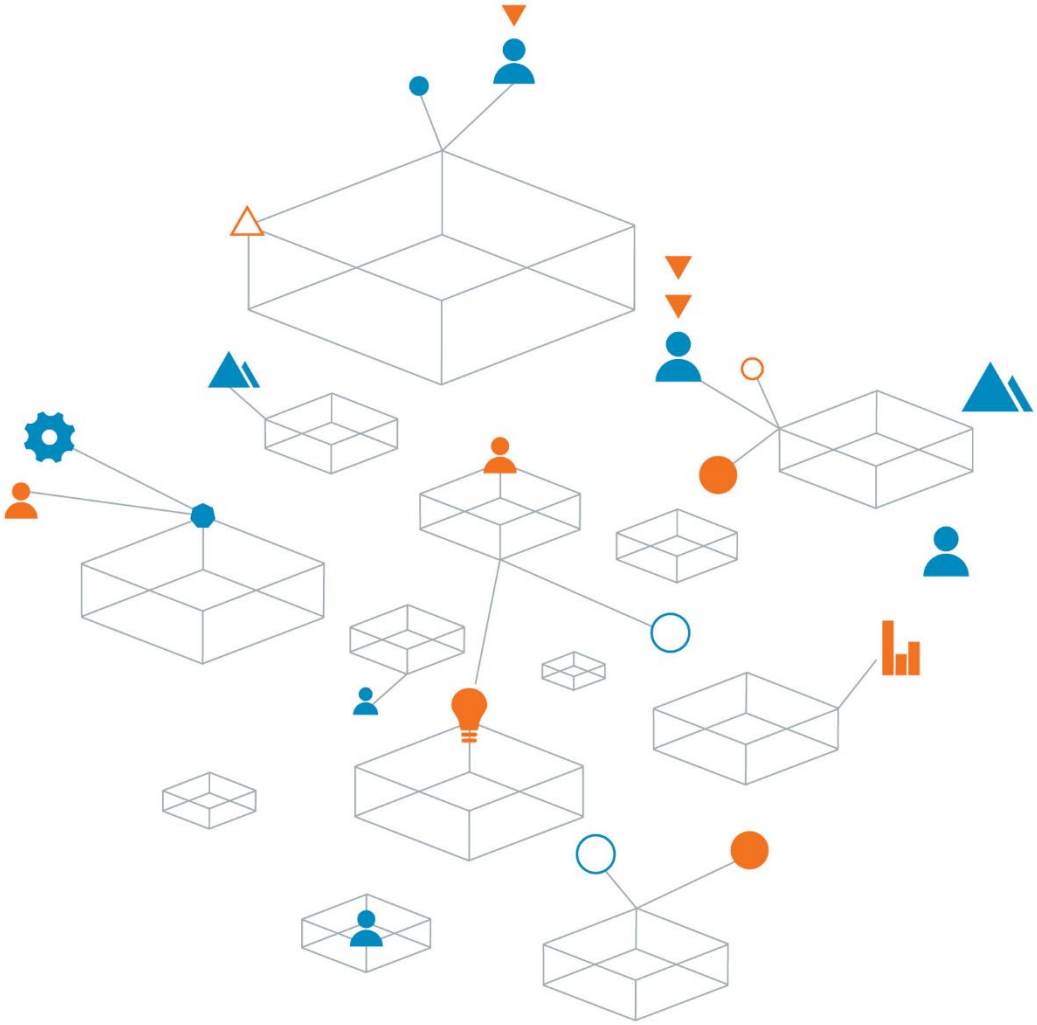
Frasers Property
Level 1 Inspection and Testing Report, Stage 3, Mambourin Estate
754-MELGE221991AG

21 April 2020



Trust is the cornerstone of all our projects

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Level 1 Inspection and Testing Report, Stage 3, Mambourin Estate

Prepared for
Frasers Property

Prepared by
Coffey Services Australia Pty Ltd
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21 April 2020

Our Ref: 754-MELGE221991AG

For and on behalf of Coffey

Stojcevski, Sotir
Principal Geotechnical Technician

Quality information

Revision history

Revision	Description	Date	Originator	Reviewer	Signatory
0	Level 1 Report	21 April 2020	Samuel V.	Ganesh M.	Sotir S.

Distribution

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1. Introduction

This report presents the results of the Level 1 Inspection and Testing for fill placement within Stage 3 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 3 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 3 was undertaken by geotechnical professionals from Coffey over a period of 16 months as shown in Table 1. We note that during this period, earthworks were also conducted on Stage 1, 2, 4 and 5 which will be reported separately.

Table 1: Level 1 GITA - dates on site

Month	Dates
September 2018	22, 24
October 2018	09, 10, 11, 12, 17, 19, 22, 23, 24, 25, 29, 30, 31
November 2018	01, 08, 19, 20, 23, 28
December 2018	04, 05, 06, 07, 10, 11, 12, 17, 18, 19
January 2019	08, 11, 12, 14, 17
March 2019	04, 05
April 2019	01, 02, 03, 09, 15, 16, 17, 29, 30
May 2019	01, 02, 08
June 2019	01, 27, 28
July 2019	01, 02, 03, 08, 09, 12, 15, 16, 17, 24, 25, 26, 29, 30, 31
August 2019	01, 05, 06, 07, 12, 13, 20, 21, 22, 23, 27, 28, 30, 31
September 2019	02, 03, 04, 05, 06, 07, 09, 10, 11, 12, 13, 14, 17, 18, 19, 20, 21, 23, 24, 25, 26
October 2019	01, 02, 03, 04, 05, 07, 08, 09, 10, 11, 12, 14, 15, 16, 17, 18, 19, 21, 22, 23, 24, 25, 28, 29, 31
November 2019	01, 06, 07, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30
December 2019	03, 04, 05, 06, 07, 09, 10
January 2020	16, 17, 27, 29

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 3 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 six Fill Pads of Stage 3 as shown in Table 2.

Table 2: Fill Pads in Stage 3

Fill Pad	Residential Lot #
Pad 1	#351 to #359
Pad 2	#360 to #370
Pad 3	#371 to #378
Pad 4	#301 to #313
Pad 5	#314 to #328
Pad 6	#329 to #350

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 3, 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 Stage 1, 2, 4 and 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 three drawings titled 'Mambourin Estate Stage 3', Preliminary, under reference 303978R01 to 303978R03. On the Face Sheet under reference 303978R01, the following notes were considered and adopted as part of the earthworks specifications:

- **Note 8:** ALL FILLING SHALL BE TO A LEVEL 150mm BELOW THE FINISHED SURFACE LEVEL SHOWN AND COMPACTED AS PER AS-3798-1988.FILLING MATERIAL IS TO BE IN ACCORDANCE WITH THE SPECIFICATION & TO THE SATISFACTION OF COUNCIL AND THE SUPERINTENDENT.
- **Note 9:** ALL BATTERS SHALL BE 1 IN 6, UNLESS OTHERWISE SHOWN.
- **Note 14:** 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 COMMENCEM ENT OF FILLING. THE FILL SHALL BE APPROVED SELECTED ON SITE MATERIAL OR APPROVED IMPORTED M ATERIAL. 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 3 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 3 was assessed progressively throughout the works in six sections as follows:

- The pad 1 subgrade was assessed on 9, 19 October 2018;
- The pad 2 subgrade was assessed on 9, 19 October 2018;
- The pad 3 subgrade was assessed on 9, 19 October 2018;
- The pad 4 subgrade was assessed on 9, 19 October 2018;
- The pad 5 subgrade was assessed on 9, 19 October 2018;

- The pad 6 subgrade was assessed on 9 October & 19 November 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 above surveys has been summarised in Table 3.

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

Fill Pad	Lot Number	Subgrade level (m)	Finish Level (m)	Fill thickness (m)	Number of layers	Average layer thickness (m)	Meet Project requirements
1	353	37.08	37.45	0.37	2	0.18	Yes
1	356	37.13	37.56	0.43	2	0.21	Yes
1	358	36.89	37.28	0.39	2	0.19	Yes
2	364	37.07	37.55	0.48	3	0.16	Yes
2	367	36.64	37.15	0.51	3	0.17	Yes
2	369	36.64	37.51	0.87	3	0.29	Yes
3	372	36.03	37.19	1.16	7	0.17	Yes
3	375	35.96	37.19	1.23	7	0.18	Yes
3	378	35.84	37.83	1.99	7	0.28	Yes

Fill Pad	Lot Number	Subgrade level (m)	Finish Level (m)	Fill thickness (m)	Number of layers	Average layer thickness (m)	Meet Project requirements
4	310	36.25	37.49	1.24	5	0.25	Yes
4	302	36.58	38.02	1.44	5	0.29	Yes
4	305	36.78	37.99	1.21	5	0.24	Yes
5	321	36.2	36.99	0.79	4	0.2	Yes
5	316	36.76	37.95	1.19	4	0.3	Yes
5	314	37.42	38.41	0.99	4	0.25	Yes
6	330	37.34	37.44	0.1	0	0.1	Yes*
6	347	37.45	37.56	0.11	0	0.11	Yes*
6	344	37.6	37.72	0.12	0	0.12	Yes*

*Fill levels across Fill Pad 6 are less than 200mm thickness, therefore exempt from testing. Subgrade was previously assessed and had successfully satisfied the specified requirements. Fill was not tested, nor it required testing in accordance with the Specifications.

Based on the summary shown in Table 3 and 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 1,000m^2 or 1 test per 200m^3 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 500m^2 or 1 test per 100m^3 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 50m^2 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 and A&Y Associates laboratories. 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 locations of the field density tests were 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 54 density tests were performed during the earthworks in the locations as presented in Figures 2 and 3. Of the 54 tests, 3 did not meet the specified criteria. These areas were subsequently re-worked and re-tested. Once re-tested, the 3 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).

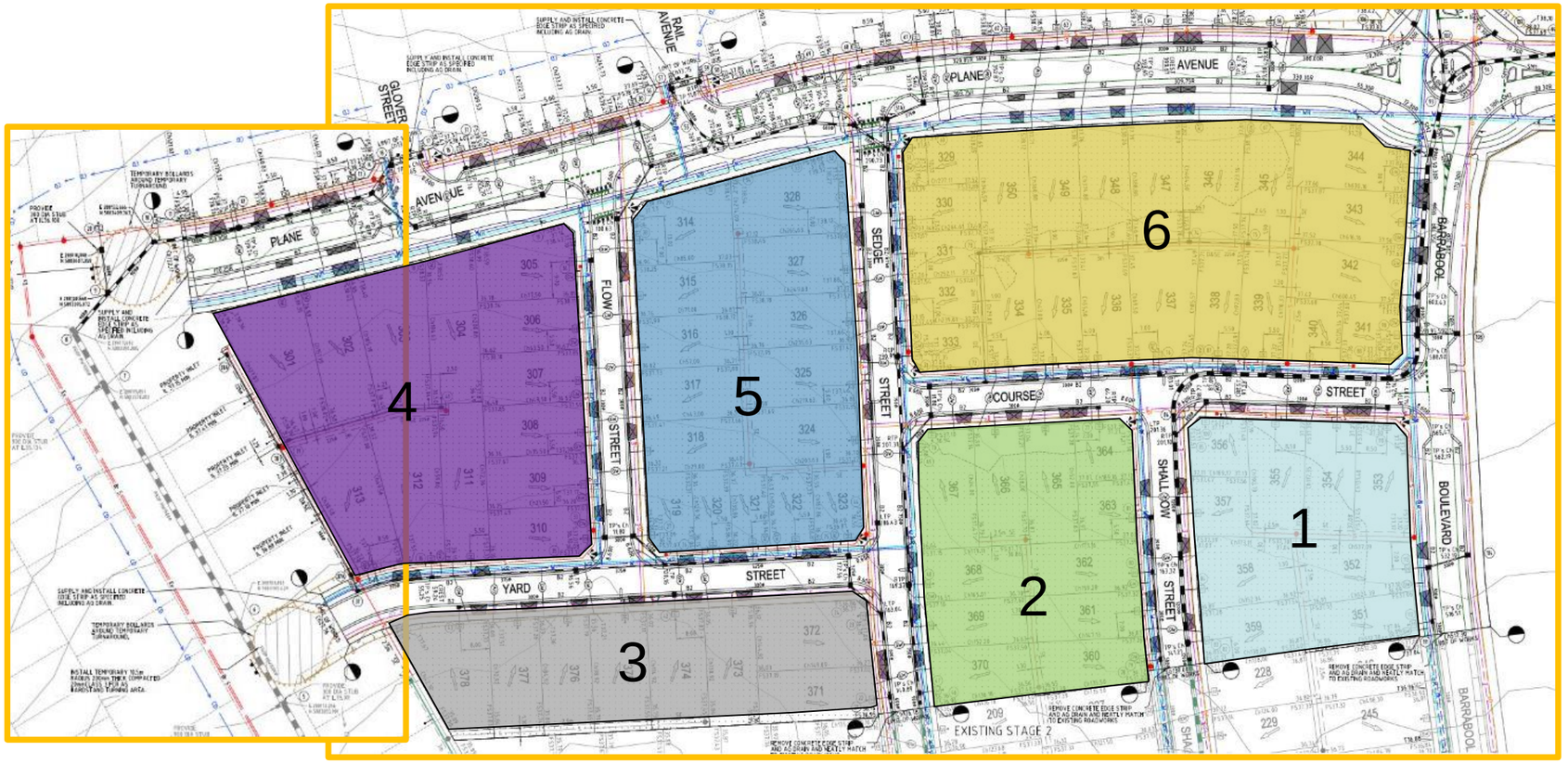
A summary of the test results obtained from the field density testing within Stage 3 are provided in a table presented as Figure 4. The laboratory test reports of the field density tests are presented in Appendix A.

7. Statement of Compliance

Coffey personnel have provided Level 1 inspection and testing services during the construction of the engineered fill areas within Stage 3 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 3 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 3



LEGEND

- Pad 1
- Pad 2
- Pad 3
- Pad 4
- Pad 5
- Pad 6

revision	description	drawn	approved	date

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

drawn	S.V
approved	S.S.
date	18/03/2020
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

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

STAGE 3

LEGEND

- Pad 1
- Pad 2
- Pad 3
- Pad 4
- Pad 5
- Pad 6

Density Tests location

- Layer 1
- Layer 2

revision	description	drawn	approved	date

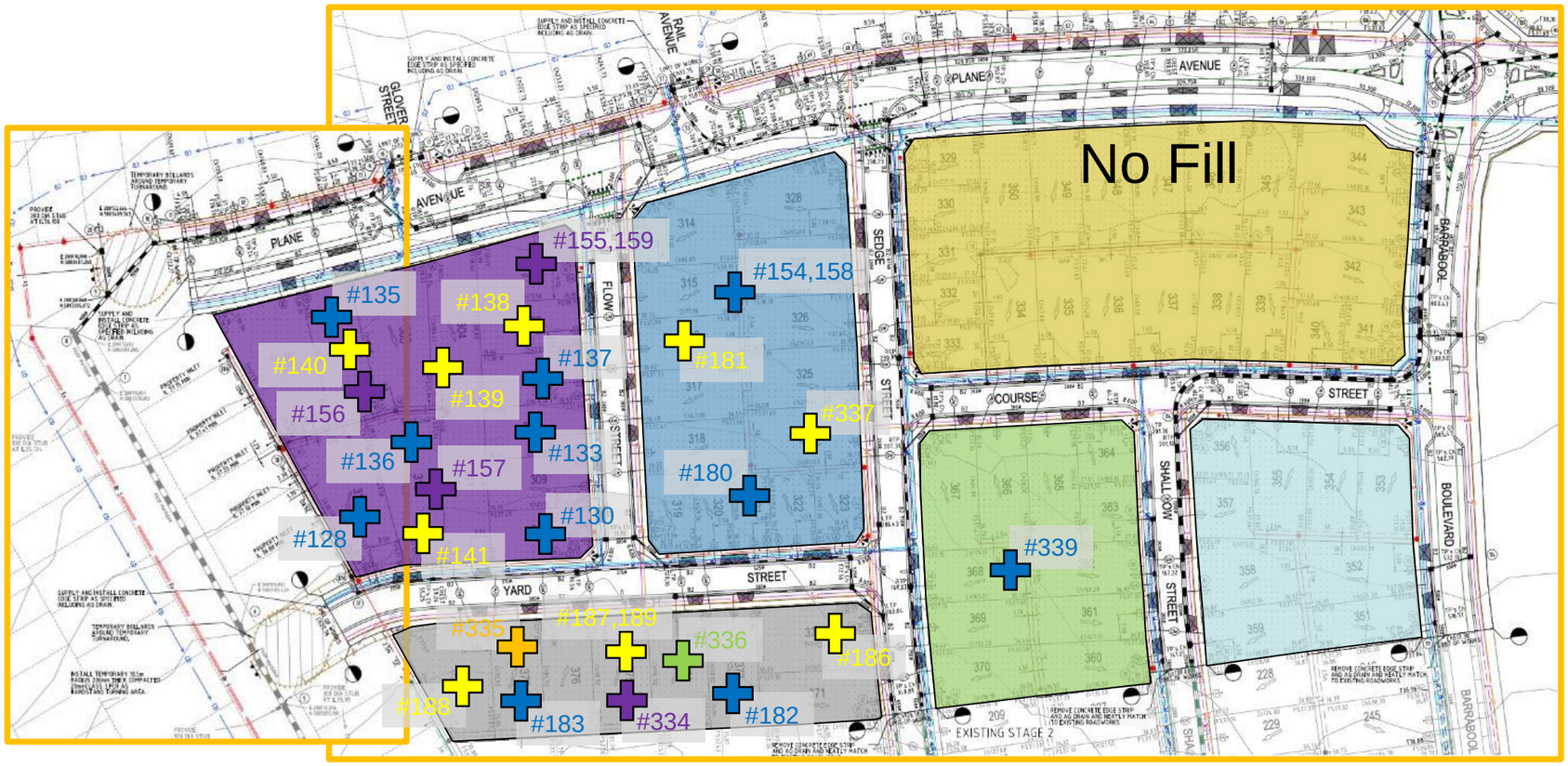
Note:
Plans are not to scale.
All locations are approximate only.

drawn	S.V
approved	S.S.
date	18/03/2020
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

client:	SPIIRE C/- FRASERS PROPERTY
project:	MAMBOURIN ESTATE STAGE 3
title:	LEVEL 1 REPORT
project no: 754-MELGE 221991 AG	figure no: 2

STAGE 3



LEGEND

- Pad 1
- Pad 2
- Pad 3
- Pad 4
- Pad 5
- Pad 6

Density Tests location

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

revision	description	drawn	approved	date

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

drawn	S.V
approved	S.S.
date	18/03/2020
scale	NTS
original size	A3

coffey
A TETRA TECH COMPANY

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

SUMMARY OF FIELD DENSITY TEST RESULTS STAGE 3 FIGURE #4

coffey
A TETRA TECH COMPANY

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

Test	Retest of Test	Date	Stage 1 / Stage 2 / Stage 3 / Stage 4 / Stage 5	Layer	Lot / Location	HILF Density Ratio	Moisture Variation of OMC	Pass / Fail	
#	#			#	#	%	%		
1 to 104	Tests conducted on other stages								
105		Thursday, October 11, 2018	Stage 3	1	372	101.5	0.5	Pass	
106			Stage 3	1	324	103.0	0.5	Pass	
107 to 114	Tests conducted on other stages								
115		Monday, October 22, 2018	Stage 3	1	377	101.5	0.5	Pass	
116			Stage 3	1	310	102.5	2.0	Pass	
117			Stage 3	1	313	106.0	3.0	Pass	
1 18 to 120	Tests conducted on other stages								
121		Tuesday, October 23, 2018	Stage 3	2	373	101.0	1.0	Pass	
122			Stage 3	2	377	99.0	1.0	Pass	
123			Stage 3	2	311	103.0	1.5	Pass	
124			Stage 3	1	302	105.0	0.5	Pass	
125			Stage 3	1	307	101.0	3.0	Pass	
126		Wednesday, October 24, 2018	Stage 3	1	361	99.0	0.5	Pass	
127			Stage 3	2	321	99.0	0.5	Pass	
128			Stage 3	3	313	103.5	1.0	Pass	
129			Stage 3	2	311	101.5	1.0	Pass	
130			Stage 3	3	310	102.0	0.0	Pass	
131			Stage 3	2	301	96.0	0.0	Pass	
132			Stage 3	2	304	99.5	0.5	Pass	

		Thursday, October 25, 2018							
133			Stage 3	3	308	101.5	0.0	Pass	
134			Stage 3	2	318	101.5	0.5	Pass	
135		Monday, October 29, 2018	Stage 3	3	302	103.5	-1.5	Pass	
136			Stage 3	3	312	99.0	-1.0	Pass	
137			Stage 3	3	307	103.0	-2.5	Pass	
138		Wednesday, October 31, 2018	Stage 3	4	306	96.0	-1.5	Pass	
139			Stage 3	4	304	102.5	-2.5	Pass	
140			Stage 3	4	302	102.0	0.0	Pass	
141			Stage 3	4	312	101.0	0.5	Pass	
142		Thursday, November 1, 2018	Stage 3	1	327	101.0	1.0	Pass	
143			Stage 3	1	316	100.0	1.0	Pass	
144			Stage 3	2	314	102.0	1.0	Pass	
145		Thursday, November 8, 2018	Stage 3	2	327	104.0	-0.5	Pass	
146			Stage 3	2	315	103.0	0.0	Pass	
147 to 153	Tests conducted on other stages								
154		Monday, November 19, 2018	Stage 3	3	315	100.5	5.5	Fail	#158
155			Stage 3	5	305	101.0	4.5	Fail	#159
156			Stage 3	5	302	99.5	1.5	Pass	
157			Stage 3	5	312	102.5	-1.5	Pass	
158	154	Tuesday, November 20, 2018	Stage 3	3	315	104.0	-2.5	Pass	
159	155		Stage 3	5	305	103.0	-2.5	Pass	
160 to 176	Tests conducted on other stages								
177		Monday, December 10, 2018	Stage 3	1	358	104.5	-0.5	Pass	
178			Stage 3	1	368	99.0	0.5	Pass	
179			Stage 3	2	362	96.0	-1.5	Pass	

180		Tuesday, December 11, 2018	Stage 3	3	321	99.0	-1.5	Pass	
181			Stage 3	4	316	98.5	0.0	Pass	
182		Wednesday, December 12, 2018	Stage 3	3	373	98.0	-2.0	Pass	
183			Stage 3	3	377	103.0	-2.5	Pass	
182 to 185	Tests conducted on other stages								
186		Wednesday, December 19, 2018	Stage 3	4	372	102.0	3.0	Pass	
187			Stage 3	4	375	100.5	3.5	Fail	189#
188			Stage 3	4	378	103.0	2.0	Pass	
189	187	Tuesday, January 08, 2019	Stage 3	4	375	103.0	1.0	Pass	
190 to 316	Tests conducted on other stages								
334		Tuesday, 08 October, 2019	Stage 3	5	375	100.0	-1.5	Pass	
335			Stage 3	6	377	97.0	-0.5	Pass	
336			Stage 3	7	374	101.5	-0.5	Pass	
337			Stage 3	4	324	102.5	-2.5	Pass	
338			Tests conducted on other stages						
339			Stage 3	3	368	99.0	-0.5	Pass	
340		Tuesday, 15 October, 2019	Stage 3	2	358	99.0	0.5	Pass	

Appendix A - Laboratory Test Certificates

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:MELB18W00242
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-00867	MELB18S-00868				
Field Sample ID	00102	00103				
Client Sample ID	105	106				
Date Tested	11/10/2018	11/10/2018				
Time Tested	02:40	03:15				
LOT Number	372	324				
Stage Number	3	3				
Layer Number	1	1				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	24.4	31.8				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.99	1.99				
Field Dry Density (t/m³)	1.60	1.51				
Peak Converted Wet Density* (t/m³)	1.96	1.93				
Optimum Moisture Content (%)	24.0	31.0				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	101.5	102.5				
Moisture Variation (%)	0.5 wet	0.5 wet				
Hilf Density Ratio (%)	**101.5**	**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: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:MELB18W00254
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-00902	MELB18S-00903	MELB18S-00904	MELB18S-00905	MELB18S-00906
Field Sample ID	00119	00120	00121	00122	00123
Client Sample ID	121	122	123	124	125
Date Tested	23/10/2018	23/10/2018	23/10/2018	23/10/2018	23/10/2018
Time Tested	12:30		03:10	03:35	03:55
LOT Number	373	377	311	302	307
Layer Number	2	2	2	1	1
Stage	3	3	3	3	3
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 (%)	25.6	20.4	19.8	23.3	23.5
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)	1.97	1.95	1.95	1.97	1.95
Field Dry Density (t/m³)	1.57	1.62	1.63	1.60	1.58
Peak Converted Wet Density* (t/m³)	1.94	1.97	1.89	1.87	1.93
Optimum Moisture Content (%)	25.0	19.5	18.5	22.5	20.5
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	103.0	104.0	106.5	103.0	114.0
Moisture Variation (%)	1.0 wet	1.0 wet	1.5 wet	0.5 wet	3.0 wet
Hilf Density Ratio (%)	**101.0**	**99.0**	**103.0**	**105.0**	**101.0**
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:MELB18W00255
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-00907	MELB18S-00908	MELB18S-00909	MELB18S-00910	MELB18S-00911
Field Sample ID	00124	00125	00126	00127	00128
Client Sample ID	126	127	128	129	130
Date Tested	24/10/2018	24/10/2018	24/10/2018	24/10/2018	24/10/2018
Time Tested	11:30	12:10	03:30	03:55	04:15
LOT Number	361	321	313	311	310
Layer Number	1	2	3	2	3
Stage	3	3	3	3	3
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 (%)	24.9	30.8	24.7	27.9	27.3
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)	1.94	1.96	1.94	1.95	1.95
Field Dry Density (t/m³)	1.56	1.50	1.56	1.52	1.53
Peak Converted Wet Density* (t/m³)	1.96	1.98	1.88	1.92	1.92
Optimum Moisture Content (%)	24.5	30.0	24.0	27.0	27.0
Compactive Effort	Standard	Standard	Standard	Standard	Standard
Moisture Ratio (%)	101.5	102.5	104.0	103.0	100.5
Moisture Variation (%)	0.5 wet	0.5 wet	1.0 wet	1.0 wet	0.0
Hilf Density Ratio (%)	**99.0**	**99.0**	**103.5**	**101.5**	**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:MELB18W00258
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-00916	MELB18S-00917	MELB18S-00918	MELB18S-00919		
Field Sample ID	00129	00130	00131	00132		
Client Sample ID	131	132	133	134		
Date Tested	25/10/2018	25/10/2018	25/10/2018	25/10/2018		
Time Tested	03:20	03:50	04:25	04:45		
LOT Number	301	304	308	318		
Layer Number	2	2	3	2		
Stage	3	3	3	3		
Field and Laboratory Data						
Depth of Test (mm)	275	275	275	275		
Depth of Layer (mm)	300	300	300	300		
Field Moisture Content (%)	23.4	24.2	23.8	22.9		
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)	1.90	1.88	1.91	1.94		
Field Dry Density (t/m³)	1.54	1.52	1.54	1.58		
Peak Converted Wet Density* (t/m³)	1.97	1.90	1.88	1.91		
Optimum Moisture Content (%)	23.0	24.0	24.0	22.5		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Ratio (%)	101.0	102.0	99.5	101.0		
Moisture Variation (%)	0.0	0.5 wet	0.0	0.5 wet		
Hilf Density Ratio (%)	**96.0**	**99.5**	**101.5**	**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:MELB18W00260
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-00925	MELB18S-00926	MELB18S-00927			
Field Sample ID	00133	00134	00135			
Client Sample ID	135	136	137			
Date Tested	29/10/2018	29/10/2018	29/10/2018			
Time Tested	03:45	04:15	04:35			
LOT Number	302	312	307			
Layer Number	3	3	3			
Stage	3	3	3			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	20.4	21.2	17.7			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.97	1.98	1.98			
Field Dry Density (t/m³)	1.63	1.64	1.68			
Peak Converted Wet Density* (t/m³)	1.90	2.00	1.93			
Optimum Moisture Content (%)	21.5	22.5	20.0			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	94.0	95.0	88.0			
Moisture Variation (%)	1.5 dry	1.0 dry	2.5 dry			
Hilf Density Ratio (%)	**103.5**	**99.0**	**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:MELB18W00261
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 witiin 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-00928	MELB18S-00929	MELB18S-00930	MELB18S-00931		
Field Sample ID	00136	00137	00138	00139		
Client Sample ID	138	139	140	141		
Date Tested	31/10/2018	31/10/2018	31/10/2018	31/10/2018		
Time Tested	03:45	04:10	04:30	04:45		
LOT Number	306	304	302	312		
Layer Number	4	4	4	4		
Stage	3	3	3	3		
Field and Laboratory Data						
Depth of Test (mm)	275	275	275	275		
Depth of Layer (mm)	300	300	300	300		
Field Moisture Content (%)	24.5	23.3	20.5	27.9		
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)	1.93	1.95	1.97	1.96		
Field Dry Density (t/m³)	1.55	1.58	1.63	1.53		
Peak Converted Wet Density* (t/m³)	2.01	1.90	1.93	1.94		
Optimum Moisture Content (%)	26.0	26.0	20.5	27.5		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Ratio (%)	94.0	90.0	100.0	102.0		
Moisture Variation (%)	1.5 dry	2.5 dry	0.0	0.5 wet		
Hilf Density Ratio (%)	**96.0**	**102.5**	**102.0**	**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:MELB18W00262
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-00932	MELB18S-00933	MELB18S-00934			
Field Sample ID	00140	00141	00142			
Client Sample ID	142	143	144			
Date Tested	1/11/2018	1/11/2018	1/11/2018			
Time Tested	02:45	03:15	03:40			
LOT Number	327	316	314			
Layer Number	1	1	2			
Stage	3	3	3			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	23.7	25.0	25.5			
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	1.98			
Field Dry Density (t/m³)	1.58	1.57	1.58			
Peak Converted Wet Density* (t/m³)	1.94	1.96	1.94			
Optimum Moisture Content (%)	22.5	24.0	24.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	104.0	104.0	103.5			
Moisture Variation (%)	1.0 wet	1.0 wet	1.0 wet			
Hilf Density Ratio (%)	**101.0**	**100.0**	**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:MELB18W00263
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 an 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-00935	MELB18S-00936				
Field Sample ID	00143	00144				
Client Sample ID	145	146				
Date Tested	8/11/2018	8/11/2018				
Time Tested	03:30	03:55				
LOT Nunber	327	315				
Layer Numer	2	2				
Stage Number	3	3				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	26.1	17.9				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.96	1.95				
Field Dry Density (t/m³)	1.56	1.65				
Peak Converted Wet Density* (t/m³)	1.88	1.90				
Optimum Moisture Content (%)	26.5	18.0				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	98.5	99.5				
Moisture Variation (%)	0.5 dry	0.0				
Hilf Density Ratio (%)	**104.0**	**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:MELB18W00267

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:**

Date of Issue:

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-00947	MELB18S-00948	MELB18S-00949	MELB18S-00950		
Field Sample ID	00152	00153	00154	00155		
Client Sample ID	154	155	156	157		
Date Tested	19/11/2018	19/11/2018	19/11/2018	19/11/2018		
Time Tested	03:45	04:00	04:20	04:40		
LOT Number	315	305	312	302		
Layer Number	3	5	5	5		
Stage	3	3	3	3		
Field and Laboratory Data						
Depth of Test (mm)	275	275	275	275		
Depth of Layer (mm)	300	300	300	300		
Field Moisture Content (%)	23.8	21.0	25.0	19.0		
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1		
Field Wet Density (t/m³)	1.96	1.97	1.95	1.96		
Field Dry Density (t/m³)	1.58	1.63	1.56	1.65		
Peak Converted Wet Density* (t/m³)	1.94	1.95	1.96	1.92		
Optimum Moisture Content (%)	19.0	16.5	23.5	20.5		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Ratio (%)	127.0	126.0	106.5	92.0		
Moisture Variation (%)	5.5 wet	4.5 wet	1.5 wet	1.5 dry		
Hilf Density Ratio (%)	**100.5**	**101.0**	**99.5**	**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:MELB18W00268

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:**

Date of Issue:

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-00951	MELB18S-00952				
Field Sample ID	00156	00157				
Client Sample ID	158	159				
Date Tested	20/11/2018	20/11/2018				
Time Tested	01:00	01:40				
LOT Number	315	305				
Layer Number	3	5				
Stage	3	3				
Re-test	154	155				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	24.3	21.8				
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)	1.58	1.61				
Peak Converted Wet Density* (t/m³)	1.88	1.90				
Optimum Moisture Content (%)	27.0	24.0				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	90.0	90.0				
Moisture Variation (%)	2.5 dry	2.5 dry				
Hilf Density Ratio (%)	**104.0**	**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:MELB18W00275

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:**

Date of Issue:

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-00970	MELB18S-00971	MELB18S-00972			
Field Sample ID	00175	00176	00177			
Client Sample ID	177	178	179			
Date Tested	10/12/2018	10/12/2018	10/12/2018			
Time Tested	11:30	12:40	01:35			
LOT Number	358	368	362			
Layer Number	3	3	3			
Stage	1	1	2			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	17.9	12.0	12.8			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.97	2.09	2.00			
Field Dry Density (t/m³)	1.67	1.86	1.77			
Peak Converted Wet Density* (t/m³)	1.88	2.11	2.08			
Optimum Moisture Content (%)	18.5	11.5	14.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	97.0	105.0	88.5			
Moisture Variation (%)	0.5 dry	0.5 wet	1.5 dry			
Hilf Density Ratio (%)	**104.5**	**99.0**	**96.0**			
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:MELB18W00278

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:**

Date of Issue:

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moistutre variation to be wiithin 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-00976	MELB18S-00977				
Field Sample ID	00178	00179				
Client Sample ID	180	181				
Date Tested	11/12/2018	11/12/2018				
Time Tested	10:30	11:30				
LOT Number	321	316				
Layer Number	3	4				
Stage	3	3				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	16.8	17.9				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.97	1.96				
Field Dry Density (t/m³)	1.68	1.66				
Peak Converted Wet Density* (t/m³)	1.99	1.99				
Optimum Moisture Content (%)	18.0	17.5				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	93.0	101.5				
Moisture Variation (%)	1.5 dry	0.0				
Hilf Density Ratio (%)	**99.0**	**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:MELB18W00280

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:**

Date of Issue:

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-00986	MELB18S-00987	MELB18S-00988	MELB18S-00989		
Field Sample ID	00187	00188	00189	00190		
Client Sample ID	182	183	184	185		
Date Tested	12/12/2018	12/12/2018	12/12/2018	12/12/2018		
Time Tested	11:10	11:45	03:50	04:00		
LOT Number	373	377	527	516		
Layer Number	3	3	1	1		
Stage	3	3	5	5		
Field and Laboratory Data						
Depth of Test (mm)	275	275	275	275		
Depth of Layer (mm)	300	300	300	300		
Field Moisture Content (%)	15.1	15.7	15.0	15.7		
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)	1.96	1.97	1.97	1.97		
Field Dry Density (t/m³)	1.71	1.70	1.71	1.70		
Peak Converted Wet Density* (t/m³)	2.01	1.92	2.05	2.05		
Optimum Moisture Content (%)	17.5	18.0	14.0	14.5		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Ratio (%)	87.5	86.5	106.0	108.5		
Moisture Variation (%)	2.0 dry	2.5 dry	1.0 wet	1.0 wet		
Hilf Density Ratio (%)	**98.0**	**103.0**	**96.0**	**96.0**		
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:MELB18W00287

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:**

Date of Issue:

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-01013	MELB18S-01014	MELB18S-01015			
Field Sample ID	00197	00198	00199			
Client Sample ID	186	187	188			
Date Tested	19/12/2018	19/12/2018	19/12/2018			
Time Tested	11:30	12:10	01:00			
LOT Number	372	375	378			
Layer Number	4	4	4			
Stage	3	3	3			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	29.7	32.8	30.6			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.97	1.96	1.97			
Field Dry Density (t/m³)	1.52	1.47	1.51			
Peak Converted Wet Density* (t/m³)	1.93	1.95	1.91			
Optimum Moisture Content (%)	26.5	29.0	28.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	112.0	112.0	108.0			
Moisture Variation (%)	3.0 wet	3.5 wet	2.0 wet			
Hilf Density Ratio (%)	**102.0**	**100.5**	**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:MELB19W00003

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:**

Date of Issue:

Sample Details

Location:	Mambourin Estate
Client Request ID:	
Specification Requirements:	MINIMUM HILF DENSITY RATIO OF 95% of Standard Compaction and Moisture variation to be witinin 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	MELB19S-00011					
Field Sample ID	00200					
Client Sample ID	189					
Date Tested	8/01/2019					
Time Tested	03:30					
LOT Number	376					
Layer Number	4					
Stage Number	3					
Re-test Number	187					
Field and Laboratory Data						
Depth of Test (mm)	275					
Depth of Layer (mm)	300					
Field Moisture Content (%)	21.1					
Field Moisture Content Method	AS 1289.2.1.1					
Field Wet Density (t/m³)	1.89					
Field Dry Density (t/m³)	1.56					
Peak Converted Wet Density* (t/m³)	1.84					
Optimum Moisture Content (%)	20.5					
Compactive Effort	Standard					
Moisture Ratio (%)	104.0					
Moisture Variation (%)	1.0 wet					
Hilf Density Ratio (%)	**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:MELB19W00142

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:**

Date of Issue:

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-00531	MELB19S-00532				
Field Sample ID	00268	00269				
Client Sample ID	240	241				
Date Tested	30/04/2019	30/04/2019				
Time Tested	11:15	12:10				
LOT Number	330	327				
Layer Number	5	5				
Stage	5	5				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	24.8	20.8				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.95	1.94				
Field Dry Density (t/m³)	1.56	1.60				
Peak Converted Wet Density* (t/m³)	1.99	1.96				
Optimum Moisture Content (%)	23.5	19.5				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	106.0	108.0				
Moisture Variation (%)	1.5 wet	1.5 wet				
Hilf Density Ratio (%)	**98.5**	**99.0**				
legend * adjusted for oversize material						

Comments

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
5/16 Network Drive
Truganina VIC 3029
PH: 0400 413 531
info@ayassociates.com.au

Client:	Coffey Services Australia	**Job No:**	COF720	
Project:	Mambourin Estate - Compaction	**Report:**	3	
Location:	Stage 3 -Lot Testing			

Sample No		334	335	336	337	338	339
Date Tested		8/10/2019	8/10/2019	8/10/2019	8/10/2019	8/10/2019	8/10/2019
Time Tested		10:45	12:30	13:50	14:30	15:00	15:45
Test Location		Stage 3 Lot 375	Stage 3 Lot 377	Stage 3 Lot 374	Stage 3 Lot 324	Stage 5 Lot 528	Stage 3 Lot 368
Level/Layer		5	6	7	4	7	3
Layer Thickness	mm	200	200	200	200	200	200
Test Depth	mm	175	175	175	175	175	175
Field Wet Density	t/m^3	1.968	1.97	1.958	1.959	1.964	1.971
Field Moisture Content	%	23.6	21.1	22.5	23.6	22.1	26.6
Material:		Clay Fill	Clay Fill	Clay Fill	Clay Fill	Clay Fill	Clay Fill
Oversize Material	WET, %	0.0	0.0	0.0	0.0	0.0	0.0
Sieve Size	mm	19	19	19	19	19	19
Peak Converted Wet Density	t/m^3	1.97	2.03	1.93	1.91	1.99	1.99
Optimum Moisture Content	%	25.5	21.5	23	26	22	27
Moisture Ratio	%	92.5	98	98	91	100.5	98.5
Moisture Variation from OMC	%	-1.5 Drier	-0.5 Drier	-0.5 Drier	-2.5 Drier	0.0 OMC	-0.5 Drier
Density Ratio	%	100.0	97.0	101.5	102.5	99.0	99.0

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Field density test conducted and provided by Coffey Laboratories. Accreditation No. #1151	Coffey's Ref: 754-MELGE 221991	
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	Sampled By Client

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory No. 20172

Accreditation for compliance with ISO/IEC 17025 - Testing

The results of tests, calibrations and/or measurements included in this document, are traceable to Australian / National Standards

Approved Signatory:

David Burns

Date: 11/10/2019

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
5/16 Network Drive
Truganina VIC 3029
PH: 0400 413 531
info@ayassociates.com.au

Client:	Coffey Services Australia	**Job No:**	COF776
Project:	Mambourin Estate - Lot Testing	**Report:**	7
Location:	Mambourin - Stage 3		

Sample No		334					
Date Tested		15/10/2019					
Time Tested		14:00					
Test Location		Stage 3 Lot #358					
Level/Layer		2					
Layer Thickness	mm	200					
Test Depth	mm	175					
Field Wet Density	t/m^3	1.967					
Field Moisture Content	%	17.8					
Material:		Local Clay Fill					
Oversize Material	WET, %	0.0					
Sieve Size	mm	19					
Peak Converted Wet Density	t/m^3	1.99					
Optimum Moisture Content	%	17.5					
Moisture Ratio	%	102					
Moisture Variation from OMC	%	0.5 Wetter					
Density Ratio	%	99.0					

Specification:	95% Std	**Test Selection:**	N/A
Notes:	Field density test conducted and provided by Coffey Laboratories. Accreditation No. #1151	Coffey's Ref: 754-MELGE221991	
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	Sampled By Client

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory No. 20172

Accreditation for compliance with ISO/IEC 17025 - Testing

The results of tests, calibrations and/or measurements included in this document, are traceable to Australian / National Standards

Approved Signatory:

David Burns

Date: 16/10/2019

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

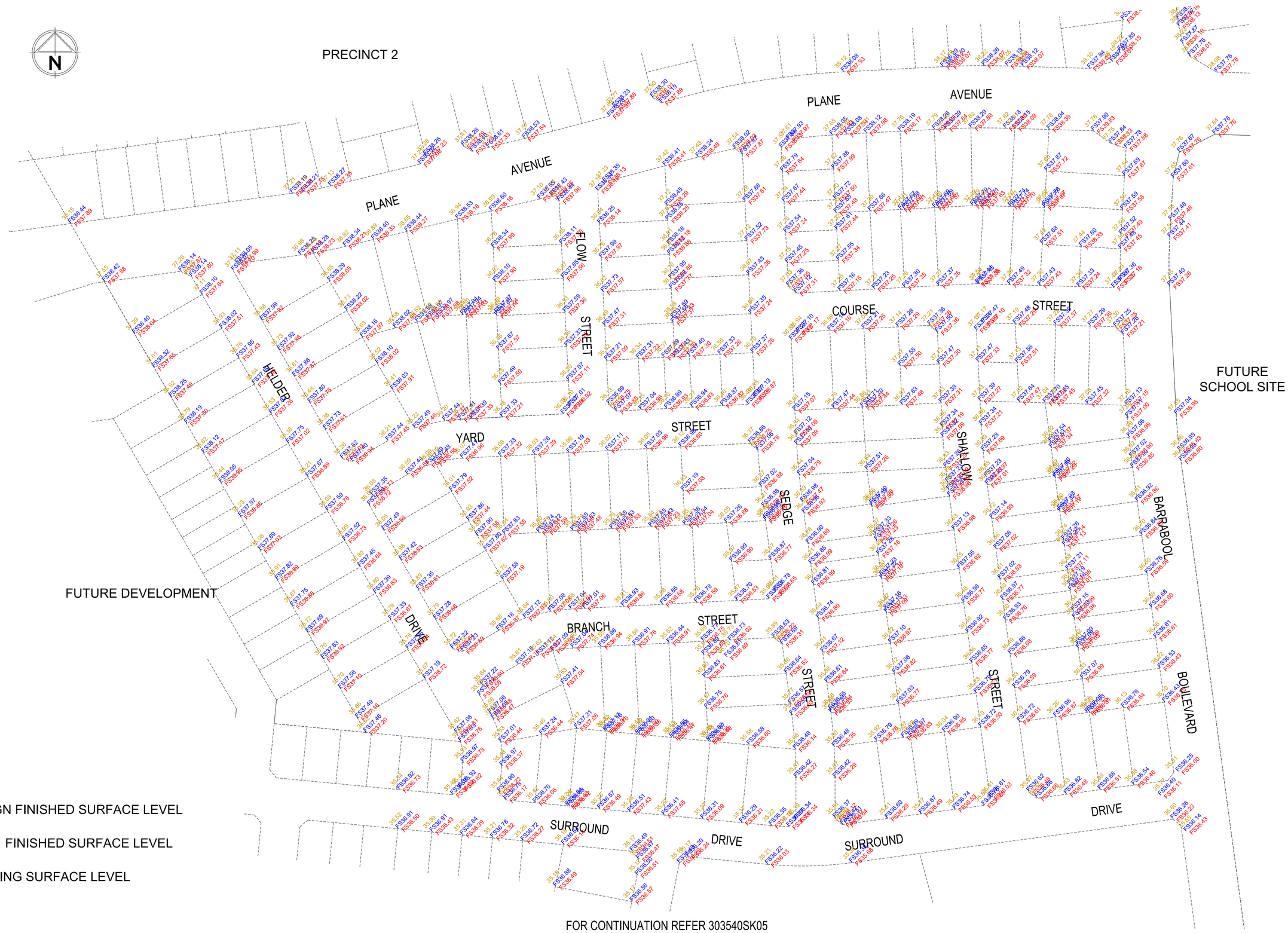
Designed R. WEINBER
Checked M.LETSON
Authorised M.LETSON
Date 14/06/19

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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