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LEVEL 1 INSPECTION & TESTING
FIVE FARMS ESTATE - STAGE 4, CLYDE

Prepared for Frasers Property Australia

Report Reference: GS5860.4 AA

Date: 11 May 2022

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PROJECT DETAILS

Project Reference	GS5860.4	Rev	AA
Project Title	Five Farms Estate - Stage 4		
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 4 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 Rev P3, dated 10/05/2021). This report details the Level 1 earthwork process performed on site which commenced on 24th January 2022 and was completed on 28th February 2022, 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 P3, dated 10/05/2021). 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^2;
    - 1 test per 500m^3 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;

- 815 compactor;
- Water cart;
- Dozer;
- Excavator;
- Dump Trucks & Trailers.

During fill placement, the weather conditions were generally fine to overcast with occasional wet 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 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 65 in-situ density tests using a nuclear moisture-density gauge in accordance with Australian Standard (AS1289 5.8.1) and 65 "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.

Test #16, #21, and #23 failed to meet the required target density 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 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 0the 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.

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: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Specification: 95% Standard Compaction & +/- 3% Moisture Variation
Test Methods: AS 1289 5.7.1 STD & 5.8.1 & 2.1.1

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Geotechnical & Environmental Consultants
Ground Science Pty Ltd
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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)
**	58604-S1	24/01/2022	From the SE corner of Lot 407	5mW	7mN	**	1	96.5	1.0	12.4	2.03
**	58604-S2	24/01/2022	From the SE corner of Lot 413	7mW	10mN	**	1	96.0	-0.5	17.7	2.00
**	58604-S3	25/01/2022	From the E corner of lot 416	10mSW	7mNW	**	1	99.0	1.0	12.0	2.04
**	58604-S4	25/01/2022	From the E corner of lot 422	3mNW	8mSW	**	1	96.5	0.0	14.3	2.05
**	58604-S5	25/01/2022	From the E corner of lot 412	5mSW	12mNW	**	2	98.5	0.5	14.0	2.06
**	58604-S6	25/01/2022	From the E corner of lot 406	2mNW	10mSW	**	2	102.0	0.5	16.4	2.09
**	58604-S7	25/01/2022	From the E corner of lot 417	8mSW	4mNW	**	2	99.0	0.5	14.6	2.04
**	58604-S8	25/01/2022	From the E corner of lot 421	3mNW	9mSW	**	2	95.5	0.0	15.1	1.99
**	58604-S9	27/01/2022	From the E corner of lot 414	10mSW	7mNW	**	4	95.5	0.5	16.9	1.98
**	58604-S10	27/01/2022	From the E corner of lot 411	6mSW	5mNW	-0.25	3	98.5	0.5	18.0	2.02
**	58604-S11	27/01/2022	From the E corner of lot 409	12mSW	6mNW	**	4	96.0	-1.0	16.1	2.02
**	58604-S12	27/01/2022	From the E corner of lot 415	9mSW	10mNW	**	4	96.0	1.0	13.2	1.97
**	58604-S13	27/01/2022	From the E corner of lot 418	5mSW	4mNW	-0.25	3	97.5	0.5	13.8	2.00
**	58604-S14	27/01/2022	From the E corner of lot 420	4mNW	7mSW	**	4	95.5	0.5	15.3	1.98
**	58604-S15	28/01/2022	From the E corner of Lot 431	5mSW	7mNW	**	1	98.0	-0.5	13.3	2.10
**	58604-S16	28/01/2022	From the E corner of Lot 426	4mNW	10mSW	**	1	91.0	-0.5	12.1	1.97
**	58604-S17	28/01/2022	From the E corner of Lot 434	10mSW	12mNW	**	1	95.0	0.0	16.2	2.04
**	58604-S18	28/01/2022	From the E corner of lot 430	7mSW	10mNW	**	2	100.5	2.0	16.0	2.03
**	58604-S19	28/01/2022	From the E corner of lot 427	3mNW	8mSW	**	2	97.5	-1.5	17.8	2.03
**	58604-S20	01/02/2022	Lot 432	356891	5780771	**	3	100.0	0.5	15.4	2.08
**	58604-S21	01/02/2022	Lot 425	356907	5780782	**	3	94.0	1.5	13.9	1.97
**	58604-S22	01/02/2022	Lot 435	356883	5780828	**	2	101.0	1.5	14.9	2.10
**	58604-S23	01/02/2022	Lot 416	356896	5780736	**	1	93.0	0.5	17.2	1.94
**	58604-S24	01/02/2022	Lot 422	356915	5780751	**	1	99.5	-1.5	17.6	2.10
**	58604-S25	02/02/2022	Lot 416	356891	5780741	**	2	102.5	0.0	18.2	2.13
**	58604-S26	02/02/2022	Lot 419	356928	5780760	**	2	100.5	-0.5	17.6	2.09
**	58604-S27	02/02/2022	Lot 412	356889	5780666	**	1	101.5	-0.5	16.9	2.12
**	58604-S28	02/02/2022	Lot 408	356961	5780722	**	1	101.0	-2.0	20.8	2.10
**	58604-S29	03/02/2022	Lot 413	356899	5780669	**	2	95.0	0.5	14.7	1.97
**	58604-S30	03/02/2022	Lot 405	356953	5780721	**	2	94.5	2.0	14.7	1.96
**	58604-S31	03/02/2022	Lot 415	356897	5780745	**	3	99.5	0.0	19.0	2.05
**	58604-S32	03/02/2022	Lot 423	356935	5780769	**	3	101.5	0.5	19.6	2.04
**	58604-S33	03/02/2022	Lot 431	356890	5780751	**	2	98.0	0.5	16.4	2.01
**	58604-S34	03/02/2022	Lot 429	356909	5780760	**	2	96.5	1.0	14.8	1.99
**	58604-S35	03/02/2022	Lot 414	356913	5780690	**	3	97.5	0.0	15.3	2.07
**	58604-S36	03/02/2022	Lot 409	356947	5780716	**	3	100.0	-1.0	18.3	2.09
**	4589.1-S37	04/02/2022	Lot 415	356885	5780744	**	4	95.5	1.0	15.5	2.00
**	4589.1-S38	04/02/2022	Lot 419	356909	5780769	**	4	96.0	0.5	18.9	1.95
**	4589.1-S39	04/02/2022	Lot 428	356883	5780735	**	4	97.5	0.5	17.0	2.03
**	4589.1-S40	04/02/2022	Retest sample 16 lot 426	356886	5780768	**	1	100.5	0.5	17.6	2.07
**	4589.1-S41	04/02/2022	Retest sample 21 lot 425	356868	5780759	**	3	102.5	1.0	16.4	2.09
**	58604-S42	04/02/2022	Retest sample 23 lot 416	356898	5780791	**	1	95.5	0.5	14.6	2.04
**	58604-S43	04/02/2022	Lot 435	356867	5780802	**	3	99.5	-0.5	17.3	2.08
**	58604-S44	04/02/2022	Lot 432	356901	5780759	**	5	95.0	0.5	15.0	1.98
**	58604-S45	04/02/2022	Lot 429	356879	5780749	**	5	97.0	0.0	16.9	2.03
**	58604-S46	07/02/2022	Lot 413	356945	5780711	**	4	99.0	2.5	13.5	2.06
**	58604-S47	07/02/2022	Lot 407	356960	5780729	**	4	101.0	1.5	14.0	2.07

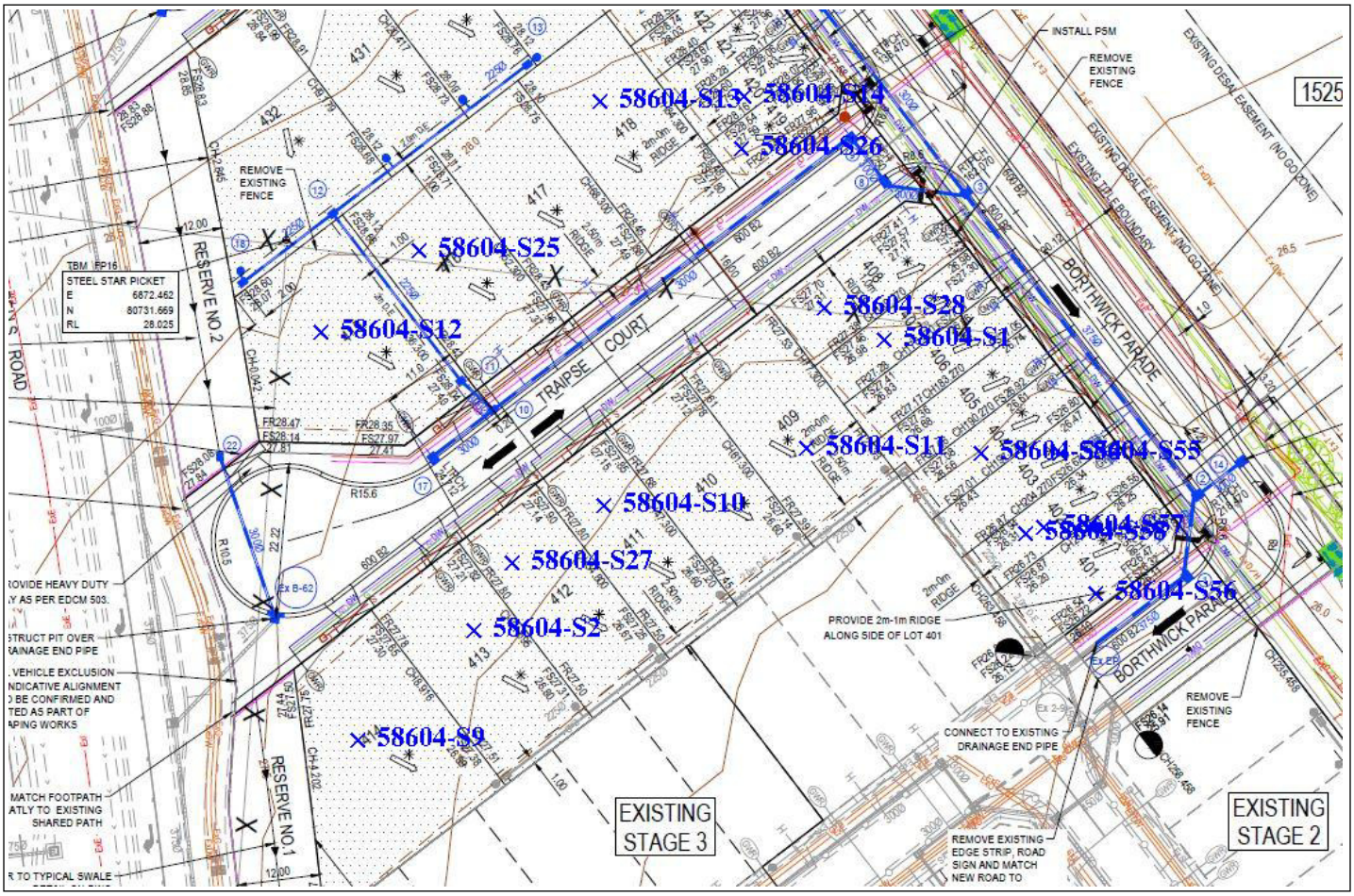
Lot #	Sample #	Date Sampled	Location	Chainage (m)	Location Offset (m)	Elevation (m)	Layer	Relative Compaction (%)	Moisture Variation (%)	Moisture Content (%)	Field Wet Density (t/m3)
**	58604-S48	07/02/2022	Lot 430	356904	5780782	**	5	103.0	3.0	13.0	2.14
**	58604-S49	07/02/2022	Lot 418	356916	5780746	**	5	100.0	0.0	15.8	2.12
**	58604-S50	07/02/2022	Lot 415	356903	5780734	**	5	96.0	0.0	14.8	2.02
**	58604-S51	08/02/2022	Lot 417	356927	5780714	**	5	101.0	0.5	16.4	2.10
**	58604-S52	08/02/2022	Lot 432	356878	5780762	**	5	98.5	0.0	16.7	2.08
**	58604-S53	08/02/2022	Lot 426	356904	5780778	**	5	99.0	-0.5	16.1	2.09
**	58604-S54	21/02/2022	54 Lot 403-405	356971	5780730	**	1	100.0	0.0	14.0	2.13
**	58604-S55	22/02/2022	55 Lots 403-404	356970	5780712	**	2	100.0	0.0	13.8	2.12
**	58604-S56	22/02/2022	56 Lots 401-402	356989	5780692	**	1	96.0	0.0	17.0	2.01
**	58604-S57	22/02/2022	57 Lots 401-402	356972	5780711	**	1	95.5	-3.5	17.5	2.03
**	58604-S58	24/02/2022	58 Lots 401-402	356977	5780716	**	02	95.5	0.5	17.6	2.04
**	58604-S59	25/02/2022	59 Lot 414	356895	5780671	**	5	99.5	-0.5	15.4	2.05
**	58604-S60	25/02/2022	60 Lot 409	356940	5780708	**	5	100.0	-0.5	15.2	2.09
**	58604-S61	25/02/2022	61 Lot 401	356969	5780685	**	1	99.5	-1.0	17.3	2.08
**	58604-S62	25/02/2022	62 Lot 403	356967	5780697	**	2	100.0	-2.0	16.9	2.12
**	58604-S63	28/02/2022	63 Lot 404	356978	5780704	**	03	107.5	4.5	10.8	2.13
**	58604-S64	28/02/2022	64 Lot 402	356983	5780704	**	04	99.5	2.5	13.3	2.08
**	58604-S65	28/02/2022	65 Lot 403	356	5780	**	05	97.5	4.0	11.7	1.93

Moisture Variation Note:

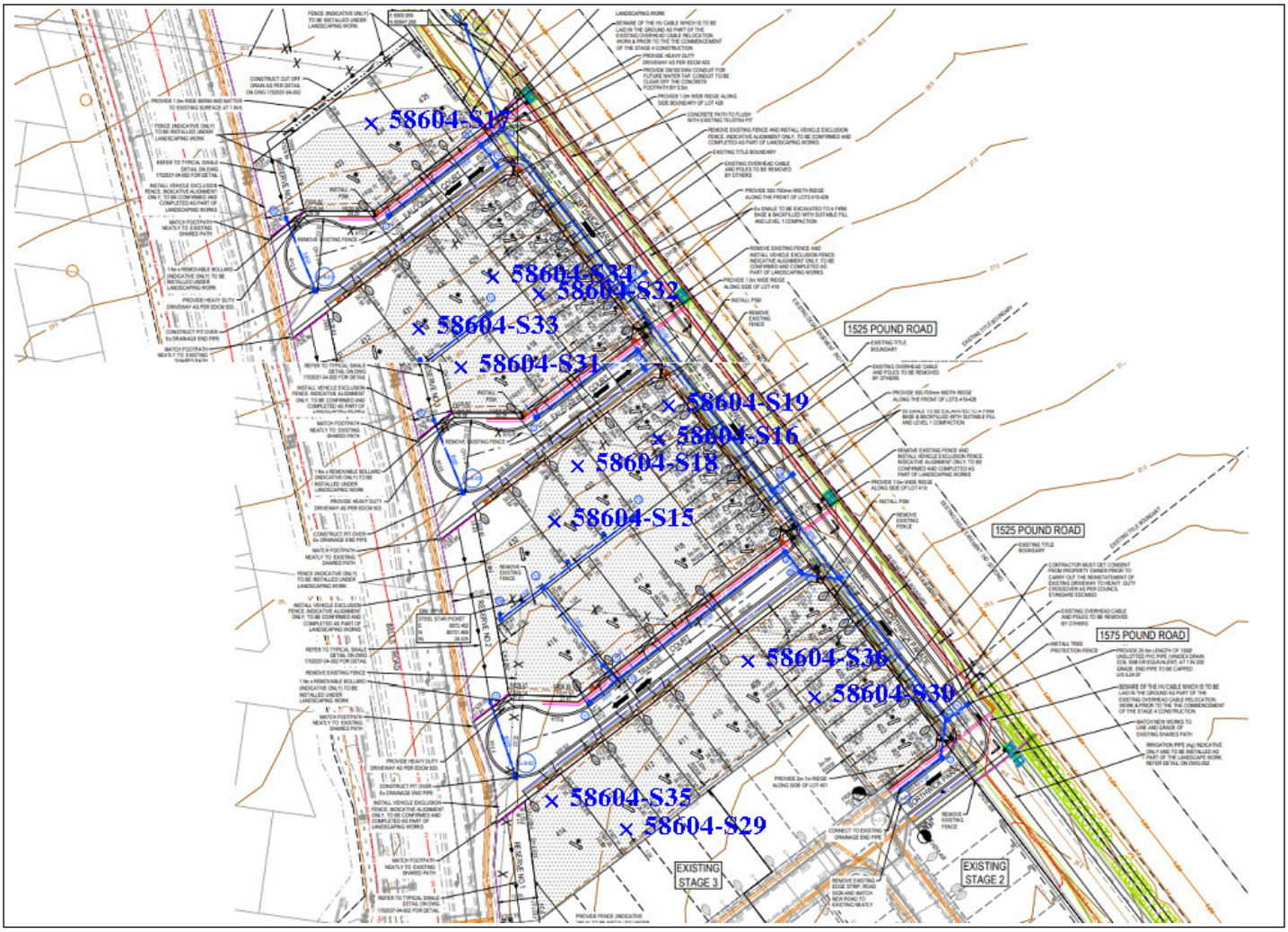
Positive values = test is dry of OMC

Negative values = test is wet of OMC

Sample Locations Plan



Sample Locations Plan



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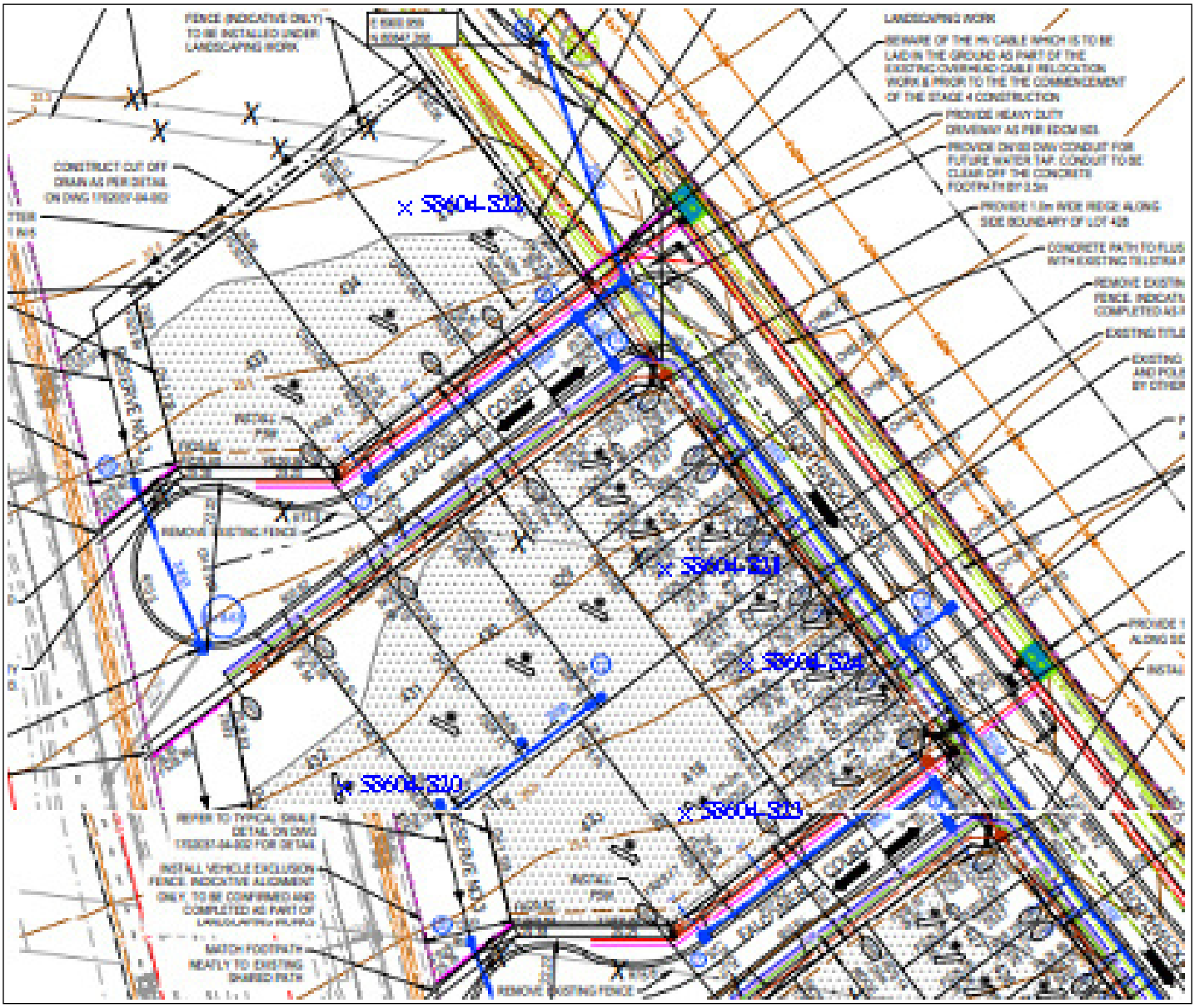
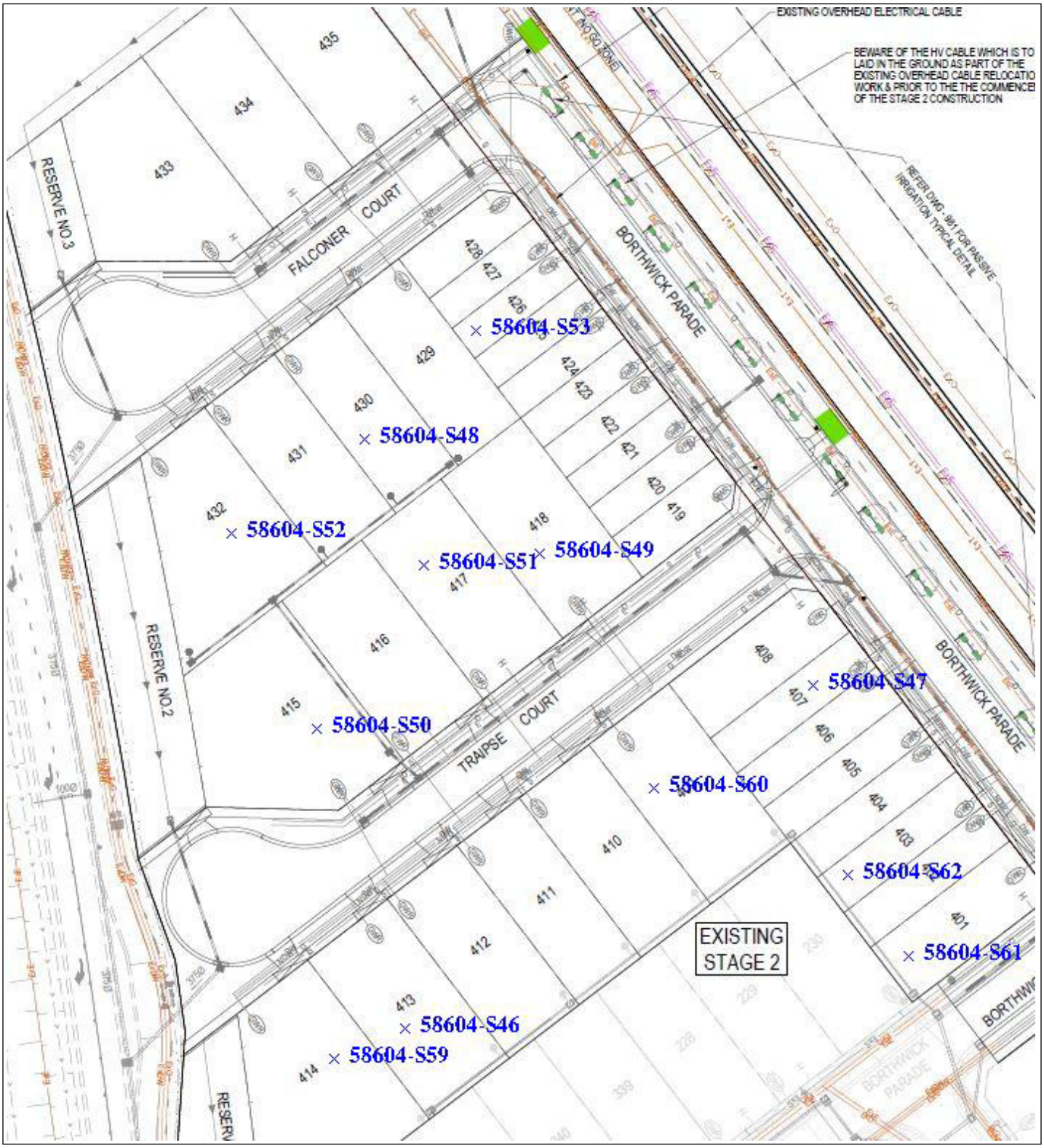


Sample Locations Plan

Sample Locations Plan



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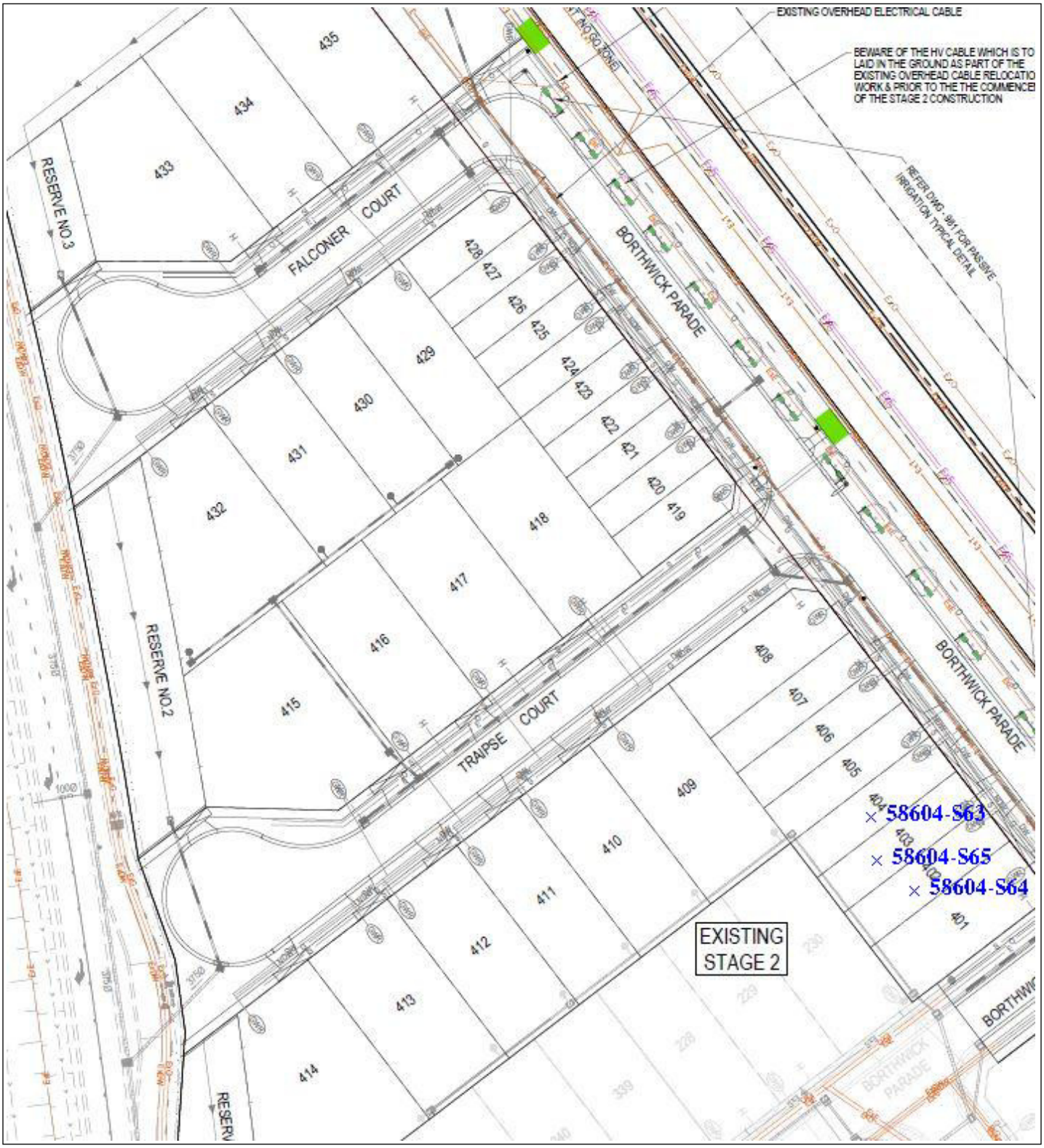

APPENDIX B

Field Density Test Report Sheets

Material Test Report

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
Laboratory 2IC

NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-1**
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: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6650
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58604-S1	58604-S2	
Date Tested	24/01/2022	24/01/2022	
Time Tested	14:01	14:07	
Test Request #/Location	From the SE corner of Lot 407	From the SE corner of Lot 413	
Chainage (m)	5mW	7mW	
Location Offset (m)	7mN	10mN	
Layer / Reduced Level	1	1	
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^3	2.03	2.00	
Field Moisture Content %	12.4	17.7	
Field Dry Density (FDD) t/m^3	1.81	1.70	
Peak Converted Wet Density t/m^3	2.11	2.09	
Adjusted Peak Converted Wet Density t/m^3	**	**	
Moisture Variation (Wv) %	1.0	-0.5	
Adjusted Moisture Variation %	**	**	
Hilf Density Ratio (%)	**96.5**	**96.0**	
Compaction Method	**Standard**	**Standard**	
Report Remarks	**	**	

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

Material Test Report

Ground Science Pty Ltd
Ground Science Laboratory
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Email: brent@groundscience.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Brent Elliott
Laboratory 2IC

NATA Accredited Laboratory Number: 15055

Report Number: GS5860/4-2
Issue Number: 1
Date Issued: 28/01/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6661
Date Sampled: 25/01/2022
Dates Tested: 25/01/2022 - 28/01/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1						
Sample Number	58604-S3	58604-S4	58604-S5	58604-S6	58604-S7	58604-S8
Date Tested	25/01/2022	25/01/2022	25/01/2022	25/01/2022	25/01/2022	25/01/2022
Time Tested	08:23	08:29	10:05	10:10	12:05	12:11
Test Request #/Location	From the E corner of lot 416	From the E corner of lot 422	From the E corner of lot 412	From the E corner of lot 406	From the E corner of lot 417	From the E corner of lot 421
Chainage (m)	10mSW	3mNW	5mSW	2mNW	8mSW	3mNW
Location Offset (m)	7mNW	8mSW	12mNW	10mSW	4mNW	9mSW
Layer / Reduced Level	1	1	2	2	2	2
Thickness of Layer (mm)	250	250	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	Sandy CLAY, medium to high plasticity, brown	Sandy 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	0	0
Field Wet Density (FWD) t/m^3	2.04	2.05	2.06	2.09	2.04	1.99
Field Moisture Content %	12.0	14.3	14.0	16.4	14.6	15.1
Field Dry Density (FDD) t/m^3	1.82	1.79	1.81	1.79	1.78	1.73
Peak Converted Wet Density t/m^3	2.06	2.12	2.09	2.05	2.06	2.08
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**	**	**
Moisture Variation (Wv) %	1.0	0.0	0.5	0.5	0.5	0.0
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	**99.0**	**96.5**	**98.5**	**102.0**	**99.0**	**95.5**
Compaction Method	**Standard**	**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

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Ground Science Laboratory
13 Brock Street Thomastown Victoria 3074
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Approved Signatory: Brent Elliott
Laboratory 2IC
NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-3**
Issue Number: 1
Date Issued: 31/01/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6674
Date Sampled: 27/01/2022
Dates Tested: 27/01/2022 - 28/01/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1						
Sample Number	58604-S9	58604-S10	58604-S11	58604-S12	58604-S13	58604-S14
Date Tested	27/01/2022	27/01/2022	27/01/2022	27/01/2022	27/01/2022	27/01/2022
Time Tested	13:14	13:09	13:03	14:01	14:07	14:15
Test Request #/Location	From the E corner of lot 414	From the E corner of lot 411	From the E corner of lot 409	From the E corner of lot 415	From the E corner of lot 418	From the E corner of lot 420
Chainage (m)	10mSW	6mSW	12mSW	9mSW	5mSW	4mNW
Location Offset (m)	7mNW	5mNW	6mNW	10mNW	4mNW	7mSW
Elevation (m)	**	-0.25	**	**	-0.25	**
Layer / Reduced Level	4	3	4	4	3	4
Thickness of Layer (mm)	250	250	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	Sandy CLAY, medium to high plasticity, brown	Sandy 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	0	0
Field Wet Density (FWD) t/m^3	1.98	2.02	2.02	1.97	2.00	1.98
Field Moisture Content %	16.9	18.0	16.1	13.2	13.8	15.3
Field Dry Density (FDD) t/m^3	1.69	1.71	1.74	1.74	1.76	1.72
Peak Converted Wet Density t/m^3	2.08	2.05	2.10	2.05	2.05	2.07
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**	**	**
Moisture Variation (Wv) %	0.5	0.5	-1.0	1.0	0.5	0.5
Adjusted Moisture Variation %	**	**	**	**	**	**
Hilf Density Ratio (%)	**95.5**	**98.5**	**96.0**	**96.0**	**97.5**	**95.5**
Compaction Method	**Standard**	**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

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Approved Signatory: Brent Elliott
Laboratory 2IC

NATA Accredited Laboratory Number: 15055

Report Number: GS5860/4-4
Issue Number: 1
Date Issued: 01/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6690
Date Sampled: 28/01/2022
Dates Tested: 28/01/2022 - 31/01/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	58604-S15	58604-S16	58604-S17	58604-S18	58604-S19
Date Tested	28/01/2022	28/01/2022	28/01/2022	28/01/2022	28/01/2022
Time Tested	09:58	10:04	12:48	14:02	14:08
Test Request #/Location	From the E corner of Lot 431	From the E corner of Lot 426	From the E corner of Lot 434	From the E corner of lot 430	From the E corner of lot 427
Chainage (m)	5mSW	4mNW	10mSW	7mSW	3mNW
Location Offset (m)	7mNW	10mSW	12mNW	10mNW	8mSW
Layer / Reduced Level	1	1	1	2	2
Thickness of Layer (mm)	250	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	Sandy 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^3	2.10	1.97	2.04	2.03	2.03
Field Moisture Content %	13.3	12.1	16.2	16.0	17.8
Field Dry Density (FDD) t/m^3	1.86	1.76	1.76	1.75	1.72
Peak Converted Wet Density t/m^3	2.15	2.16	2.15	2.02	2.08
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**	**
Moisture Variation (Wv) %	-0.5	-0.5	0.0	2.0	-1.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	**98.0**	**91.0**	**95.0**	**100.5**	**97.5**
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

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Ground Science Laboratory
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Tim Senserrick
Laboratory 21C
NATA Accredited Laboratory Number: 15055

Report Number: GS5860/4-5
Issue Number: 1
Date Issued: 03/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6728
Date Sampled: 01/02/2022
Dates Tested: 01/02/2022 - 02/02/2022
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 excavation

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	58604-S20	58604-S21	58604-S22	58604-S23	58604-S24
Date Tested	01/02/2022	01/02/2022	01/02/2022	01/02/2022	01/02/2022
Time Tested	11:12	11:27	13:11	14:08	14:18
Test Request #/Location	Lot 432	Lot 425	Lot 435	Lot 416	Lot 422
Easting	356891	356907	356883	356896	356915
Northing	5780771	5780782	5780828	5780736	5780751
Layer / Reduced Level	3	3	2	1	1
Thickness of Layer (mm)	250	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	Sandy 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^3	2.08	1.97	2.10	1.94	2.10
Field Moisture Content %	15.4	13.9	14.9	17.2	17.6
Field Dry Density (FDD) t/m^3	1.80	1.73	1.83	1.65	1.78
Peak Converted Wet Density t/m^3	2.08	2.09	2.08	2.08	2.10
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**	**
Moisture Variation (Wv) %	0.5	1.5	1.5	0.5	-1.5
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	**100.0**	**94.0**	**101.0**	**93.0**	**99.5**
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

Ground Science Pty Ltd
Ground Science Laboratory
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Tim Senserrick
Laboratory 21C
NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-6**
Issue Number: 1
Date Issued: 04/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6744
Date Sampled: 02/02/2022
Dates Tested: 02/02/2022 - 04/02/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	58604-S25	58604-S26	58604-S27	58604-S28
Date Tested	02/02/2022	02/02/2022	02/02/2022	02/02/2022
Time Tested	13:06	13:18	14:19	14:29
Test Request #/Location	Lot 416	Lot 419	Lot 412	Lot 408
Easting	356891	356928	356889	356961
Northing	5780741	5780760	5780666	5780722
Layer / Reduced Level	2	2	1	1
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^3	2.13	2.09	2.12	2.10
Field Moisture Content %	18.2	17.6	16.9	20.8
Field Dry Density (FDD) t/m^3	1.80	1.78	1.81	1.74
Peak Converted Wet Density t/m^3	2.08	2.08	2.09	2.07
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**
Moisture Variation (Wv) %	0.0	-0.5	-0.5	-2.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	**102.5**	**100.5**	**101.5**	**101.0**
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

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Ground Science Laboratory
13 Brock Street Thomastown Victoria 3074
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Tim Senserrick
Laboratory 21C
NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-7**
Issue Number: 1
Date Issued: 07/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6769
Date Sampled: 03/02/2022
Dates Tested: 03/02/2022 - 05/02/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	58604-S29	58604-S30	58604-S31	58604-S32
Date Tested	03/02/2022	03/02/2022	03/02/2022	03/02/2022
Time Tested	09:58	10:08	10:21	10:28
Test Request #/Location	Lot 413	Lot 405	Lot 415	Lot 423
Easting	356899	356953	356897	356935
Northing	5780669	5780721	5780745	5780769
Layer / Reduced Level	2	2	3	3
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^3	1.97	1.96	2.05	2.04
Field Moisture Content %	14.7	14.7	19.0	19.6
Field Dry Density (FDD) t/m^3	1.72	1.71	1.72	1.71
Peak Converted Wet Density t/m^3	2.07	2.07	2.05	2.01
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**
Moisture Variation (Wv) %	0.5	2.0	0.0	0.5
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	**95.0**	**94.5**	**99.5**	**101.5**
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

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Approved Signatory: Tim Senserrick
Laboratory 21C
NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-7**
Issue Number: 1
Date Issued: 07/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6769
Date Sampled: 03/02/2022
Dates Tested: 03/02/2022 - 05/02/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	58604-S33	58604-S34	58604-S35	58604-S36
Date Tested	03/02/2022	03/02/2022	03/02/2022	03/02/2022
Time Tested	12:50	12:58	13:41	13:48
Test Request #/Location	Lot 431	Lot 429	Lot 414	Lot 409
Easting	356890	356909	356913	356947
Northing	5780751	5780760	5780690	5780716
Layer / Reduced Level	2	2	3	3
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^3	2.01	1.99	2.07	2.09
Field Moisture Content %	16.4	14.8	15.3	18.3
Field Dry Density (FDD) t/m^3	1.72	1.73	1.80	1.77
Peak Converted Wet Density t/m^3	2.05	2.06	2.12	2.10
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**
Moisture Variation (Wv) %	0.5	1.0	0.0	-1.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	**98.0**	**96.5**	**97.5**	**100.0**
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: GS5860/4-8
Issue Number: 1
Date Issued: 08/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6792
Date Sampled: 04/02/2022
Dates Tested: 04/02/2022 - 07/02/2022
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

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Approved Signatory: Brent Elliott
Laboratory 2IC
NATA Accredited Laboratory Number: 15055

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	4589.1-S37	4589.1-S38	4589.1-S39	4589.1-S40	4589.1-S41
Date Tested	04/02/2022	04/02/2022	04/02/2022	04/02/2022	04/02/2022
Time Tested	08:28	08:40	08:53	11:05	11:15
Test Request #/Location	Lot 415	Lot 419	Lot 428	Retest sample 16 lot 426	Retest sample 21 lot 425
Easting	356885	356909	356883	356886	356868
Northing	5780744	5780769	5780735	5780768	5780759
Layer / Reduced Level	4	4	4	1	3
Thickness of Layer (mm)	250	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	Sandy 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^3	2.00	1.95	2.03	2.07	2.09
Field Moisture Content %	15.5	18.9	17.0	17.6	16.4
Field Dry Density (FDD) t/m^3	1.73	1.64	1.74	1.76	1.79
Peak Converted Wet Density t/m^3	2.09	2.04	2.08	2.06	2.04
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**	**
Moisture Variation (Wv) %	1.0	0.5	0.5	0.5	1.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	**95.5**	**96.0**	**97.5**	**100.5**	**102.5**
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

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
Laboratory 2IC

NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-8**
Issue Number: 1
Date Issued: 08/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6792
Date Sampled: 04/02/2022
Dates Tested: 04/02/2022 - 07/02/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	58604-S42	58604-S43	58604-S44	58604-S45	
Date Tested	04/02/2022	04/02/2022	04/02/2022	04/02/2022	
Time Tested	11:23	11:34	14:44	14:55	
Test Request #/Location	Retest sample 23 lot 416	Lot 435	Lot 432	Lot 429	
Easting	356898	356867	356901	356879	
Northing	5780791	5780802	5780759	5780749	
Layer / Reduced Level	1	3	5	5	
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^3	2.04	2.08	1.98	2.03	
Field Moisture Content %	14.6	17.3	15.0	16.9	
Field Dry Density (FDD) t/m^3	1.78	1.77	1.72	1.74	
Peak Converted Wet Density t/m^3	2.14	2.09	2.09	2.10	
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**	
Moisture Variation (Wv) %	0.5	-0.5	0.5	0.0	
Adjusted Moisture Variation %	**	**	**	**	
Hilf Density Ratio (%)	**95.5**	**99.5**	**95.0**	**97.0**	
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

Ground Science Pty Ltd
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13 Brock Street Thomastown Victoria 3074
Phone: (03) 9464 4617
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Brent Elliott
Laboratory 2IC
NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-9**
Issue Number: 1
Date Issued: 09/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6836
Date Sampled: 14/02/2022
Dates Tested: 08/02/2022 - 08/02/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1					
Sample Number	58604-S46	58604-S47	58604-S48	58604-S49	58604-S50
Date Tested	07/02/2022	07/02/2022	07/02/2022	07/02/2022	07/02/2022
Time Tested	08:52	09:10	09:28	14:14	14:30
Test Request #/Location	Lot 413	Lot 407	Lot 430	Lot 418	Lot 415
Easting	356945	356960	356904	356916	356903
Northing	5780711	5780729	5780782	5780746	5780734
Layer / Reduced Level	4	4	5	5	5
Thickness of Layer (mm)	250	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	Sandy 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^3	2.06	2.07	2.14	2.12	2.02
Field Moisture Content %	13.5	14.0	13.0	15.8	14.8
Field Dry Density (FDD) t/m^3	1.81	1.82	1.90	1.83	1.76
Peak Converted Wet Density t/m^3	2.08	2.05	2.08	2.12	2.11
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**	**
Moisture Variation (Wv) %	2.5	1.5	3.0	0.0	0.0
Adjusted Moisture Variation %	**	**	**	**	**
Hilf Density Ratio (%)	**99.0**	**101.0**	**103.0**	**100.0**	**96.0**
Compaction Method	**Modified**	**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

Ground Science Pty Ltd
Ground Science Laboratory
13 Brock Street Thomastown Victoria 3074
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Tim Senserrick
Laboratory 21C
NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-10**
Issue Number: 1
Date Issued: 10/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 6858
Date Sampled: 08/02/2022
Dates Tested: 08/02/2022 - 10/02/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58604-S51	58604-S52	58604-S53
Date Tested	08/02/2022	08/02/2022	08/02/2022
Time Tested	11:58	12:15	12:26
Test Request #/Location	Lot 417	Lot 432	Lot 426
Easting	356927	356878	356904
Northing	5780714	5780762	5780778
Layer / Reduced Level	5	5	5
Thickness of Layer (mm)	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
Test Depth (mm)	225	225	225
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0	3	0
Field Wet Density (FWD) t/m^3	2.10	2.08	2.09
Field Moisture Content %	16.4	16.7	16.1
Field Dry Density (FDD) t/m^3	1.81	1.78	1.80
Peak Converted Wet Density t/m^3	2.08	**	2.11
Adjusted Peak Converted Wet Density t/m^3	**	2.11	**
Moisture Variation (Wv) %	0.5	**	-0.5
Adjusted Moisture Variation %	**	0.0	**
Hilf Density Ratio (%)	**101.0**	**98.5**	**99.0**
Compaction Method	**Standard**	**Standard**	**Standard**
Report Remarks	**	**	**

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

Material Test Report

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
Laboratory 2IC

NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-11**
Issue Number: 1
Date Issued: 28/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 7096
Date Sampled: 21/02/2022
Dates Tested: 21/02/2022 - 25/02/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58604-S54		
Date Tested	21/02/2022		
Time Tested	13:10		
Test Request #/Location	54 Lot 403-405		
Easting	356971		
Northing	5780730		
Layer / Reduced Level	1		
Thickness of Layer (mm)	250		
Soil Description	Sandy 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^3	2.13		
Field Moisture Content %	14.0		
Field Dry Density (FDD) t/m^3	1.87		
Peak Converted Wet Density t/m^3	2.13		
Adjusted Peak Converted Wet Density t/m^3	**		
Moisture Variation (Wv) %	0.0		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	**100.0**		
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

Ground Science Pty Ltd
Ground Science Laboratory
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Brent Elliott
Laboratory 2IC

NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-12**
Issue Number: 1
Date Issued: 28/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 7120
Date Sampled: 22/02/2022
Dates Tested: 22/02/2022 - 26/02/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58604-S55	58604-S56	58604-S57
Date Tested	22/02/2022	22/02/2022	22/02/2022
Time Tested	09:45	12:23	12:35
Test Request #/Location	55 Lots 403-404	56 Lots 401-402	57 Lots 401-402
Easting	356970	356989	356972
Northing	5780712	5780692	5780711
Layer / Reduced Level	2	1	1
Thickness of Layer (mm)	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
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^3	2.12	2.01	2.03
Field Moisture Content %	13.8	17.0	17.5
Field Dry Density (FDD) t/m^3	1.87	1.72	1.73
Peak Converted Wet Density t/m^3	2.13	2.09	2.12
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Moisture Variation (Wv) %	0.0	0.0	-3.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**100.0**	**96.0**	**95.5**
Compaction Method	**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

Ground Science Pty Ltd
Ground Science Laboratory
13 Brock Street Thomastown Victoria 3074
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Tim Senserrick
Laboratory Manager
NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-13**
Issue Number: 1
Date Issued: 28/02/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 7179
Date Sampled: 24/02/2022
Dates Tested: 24/02/2022 - 28/02/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58604-S58		
Date Tested	24/02/2022		
Time Tested	10:05		
Test Request #/Location	58 Lots 401-402		
Easting	356977		
Northing	5780716		
Layer / Reduced Level	02		
Thickness of Layer (mm)	250		
Soil Description	Sandy 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^3	2.04		
Field Moisture Content %	17.6		
Field Dry Density (FDD) t/m^3	1.73		
Peak Converted Wet Density t/m^3	2.13		
Adjusted Peak Converted Wet Density t/m^3	**		
Moisture Variation (Wv) %	0.5		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	**95.5**		
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

Ground Science Pty Ltd
Ground Science Laboratory
13 Brock Street Thomastown Victoria 3074
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Email: brent@groundscience.com.au

Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Brent Elliott
Laboratory 2IC
NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-14**
Issue Number: 1
Date Issued: 02/03/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 7203
Date Sampled: 25/02/2022
Dates Tested: 25/02/2022 - 08/03/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1				
Sample Number	58604-S59	58604-S60	58604-S61	58604-S62
Date Tested	25/02/2022	25/02/2022	25/02/2022	25/02/2022
Time Tested	08:43	08:55	10:50	12:30
Test Request #/Location	59 Lot 414	60 Lot 409	61 Lot 401	62 Lot 403
Easting	356895	356940	356969	356967
Northing	5780671	5780708	5780685	5780697
Layer / Reduced Level	5	5	1	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^3	2.05	2.09	2.08	2.12
Field Moisture Content %	15.4	15.2	17.3	16.9
Field Dry Density (FDD) t/m^3	1.77	1.81	1.78	1.81
Peak Converted Wet Density t/m^3	2.05	2.09	2.09	2.12
Adjusted Peak Converted Wet Density t/m^3	**	**	**	**
Moisture Variation (Wv) %	-0.5	-0.5	-1.0	-2.0
Adjusted Moisture Variation %	**	**	**	**
Hilf Density Ratio (%)	**99.5**	**100.0**	**99.5**	**100.0**
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

Ground Science Pty Ltd
Ground Science Laboratory
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Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Tim Senserrick
Laboratory Manager
NATA Accredited Laboratory Number: 15055

Report Number: **GS5860/4-15**
Issue Number: 1
Date Issued: 07/03/2022
Client: Frasers Property Australia Pty Ltd
Level 9, 484 St Kilda Road, Melbourne VIC 3004
Contact: Jason Novotny
Project Number: GS5860/4
Project Name: Five Farms - Stage 4 (Level 1)
Project Location: Clyde
Work Request: 7243
Date Sampled: 28/02/2022
Dates Tested: 28/02/2022 - 05/03/2022
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

Compaction Control AS 1289 5.7.1 & 5.8.1 & 2.1.1			
Sample Number	58604-S63	58604-S64	58604-S65
Date Tested	28/02/2022	28/02/2022	28/02/2022
Time Tested	09:20	10:05	12:10
Test Request #/Location	63 Lot 404	64 Lot 402	65 Lot 403
Easting	356978	356983	356
Northing	5780704	5780704	5780
Layer / Reduced Level	03	04	05
Thickness of Layer (mm)	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
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^3	2.13	2.08	1.93
Field Moisture Content %	10.8	13.3	11.7
Field Dry Density (FDD) t/m^3	1.92	1.84	1.73
Peak Converted Wet Density t/m^3	1.98	2.09	1.98
Adjusted Peak Converted Wet Density t/m^3	**	**	**
Moisture Variation (Wv) %	4.5	2.5	4.0
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	**107.5**	**99.5**	**97.5**
Compaction Method	**Standard**	**Standard**	**Standard**
Report Remarks	**	**	**

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

APPENDIX C

Site Photographs


24 Jan 2022 8:23:43 am
lots 405-414 base inspection and proof roll stage 4


27 Jan 2022 8:11:13 am
lots 415-423 layer 3 finished and layer 4 being placed


8 Feb 2022 12:46:59 pm
lots 415-432 full layer 5


25 Feb 2022 10:10:57 am
Finish of Layer 5 in lots 405-414