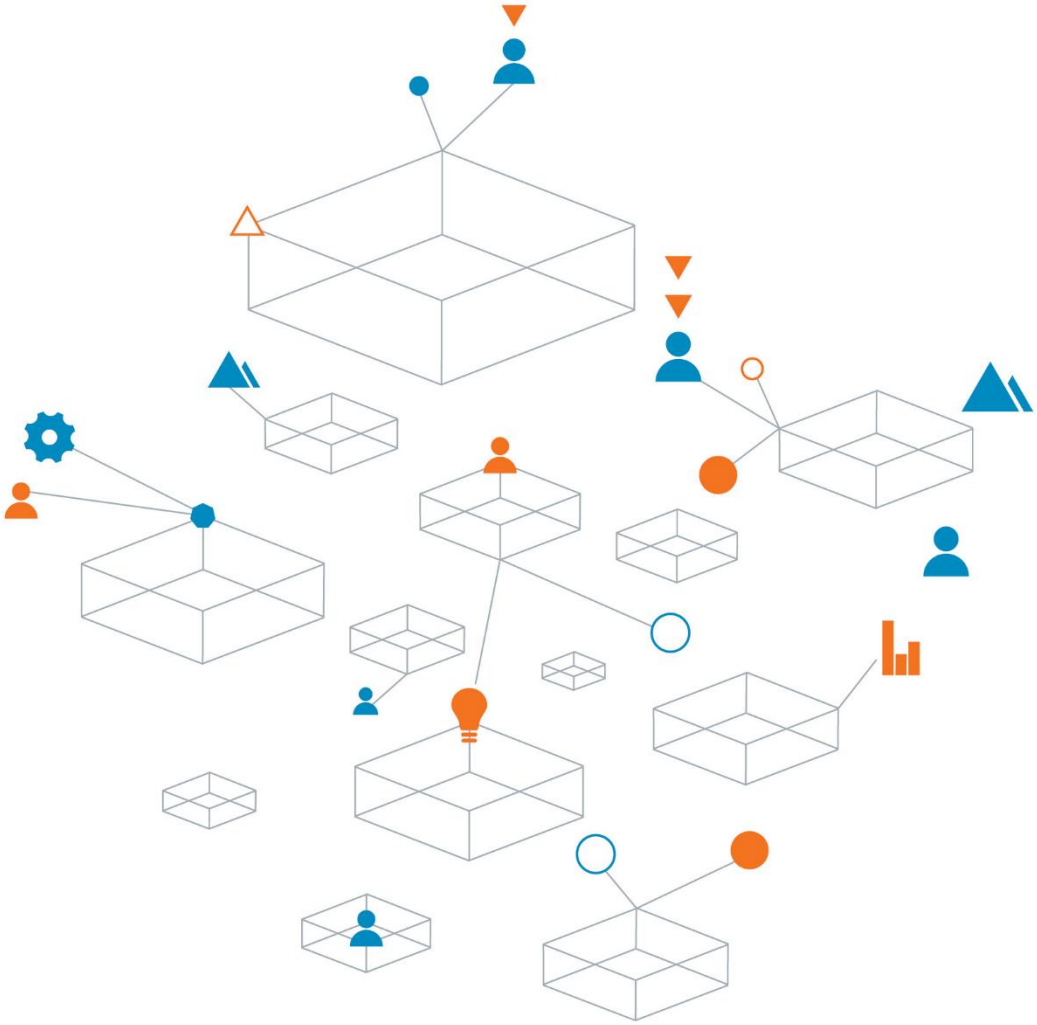
Frasers Property
Level 1 Inspection and Testing Report, Stage 1, Mambourin Estate
754-MELGE221991AD

28 August 2019



Trust is the cornerstone of all our projects

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Level 1 Inspection and Testing Report, Stage 1, Mambourin Estate

Prepared for
Frasers Property

Prepared by
Coffey Services Australia Pty Ltd
Level 1, 436 Johnston Street
Abbotsford
Vic 3067 Australia
t: +61 3 9290 7000 f: +61 3 9290 7499
ABN 55 139 460 521

19 December 2019

Our Ref: 754-MELGE221991AD Rev 1

For and on behalf of Coffey

Stojcevski, Sotir
Principal Geotechnical Technician

Quality information

Revision history

Revision	Description	Date	Originator	Reviewer	Signatury
0	Level 1 Inspection and Testing Report – Rev 0	28 August 2019	Sotir Stojcevski	Ganesh Manivannan	Sotir Stojcevski

Distribution

Report Status	No. of copies	Format	Distributed to	Date
Rev 0	1	PDF	Spiire – Mithun.Ranjanan@spiire.com.au	28 August 2019
	1	PDF	Frasers Property – Ilce.Mladenovski@fraserspropery.com.au	
	1	PDF	Coffey Library	
Rev 1 (addition of western batters – Figures 1, 2, 3)	1	PDF	Spiire – Mithun.Ranjanan@spiire.com.au	19 December 2019
	1	PDF	Frasers Property – Ilce.Mladenovski@fraserspropery.com.au	
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1. Introduction

This report presents the results of the Level 1 Inspection and Testing for fill placement within Stage 1 of Mambourin Estate, Wyndham Vale, undertaken by Coffey Services Australia Pty Ltd (Coffey).

The works were commissioned by Kranish Reddy from Frasers Property (Frasers). The project was managed by Spiire Australia Pty Ltd (Spiire).

2. Project Summary

We understand that Frasers require fill placement within Stage 1 of the Mambourin Estate, in the area as shown in Figure 1, to be constructed under Level 1 Inspection and Testing undertaken by a Geotechnical Inspection and Testing Authority (GITA).

Level 1 Inspection and Testing, as defined in AS3798-2007 “Guidelines on Earthworks for Commercial and Residential Development,” provides for full time inspection of the construction of controlled fill and field and laboratory testing in accordance with AS1289 “Methods of Testing Soils for Engineering Purposes.”

The Level 1 Inspection for Stage 1 was undertaken by geotechnical professionals from Coffey over a period of 12 months as shown in Table 1. We note that during this period, earthworks were also conducted on Stages 2, 3, 4 and 5, which will be reported separately.

Table 1: Level 1 GITA - dates on site

Month	Dates
August 2018	24, 27, 28, 29, 30, 31
September 2018	1, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 21, 22, 24, 25,26, 27
October 2018	1, 2, 3, 4, 5, 6, 8, 9,10,11, 12, 13, 15
November 2018	12, 13, 14, 15, 16, 17
December 2018	17, 18, 19
January 2019	16,18, 21
February 2019	25, 26, 27, 28
March 2019	4, 5
April 2019	2, 3, 9, 15, 16, 17, 18, 29, 30
May 2019	4, 6, 7, 8, 9, 14, 15, 16, 17, 18, 20, 21, 22, 23, 24, 25, 27, 28, 29, 31
June 2019	1, 4, 5, 17, 26, 27, 28
July 2019	1, 2, 3, 4, 5, 8, 9, 12, 15, 16, 17, 24, 25, 26, 29, 30, 31
August 2019	1, 5, 6, 7, 8

The earthworks contractor for the project was Winslow Constructors Pty Ltd (Winslow). Coffey undertook the field density testing and the compaction control testing in their laboratory, as part of the Level 1 Inspection and Testing process.

2.1. Included areas

This report is applicable to material placed by Winslow within Stage 1 of the Mambourin Estate, as shown in Figure 1 and with reference to Section 2.2 (Excluded Areas) of this report. The filling areas encompass three Fill Pads of Stage 1 as shown in Table 2.

Table 2: Fill Pads on Stage 1

Fill Pad	Residential Lot #
Eastern Pad	#143 to #169
Central Pad	#116 to #138
Western Pad	#101 to #114 & #139 to #142

2.2. Excluded areas

This report does not include fill other than where mentioned in this report or any other fill that may be placed during this period or subsequent periods at or surrounding the subject site. Excluded works comprise road construction, wetlands construction, trench backfill, foot paths, landscaping fill and placement of topsoil.

We note that Spiire (on behalf of Frasers) has engaged Coffey to assess selected parts of the road and wetlands construction within Stage 1, such as subgrade assessment, CBR values assessments, density testing, material properties testing and other works where geotechnical advice was required. These works are not covered in this report and are reported separately.

During Coffey's presence on site, observations of the earthworks for Stages 2 to 5 were also conducted by our Level 1 engineer on site. These works are to be reported separately and are excluded from this report.

3. Specifications / Work Instructions

The specification for the project were in general accordance with the 'Guidelines on earthworks for commercial and residential developments' of AS 3798-2007.

Spiire have provided Coffey with five drawings titled 'Mambourin Estate Stage 1', for Construction, under reference 303976R01 to 303976R05. On the Face Sheet under reference 303976R01, the following notes were considered and adopted as part of the earthworks specifications:

- **Note 8:** ALL FILLING ON LOTS AND WITHIN ROAD RESERVES GREATER THAN 200mm IS TO BE UNDERTAKEN USING LEVEL 1 SUPERVISION AND BE COMPLETED IN ACCORDANCE WITH AS 3798-2007. FILL AREAS ARE TO BE STRIPPED OF TOPSOIL, FILLED AND REPLACED WITH TOPSOIL (WHERE REQUIRED) TO OBTAIN THE FINAL LEVELS SHOWN ON THE DRAWINGS.

- **Note 9:** FILLING MATERIAL IS TO BE IN ACCORDANCE WITH THE SPECIFICATION, AS 3798-2007 & TO THE SATISFACTION OF COUNCIL AND THE SUPERINTENDENT.

- **Note 10:** ALL BATTERS SHALL BE 1 IN 6, UNLESS OTHERWISE SHOWN.

- **Note 15:** WHERE REQUIRED, ALL EXISTING DAMS, DEPRESSIONS AND DRAINS ARE TO BE BREACHED, DRAINED, DESLUDGED AND SHALL BE EXCAVATED TO A CLEAN FIRM BASE. THE SURFACE SHALL BE INSPECTED, APPROVED AND LEVELED BY THE ENGINEER PRIOR TO COMMENCEMENT OF FILLING. THE FILL SHALL BE APPROVED SELECTED ON SITE MATERIAL OR APPROVED IMPORTED MATERIAL. THE FILL

SHALL BE PLACED UNDER CONTROLLED MOISTURE CONDITIONS IN ACCORDANCE WITH THE SPECIFICATION.

In addition to the above notes, the following items from AS3798-2007 were discussed with Spiire and Winslow prior to the earthworks and adopted as part of the project earthworks specifications:

- Subgrade to be proof rolled in presence of the Level 1 Inspector prior to placement of an engineered fill;
- Subgrade to be surveyed prior to placement of any fill;
- Fill to be compacted in near horizontal layers not exceeding 300mm loose thickness;
- Compaction to achieve a ratio of at least 95% Standard MDD (maximum dry density);
- Moisture content of the fill material is to be within ±3% of the Standard Optimum Moisture Content (SOMC);
- Frequency of testing to be in accordance with Table 8.1 of AS3798-2007;
- Finished fill surface to be surveyed prior to placement of topsoil.

4. Fill Material

Fill used for the construction of Stage 1 comprised from imported sources arranged and approved by the contractor (Winslow) and the project manager (Spiire), as well as locally sourced clay from excavation of wetlands, road boxing and trenching within Mambourin Estate.

Any observed organic or deleterious matter including any oversize particles were removed during the fill placement within the engineered fill platforms. Coffey was not involved in the selection and approval process for the imported fill material.

The fill placed on the residential fill lots generally comprised of high and medium plasticity clay which is considered as ‘Suitable Material’ in accordance with Section 4.4 of the AS3798-2007.

5. Earthworks

The earthworks for this project included the following:

- Stripping of topsoil,
- Assessment, remediation and proof rolling of subgrade, and;
- Placement and compaction of fill to construct the engineered fill areas.

5.1. Subgrade Assessment

The subgrade for Stage 1 was assessed progressively throughout the works in three sections as follows:

- The Eastern Pad subgrade was assessed on 24 August 2018;
- The Central Pad subgrade was assessed on 24 and 30 August 2018;
- The Western Pad subgrade was assessed on 24 and 30 August 2018.

Subgrade assessment was conducted following the removal of topsoil, uncontrolled fill and before any fill was placed. In all areas the subgrade comprised natural clay with occasional basalt floaters observed immediately below and at the surface level.

No soft spots or deflections were observed during the subgrade proof rolling.

5.2. Fill Construction

All sourced fill was trucked in, spread with a bulldozer, compactor or grader and compacted with a compactor and/or a pad foot roller. A water cart was present onsite during works for moisture conditioning of the materials.

Prior to placement of the fill, the subgrade was scarified and moisturised to allow better bonding. The fill was then placed in horizontal layers not exceeding 300mm thickness. If any organic matter, oversize particles or unsuitable material was observed, the contractor was advised to remove this from the fill pad. Once the placed fill was approved, the layer was compacted accordingly.

Coffey personnel were on site on a fulltime basis during the placement, compaction and testing of the fill on the dates noted in Table 1 of this report.

5.3. Survey data and Fill Thickness

Spiire Australia Pty Ltd (Spiire) have provided us with a copy of a survey showing the levels of the stripped and finished surfaces of Precinct 1 of Mambourin Estate. Precinct 1 includes Stage 1 to 5 of the project.

These drawings are presented in 2 sheets attached in Appendix B under reference Mambourin Estate Precinct 1, Earthworks Filling Plan, Spot Level Comparison, Sheets 1 and 2, Drawing No. 303540SK05 and 303540SK06, Rev A. The information from the surveys has been summarised in Table 3.

Table 3: Fill levels at selected spot locations in Stage 1

Fill Pad	Lot Number	Subgrade level (m)	Finish Level (m)	Fill thickness (m)	Number of layers	Average layer thickness (m)	Meet Project requirements
Eastern	157	35.14	36.54	1.40	7	0.2	Yes
Eastern	162	35.14	36.82	1.78	6	0.3	Yes
Eastern	153	35.14	36.52	1.38	6	0.23	Yes
Eastern	148	35.26	36.87	1.61	6	0.27	Yes
Eastern	143	35.20	36.99	1.79	6	0.3	Yes
Central	130	35.16	37.12	1.96	8	0.24	Yes
Central	124	35.21	37.19	1.98	8	0.25	Yes
Central	121	35.15	37.49	2.34	8	0.29	Yes
Central	117	35.16	37.14	1.98	7	0.28	Yes
Central	137	35.16	37.02	1.86	7	0.27	Yes
Western	102	35.49	37.67	2.18	8	0.27	Yes
Western	106	35.45	37.33	1.88	8	0.23	Yes
Western	112	35.68	37.43	1.75	7	0.25	Yes
Western	139	35.15	36.71	1.56	7	0.22	Yes
Western	142	35.18	36.88	1.7	7	0.24	Yes

Based on the summary shown in Table 3, the analysed fill layers thicknesses at the selected spot locations are generally compliant with the project specifications.

6. Testing and Results

Field density testing was undertaken progressively during construction on the compacted fill. Testing was undertaken under the frequencies listed below, subject to the area and volume worked on the day of testing:

- 1 test per material type per layer per 2500m^2 or 1 test per 500m^3 distributed reasonably evenly or 3 tests per lot – whichever requires the most tests in accordance with Type 1 Earthworks (large scale operations) as defined in Table 8.1 of the AS 3798-2007;
- 1 test per layer per 1,000m² or 1 test per 200m³ distributed reasonably evenly or 1 test per residential lot - whichever requires the most tests in accordance with Type 2 Earthworks (small scale operations) as defined in Table 8.1 of the AS 3798-2007;
- 1 test per layer per 500m² or 1 test per 100m³ distributed reasonably evenly or 3 tests per visit - whichever requires the most tests in accordance with Type 3 Earthworks (concentrated scale operations) as defined in Table 8.1 of the AS 3798-2007;
- 1 test per 2 layers per 50m² distributed reasonably evenly throughout the fill depth –in accordance with Type 4 Earthworks (confined operations) as defined in Table 8.1 of the AS 3798-2007.

The field density testing was conducted by Coffey's personnel on site using a Nuclear Density Gauge in accordance with AS1289.5.8.1 'Determination of field density and field moisture content of a soil using a nuclear surface Moisture – Density Gauge'.

The laboratory testing was performed at Coffey's laboratory, with exception of Tests #1 to #15 that were conducted in Site Geotechnical laboratory, and, tests #313 to #316 conducted in A&Y Associates laboratory. A Hilf Rapid compaction test was performed for each field density test in accordance with AS1289.5.7.1 'Soil compaction and density tests—Compaction control test—Hilf density ratio and Hilf moisture variation (rapid method)'.

The location of the field density tests was determined by use of the GPS on the construction plant operated by the contractor on site. For each of the field density tests, the following items were recorded on the field sheets: test location, layer number, layer thickness, test depth, soil type, time and date of testing.

A total of 133 density tests were performed during the earthworks in the locations as presented in Figures 2 and 3. Of the 133 tests, 17 did not meet the specified criteria. These areas were subsequently re-worked and re-tested. Once re-tested, the 17 test results met the specified dry density ratio criteria of 95% Standard compactive effort and moisture variation of ±3% of the Optimum Moisture Content (OMC).

We note that test #22 returned a density ratio of 106% and a moisture ratio of -3.5% which is marginally outside the specified limit of ±3% of the OMC. It is our opinion that this results being 0.5% outside the specified moisture limit will not affect the integrity of the fill platform for the purpose it is constructed.

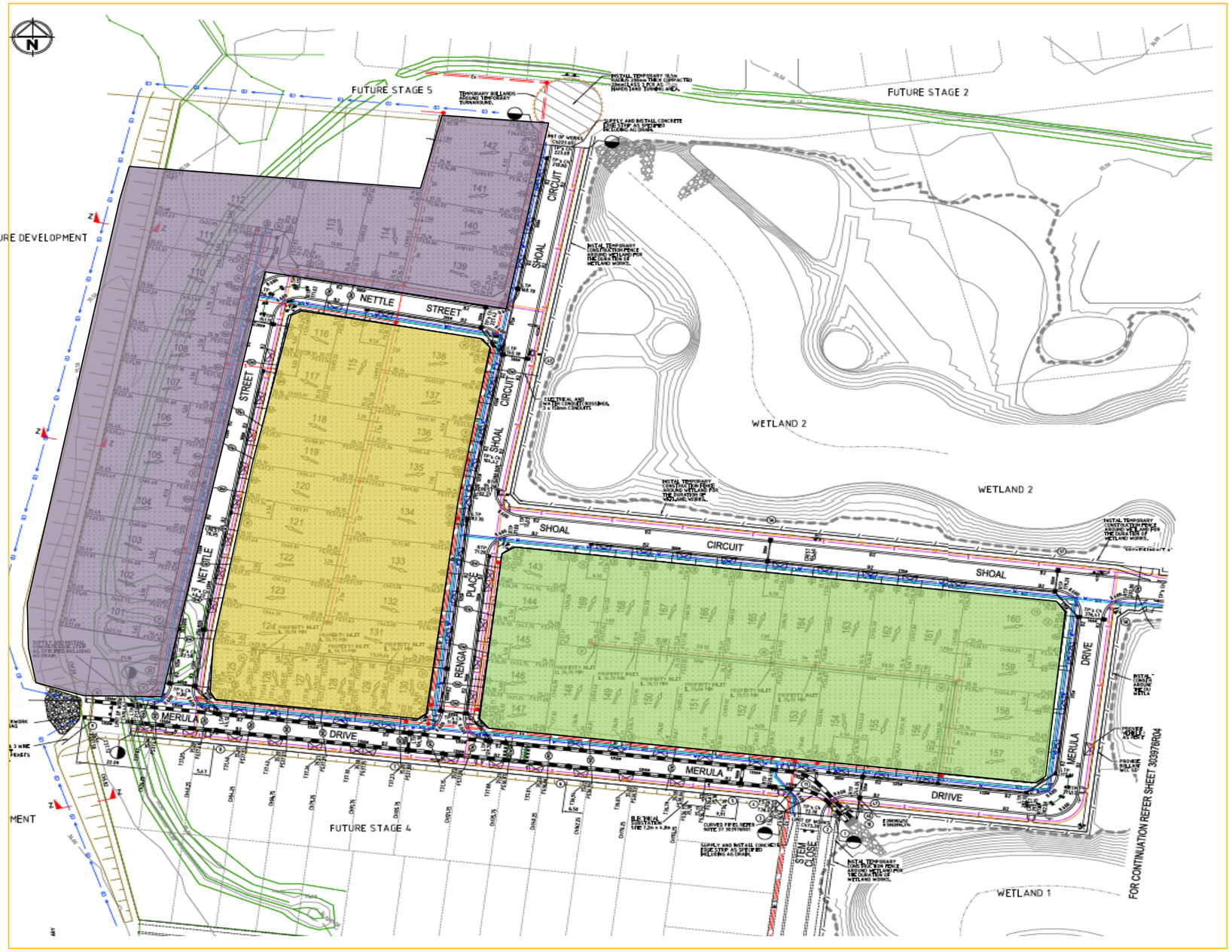
A summary of the test results obtained from the field density testing within Stage 1 are provided in a table presented as Figure 4. The laboratory test reports of the field density tests are presented in Appendix A.

7. Statement of Compliance

Coffey personnel have provided Level 1 inspection and testing services during the construction of the engineered fill areas within Stage 1 of Mambourin Estate as shown in SMS survey drawing in Appendix B. A geotechnical professional from Coffey (Level 1 Inspector) was on site on a full-time basis during the construction of the engineered fill platforms and observed the construction techniques adopted for the dates noted in section 2 of this report.

Based on observations made by Coffey's Level 1 Inspector and the results of field and laboratory tests, Coffey consider that the engineered fill areas within Stage 1 of Mambourin Estate as indicated in the SMS survey drawing in Appendix B, constructed by Winslow to the levels indicated in Section 5.3 of this report, as far as we have been able to reasonably determine, have been placed in general accordance with the intent of the specification.

Stage 1



LEGEND

- *Eastern Pad*
- *Central Pad*
- *Western Pad (incl. batters to west)*

revision	description	drawn	approved	date

Note:
Plans are not to scale.
All locations are approximate only.

drawn	S.S.
approved	G.M.
date	19.12.2019
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client:	SPIIRE C/- FRASERS PROPERTY
project:	MAMBOURIN ESTATE STAGE 1
title:	LEVEL 1 GITA REPORT
project no:	754-MELGE 221991 AD
figure no:	1

Stage 1

LEGEND

Eastern Pad

Southern Pad

Western Pad (incl. batters to west)

Field Density Tests location

Layer 1

Layer 2

revision	description	drawn	approved	date

Note:
Plans are not to scale.
All locations are approximate only.

drawn	S.S.
approved	G.M.
date	19.12.2019
scale	NTS
original size	A3

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client:	SPIIRE C/- FRASERS PROPERTY
project:	MAMBOURIN ESTATE STAGE 1
title:	LEVEL 1 GITA REPORT
project no:	754-MELGE 221991 AD
figure no:	2

Stage 1

LEGEND

- Eastern Pad
- Southern Pad
- Western Pad (incl. batters to west)

Field Density Tests locations

- Layer 3
- Layer 4
- Layer 5
- Layer 6
- Layer 7
- Layer 8

revision	description	drawn	approved	date

Note:
Plans are not to scale.
All locations are approximate only.

drawn	S.S.
approved	G.M.
date	19.12.2019
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client:	SPIIRE C/- FRASERS PROPERTY
project:	MAMBOURIN ESTATE STAGE 1
title:	LEVEL 1 GITA REPORT
project no:	754-MELGE 221991 AD
figure no:	3

FIGURE 3

Project Number	754-MELGE221991	Contractor	WINSLOW
Project Name	MOMOURIN ESTATE	Project Managers	SPIIRE
Location	BLACK FORREST ROAD, WYNDHAM VALE	Specifications	Density Ratio ≥ 95% of Max Dry Density
Client	FRASERS PROPERTY		Moisture content within ± 3% of OMC

SUMMARY OF FIELD DENSITY TEST RESULTS — FIGURE #4

Project: Mambourin Estate, Wyndham Vale
Client: Frasers Property
PM: Spiire
Project No. 754-MELGE221991
Specification: Density Ratio ≥ 95% of Max Dry Density; Moisture content within ± 3% of OMC

Test #	Retest of Test #	Date	Stage #	Layer #	Lot / Location #	HILF Density Ratio %	Moisture Variation of OMC %	Pass / Fail	Retest # Comment
1	X	Tuesday, August 21, 2018	Stage 1	1	Lot 160	95.5	-3.0	Pass	
2	X		Stage 1	1	Lot 161	97.5	-1.5	Pass	
3	X		Stage 1	1	Lot 163	**92.5**	0.5	**Fail**	Retest #7
4	X		Stage 1	1	Lot 158	99.0	**-5.0**	**Fail**	Retest #8
5	X		Stage 1	1	Lot 155	97.0	**-7.0**	**Fail**	Retest #9
6	X		Stage 1	1	Trial area	99.5	**-6.0**	**Fail**	Trial Test only
7	**3**	Thursday, August 23, 2018	Stage 1	1	Lot 163	100.0	**-1.5**	Pass	
8	**4**	Friday, August 24, 2018	Stage 1	1	Lot 158	100	**-5.5**	**Fail**	Retest #18
9	**5**		Stage 1	1	Lot 155	100.5	**-5**	**Fail**	Retest #19
10	X		Stage 1	1	Lot 154	**93**	0.5	**Fail**	Retest #21
11	X		Stage 1	1	Lot 148	100.5	0.5	Pass	
12	X		Stage 1	1	Lot 169	96	0.5	Pass	
13	X		Stage 1	1	Lot 168	96.5	1.5	Pass	
14	X		Stage 1	1	Lot 166	**94**	-3	**Fail**	Retest #22
15	X		Stage 1	1	Lot 150	104.5	2.5	Pass	
16	X	Monday, August 27, 2018	Stage 1	2	Lot 160	99.5	0	Pass	
17	X		Stage 1	2	Lot 163	100	-3	Pass	
18	**8**	Tuesday, August 28, 2018	Stage 1	1	Lot 158	97.5	0	Pass	
19	**9**		Stage 1	1	Lot 155	99.5	-3	Pass	
20	X	Wednesday, August 29, 2018	Stage 1	1	Lot 147	103.5	-3	Pass	
21	**10**		Stage 1	1	Lot 154	95	-2.5	Pass	
22	**14**		Stage 1	1	Lot 165	**106**	-3.5	Pass	Approved by PM
23	**22**	Friday August 31, 2018	Stage 1	1	Lot 165	96.0	0.0	Pass	
24	x		Stage 1	1	Lot 130	98.5	-2.0	Pass	
25	x		Stage 1	1	Lot 133	99	-0.5	Pass	
26	x	Saturday, September 1, 21018	Stage 1	1	Lot 144	101.0	-2.0	Pass	
27	x		Stage 1	1	Lot 128	101.5	-2.5	Pass	
28	x		Stage 1	1	Lot 122	99.0	-0.5	Pass	
29	x	Monday, September 3, 2018	Stage 1	1	Lot 139	100.0	-2.5	Pass	
30	x		Stage 1	1	Lot 137	102.0	-2.0	Pass	
31	x		Stage 1	1	Lot 135	96.5	0.5	Pass	
32	X	x	Other Stages	x	x	98.5	x	x	x
33	X	Wednesday, September 5, 2018	Stage 1	2	155	103.0	-2.0	Pass	
34	X		Stage 1	2	151	98.0	-2.0	Pass	

Test #	Retest of Test #	Date	Stage #	Layer #	Lot / Location #	HILF Density Ratio %	Moisture Variation of OMC %	Pass / Fail	Retest # Comment
35	X		Stage 1	2	166	97.5	-2.0	Pass	
36-59	X	x	Other Stages	x	x	x	x	x	
60		Monday, September 17.2018	Stage 1	2	123	104.5	-2.5	Pass	
61			Stage 1	2	120	105.5	-2.0	Pass	
62			Stage 1	2	118	104.5	-2.5	Pass	
63	X	x	Other Stages	x	x	x	x	x	
64		Tuesday, September 18.2018	Stage 1	2	110	103.5	-2.0	Pass	
65			Stage 1	2	138	108.0	0.0	Pass	
66		Wednesday, September 19, 2018	Stage 1	3	155	102.5	-3.0	Pass	
67			Stage 1	3	158	98.5	0.0	Pass	
68			Stage 1	3	159	101.0	0.0	Pass	
69	X	x	Other Stages	x	x	x	x	x	
71		Thursday, September 20, 2018	Stage 1	3	165	100.5	2.0	Pass	
72			Stage 1	3	168	104.5	0.0	Pass	
73			Stage 1	3	146	102.0	0.0	Pass	
74		Friday, September 21 , 2018	Stage 1	3	124	100.0	0.5	Pass	
75			Stage 1	3	133	101.0	-1.5	Pass	
76		Tuesday, September 25, 2018	Stage 1	3	103	102.0	-2.0	Pass	
77			Stage 1	3	107	100.5	0.0	Pass	
78			Stage 1	3	111	103.0	0.0	Pass	
79			Stage 1	3	115	98.0	**5.0**	**Fail**	#81
80			Stage 1	3	140	101.5	-2.0	Pass	
81	#79	Wednesday, September 26 , 2018	Stage 1	3	115	102.5	**3.5**	**Fail**	#88
82			Stage 1	4	161	101.5	2.5	Pass	
83			Stage 1	4	154	102.5	-2.5	Pass	
84			Stage 1	4	130	97.5	1.5	Pass	

Test #	Retest of Test #	Date	Stage #	Layer #	Lot / Location #	HILF Density Ratio %	Moisture Variation of OMC %	Pass / Fail	Retest # Comment
85		Thursday, September 27 , 2018	Stage 1	4	149	97.5	2.5	Pass	
86			Stage 1	4	165	98.5	2.0	Pass	
87			Stage 1	4	144	99.5	0.0	Pass	
88	#81		Stage 1	3	115	97.0	0.5	Pass	
89		Wednesday, October 3 , 2018	Stage 1	4	122	102.5	2.5	Pass	
90			Stage 1	4	114	100.5	1.0	Pass	
91			Stage 1	4	137	98.0	2.5	Pass	
92			Stage 1	4	109	98.5	3.0	Pass	
93			Stage 1	4	104	101.5	0.0	Pass	
94		Friday, October 5, 2018	Stage 1	5	136	105.5	3.0	Pass	
95			Stage 1	5	118	97.5	1.5	Pass	
96			Stage 1	5	121	84.0	1.5	Fail	#101
97		Monday, October 8, 2018	Stage 1	5	149	99.0	2.0	Pass	
98			Stage 1	5	153	98.5	2.5	Pass	
99			Stage 1	5	161	94.5	4.0	Fail	#102
100			Stage 1	5	167	96.5	0.0	Pass	
101	96		Stage 1	5	121	98.0	2.0	Pass	
102	99	Wednesday, October 10, 2018	Stage 1	5	161	98.5	0.0	Pass	
103			Stage 1	5	111	96.0	2.0	Pass	
104			Stage 1	5	141	95.5	2.0	Pass	
x	X	x	Other Stages	x	x	x	x	x	
107		Friday, October 12, 2018	Stage 1	6	132	103.0	2.0	Pass	
108			Stage 1	6	125	103.0	2.5	Pass	
109			Stage 1	6	102	103.0	2.5	Pass	
110		Saturday, October 13, 2018	Stage 1	7	101	101.0	0.0	Pass	
111			Stage 1	7	124	101.0	2.0	Pass	
112			Stage 1	6	106	100.5	-0.5	Pass	

Test #	Retest of Test #	Date	Stage #	Layer #	Lot / Location #	HILF Density Ratio %	Moisture Variation of OMC %	Pass / Fail	Retest # Comment
113		Monday, October 15, 2018	Stage 1	6	110	97.5	0.5	Pass	
114			Stage 1	6	120	98.5	0.0	Pass	
x	X	x	Other Stages	x	x	x	x	x	
118		Mobday 22 October 2018	Stage 1	8	129	101.0	0.0	Pass	
119			Stage 1	6	140	101.0	0.0	Pass	
120			Stage 1	6	112	103.5	2.5	Pass	
x	X	Tuesday, October 23, 2018	Other Stages	x	x	x	x	x	
147		Monday. November 12, 2018	Stage 1	6	118	96.5	0.5	Pass	
148			Stage 1	8	132	98.5	1.0	Pass	
149			Stage 1	8	122	99.0	0.5	Pass	
150			Stage 1	7	113	100.0	1.0	Pass	
151			Stage 1	7	111	100.5	1.0	Pass	
152		Friday, November 16, 2018	Stage 1	6	157	100.5	-1.5	Pass	
153			Stage 1	6	159	102.5	-2.5	Pass	
x	X	Monday, November 19, 2018	Other Stages	x	x	x	x	x	
202		Friday, January 18, 2019	Stage 1	1	111	100.0	-0.5	Pass	
203			Stage 1	1	106	98.0	0.5	Pass	
204			Stage 1	1	103	98.5	2.0	Pass	
205		Monday, January 21, 2019	Stage 1	2	110	101.5	-1.5	Pass	
206			Stage 1	2	106	100.5	-1.5	Pass	
x	X	Tuesday, January 22, 2019	Other Stages	x	x	x	x	x	
213		Monday, February 25, 2019	Stage 1	3	109	104.5	-2.5	Pass	
214			Stage 1	3	104	105.0	-2.5	Pass	
x	X		Other Stages	x	x	x	x	x	
220			Stage 1	4	111	102.0	0.5	Pass	
221			Stage 1	4	106	100.0	0.5	Pass	
222			Stage 1	4	102	100.5	2.0	Pass	
x	X	Tuesday, March 05, 2019	Other Stages	x	x	x	x	x	

Test #	Retest of Test #	Date	Stage #	Layer #	Lot / Location #	HILF Density Ratio %	Moisture Variation of OMC %	Pass / Fail	Retest # Comment
249			Stage 1	5	110	100.5	5.0	Fail	258
250			Stage 1	5	106	100.5	3.0	Pass	
251			Stage 1	6	111	100.0	3.0	Pass	
252			Stage 1	6	108	100.0	3.0	Pass	
253			Stage 1	7	109	99.5	3.0	Pass	
254			Stage 1	8	101	98.5	3.0	Pass	
255		Monday, May 6, 2019	Stage 1	5	101	97.0	6.0	Fail	259
256			Stage 1	6	103	97.0	0.5	Pass	
x	X		Other Stages	x	x	x	x	x	
258	249	Tuesday, May 7, 2019	Stage 1	5	110	100.5	7.5	Fail	261
259	255		Stage 1	5	101	100.5	7.5	Fail	262
x	X		Other Stages	x	x	x	x	x	
261	258	Thursday, May 9, 2019	Stage 1	5	110	103.0	-2.0	Pass	
262	259		Stage 1	5	101	103.5	-1.0	Pass	
x	X	Tuesday, May 14, 2019	Other Stages	x	x	x	x	x	
272			Stage 1	7	101	101.0	3.5	Fail	278
273		Friday, May 17, 2019	Stage 1	7	103	100.5	1.5	Pass	
274			Stage 1	7	105	101.5	2.0	Pass	
275			Stage 1	7	107	100.5	2.0	Pass	
276		Monday, May 20, 2019	Stage 1	7	110	98.5	1.0	Pass	
277			Stage 1	7	112	100.5	2.0	Pass	
278	272	Tuesday, May 21, 2019	Stage 1	7	101	99.0	1.0	Pass	
x	X		Other Stages	x	x	x	x	x	
281			Stage 1	6	147	96.5	1.0	Pass	
282			Stage 1	6	144	99.5	0.5	Pass	
283		Wednesday, May 22, 2019	Stage 1	6	151	97.5	0.5	Pass	
284			Stage 1	6	167	97.5	0.0	Pass	
285			Stage 1	6	164	102.0	0.0	Pass	

Test #	Retest of Test #	Date	Stage #	Layer #	Lot / Location #	HILF Density Ratio %	Moisture Variation of OMC %	Pass / Fail	Retest # Comment
286		Friday, May 24, 2019	Stage 1	6	153	99.0	0.5	Pass	
287			Stage 1	6	156	99.0	0.5	Pass	
288			Stage 1	6	161	99.5	1.0	Pass	
289		Saturday, May 25, 2019	Stage 1	7	157	98.5	1.0	Pass	
290			Stage 1	7	160	99.0	0.5	Pass	
x	X	Wednesday, 29 May, 2019	Other Stages	x	x	x	x	x	
313		Wednesday, 07 August, 2019	Stage 1	7	119	101.5	-0.5	Pass	
314			Stage 1	7	117	102.5	-0.5	Pass	
315			Stage 1	7	137	101.5	-0.5	Pass	
316			Stage 1	7	135	105.0	0.0	Pass	

Appendix A - Laboratory Test Certificates

Soil Compaction and Density Test - Compaction control test - Hilf density ratio and Hilf moisture variation (Rapid method)

SITE Geotechnical
Soil Investigation Testing & Evaluation

PROJECT INFORMATION

Client	Frasers Property C/- Spiire	Job Number	6626-1
Client Address	PO Box 16084, Melbourne VIC 8007	Visit Number	6
Project	Residential Subdivision (Mambourin)	Report Number	6626-1-6-1-6-HILF
Project Location	974 Black Forest Road, Wyndham Vale VIC 3024		

TEST SAMPLE INFORMATION / DENSITY TEST RESULTS

Method / Test Site Location Details / Chainage	Test Depth (mm)	Sample I.D.	Sample Description	COMPACTIVE EFFORT	WD Field Wet Density (t/m³)	W_f Moisture Content (%)	R_m Relative Moisture Ratio (%)	APCWD Adjusted Peak Converted Wet Density (t/m³)	P_o Percentage Oversized Material & Sieve Size	Aw_v Adjusted Moisture Variation From OMC (%)	WET / DRY of OMC	R_{HD} HILF Density Ratio (%)
				AS1289.5.	AS1289.5.8.1	AS1289.5.4.1		AS1289.5.7.1				
Stage 1 - Lot 160, S37°53'46.7" / E144°35'38.1", Layer 1.	275	S6626-1-6-1	Silty CLAY - Imported	.1.1 (STD)	1.75	25.9	89.0	1.83	0.0 on 19.0mm	3.0	DRY	95.5
Stage 1 - Lot 161, S37°53'47.1" / E144°35'37.6", Layer 1.	275	S6626-1-6-2	Silty CLAY - Imported	.1.1 (STD)	1.76	26.6	94.0	1.80	0.0 on 19.0mm	1.5	DRY	97.5
Stage 1 - Lot 163, S37°53'46.5" / E144°35'36.9", Layer 1.	275	S6626-1-6-3	Silty CLAY - Imported	.1.1 (STD)	1.82	26.5	113.0	1.97	7.9 on 19.0mm	-0.5	WET	92.5
Stage 1 - Lot 158, S37°53'47.7" / E144°35'38.2", Layer 1.	275	S6626-1-6-4	Silty CLAY - Site Derived	.1.1 (STD)	1.70	31.1	85.5	1.71	0.0 on 19.0mm	5.0	DRY	99.0
Stage 1 - Lot 155, S37°53'47.5" / E144°35'36.7", Layer 1.	275	S6626-1-6-5	Silty CLAY - Site Derived	.1.1 (STD)	1.61	30.4	81.5	1.66	0.0 on 19.0mm	7.0	DRY	97.0
Stage 1 - Trial Area, S37°53'47.1" / E144°35'38.7".	275	S6626-1-6-6	Silty CLAY - Site Derived	.1.1 (STD)	1.63	35.4	86.0	1.64	0.0 on 19.0mm	6.0	DRY	99.5

Remarks:

Site Geotechnical Pty Ltd ABN: 23 114 166 997
Factory 3 / 8 Cannery Court, Tyabb, VIC 3913
Phone: 1300 557 260
http://www.sitegeo.com.au Email: lab@sitegeo.com.au

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing

The results of the tests and measurements included in this document are traceable to Australian/national standards

Field Tested by: C. Paros
Date tested: 21/08/2018
Date Issued: 30/08/2018

Authorised Signatory: .....
Chris Paros (Laboratory Manager)

NATA Accredited Laboratory Number: 17066

Soil Compaction and Density Test - Compaction control test - Hilf density ratio and Hilf moisture variation (Rapid method)

SITE Geotechnical
Soil Investigation Testing & Evaluation

PROJECT INFORMATION

Client	Frasers Property Group C/- Spiire	Job Number	6626-1
Client Address	PO Box 16084, Melbourne VIC 8007	Visit Number	8
Project	Residential Subdivision (Mambourin)	Report Number	6626-1-8-7-7-HILF
Project Location	974 Black Forest Road, Wyndham Vale VIC 3024		

TEST SAMPLE INFORMATION / DENSITY TEST RESULTS

Method / Test Site Location Details / Chainage	Test Depth (mm)	Sample I.D.	Sample Description	COMPACTIVE EFFORT	WD Field Wet Density (t/m³)	W_f Moisture Content (%)	R_m Relative Moisture Ratio (%)	APCWD Adjusted Peak Converted Wet Density (t/m³)	P_o Percentage Oversized Material & Sieve Size	Aw_v Adjusted Moisture Variation From OMC (%)	WET / DRY of OMC	R_{HD} HILF Density Ratio (%)
				AS1289.5.	AS1289.5.8.1	AS1289.5.4.1		AS1289.5.7.1				
Stage 1 - Lot 163 - Retest of test no. 3, S37°53'46.1" / E144°35'36.8", Layer 1.	275	S6626-1-8-7	Silty CLAY - Imported	.1.1 (STD)	2.00	19.8	91.0	2.00	4.2 on 19.0mm	1.5	DRY	100.0

Remarks:

Site Geotechnical Pty Ltd ABN: 23 114 166 997
Factory 3 / 8 Cannery Court, Tyabb, VIC 3913
Phone: 1300 557 260
http://www.sitegeo.com.au Email: lab@sitegeo.com.au

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing

The results of the tests and measurements included in this document are traceable to Australian/national standards

Field Tested by: S. Puts
Date tested: 23/08/2018
Date Issued: 30/08/2018

Authorised Signatory: .....
Chris Paros (Laboratory Manager)

NATA Accredited Laboratory Number: 17066

Soil Compaction and Density Test - Compaction control test - Hilf density ratio and Hilf moisture variation (Rapid method)

SITE Geotechnical
Soil Investigation Testing & Evaluation

PROJECT INFORMATION

Client	Frasers Property C/- Spiire	Job Number	6626-1
Client Address	PO Box 16084, Melbourne VIC 8007	Visit Number	9
Project	Residential Subdivision (Mambourin)	Report Number	6626-1-9-8-13-HILF
Project Location	974 Black Forest Road, Wyndham Vale VIC 3024		

TEST SAMPLE INFORMATION / DENSITY TEST RESULTS

Method / Test Site Location Details / Chainage	Test Depth (mm)	Sample I.D.	Sample Description	COMPACTIVE EFFORT	WD Field Wet Density (t/m³)	W_f Moisture Content (%)	R_m Relative Moisture Ratio (%)	APCWD Adjusted Peak Converted Wet Density (t/m³)	P_o Percentage Oversized Material & Sieve Size	Aw_v Adjusted Moisture Variation From OMC (%)	WET / DRY of OMC	R_{HD} HILF Density Ratio (%)
				AS1289.5.	AS1289.5.8.1	AS1289.5.4.1		AS1289.5.7.1				
Stage 1 - Lot 158 - Retest of no. 4, S37°53'47.8" / E144°35'38.0", Layer 1.	275	S6626-1-9-8	Silty CLAY - Site Derived	.1.1 (STD)	1.68	33.5	92.5	1.68	6.0 on 19.0mm	5.5	DRY	100.0
Stage 1 - Lot 155 - Retest of no. 5, S37°53'47.1" / E144°35'36.6", Layer 1.	275	S6626-1-9-9	Silty CLAY - Site Derived	.1.1 (STD)	1.70	33.9	89.0	1.70	1.7 on 19.0mm	5.0	DRY	100.5
Stage 1 - Lot 154, S37°53'48.5" / E144°35'36.1", Layer 1.	275	S6626-1-9-10	Silty CLAY - Site Derived	.1.1 (STD)	1.62	39.5	99.0	1.74	0.0 on 19.0mm	0.5	DRY	93.0
Stage 1 - Lot 148, S37°53'47.1" / E144°35'31.6", Layer 1.	275	S6626-1-9-11	Silty CLAY - Imported	.1.1 (STD)	2.09	17.8	121.0	2.08	17.3 on 19.0mm	0.5	WET	100.5
Stage 1 - Lot 169, S37°53'46.3" / E144°35'32.1", Layer 1.	275	S6626-1-9-12	Silty CLAY - Imported	.1.1 (STD)	1.94	19.7	106.0	2.02	8.0 on 19.0mm	0.5	WET	96.0
Stage 1 - Lot 168, S37°53'46.7" / E144°35'33.3", Layer 1.	275	S6626-1-9-13	Silty CLAY - Imported	.1.1 (STD)	1.84	22.2	102.0	1.91	7.1 on 19.0mm	1.5	WET	96.5

Remarks:

Site Geotechnical Pty Ltd ABN: 23 114 166 997
Factory 3 / 8 Cannery Court, Tyabb, VIC 3913
Phone: 1300 557 260
http://www.sitegeo.com.au Email: lab@sitegeo.com.au

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing

The results of the tests and measurements included in this document are traceable to Australian/national standards

Field Tested by: S. Puts
Date tested: 2/08/2018
Date Issued: 30/08/2018

Authorised Signatory: .....
Chris Paros (Laboratory Manager)

NATA Accredited Laboratory Number: 17066

Soil Compaction and Density Test - Compaction control test - Hilf density ratio and Hilf moisture variation (Rapid method)

SITE Geotechnical
Soil Investigation Testing & Evaluation

PROJECT INFORMATION

Client	Frasers Property C/- Spiire	Job Number	6626-1
Client Address	PO Box 16084. Melbourne VIC 8007	Visit Number	9
Project	Residential Subdivision (Mambourin)	Report Number	6626-1-9-14-15-HILF
Project Location	974 Black Forest Road, Wyndham Vale VIC 3024		

TEST SAMPLE INFORMATION / DENSITY TEST RESULTS

Method / Test Site Location Details / Chainage	Test Depth (mm)	Sample I.D.	Sample Description	COMPACTIVE EFFORT	WD Field Wet Density (t/m³)	W_f Moisture Content (%)	R_m Relative Moisture Ratio (%)	APCWD Adjusted Peak Converted Wet Density (t/m³)	P_o Percentage Oversized Material & Sieve Size	Aw_v Adjusted Moisture Variation From OMC (%)	WET / DRY of OMC	R_{HD} HILF Density Ratio (%)
				AS1289.5.	AS1289.5.8.1	AS1289.5.4.1		AS1289.5.7.1				
Stage 1 - Lot 166, S37°53'46.7 / E144°35'33.3", Layer 1.	275	S6626-1-9-14	Silty CLAY - Imported	.1.1 (STD)	1.80	14.6	83.5	1.91	0.0 on 19.0mm	3.0	DRY	94.0
Stage 1 - Lot 150, S37°53'47.8" / E144°35'33.4", Layer 1.	275	S6626-1-9-15	Silty CLAY - Imported	.1.1 (STD)	1.98	19.7	97.5	1.89	8.5 on 19.0mm	2.5	DRY	104.5

Remarks:

Site Geotechnical Pty Ltd ABN: 23 114 166 997
Factory 3 / 8 Cannery Court, Tyabb, VIC 3913
Phone: 1300 557 260
http://www.sitegeo.com.au Email: lab@sitegeo.com.au

NATA
WORLD RECOGNISED ACCREDITATION

Accredited for compliance with ISO/IEC 17025 - Testing

The results of the tests and measurements included in this document are traceable to Australian/national standards

Field Tested by: S. Puts
Date tested: 24/08/2018
Date Issued: 30/08/2018

Authorised Signatory: .....
Chris Paros (Laboratory Manager)

NATA Accredited Laboratory Number: 17066

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00176
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 2/09/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and moisture variation to within 0% to +3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00637	MELB18S-00638				
Field Sample ID	00001	00002				
Client Sample ID	16	17				
Date Tested	27/08/2018	27/08/2018				
Time Tested	04:30	04:45				
Lot Number	160	163				
Layer Number	2	2				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	18.2	27.8				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.97	1.85				
Field Dry Density (t/m³)	1.67	1.45				
Peak Converted Wet Density* (t/m³)	1.98	1.85				
Optimum Moisture Content (%)	18.0	31.0				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	100.0	89.5				
Moisture Variation (%)	0.0	3.0 dry				
Hilf Density Ratio (%)	**99.5**	**100.0**				
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00178
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 2/09/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and moisture variation to be within 0% to +3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00642	MELB18S-00643				
Field Sample ID	00003	00004				
Client Sample ID	18	19				
Date Tested	28/08/2018	28/08/2018				
Time Tested	03:00	03:20				
Lot Number	158	155				
Layer Number	1	1				
Re-test	Re-test of 8	Re-test of 9				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	31.4	24.0				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.81	1.82				
Field Dry Density (t/m³)	1.38	1.47				
Peak Converted Wet Density* (t/m³)	1.86	1.83				
Optimum Moisture Content (%)	31.5	27.0				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	99.5	88.5				
Moisture Variation (%)	0.0	3.0 dry				
Hilf Density Ratio (%)	**97.5**	**99.5**				
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00181
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 2/09/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and moisture variation to be within 0% to +3% of OMC (as advised by client)l
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00651	MELB18S-00652	MELB18S-00653			
Field Sample ID	00005	00006	00007			
Client Sample ID	20	21	22			
Date Tested	29/08/2018	29/08/2018	29/08/2018			
Time Tested	04:00	04:30	05:00			
Lot Number	157	154	165			
Layer Number	2	2	2			
Re-test		Re-test 14	Re-test 10			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	27.2	29.1	22.1			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.88	1.75	1.93			
Field Dry Density (t/m³)	1.47	1.36	1.58			
Peak Converted Wet Density* (t/m³)	1.82	1.84	1.82			
Optimum Moisture Content (%)	30.0	32.0	25.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	90.0	91.5	86.5			
Moisture Variation (%)	3.0 dry	2.5 dry	3.5 dry			
Hilf Density Ratio (%)	**103.5**	**95.0**	**106.0**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00188
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 15/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 0% to +3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00669	MELB18S-00670	MELB18S-00671			
Field Sample ID	00008	00009	00010			
Client Sample ID	23	24	25			
Date Tested	31/08/2018	31/08/2018	31/08/2018			
Time Tested	05:10	05:20	05:40			
LOT Number	165	130	133			
Layer Number	1	1	1			
Re-test	Re-test of 22					
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Oversize Wet (%)	0	1	1			
Field Moisture Content (%)	27.7	21.9	23.7			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.88	1.83	1.96			
Field Dry Density (t/m³)	1.47	1.50	1.58			
Peak Converted Wet Density* (t/m³)	1.96	1.85	1.97			
Optimum Moisture Content (%)	27.5	24.0	24.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	100.5	91.0	97.5			
Moisture Variation (%)	0.0	2.0 dry	0.5 dry			
Hilf Density Ratio (%)	**96.0**	**98.5**	**99.0**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00189
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 15/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 0% to +3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00672	MELB18S-00673	MELB18S-00674			
Field Sample ID	00011	00012	00013			
Client Sample ID	26	27	28			
Date Tested	1/09/2018	1/09/2018	1/09/2018			
Time Tested	02:15	02:30	03:00			
LOT Number	144	128	122			
Layer Number	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Oversize Wet (%)	1	9	2			
Field Moisture Content (%)	28.2	21.9	19.0			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.83	1.96	1.96			
Field Dry Density (t/m³)	1.43	1.61	1.64			
Peak Converted Wet Density* (t/m³)	1.81	1.93	1.98			
Optimum Moisture Content (%)	30.5	24.5	19.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	93.0	90.0	98.5			
Moisture Variation (%)	2.0 dry	2.5 dry	0.5 dry			
Hilf Density Ratio (%)	**101.0**	**101.5**	**99.0**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00191
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 15/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moiusture variation to be within 0% to 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00678	MELB18S-00679	MELB18S-00680			
Field Sample ID	00014	00015	00016			
Client Sample ID	29	30	31			
Date Tested	3/09/2018	3/09/2018	3/09/2018			
Time Tested	04:10	04:30	04:45			
LOT Number	139	137	135			
Layer Number	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
AS Sieve Size (mm)	19.5	19.5	19.5			
Oversize Wet (%)	0	0	18			
Field Moisture Content (%)	22.8	23.6	22.0			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.91	1.92	1.91			
Field Dry Density (t/m³)	1.55	1.55	1.56			
Peak Converted Wet Density* (t/m³)	1.90	1.88	1.97			
Optimum Moisture Content (%)	25.5	25.5	22.0			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	90.0	92.5	101.0			
Moisture Variation (%)	2.5 dry	2.0 dry	0.5 wet			
Hilf Density Ratio (%)	**100.0**	**102.0**	**96.5**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00195
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 15/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00688	MELB18S-00689	MELB18S-00690			
Field Sample ID	00018	00019	00020			
Client Sample ID	33	34	35			
Date Tested	5/09/2018	5/09/2018	5/09/2018			
Lot #	155	151	166			
Layer	2	2	2			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	30.6	26.9	23.0			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.93	1.83	1.84			
Field Dry Density (t/m³)	1.48	1.44	1.50			
Peak Converted Wet Density* (t/m³)	1.87	1.87	1.89			
Optimum Moisture Content (%)	32.5	29.0	25.0			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	94.0	92.5	92.5			
Moisture Variation (%)	2.0 dry	2.0 dry	2.0 dry			
Hilf Density Ratio (%)	**103.0**	**98.0**	**97.5**			
legend * adjusted for oversize material						

Comments

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Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00214
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00749	MELB18S-00750	MELB18S-00751			
Field Sample ID	00046	00047	00048			
Client Sample ID	60	61	62			
Date Tested	17/09/2018	17/09/2018	17/09/2018			
Time Tested	03:15	03:45	04:10			
LOT Number	123	120	118			
Stage	1	1	1			
Layer Number	2	2	2			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	25.9	25.4	28.4			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.95	1.97	1.99			
Field Dry Density (t/m³)	1.55	1.57	1.55			
Peak Converted Wet Density* (t/m³)	1.87	1.87	1.91			
Optimum Moisture Content (%)	28.5	27.5	31.0			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	91.0	92.5	91.0			
Moisture Variation (%)	2.5 dry	2.0 dry	2.5 dry			
Hilf Density Ratio (%)	**104.5**	**105.5**	**104.5**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00215
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture Variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00752	MELB18S-00753	MELB18S-00754			
Field Sample ID	00049	00050	00051			
Client Sample ID	63	64	65			
Date Tested	18/09/2018	18/09/2018	18/09/2018			
Time Tested	10:15	03:30	03:50			
LOT Number	203	110	138			
Stage Number	2	1	1			
Layer Number	4	2	2			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	36.1	29.0	30.1			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.91	1.99	2.06			
Field Dry Density (t/m³)	1.40	1.54	1.58			
Peak Converted Wet Density* (t/m³)	1.75	1.92	1.90			
Optimum Moisture Content (%)	38.5	31.0	30.0			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	94.0	93.5	100.5			
Moisture Variation (%)	2.5 dry	2.0 dry	0.0			
Hilf Density Ratio (%)	**109.5**	**103.5**	**108.0**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00218
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00771	MELB18S-00772	MELB18S-00773	MELB18S-00774	MELB18S-00775
Field Sample ID	00058	00059	00060	00061	00062
Client Sample ID	66	67	68	69	70
Date Tested	19/09/2018	19/09/2018	19/09/2018	19/09/2018	19/09/2018
Time Tested	03:30	04:00	04:20	04:50	05:15
LOT Number	155	158	159	252	215
Layer Number	3	3	3	3	2
Stage	1	1	1	1	1
				Re-test of 59	Retest of 53
Field and Laboratory Data					
Depth of Test (mm)	275	275	275	275	275
Depth of Layer (mm)	300	300	300	300	300
Field Moisture Content (%)	35.5	30.3	24.7	25.5	34.8
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m³)	1.91	1.98	1.92	1.90	1.92
Field Dry Density (t/m³)	1.41	1.52	1.54	1.51	1.43
Peak Converted Wet Density* (t/m³)	1.86	2.01	1.90	1.90	1.93
Optimum Moisture Content (%)	39.0	30.0	24.5	28.0	34.5
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	91.0	100.5	100.5	91.0	101.5
Moisture Variation (%)	3.0 dry	0.0	0.0	2.5 dry	0.5 wet
Hilf Density Ratio (%)	**102.5**	**98.5**	**101.0**	**100.0**	**99.5**
legend * adjusted for oversize material					

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00220
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC(as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00777	MELB18S-00778	MELB18S-00779			
Field Sample ID	00063	00064	00065			
Client Sample ID	71	72	73			
Date Tested	20/09/2018	20/09/2018	20/09/2018			
Time Tested	03:45	04:10	04:30			
LOT Number	165	168	146			
Layer Number	3	3	3			
Stage Number	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	25.9	23.9	24.1			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.97	1.98	1.93			
Field Dry Density (t/m³)	1.56	1.60	1.55			
Peak Converted Wet Density* (t/m³)	1.95	1.90	1.89			
Optimum Moisture Content (%)	23.5	24.0	24.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	109.5	100.5	99.5			
Moisture Variation (%)	2.0 wet	0.0	0.0			
Hilf Density Ratio (%)	**100.5**	**104.5**	**102.0**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00223
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC(as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00784	MELB18S-00785				
Field Sample ID	00066	00067				
Client Sample ID	74	75				
Date Tested	21/09/2018	21/09/2018				
Time Tested	15:15	16:15				
stage	1	1				
LOT #	124	133				
Layer	3	3				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	27.5	21.4				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.93	1.94				
Field Dry Density (t/m³)	1.51	1.60				
Peak Converted Wet Density* (t/m³)	1.93	1.92				
Optimum Moisture Content (%)	27.0	23.0				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	102.0	92.5				
Moisture Variation (%)	0.5 wet	1.5 dry				
Hilf Density Ratio (%)	**100.0**	**101.0**				
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00226
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00809	MELB18S-00810	MELB18S-00811	MELB18S-00812	MELB18S-00813
Field Sample ID	00073	00074	00075	00076	00077
Client Sample ID	76	77	78	79	80
Date Tested	25/09/2018	25/09/2018	25/09/2018	25/09/2018	25/09/2018
Time Tested	11:30	12:01	01:00	01:20	01:45
LOT Number	103	107	111	115	140
Layer Number	3	3	3	3	3
Stage	1	1	1	1	1
Field and Laboratory Data					
Depth of Test (mm)	275	275	275	275	275
Depth of Layer (mm)	300	300	300	300	300
Field Moisture Content (%)	15.4	20.8	21.7	23.0	20.3
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m³)	1.96	1.96	1.98	1.94	1.93
Field Dry Density (t/m³)	1.70	1.62	1.63	1.58	1.61
Peak Converted Wet Density* (t/m³)	1.93	1.95	1.92	1.99	1.90
Optimum Moisture Content (%)	17.5	20.5	21.5	18.0	22.5
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	88.0	100.5	100.5	126.5	91.0
Moisture Variation (%)	2.0 dry	0.0	0.0	5.0 wet	2.0 dry
Hilf Density Ratio (%)	**102.0**	**100.5**	**103.0**	**98.0**	**101.5**
legend * adjusted for oversize material					

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00228
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00817	MELB18S-00818	MELB18S-00819			
Field Sample ID	00078	00079	00080			
Client Sample ID	81	82	83			
Date Tested	26/09/2018	26/09/2018	26/09/2018			
Time Tested	12:30	03:00	03:40			
LOT Number	115	161	154			
Layer Number	3	4	4			
Stage	1	1	1			
	Re-test of 79					
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	17.1	17.5	16.5			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.96	1.96	1.94			
Field Dry Density (t/m³)	1.67	1.66	1.67			
Peak Converted Wet Density* (t/m³)	1.91	1.92	1.90			
Optimum Moisture Content (%)	14.0	15.5	19.0			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	123.0	114.0	86.5			
Moisture Variation (%)	3.5 wet	2.5 wet	2.5 dry			
Hilf Density Ratio (%)	**102.5**	**101.5**	**102.5**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00230
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00825	MELB18S-00826	MELB18S-00827	MELB18S-00828	MELB18S-00829
Field Sample ID	00081	00082	00083	00084	00085
Client Sample ID	84	85	86	87	88
Date Tested	27/08/2018	27/08/2018	27/08/2018	27/08/2018	27/08/2018
Time Tested	11:00	11:50	12:40	01:30	03:00
LOT Number	130	149	165	144	155
Layer Number	4	4	4	4	3
Stage	1	1	1	1	1
Re-test					Re-test of 81
Field and Laboratory Data					
Depth of Test (mm)	275	275	275	275	275
Depth of Layer (mm)	300	300	300	300	300
Field Moisture Content (%)	24.1	157	27.6	31.0	24.8
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m³)	1.94	1.94	1.95	1.93	1.94
Field Dry Density (t/m³)	1.56	0.76	1.53	1.47	1.55
Peak Converted Wet Density* (t/m³)	1.98	1.99	1.98	1.94	2.00
Optimum Moisture Content (%)	22.5	151.0	25.5	30.5	24.0
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	108.0	103.5	108.0	100.5	103.0
Moisture Variation (%)	1.5 wet	2.5 wet	2.0 wet	0.0	0.5 wet
Hilf Density Ratio (%)	**97.5**	**97.5**	**98.5**	**99.5**	**97.0**
legend * adjusted for oversize material					

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00234
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC(as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.5.1
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00839	MELB18S-00840	MELB18S-00841	MELB18S-00842	MELB18S-00843
Field Sample ID	00086	00087	00088	00089	00090
Client Sample ID	89	90	91	92	93
Date Tested	3/11/2018	3/11/2018	3/11/2018	3/11/2018	3/11/2018
Time Tested	11:00	03:00	03:40	04:10	04:30
LOT Number	122	114	137	109	104
Layer Number	4	4	4	4	4
Stage	1	1	1	1	1
Field and Laboratory Data					
Depth of Test (mm)	275	275	275	275	275
Depth of Layer (mm)	300	300	300	300	300
Field Moisture Content (%)	29.8	23.5	19.3	18.0	33.0
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m³)	1.99	1.99	1.99	1.98	1.99
Field Dry Density (t/m³)	1.54	1.61	1.67	1.68	1.50
Peak Converted Wet Density* (t/m³)	1.94	1.98	2.03	2.01	1.96
Optimum Moisture Content (%)	27.0	22.5	17.0	15.0	33.0
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	110.0	104.0	115.5	118.0	100.0
Moisture Variation (%)	2.5 wet	1.0 wet	2.5 wet	3.0 wet	0.0
Hilf Density Ratio (%)	**102.5**	**100.5**	**98.0**	**98.5**	**101.5**
legend * adjusted for oversize material					

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00239
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00857	MELB18S-00858	MELB18S-00859	MELB18S-00860	MELB18S-00861
Field Sample ID	00094	00095	00096	00097	00098
Client Sample ID	97	98	99	100	101
Date Tested	8/10/2018	8/10/2018	8/10/2018	8/10/2018	8/10/2018
Time Tested	10:20	11:03	12:45	12:45	03:00
LOT Number	149	153	161	167	121
Layer Number	5	5	5	5	5
Re-test of					96
Field and Laboratory Data					
Depth of Test (mm)	275	275	275	275	275
Depth of Layer (mm)	300	300	300	300	300
Field Moisture Content (%)	23.7	20.4	11.5	17.9	22.3
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m³)	1.91	1.94	1.89	1.97	1.86
Field Dry Density (t/m³)	1.54	1.61	1.70	1.67	1.52
Peak Converted Wet Density* (t/m³)	1.93	1.97	2.00	2.04	1.89
Optimum Moisture Content (%)	26.0	23.0	15.5	18.0	24.5
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	91.0	88.5	74.5	100.0	91.0
Moisture Variation (%)	2.0 dry	2.5 dry	4.0 dry	0.0	2.0 dry
Hilf Density Ratio (%)	**99.0**	**98.5**	**94.5**	**96.5**	**98.0**
legend * adjusted for oversize material					

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00241
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00864	MELB18S-00865	MELB18S-00866			
Field Sample ID	00099	00100	00101			
Client Sample ID	102	103	104			
Date Tested	10/10/2018	10/10/2018	10/10/2018			
Time Tested	12:20	10:10	10:45			
LOT Number	161	111	141			
Layer Number	5	5	5			
Stage Number	1	1	1			
Re-test of	99					
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	17.7	20.6	20.6			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	2.04	1.99	1.99			
Field Dry Density (t/m³)	1.73	1.65	1.65			
Peak Converted Wet Density* (t/m³)	2.07	2.07	2.08			
Optimum Moisture Content (%)	18.0	18.5	18.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	99.5	110.5	112.0			
Moisture Variation (%)	0.0	2.0 wet	2.0 wet			
Hilf Density Ratio (%)	**98.5**	**96.0**	**95.5**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00243
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC(as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	Fill

Sample Data

Sample ID	MELB18S-00869	MELB18S-00870	MELB18S-00871			
Field Sample ID	00104	00105	00106			
Client Sample ID	107	108	109			
Date Tested	12/10/2018	12/10/2018	12/10/2018			
Time Tested	02:45	03:10	03:30			
LOT Number	132	125	102			
Layer Number	6	6	6			
Stage	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	16.4	18.1	16.8			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.98	1.97	1.99			
Field Dry Density (t/m³)	1.70	1.67	1.71			
Peak Converted Wet Density* (t/m³)	1.92	1.91	1.94			
Optimum Moisture Content (%)	14.5	15.5	14.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	114.0	115.0	117.0			
Moisture Variation (%)	2.0 wet	2.5 wet	2.5 wet			
Hilf Density Ratio (%)	**103.0**	**103.0**	**103.0**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00245
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate, Stage -1
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00873	MELB18S-00874				
Field Sample ID	00107	00108				
Client Sample ID	110	111				
Date Tested	13/10/2018	13/10/2018				
Time Tested	13:00	13:25				
LOT#	101	124				
Layer	7	7				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	24.8	27.8				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.99	1.97				
Field Dry Density (t/m³)	1.59	1.54				
Peak Converted Wet Density* (t/m³)	1.96	1.95				
Optimum Moisture Content (%)	24.5	26.0				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	101.0	107.5				
Moisture Variation (%)	0.0	2.0 wet				
Hilf Density Ratio (%)	**101.0**	**101.0**				
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00247
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC(as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	

Sample Data

Sample ID	MELB18S-00878	MELB18S-00879	MELB18S-00880			
Field Sample ID	00110	00111	00112			
Client Sample ID	112	113	114			
Date Tested	15/10/2018	15/10/2018	15/10/2018			
Time Tested	03:45	04:15	04:40			
LOT Nuber	105	110	120			
Layer Number	6	6	6			
Stage	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	26.9	24.5	25.0			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	2.00	1.96	1.98			
Field Dry Density (t/m³)	1.58	1.58	1.59			
Peak Converted Wet Density* (t/m³)	1.99	2.01	2.01			
Optimum Moisture Content (%)	27.5	24.0	25.0			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	98.5	101.5	99.5			
Moisture Variation (%)	0.5 dry	0.5 wet	0.0			
Hilf Density Ratio (%)	**100.5**	**97.5**	**98.5**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00252
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.5.3
Source:	
Material:	Fill

Sample Data

Sample ID	MELB18S-00893	MELB18S-00894	MELB18S-00895	MELB18S-00896	MELB18S-00897	MELB18S-00898
Field Sample ID	00113	00114	00115	00116	00117	00118
Client Sample ID	115	116	117	118	119	120
Date Tested	22/10/2018	22/10/2018	22/10/2018	22/10/2018	22/10/2018	22/10/2018
Time Tested	11:30	12:00	01:00	01:45	03:30	03:50
LOT Number	377	310	313	129	140	112
Layer Number	1	1	1	8	6	6
Stage	3	3	3	1	1	1
Field and Laboratory Data						
Depth of Test (mm)	275	275	275	275	275	275
Depth of Layer (mm)	300	300	300	300	300	300
Field Moisture Content (%)	20.7	14.3	19.7	19.3	1401	22.3
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m³)	1.97	1.98	1.99	1.95	1.99	1.94
Field Dry Density (t/m³)	1.63	1.74	1.66	1.64	0.13	1.58
Peak Converted Wet Density* (t/m³)	1.94	1.94	1.87	1.93	1.97	1.87
Optimum Moisture Content (%)	20.0	12.5	17.0	19.5	1402.5	20.0
Compactive Effort	Standard	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	102.5	114.5	115.5	99.0	100.0	112.5
Moisture Variation (%)	0.5 wet	2.0 wet	3.0 wet	0.0	0.0	2.5 wet
Hilf Density Ratio (%)	**101.5**	**102.5**	**106.0**	**101.0**	**101.0**	**103.5**
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB18W00264
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 21/11/2018

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compactionand Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	Fill

Sample Data

Sample ID	MELB18S-00937	MELB18S-00938	MELB18S-00939	MELB18S-00940	MELB18S-00941
Field Sample ID	00145	00146	00147	00148	00149
Client Sample ID	147	148	149	150	151
Date Tested	12/11/2018	12/11/2018	12/11/2018	12/11/2018	12/11/2018
Time Tested	01:15	01:50	02:30	03:30	03:50
LOT Number	118	132	122	113	111
Layer Number	6	8	8	7	7
Stage Number	1	1	1	1	1
Field and Laboratory Data					
Depth of Test (mm)	275	275	275	275	275
Depth of Layer (mm)	300	300	300	300	300
Field Moisture Content (%)	19.8	18.7	17.0	16.8	17.8
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1
Field Wet Density (t/m³)	1.95	1.96	1.94	1.95	1.97
Field Dry Density (t/m³)	1.62	1.65	1.66	1.67	1.67
Peak Converted Wet Density* (t/m³)	2.02	1.98	1.96	1.95	1.96
Optimum Moisture Content (%)	19.5	17.5	16.5	16.0	17.0
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	102.0	105.5	101.5	105.5	105.0
Moisture Variation (%)	0.5 wet	1.0 wet	0.5 wet	1.0 wet	1.0 wet
Hilf Density Ratio (%)	**96.5**	**98.5**	**99.0**	**100.0**	**100.5**

legend * adjusted for oversize material

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB19W00155
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 11/07/2019

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC(as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	Fill

Sample Data

Sample ID	MELB19S-00569	MELB19S-00570	MELB19S-00571			
Field Sample ID	00300	00301	00302			
Client Sample ID	272	273	274			
Date Tested	17/05/2019	17/05/2019	17/05/2019			
Time Tested	11:15	01:30	02:00			
LOT Number	101	103	105			
Layer Number	7	7	7			
Stage	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	26.2	24.8	22.9			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.95	1.82	1.96			
Field Dry Density (t/m³)	1.55	1.46	1.59			
Peak Converted Wet Density* (t/m³)	1.93	1.81	1.92			
Optimum Moisture Content (%)	22.5	23.5	20.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	116.0	106.5	110.5			
Moisture Variation (%)	3.5 wet	1.5 wet	2.0 wet			
Hilf Density Ratio (%)	**101.0**	**100.5**	**101.5**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB19W00157
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 11/07/2019

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC(as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	Fill

Sample Data

Sample ID	MELB19S-00574	MELB19S-00575	MELB19S-00576			
Field Sample ID	00303	00304	00305			
Client Sample ID	275	276	277			
Date Tested	20/05/2019	20/05/2019	20/05/2019			
Time Tested	11:45	12:30	01:40			
LOT Number	107	110	112			
Layer Number	7	7	7			
stage	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	27.9	27.1	26.9			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.96	1.95	1.96			
Field Dry Density (t/m³)	1.53	1.53	1.55			
Peak Converted Wet Density* (t/m³)	1.95	1.98	1.95			
Optimum Moisture Content (%)	26.0	26.5	24.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	107.5	103.0	109.0			
Moisture Variation (%)	2.0 wet	1.0 wet	2.0 wet			
Hilf Density Ratio (%)	**100.5**	**98.5**	**100.5**			
legend * adjusted for oversize material						

Comments

coffey
A TETRA TECH COMPANY

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB19W00158
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 11/07/2019

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	Fill

Sample Data

Sample ID	MELB19S-00577	MELB19S-00578	MELB19S-00579			
Field Sample ID	00306	00307	00308			
Client Sample ID	278	279	280			
Date Tested	21/05/2019	21/05/2019	21/05/2019			
Time Tested	12:00	01:30	01:55			
LOT Number	101	427	429			
Layer Number	7	5	5			
Stage	1	4	4			
Re-test	Re-test of 272					
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	25.8	21.6	37.2			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.96	1.94	1.94			
Field Dry Density (t/m³)	1.56	1.60	1.41			
Peak Converted Wet Density* (t/m³)	1.98	1.90	1.91			
Optimum Moisture Content (%)	25.0	19.0	33.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	103.5	114.0	110.5			
Moisture Variation (%)	1.0 wet	3.0 wet	3.0 wet			
Hilf Density Ratio (%)	**99.0**	**102.0**	**101.5**			
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB19W00159
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 11/07/2019

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	Fill

Sample Data

Sample ID	MELB19S-00580	MELB19S-00581	MELB19S-00582	MELB19S-00583		
Field Sample ID	00309	00310	00311	00312		
Client Sample ID	281	282	283	284		
Date Tested	22/05/2019	22/05/2019	22/05/2019	22/05/2019		
Time Tested	01:13	12:00	12:45	01:05		
LOT Number	147	144	151	167		
Layer Number	6	6	6	6		
Sage	1	1	1	1		
Field and Laboratory Data						
Depth of Test (mm)	275	275	275	275		
Depth of Layer (mm)	300	300	300	300		
Field Moisture Content (%)	14.2	24.5	25.0	28.1		
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1		
Field Wet Density (t/m³)	1.95	1.96	1.96	1.95		
Field Dry Density (t/m³)	1.71	1.58	1.57	1.52		
Peak Converted Wet Density* (t/m³)	2.03	1.98	2.01	2.01		
Optimum Moisture Content (%)	13.5	24.0	24.5	28.5		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Ratio (%)	106.5	101.5	101.5	99.5		
Moisture Variation (%)	1.0 wet	0.5 wet	0.5 wet	0.0		
Hilf Density Ratio (%)	**96.5**	**99.5**	**97.5**	**97.5**		
legend * adjusted for oversize material						

Comments

Melbourne Laboratory

Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

ABN 55 139 460 521
Phone: +61 418 691 682

Report No: HDR:MELB19W00161
Issue No: 1

HILF Density Ratio Report

Client:	Coffey Services Australia Pty Ltd (EXT - Abbotsford) Level 1 436 Johnston Street Abbotsford VIC 3067
Principal:	Frasers Property Australia
Project No.:	754-MELB00044AA
Project Name:	754-MELGE221991AA - Mambourin Estate
Lot No.:	**TRN:**

Approved Signatory: Stephen Pender
(Senior Geotechnician)
431
Date of Issue: 11/07/2019

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variartion to be within 3% of OMC (as advised by client)
Field Test procedures:	AS 1289.5.8.1
Laboratory Test procedures:	AS 1289.5.7.1, AS 1289.2.1.1
Sampling Method:	AS1289.1.2.1 Clause 6.4 (b)
Source:	
Material:	Fill

Sample Data

Sample ID	MELB19S-00588	MELB19S-00589				
Field Sample ID	00317	00318				
Client Sample ID	289	290				
Date Tested	25/05/2019	25/05/2019				
Time Tested	11:30	12:10				
LOT Number	157	160				
Layer Number	6	6				
Stage	1	1				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	25.8	24.4				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.96	1.96				
Field Dry Density (t/m³)	1.56	1.57				
Peak Converted Wet Density* (t/m³)	2.00	1.98				
Optimum Moisture Content (%)	25.0	23.5				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	103.5	103.0				
Moisture Variation (%)	1.0 wet	0.5 wet				
Hilf Density Ratio (%)	**98.5**	**99.0**				
legend * adjusted for oversize material						

Comments

Appendix B – Survey Drawings

FOR CONTINUATION REFER 303540SK06

SURROUND DRIVE

SURROUND DRIVE

CIRCUIT

BARRABOOL BOULEVARD

NETTLE STREET

FUTURE DEVELOPMENT

WETLAND 2

STREET

SHOAL

SHOAL CIRCUIT

NETTLE

PLACE

RENGA

DRIVE

MERULA DRIVE

MERULA CLOSE

STEM

WETLAND 1

FOR WETLAND BULK EARTHWORKS
ZONES REFER TO WETLAND DETAIL DRAWINGS

FUTURE DEVELOPMENT

FUTURE DEVELOPMENT

BLACK FOREST ROAD

LEGEND

FS36.43 DESIGN FINISHED SURFACE LEVEL

FS36.26 SMS - FINISHED SURFACE LEVEL

36.09 EXISTING SURFACE LEVEL

Rev	Amendments	Approved	Date
A	ISSUE FOR INFORMATION	M.L	4/07/19

1:750_A1
Horizontal 0 5 10 15 20 25
Vertical 0 5 10 15 20 25

spiire
spiire.com.au ABN 55 050 029 635

FRASERS PROPERTY

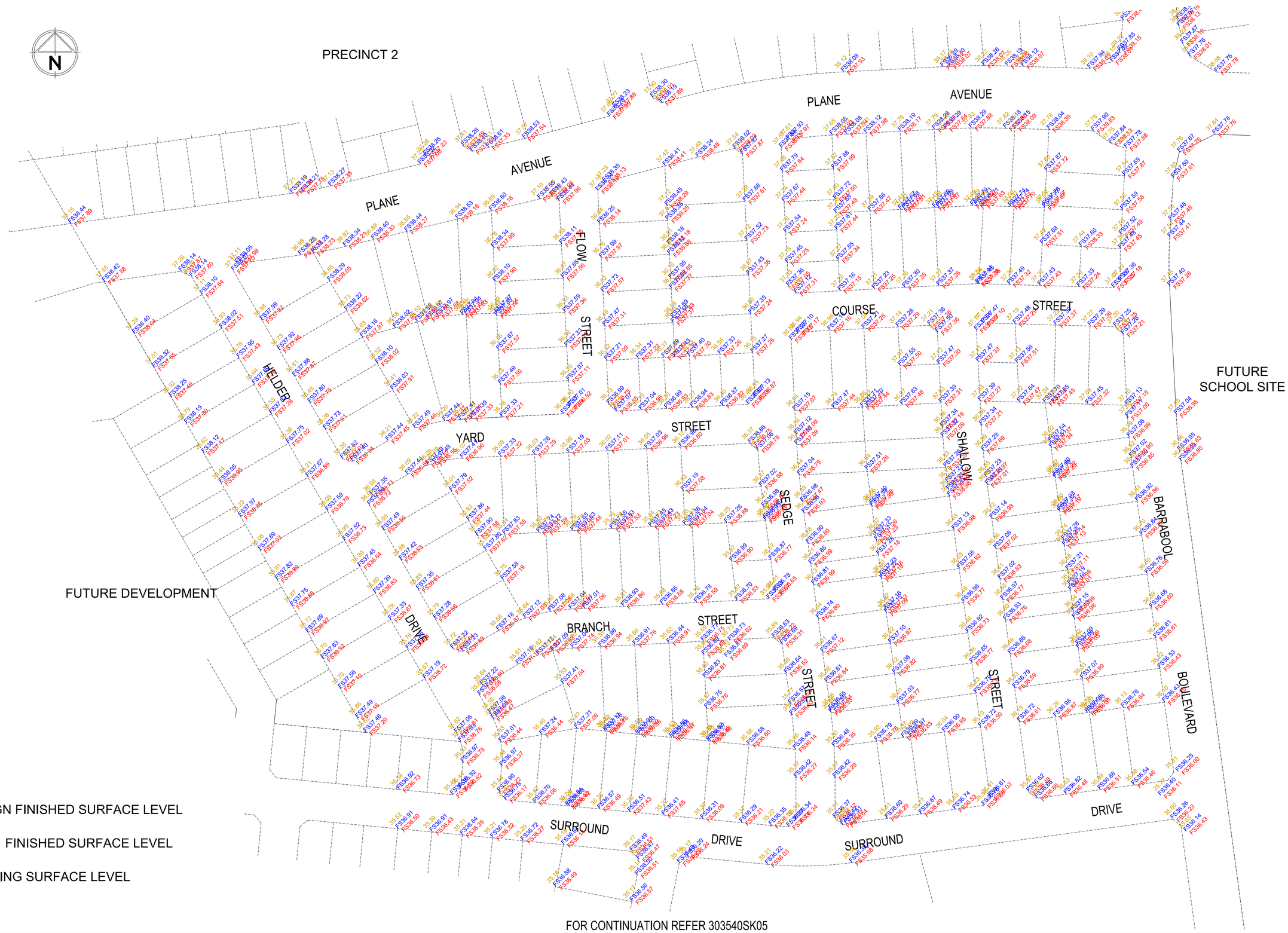
Designed R. WEINBER
Checked M.LETSON
Authorised M.LETSON
Date 14/06/19

MAMBOURIN ESTATE

PRECINCT 1
EARTHWORKS FILLING PLAN - SPOT LEVEL COMPARISON
SHEET 1 OF 2
FRASER PROPERTY AUSTRALIA
WYNDHAM CITY COUNCIL

PRELIMINARY

Drg No **303540SK05** Rev **A**



LEGEND

FS36.43 DESIGN FINISHED SURFACE LEVEL

FS36.26 SMS - FINISHED SURFACE LEVEL

36.09 EXISTING SURFACE LEVEL

Rev	Amendments	Approved	Date
A	ISSUE FOR INFORMATION	M.L	4/07/19

1:750 A1

Horizontal 0 5 10 15 20 25

Vertical 0 5 10 15 20 25

spiire

spiire.com.au ABN 55 050 029 635

FRASERS PROPERTY

Designed	Checked
R. WEINBER	M.LETSON
Authorised	**Date**
M.LETSON	14/06/19

MAMBOURIN ESTATE

PRECINCT 1
EARTHWORKS FILLING PLAN - SPOT LEVEL COMPARISON
SHEET 2 OF 2
FRASER PROPERTY AUSTRALIA
WYNDHAM CITY COUNCIL

PRELIMINARY

Drg No **303540SK06** Rev **A**

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