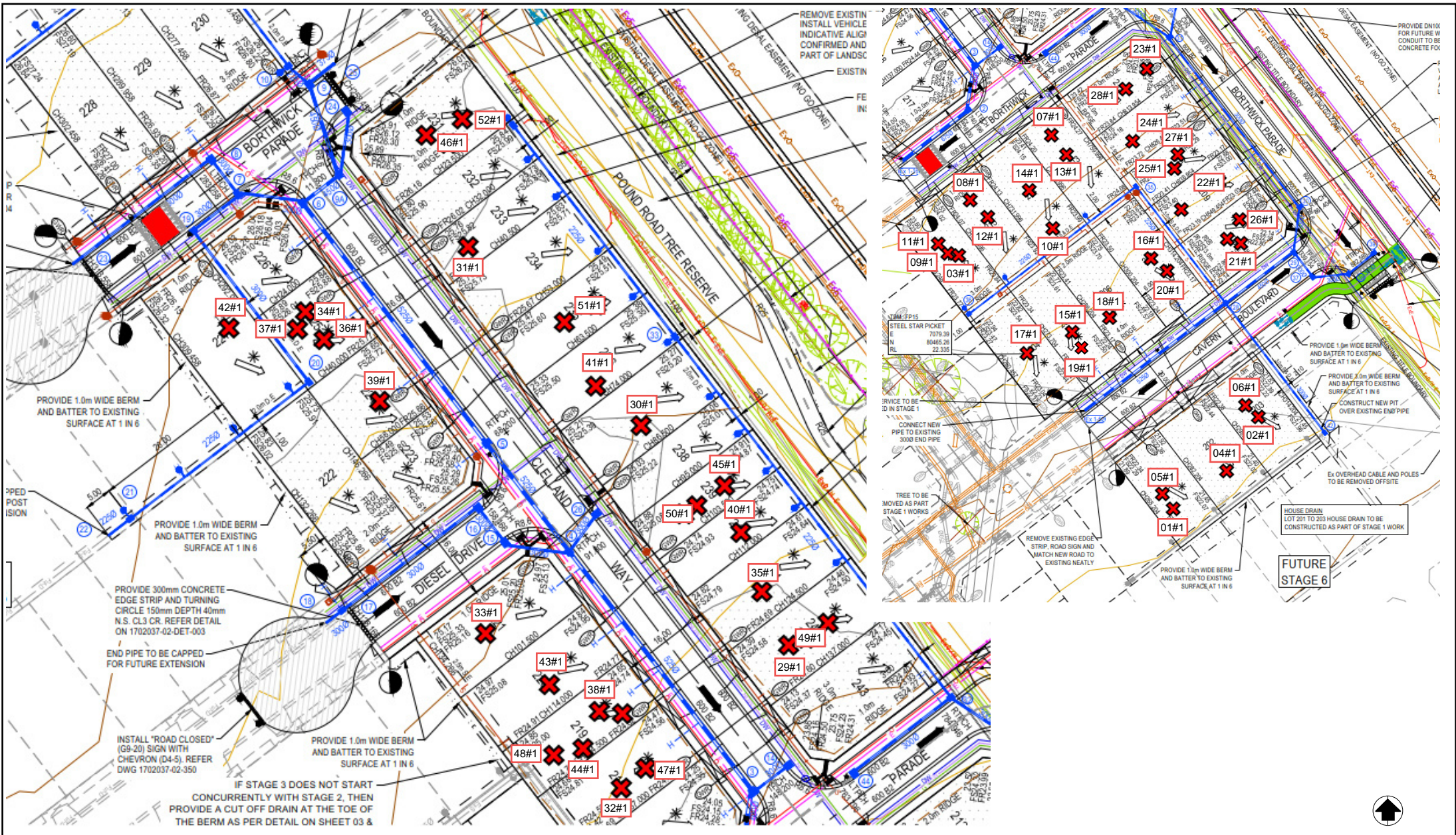
## 7. REFERENCES

- 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**

Figure 1: Site Layout & Test Location Plan





Rev	Drawn	Date	Checked	Scale	Legend
0	AM	13/4/2022	GS	NTS	Density Test Location (#Layer number)

**Five Farms - Stage 2 (Level 1)  
Clyde**

Prepared For: Frasers Property Australia  
Job No: GS5860.2 AA





## **APPENDIX B**

### Field Density Test Summary

# 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:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (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)
**	58602-S1	19/08/2021	From the S corner of lot 201	10mNW	7mNE	**	1	96.5	0.0	15.9	2.06
**	58602-S2	20/08/2021	From the W corner of lot 203	6mNE	12mSE	**	2	95.0	0.0	14.3	2.00
**	58602-S3	20/08/2021	From the W corner of lot 213	5mNE	5mSE	**	1	99.0	3.5	21.1	1.88
**	58602-S4	20/08/2021	From the W corner of lot 202	8mNE	5mSE	**	3	95.5	-0.5	15.6	2.04
**	58602-S5	25/08/2021	From the W corner of lot 201	7mNE	10mSE	**	4	100.5	0.5	18.1	2.06
**	58602-S6	25/08/2021	From the W corner of lot 203	5mNE	5mSE	**	4	99.0	-0.5	16.7	2.09
**	58602-S7	25/08/2021	From the W corner of lot 213 (retest #3)	5mNE	5mSE	**	1	104.0	0.0	20.6	2.10
**	58602-S8	25/08/2021	From the W corner of lot 215	6mNE	9mSE	**	2	103.0	0.0	20.7	2.06
**	58602-S9	25/08/2021	From the W corner of lot 216	7mNE	12mSE	**	3	103.0	0.0	20.7	2.02
**	58602-S10	25/08/2021	From the W corner of lot 214	6mNE	3mSE	**	4	100.0	0.0	**	2.02
**	58602-S11	26/08/2021	From the W corner of lot 216	6mNE	10mSE	**	5	103.0	2.0	19.1	2.04
**	58602-S12	26/08/2021	From the W corner of lot 215	8mNE	13mSE	**	6	103.0	0.5	23.5	2.02
**	58602-S13	27/08/2021	From the W corner of lot 213	7mNE	10mSE	**	7	101.5	1.0	24.0	1.99
**	58602-S14	27/08/2021	From the W corner of lot 214	8mNE	4mSE	**	7	105.0	2.5	19.4	2.04
**	58602-S15	27/08/2021	From the W corner of lot 205	5mNE	10mSE	**	1	99.0	-0.5	19.5	2.01
**	58602-S16	02/09/2021	From the W corner of lot 207	8mNE	13mSE	**	2	101.0	-2.5	17.1	2.08
**	58602-S17	02/09/2021	From the W corner of lot 204	5mNE	5mSE	**	3	99.0	3.0	18.7	1.90
**	58602-S18	02/09/2021	From the W corner of lot 206	10mNE	18mSE	**	4	100.0	2.5	17.8	1.98
**	58602-S19	03/09/2021	From the W corner of lot 205	10mNE	10mSE	**	5	96.0	0.0	18.0	2.00
**	58602-S20	03/09/2021	From the W corner of lot 207	5mNE	10mSE	**	5	97.0	0.0	18.2	2.02
**	58602-S21	09/09/2021	From the E corner of lot 208	7mNW	15mSW	**	1	100.5	-1.0	16.5	2.13
**	58602-S22	09/09/2021	From the E corner of lot 209	5mNW	3mSW	**	1	102.0	0.0	23.8	1.98
**	58602-S23	09/09/2021	From the E corner of lot 212	8mNW	18mSW	**	2	102.5	0.0	17.0	2.16
**	58602-S24	09/09/2021	From the E corner of lot 211	5mNW	5mSW	**	2	98.5	-1.0	22.1	2.02
**	58602-S25	10/09/2021	From the E corner of lot 210	9mNW	3mSW	**	3	104.0	0.5	18.8	2.06
**	58602-S26	10/09/2021	From the E corner of lot 208	6mNW	12mSW	**	4	98.0	-0.5	18.6	1.99
**	58602-S27	10/09/2021	From the E corner of lot 210	7mNW	8mSW	**	5	99.0	0.0	56.1	2.04
**	58602-S28	10/09/2021	From the S corner of lot 212	5mNW	17mSW	**	6	100.5	0.0	26.3	2.06
**	58602-S29	08/12/2021	29 Lot 242	38.114894	145.3694962	**	1	98.5	0.0	16.5	2.06
**	58602-S30	08/12/2021	30 Lot 237	38.1109941	145.3700134	**	1	99.0	-2.5	26.7	1.95
**	58602-S31	08/12/2021	31 Lot 233	38.1110631	145.3692078	**	1	97.5	-2.0	19.4	2.04
**	58602-S32	08/12/2021	32 Lot 218	38.1114797	145.3694113	**	1	98.5	1.5	18.1	2.01
**	58602-S33	08/12/2021	33 Lot 221	38.1113037	145.3691374	**	1	98.5	2.0	18.0	2.00
**	58602-S34	09/12/2021	34 Lot 225	356990	5780622	**	1	95.0	2.0	21.7	1.96
**	58602-S35	09/12/2021	35 Lot 241	357065	5780582	**	2	100.5	0.5	21.6	2.04
**	58602-S36	09/12/2021	36 Lot 225	357049	5780601	**	2	96.5	0.0	17.8	2.03
**	58602-S37	09/12/2021	37 Lot 225	357032	5780621	**	2	98.5	0.0	19.5	2.10
**	58602-S38	10/12/2021	38 Lot 219	357043	5780561	**	2	98.0	0.0	14.8	2.10
**	58602-S39	10/12/2021	39 Lot 224	356992	5780617	**	2	99.0	0.5	16.7	2.05
**	58602-S40	10/12/2021	40 Lot 240	357054	5780583	**	3	96.5	0.5	17.2	1.99
**	58602-S41	10/12/2021	41 Lot 236	357037	5780618	**	3	100.0	0.5	16.4	2.08
**	58602-S42	10/12/2021	42 Lot 227	356996	5780619	**	3	101.5	0.5	14.4	2.13

Lot #	Sample #	Date Sampled	Location	Chainage (m)	Location Offset (m)	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	58602-S43	10/12/2021	43 Lot 22o	357026	5780573	**	3	96.5	3.0	12.1	2.05
**	58602-S44	13/12/2021	44 Lot 219	357037	5780562	**	4	98.5	0.5	13.2	2.10
**	58602-S45	14/12/2021	45 Lot 239	357059	5780597	**	3	98.0	-0.5	15.0	1.99
**	58602-S46	14/12/2021	46 Lot 231	357024	5780654	**	3	95.0	2.0	16.1	1.97
**	58602-S47	14/12/2021	47 Lot 218	357037	5780541	**	2	102.5	0.5	23.4	2.03
**	58602-S48	17/12/2021	48 Lot 219	357040	5780555	**	4	100.0	0.0	17.8	2.08
**	58602-S49	21/12/2021	49 Lot 242	357073	5780572	**	4	102.0	2.0	17.4	2.05
**	58602-S50	21/12/2021	50 Lot 239	357055	5780588	**	4	106.0	2.5	15.9	2.13
**	58602-S51	21/12/2021	51 Lot 235	357034	5780235	**	4	97.0	0.5	15.9	2.02
**	58602-S52	21/12/2021	52 Lot 231	357003	5780229	**	4	98.5	1.0	15.1	2.04
**	58602-S53	21/12/2021	53 Lot 225	356987	5780623	**	4	101.5	0.5	15.9	2.10

**Moisture Variation Note:**

Positive values = test is dry of OMC

Negative values = test is wet of OMC

## **APPENDIX C**

Field Density Test Report Sheets

# Material Test Report




**Report Number:** GS5860/2-1  
**Issue Number:** 1  
**Date Issued:** 23/08/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 4957  
**Date Sampled:** 19/08/2021  
**Dates Tested:** 19/08/2021 - 21/08/2021  
**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: tim@groundscience.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



  
 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	58602-S1		
Date Tested	19/08/2021		
Time Tested	14:41		
Test Request #/Location	From the S corner of lot 201		
Chainage (m)	10mNW		
Location Offset (m)	7mNE		
Layer / Reduced Level	1		
Thickness of Layer (mm)	250		
Soil Description	Silty CLAY, medium to high plasticity, brown		
Test Depth (mm)	225		
Sieve used to determine oversize (mm)	19.0		
Percentage of Wet Oversize (%)	0		
Field Wet Density (FWD) t/m <sup>3</sup>	2.06		
Field Moisture Content %	15.9		
Field Dry Density (FDD) t/m <sup>3</sup>	1.78		
Peak Converted Wet Density t/m <sup>3</sup>	2.14		
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**		
Moisture Variation (Wv) %	0.0		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	<b>96.5</b>		
Compaction Method	<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:** GS5860/2-2  
**Issue Number:** 1  
**Date Issued:** 23/08/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 4975  
**Date Sampled:** 20/08/2021  
**Dates Tested:** 20/08/2021 - 23/08/2021  
**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

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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	58602-S2	58602-S3	58602-S4
Date Tested	20/08/2021	20/08/2021	20/08/2021
Time Tested	12:30	14:49	14:37
Test Request #/Location	From the W corner of lot 203	From the W corner of lot 213	From the W corner of lot 202
Chainage (m)	6mNE	5mNE	8mNE
Location Offset (m)	12mSE	5mSE	5mSE
Layer / Reduced Level	2	1	3
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>	2.00	1.88	2.04
Field Moisture Content %	14.3	21.1	15.6
Field Dry Density (FDD) t/m <sup>3</sup>	1.75	1.56	1.77
Peak Converted Wet Density t/m <sup>3</sup>	2.10	1.90	2.14
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	0.0	3.5	-0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>95.0</b>	<b>99.0</b>	<b>95.5</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:** GS5860/2-5  
**Issue Number:** 1  
**Date Issued:** 27/08/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5073  
**Date Sampled:** 25/08/2021  
**Dates Tested:** 25/08/2021 - 27/08/2021  
**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

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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	58602-S5	58602-S6	
Date Tested	25/08/2021	25/08/2021	
Time Tested	09:19	09:11	
Test Request #/Location	From the W corner of lot 201	From the W corner of lot 203	
Chainage (m)	7mNE	5mNE	
Location Offset (m)	10mSE	5mSE	
Layer / Reduced Level	4	4	
Thickness of Layer (mm)	150	150	
Soil Description	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown	
Test Depth (mm)	125	125	
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>	2.06	2.09	
Field Moisture Content %	18.1	16.7	
Field Dry Density (FDD) t/m <sup>3</sup>	1.75	1.79	
Peak Converted Wet Density t/m <sup>3</sup>	2.05	2.11	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Moisture Variation (Wv) %	0.5	-0.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	<b>100.5</b>	<b>99.0</b>	
Compaction Method	<b>Modified</b>	<b>Modified</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:** GS5860/2-4  
**Issue Number:** 1  
**Date Issued:** 27/08/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5074  
**Date Sampled:** 25/08/2021  
**Dates Tested:** 25/08/2021 - 27/08/2021  
**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

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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	58602-S7	58602-S8	58602-S9	58602-S10
Date Tested	25/08/2021	25/08/2021	25/08/2021	25/08/2021
Time Tested	10:20	10:13	10:06	14:30
Test Request #/Location	From the W corner of lot 213 (retest #3)	From the W corner of lot 215	From the W corner of lot 216	From the W corner of lot 214
Chainage (m)	5mNE	6mNE	7mNE	6mNE
Location Offset (m)	5mSE	9mSE	12mSE	3mSE
Layer / Reduced Level	1	2	3	4
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>	2.10	2.06	2.02	2.02
Field Moisture Content %	20.6	20.7	20.7	**
Field Dry Density (FDD) t/m <sup>3</sup>	1.74	1.71	1.68	1.71
Peak Converted Wet Density t/m <sup>3</sup>	2.02	2.00	1.96	2.02
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	0.0	0.0	0.0	0.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	<b>104.0</b>	<b>103.0</b>	<b>103.0</b>	<b>100.0</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:** GS5860/2-6  
**Issue Number:** 1  
**Date Issued:** 30/08/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5091  
**Date Sampled:** 26/08/2021  
**Dates Tested:** 26/08/2021 - 27/08/2021  
**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

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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

	58602-S11	58602-S12	
Sample Number	58602-S11	58602-S12	
Date Tested	26/08/2021	26/08/2021	
Time Tested	08:30	14:14	
Test Request #/Location	From the W corner of lot 216	From the W corner of lot 215	
Chainage (m)	6mNE	8mNE	
Location Offset (m)	10mSE	13mSE	
Layer / Reduced Level	5	6	
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	2.02	
Field Moisture Content %	19.1	23.5	
Field Dry Density (FDD) t/m <sup>3</sup>	1.72	1.63	
Peak Converted Wet Density t/m <sup>3</sup>	1.98	1.96	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Moisture Variation (Wv) %	2.0	0.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	<b>103.0</b>	<b>103.0</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:** GS5860/2-7  
**Issue Number:** 1  
**Date Issued:** 30/08/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5107  
**Date Sampled:** 27/08/2021  
**Dates Tested:** 27/08/2021 - 30/08/2021  
**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

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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	58602-S13	58602-S14	58602-S15
Date Tested	27/08/2021	27/08/2021	27/08/2021
Time Tested	08:51	08:42	14:05
Test Request #/Location	From the W corned of lot 213	From the W corned of lot 214	From the W corned of lot 205
Chainage (m)	7mNE	8mNE	5mNE
Location Offset (m)	10mSE	4mSE	10mSE
Layer / Reduced Level	7	7	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>	1.99	2.04	2.01
Field Moisture Content %	24.0	19.4	19.5
Field Dry Density (FDD) t/m <sup>3</sup>	1.60	1.71	1.68
Peak Converted Wet Density t/m <sup>3</sup>	1.95	1.95	2.03
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	1.0	2.5	-0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>101.5</b>	<b>105.0</b>	<b>99.0</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:** GS5860/2-8  
**Issue Number:** 1  
**Date Issued:** 06/09/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5201  
**Date Sampled:** 02/09/2021  
**Dates Tested:** 02/09/2021 - 06/09/2021  
**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

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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	58602-S16	58602-S17	58602-S18
Date Tested	02/09/2021	02/09/2021	02/09/2021
Time Tested	10:34	12:58	14:44
Test Request #/Location	From the W corner of lot 207	From the W corner of lot 204	From the W corner of lot 206
Chainage (m)	8mNE	5mNE	10mNE
Location Offset (m)	13mSE	5mSE	18mSE
Layer / Reduced Level	2	3	4
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>	2.08	1.90	1.98
Field Moisture Content %	17.1	18.7	17.8
Field Dry Density (FDD) t/m <sup>3</sup>	1.78	1.60	1.68
Peak Converted Wet Density t/m <sup>3</sup>	2.06	1.93	1.98
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	-2.5	3.0	2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>101.0</b>	<b>99.0</b>	<b>100.0</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:** GS5860/2-9  
**Issue Number:** 1  
**Date Issued:** 08/09/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5219  
**Date Sampled:** 03/09/2021  
**Dates Tested:** 03/09/2021 - 06/09/2021  
**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

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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	58602-S19	58602-S20	
Date Tested	03/09/2021	03/09/2021	
Time Tested	11:33	11:28	
Test Request #/Location	From the W corner of lot 205	From the W corner of lot 207	
Chainage (m)	10mNE	5mNE	
Location Offset (m)	10mSE	10mSE	
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>	2.00	2.02	
Field Moisture Content %	18.0	18.2	
Field Dry Density (FDD) t/m <sup>3</sup>	1.70	1.71	
Peak Converted Wet Density t/m <sup>3</sup>	2.08	2.08	
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	
Moisture Variation (Wv) %	0.0	0.0	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	<b>96.0</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:** GS5860/2-11  
**Issue Number:** 1  
**Date Issued:** 13/09/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5290  
**Date Sampled:** 09/09/2021  
**Dates Tested:** 09/09/2021 - 10/09/2021  
**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

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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	58602-S21	58602-S22	58602-S23	58602-S24
Date Tested	09/09/2021	09/09/2021	09/09/2021	09/09/2021
Time Tested	10:43	10:48	12:40	12:48
Test Request #/Location	From the E corner of lot 208	From the E corner of lot 209	From the E corner of lot 212	From the E corner of lot 211
Chainage (m)	7mNW	5mNW	8mNW	5mNW
Location Offset (m)	15mSW	3mSW	18mSW	5mSW
Layer / Reduced Level	1	1	2	2
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>	2.13	1.98	2.16	2.02
Field Moisture Content %	16.5	23.8	17.0	22.1
Field Dry Density (FDD) t/m <sup>3</sup>	1.83	1.60	1.84	1.66
Peak Converted Wet Density t/m <sup>3</sup>	2.11	1.94	2.10	2.06
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	-1.0	0.0	0.0	-1.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	<b>100.5</b>	<b>102.0</b>	<b>102.5</b>	<b>98.5</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:** GS5860/2-10  
**Issue Number:** 1  
**Date Issued:** 13/09/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 5310  
**Date Sampled:** 10/09/2021  
**Dates Tested:** 10/09/2021 - 13/09/2021  
**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

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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	58602-S25	58602-S26	58602-S27	58602-S28
Date Tested	10/09/2021	10/09/2021	10/09/2021	10/09/2021
Time Tested	08:51	08:43	11:30	13:29
Test Request #/Location	From the E corner of lot 210	From the E corner of lot 208	From the E corner of lot 210	From the S corner of lot 212
Chainage (m)	9mNW	6mNW	7mNW	5mNW
Location Offset (m)	3mSW	12mSW	8mSW	17mSW
Layer / Reduced Level	3	4	5	6
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>	2.06	1.99	2.04	2.06
Field Moisture Content %	18.8	18.6	56.1	26.3
Field Dry Density (FDD) t/m <sup>3</sup>	1.74	1.68	1.31	1.63
Peak Converted Wet Density t/m <sup>3</sup>	1.99	2.03	2.06	2.05
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	0.5	-0.5	0.0	0.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	<b>104.0</b>	<b>98.0</b>	<b>99.0</b>	<b>100.5</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:** GS5860/2-12  
**Issue Number:** 1  
**Date Issued:** 10/12/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6264  
**Date Sampled:** 08/12/2021  
**Dates Tested:** 08/12/2021 - 10/12/2021  
**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  
**Material:** Silty CLAY, medium to high plasticity, brown

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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	58602-S29	58602-S30	58602-S31	58602-S32	58602-S33
Date Tested	08/12/2021	08/12/2021	08/12/2021	08/12/2021	08/12/2021
Time Tested	15:06	15:12	15:20	15:31	15:44
Test Request #/Location	29 Lot 242	30 Lot 237	31 Lot 233	32 Lot 218	33 Lot 221
Easting	38.114894	38.1109941	38.1110631	38.1114797	38.1113037
Northing	145.3694962	145.3700134	145.3692078	145.3694113	145.3691374
Layer / Reduced Level	1	1	1	1	1
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	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	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>	2.06	1.95	2.04	2.01	2.00
Field Moisture Content %	16.5	26.7	19.4	18.1	18.0
Field Dry Density (FDD) t/m <sup>3</sup>	1.76	1.54	1.71	1.70	1.70
Peak Converted Wet Density t/m <sup>3</sup>	2.08	1.97	2.09	2.04	2.03
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	**
Moisture Variation (Wv) %	0.0	-2.5	-2.0	1.5	2.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	98.5	99.0	97.5	98.5	98.5
Compaction Method	Standard	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:** GS5860/2-13  
**Issue Number:** 1  
**Date Issued:** 13/12/2021  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6287  
**Date Sampled:** 09/12/2021  
**Dates Tested:** 09/12/2021 - 11/12/2021  
**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  
**Material:** Silty CLAY, medium to high plasticity, brown

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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	58602-S34	58602-S35	58602-S36	58602-S37
Date Tested	09/12/2021	09/12/2021	09/12/2021	09/12/2021
Time Tested	08:32	01:14	01:23	01:35
Test Request #/Location	34 Lot 225	35 Lot 241	36 Lot 225	37 Lot 225
Easting	356990	357065	357049	357032
Northing	5780622	5780582	5780601	5780621
Layer / Reduced Level	1	2	2	2
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>	1.96	2.04	2.03	2.10
Field Moisture Content %	21.7	21.6	17.8	19.5
Field Dry Density (FDD) t/m <sup>3</sup>	1.61	1.68	1.72	1.76
Peak Converted Wet Density t/m <sup>3</sup>	2.06	2.03	2.10	2.14
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**
Moisture Variation (Wv) %	2.0	0.5	0.0	0.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	<b>95.0</b>	<b>100.5</b>	<b>96.5</b>	<b>98.5</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:** GS5860/2-14  
**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:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6302  
**Date Sampled:** 10/12/2021  
**Dates Tested:** 10/12/2021 - 14/12/2021  
**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  
**Material:** Silty CLAY, medium to high plasticity, brown

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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	58602-S38	58602-S39	58602-S40	58602-S41	58602-S42	58602-S43
Date Tested	10/12/2021	10/12/2021	10/12/2021	10/12/2021	10/12/2021	10/12/2021
Time Tested	09:31	09:42	12:58	01:10	03:38	03:45
Test Request #/Location	38 Lot 219	39 Lot 224	40 Lot 240	41 Lot 236	42 Lot 227	43 Lot 220
Easting	357043	356992	357054	357037	356996	357026
Northing	5780561	5780617	5780583	5780618	5780619	5780573
Layer / Reduced Level	2	2	3	3	3	3
Thickness of Layer (mm)	250	250	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	Silty CLAY, medium to high plasticity, brown	Silty CLAY, medium to high plasticity, brown
Test Depth (mm)	225	225	225	225	225	225
Sieve used to determine oversize (mm)	19.0	19.0	19.0	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	0	0	0	4	0
Field Wet Density (FWD) t/m <sup>3</sup>	2.10	2.05	1.99	2.08	2.13	2.05
Field Moisture Content %	14.8	16.7	17.2	16.4	14.4	12.1
Field Dry Density (FDD) t/m <sup>3</sup>	1.83	1.76	1.70	1.79	1.86	1.83
Peak Converted Wet Density t/m <sup>3</sup>	2.13	**	2.06	2.08	**	2.12
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	2.07	**	**	2.10	**
Moisture Variation (Wv) %	0.0	**	0.5	0.5	**	3.0
Adjusted Moisture Variation %	**	0.5	**	**	0.5	**
Hilf Density Ratio (%)	<b>98.0</b>	<b>99.0</b>	<b>96.5</b>	<b>100.0</b>	<b>101.5</b>	<b>96.5</b>
Compaction Method	<b>Standard</b>	<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:** GS5860/2-15  
**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:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6344  
**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

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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	58602-S44		
Date Tested	13/12/2021		
Time Tested	12:08		
Test Request #/Location	44 Lot 219		
Easting	357037		
Northing	5780562		
Layer / Reduced Level	4		
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>	2.10		
Field Moisture Content %	13.2		
Field Dry Density (FDD) t/m <sup>3</sup>	1.85		
Peak Converted Wet Density t/m <sup>3</sup>	2.13		
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**		
Moisture Variation (Wv) %	0.5		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	<b>98.5</b>		
Compaction Method	<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:** GS5860/2-16  
**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:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6377  
**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

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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	58602-S45	58602-S46	58602-S47
Date Tested	14/12/2021	14/12/2021	14/12/2021
Time Tested	02:09	02:17	02:29
Test Request #/Location	45 Lot 239	46 Lot 231	47 Lot 218
Easting	357059	357024	357037
Northing	5780597	5780654	5780541
Layer / Reduced Level	3	3	2
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>	1.99	1.97	2.03
Field Moisture Content %	15.0	16.1	23.4
Field Dry Density (FDD) t/m <sup>3</sup>	1.73	1.70	1.65
Peak Converted Wet Density t/m <sup>3</sup>	2.02	2.07	1.98
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	-0.5	2.0	0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	<b>98.0</b>	<b>95.0</b>	<b>102.5</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:** GS5860/2-17  
**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:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6426  
**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

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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	58602-S48		
Date Tested	17/12/2021		
Time Tested	08:41		
Test Request #/Location	48 Lot 219		
Easting	357040		
Northing	5780555		
Layer / Reduced Level	4		
Thickness of Layer (mm)	250		
Soil Description	CLAY, medium to high plasticity, brown		
Test Depth (mm)	225		
Sieve used to determine oversize (mm)	19.0		
Percentage of Wet Oversize (%)	0		
Field Wet Density (FWD) t/m <sup>3</sup>	2.08		
Field Moisture Content %	17.8		
Field Dry Density (FDD) t/m <sup>3</sup>	1.76		
Peak Converted Wet Density t/m <sup>3</sup>	2.07		
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**		
Moisture Variation (Wv) %	0.0		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	<b>100.0</b>		
Compaction Method	<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:** GS5860/2-18  
**Issue Number:** 1  
**Date Issued:** 10/01/2022  
**Client:** Frasers Property Australia Pty Ltd  
 Level 9, 484 St Kilda Road, Melbourne VIC 3004  
**Contact:** Jason Novotny  
**Project Number:** GS5860/2  
**Project Name:** Five Farms - Stage 2 (Level 1)  
**Project Location:** Clyde  
**Work Request:** 6463  
**Date Sampled:** 21/12/2021  
**Dates Tested:** 21/12/2021 - 30/12/2021  
**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

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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	58602-S49	58602-S50	58602-S51	58602-S52	58602-S53
Date Tested	21/12/2021	21/12/2021	21/12/2021	21/12/2021	21/12/2021
Time Tested	09:39	09:51	10:04	10:16	04:10
Test Request #/Location	49 Lot 242	50 Lot 239	51 Lot 235	52 Lot 231	53 Lot 225
Easting	357073	357055	357034	357003	356987
Northing	5780572	5780588	5780235	5780229	5780623
Layer / Reduced Level	4	4	4	4	4
Thickness of Layer (mm)	250	250	250	250	250
Soil Description	CLAY, medium to high plasticity, brown, F-C	CLAY, medium to high plasticity, brown, F-C	CLAY, medium to high plasticity, brown, F-C	CLAY, medium to high plasticity, brown, F-C	CLAY, medium to high plasticity, brown, F-C
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	2
Field Wet Density (FWD) t/m <sup>3</sup>	2.05	2.13	2.02	2.04	2.10
Field Moisture Content %	17.4	15.9	15.9	15.1	15.9
Field Dry Density (FDD) t/m <sup>3</sup>	1.74	1.84	1.74	1.77	1.81
Peak Converted Wet Density t/m <sup>3</sup>	2.01	2.01	2.08	2.07	**
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**	**	2.07
Moisture Variation (Wv) %	2.0	2.5	0.5	1.0	**
Adjusted Moisture Variation %	**	**	**	**	0.5
Hilf Density Ratio (%)	<b>102.0</b>	<b>106.0</b>	<b>97.0</b>	<b>98.5</b>	<b>101.5</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



## **APPENDIX D**

Site Photographs

19 Aug 2021 10:15:43 am  
proof roll



27 Aug 2021 9:10:37 am  
lots 204-207





10 Sep 2021 9:02:08 am  
lots 208-212

