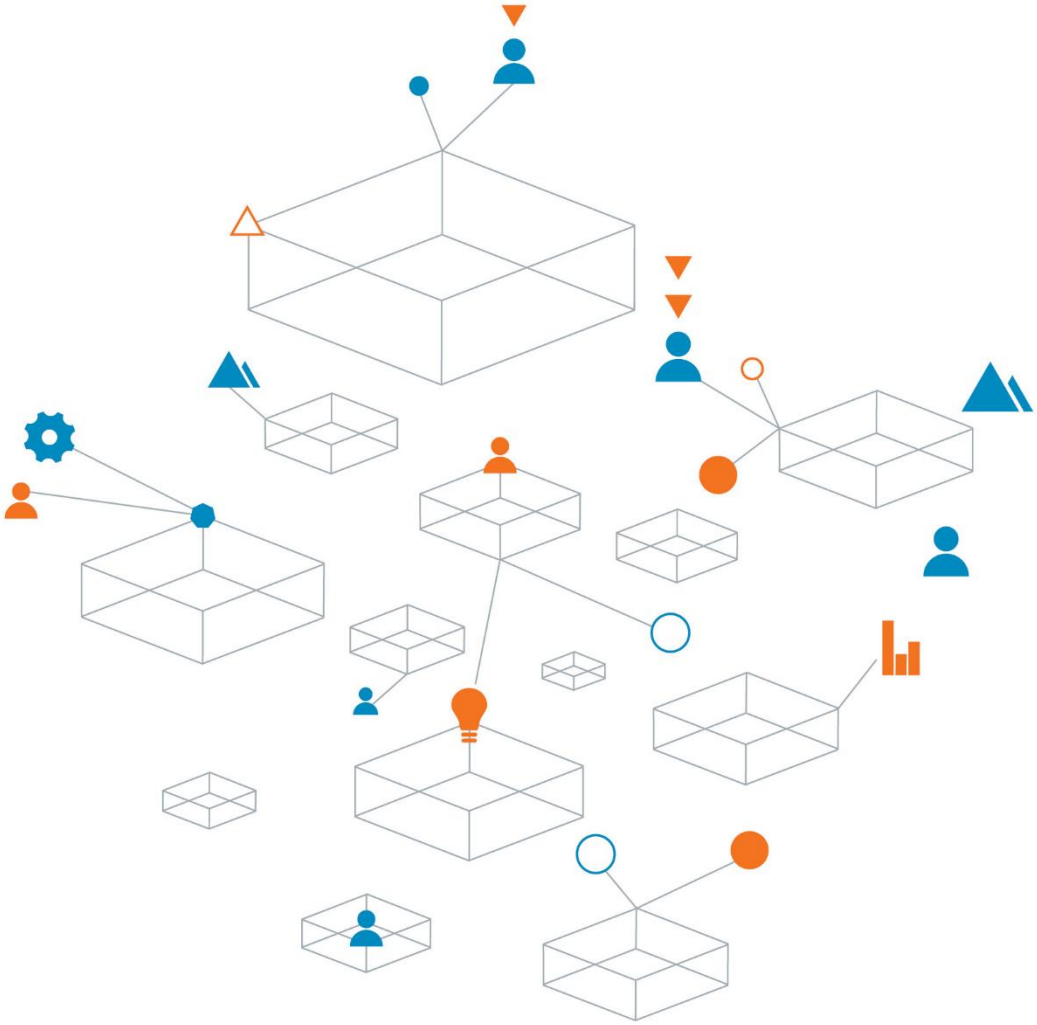
Frasers Property
Level 1 Inspection and Testing Report, Stage 2, Mambourin Estate
754-MELGE221991AF

30 August 2019



Trust is the cornerstone of all our projects

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Level 1 Inspection and Testing Report, Stage 2, Mambourin Estate

Prepared for
Frasers Property

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30 August 2019

Our Ref: 754-MELGE221991AF

For and on behalf of Coffey

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Principal Geotechnical Technician

Quality information

Revision history

Revision	Description	Date	Originator	Reviewer	Signatory
0	Level 1 Inspection and Testing Report – Rev 0	30 August 2019	Sotir Stojcevski	Ganesh Manivannan	Sotir Stojcevski

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1. Introduction

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

Table 1: Level 1 GITA - dates on site

Month	Dates
August 2018	30, 31
September 2018	1, 3, 4, 5, 6, 7, 8, 10, 11, 12, 13, 14, 15, 17, 18, 19

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 2 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 2 as shown in Table 2.

Table 2: Fill Pads on Stage 2

Fill Pad	Residential Lot #
Eastern Pad	#228-#246
Central Pad	#209 to #227
Western Pads	#201 to #208 and #247 to #259

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 2, 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 2 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 2', Preliminary, under reference 303977R01 to 303976R03. On the Face Sheet under reference 303977R01, 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 DRAW INGS.

- **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 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 2 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 2 was assessed progressively throughout the works in three sections as follows:

- The Eastern Pad subgrade was assessed on 30 August 2018 and 1 September 2018;
- The Central Pad subgrade was assessed on 30 August 2018;
- The Western Pads subgrade were assessed on 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 above surveys has been summarised in Table 3.

Table 3: Fill levels at selected spot locations in Stage 2

Fill Pad	Lot Number	Subgrade level (m)	Finish Level (m)	Fill thickness (m)	Number of layers	Average layer thickness (m)	Meet Project requirements
Eastern	239	35.81	36.25	0.44	2	0.22	Yes
Eastern	234	36.33	36.79	0.46	2	0.23	Yes
Eastern	244	36.68	37.21	0.53	2	0.27	Yes
Eastern	228	36.72	37.14	0.42	2	0.21	Yes
Central	220	36.10	36.72	0.62	2	0.31	Yes*
Central	215	35.80	36.48	0.68	2	0.34	Yes*
Central	224	36.49	36.92	0.43	2	0.21	Yes
Central	210	36.21	36.85	0.64	2	0.32	Yes*
Central	227	36.63	37.13	0.50	2	0.25	Yes
Western	251	35.70	36.81	1.11	4	0.23	Yes
Western	254	35.22	36.35	1.13	4	0.24	Yes
Western	248	35.42	37.01	1.59	6	0.27	Yes^
Western	201	35.75	37.58	0.83	4	0.21	Yes
Western	208	35.97	36.99	1.02	4	0.25	Yes

Notes:

***** It is noted that at the time when the final survey was conducted in July 2019, loose fill from trench excavations was present within the Central Pad of Stage 2. The Survey data indicates that more than 0.6m of fill has been placed in the Central Pad, however, based on our Level 1 observations and subsequent site visits, it is our opinion that up to 0.6m thick engineered fill is present on the Central Pad platform. It is likely that the survey was conducted at the surface of the loose fill that was temporarily present at the site in July 2019. To confirm the consistency of the engineered fill placed on the Central Pad, Coffey has conducted further tests discussed in Section 6.2 of this report.

^ The survey of the Western pad (Lots 247-248) indicates fill of 1.59m thickness (and more) in an area where 4 layers were tested during the earthworks in Stage 2. However, at the time of the adjoining Stage 5 earthworks, 6 layers were placed which resulted in overfilling the Stage 2 lots adjacent to Stage 5. The initial 4 layers were tested as part of the Stage 2 works, however, the uppermost layer 5 and 6 were tested as part of the Stage 5 earthworks. These tests will be reported in the Stage 5 Level 1 completion report. To confirm the consistency of the fill placed on Lots 247, 248 and the remaining Lots of Stage 2, further testing was undertaken in August 2019, as discussed in Section 6.2 of this report.

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

6. Testing and Results

6.1. Density testing

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 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 28 density tests were performed during the earthworks in the locations as presented in Figures 2 and 3. Of the 28 tests, 4 did not meet the specified criteria. These areas were subsequently re-worked and re-tested. Once re-tested, the 4 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 2 are provided in a table presented as Figure 5. The laboratory test reports of the field density tests are presented in Appendix A.

6.2. DCP Testing

Minor inconsistencies between the survey data and the Level 1 GITA observations were found at the time of preparing this report, as indicated in Section 5.3. To confirm the consistency of the engineered fill in the areas of concern, further testing was conducted at the site.

A total of 17 Dynamic Cone Penetrometer (DCP) tests were carried out from the surface of the engineered fill pads to 1m depth. The location of the DCP tests is shown in Figure 4. The DCP test results are presented in tabular format in Figures 6 and 7.

The DCP tests were advanced from the finished surface of the fill pad after the topsoil was placed, hence the results in the topsoil layer were not considered in assessing the fill consistency. The DCP results in the engineered fill, below the topsoil layer, ranged from 7 to 16 blow counts per 100mm penetration.

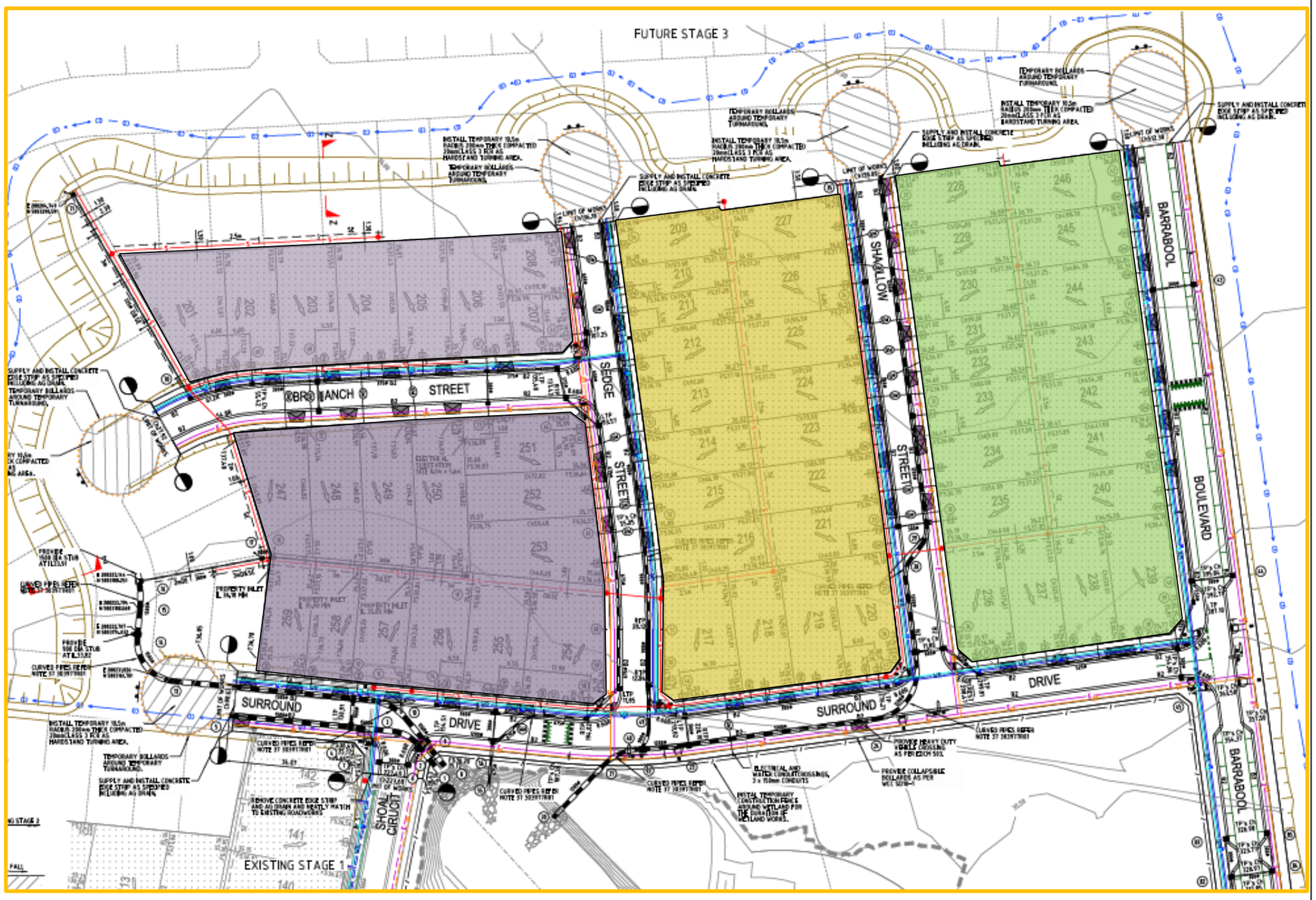
Based on the DCP test results shown in Figures 6 and 7, we consider that the fill has been compacted to achieve very stiff to hard consistency, which is in general compliance with the intent of the project specifications.

7. Statement of Compliance

Coffey personnel have provided Level 1 inspection and testing services during the construction of the engineered fill areas within Stage 2 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 2 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 2



LEGEND

- *Eastern Pad*
- *Central Pad*
- *Western Pads*

revision	description	drawn	approved	date

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

drawn	D.S
approved	S.S
date	19/08/2019
scale	NTS
original size	A3

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client: SPIIRE C/- FRASERS PROPERTY

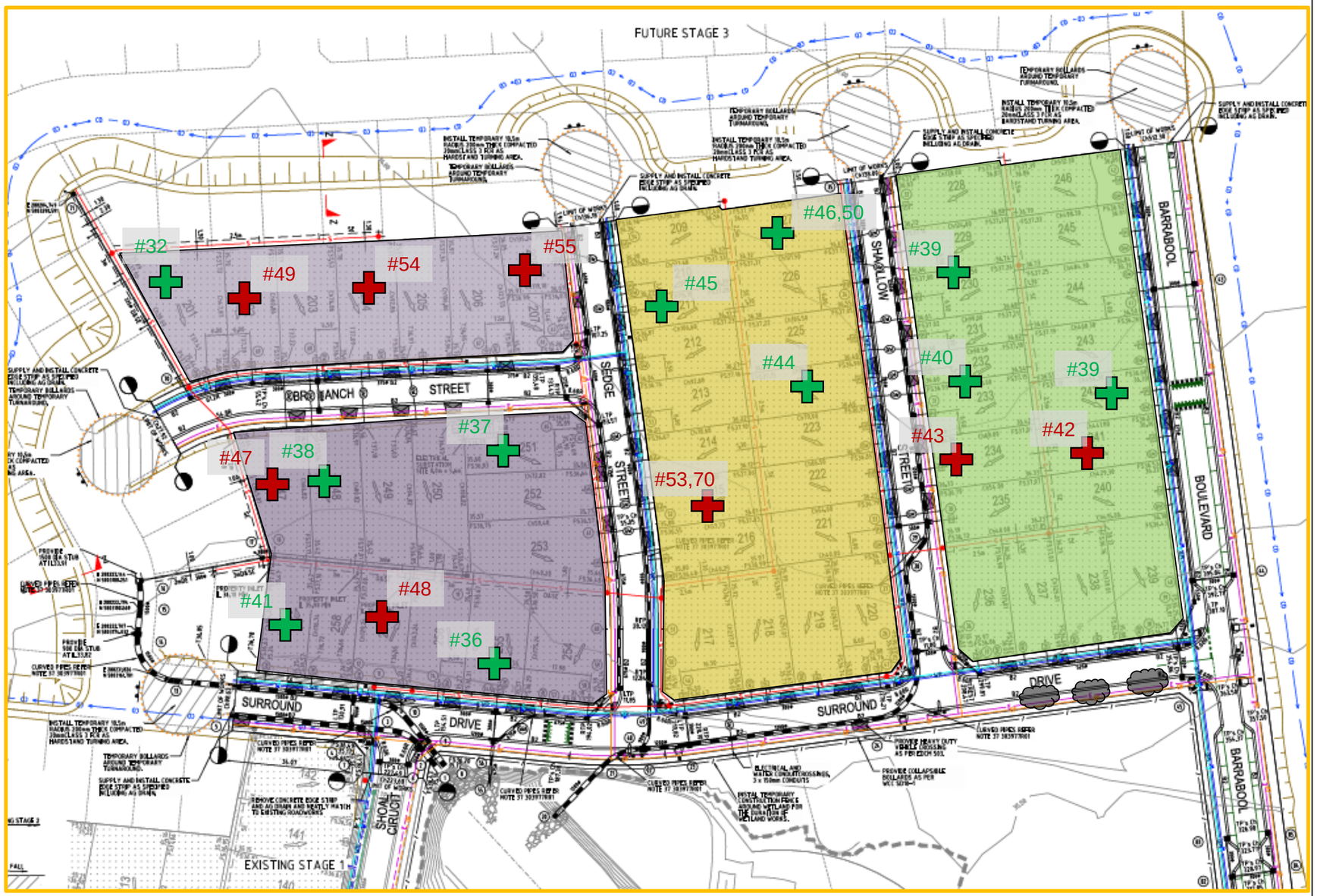
project: MAMBOURIN ESTATE STAGE 2

title: LEVEL 1 GITA REPORT

project no: 754-MELGE 221991AF

figure no: 1

STAGE 2



LEGEND

- *Eastern Pad*
- *Central Pad*
- *Western Pads*

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	D.S
approved	S.S
date	19/08/2019
scale	NTS
original size	A3

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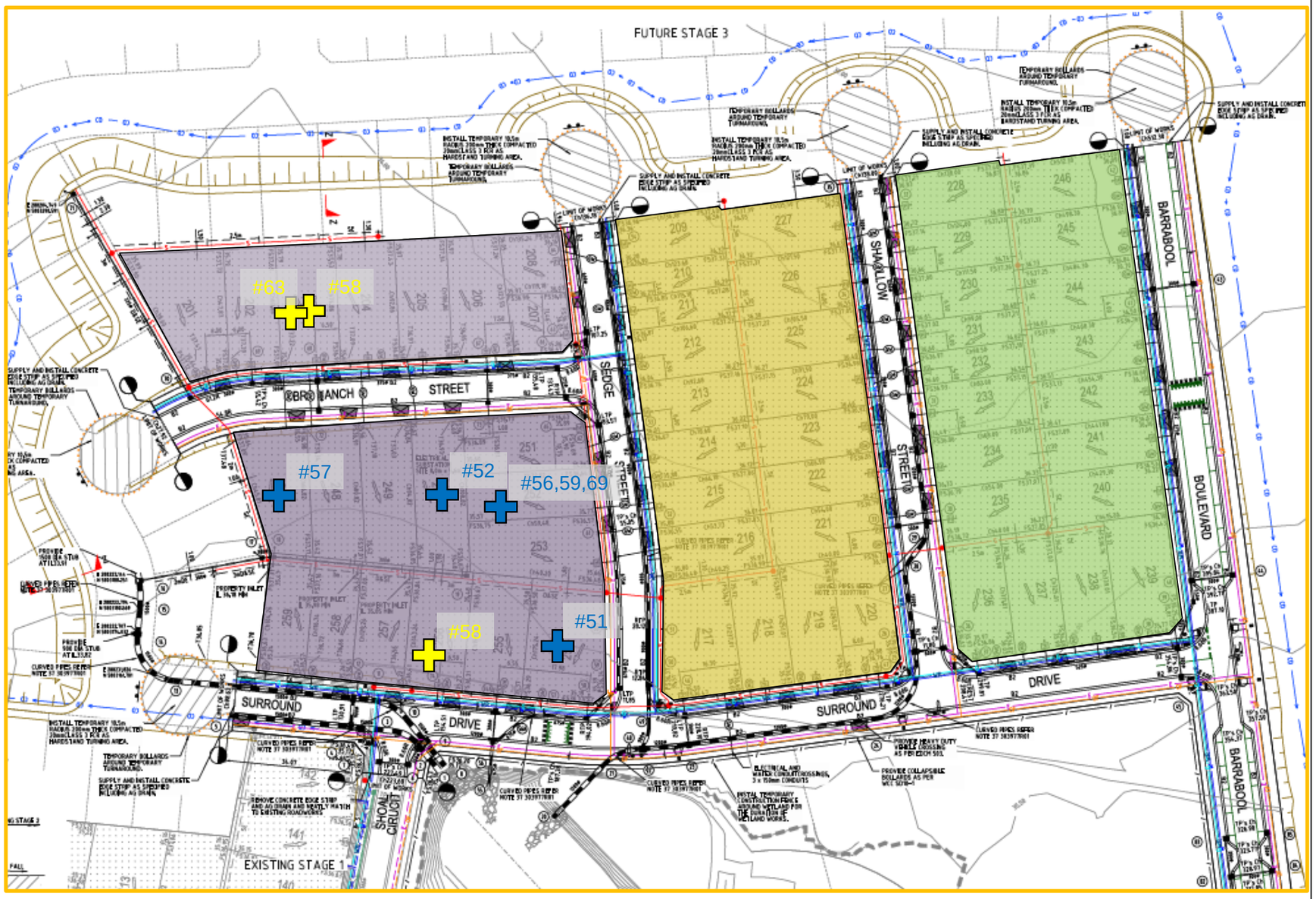
client:	SPIIRE C/- FRASERS PROPERTY
project:	MAMBOURIN ESTATE STAGE 2
title:	LEVEL 1 GITA REPORT
project no:	754-MELGE 221991AF
figure no:	2

STAGE 2



LEGEND

- *Eastern Pad*
- *Central Pad*
- *Western Pads*

Field Density Tests location

- *Layer 3*
- *Layer 4*

revision	description	drawn	approved	date

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

drawn	D.S
approved	S.S
date	19/08/2019
scale	NTS
original size	A3

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client: SPIIRE C/- FRASERS PROPERTY

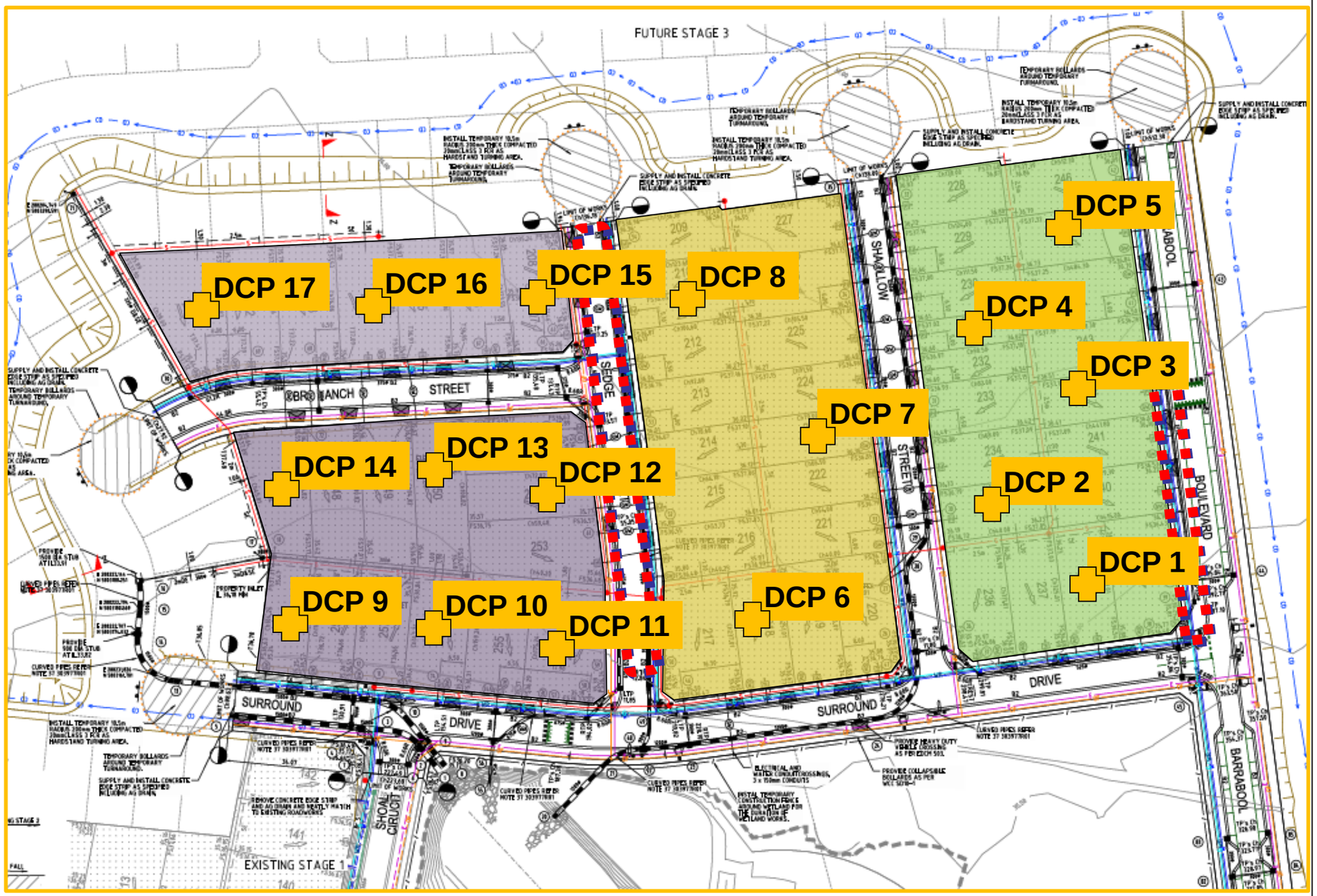
project: MAMBOURIN ESTATE
STAGE 2

title: LEVEL 1 GITA REPORT

project no: 754-MELGE 221991AF

figure no: 3

STAGE 2



LEGEND

Eastern Pad

Central Pad

Western Pads

DCP 1 — DCP Tests location

revision	description	drawn	approved	date

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

drawn	S.S.
approved	G.M.
date	19/08/2019
scale	NTS
original size	A3

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client: SPIIRE C/- FRASERS PROPERTY

project: MAMBOURIN ESTATE
STAGE 2

title: LEVEL 1 GITA REPORT

project no: 754-MELGE 221991AF

figure no: 4

SUMMARY OF FIELD DENSITY TEST RESULTS - STAGE 2

FIGURE #5

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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	Layer #	Lot / Location #	HILF Density Ratio %	Moisture Variation of OMC %	Pass / Fail	Retest Comment
7 to 31	Tests conducted on other stages							
32	X	Tuesday, September 4, 2018	1	Lot 201	98.5	2.0	Pass	
33 to35	Tests conducted on other stages							
36	X	Thursday, September 6, 2018	1	255	97.0	-0.5	Pass	
37	X	Thursday, September 6, 2018	1	251	102.0	2.5	Pass	
38	X	Thursday, September 6, 2018	1	248	101.0	-1.0	Pass	
39	X	Friday, September 7, 2018	1	242	97.5	-1.5	Pass	
40	X	Friday, September 7, 2018	1	232	98.0	-3.0	Pass	
41	X	Friday, September 7, 2018	1	259	99.5	2.5	Pass	
42	X	Saturday, September 8, 2018	2	241	100.0	-2.0	Pass	
43	X	Saturday, September 8, 2018	2	234	99.5	-0.5	Pass	
44	X	Monday, September 10, 2018	1	224	108.5	-2.5	Pass	
45	X	Monday, September 10, 2018	1	211	98.5	-0.5	Pass	
46	X	Monday, September 10, 2018	1	227	94.5	-2.5	**Fail**	#50
47	X	Tuesday, September 11, 2018	2	247	96.0	-0.5	Pass	
48	X	Tuesday, September 11, 2018	2	257	100.0	0.5	Pass	
49	X	Tuesday, September 11, 2018	2	202	99.0	-1.0	Pass	
50	**46**	Tuesday, September 11, 2018	1	227	108.0	-3.0	Pass	
51	X	Wednesday, September 12, 2018	3	254	99.0	-1.5	Pass	
52	X	Wednesday, September 12, 2018	3	250	98.5	2.5	Pass	
53	X	Wednesday, September 12, 2018	2	215	104.0	-4.0	**Fail**	#70
54	X	Thursday, September 13, 2018	2	204	98.5	-2.5	Pass	
55	X	Thursday, September 13, 2018	2	208	103.5	-2.5	Pass	

Test #	Retest of Test #	Date	Layer #	Lot / Location #	HILF Density Ratio %	Moisture Variation of OMC %	Pass / Fail	Retest Comment
56	X	Thursday, September 13, 2018	3	252	100.0	-3.5	**Fail**	
57	X	Thursday, September 13, 2018	3	247	98.0	-3.0	Pass	
58	X	Saturday, September 15, 2018	4	256	101.5	-2.5	Pass	
59	**56**	Saturday, September 15, 2018	3	252	23.0	-4.5	**Fail**	#69
60 to 62	Tests conducted on other stages							
63		Tuesday, September 18.2018	4	203	109.4	-2.5	Pass	
64 to 68	Tests conducted on other stages							
69	**59**	Wednesday, September 19, 2018	3	252	100.0	-2.5	Pass	
70	**53**	Wednesday, September 19, 2018	2	215	99.5	0.5	Pass	
71 to 316	Tests conducted on other stages							

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Dynamic Cone Penetrometer Test Results

Client:	***Frasers Property/Spiire***	Figure No:	6
Project:	**Mambourin Estate**	Project No:	754- MELGE221991
Location:	***Wydham Vale***	Date of Issu	Refer Report 754-MELGE2219911F
Standard Used (eg AS, RTA	***DCP No. 04, Calibration Due on 23/06/2020***		

Sample Details

Test Procedure: *DCP* Test Date: 14/8/2019

Depth below surface (m)	Test Numbers								*Reading Recorded in Blows per 100mm*
	1	***2***	***3***	***4***	***5***	***6***	***7***	***8***	Test Locations/ Remarks
0.1	2	1	1	2	2	1	1	2	Uppermost layer is Topsoil material
0.2	4	5	5	5	4	6	6	4	DCP results in Topsoil layer are not analysed
0.3	8	7	7	8	9	8	6	8	For DCP Test Locations, refer to Figure 4 of Level 1 GITA report under reference 754-MELGE221991
0.4	10	9	10	11	11	12	11	11	
0.5	12	10	10	10	11	13	14	12	
0.6	12	12	14	12	12	14	13	11	
0.7	12	13	13	11	13	14	12	11	
0.8	13	14	14	12	16	16	14	12	
0.9	13	8	14	12	13	15	13	12	
1	14	11	16	14	13	14	11	14	
1.1									
1.2									
1.3									
1.4									
1.5									
1.6									
1.7									
1.8									
1.9									
2									
2.1									
2.2									
2.3									
2.4									
2.5									
2.6									

Remarks:

General Information:

AS 1289 6.3.2

- ■ Drop height 510mm ± 5
- ■ Cone tip
- □ Blunt tip

AS 1289 6.3.3

- □ Drop height 600mm ± 5

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Dynamic Cone Penetrometer Test Results

Sheet *of* *1 of 1*

Client:	***Frasers Property/Spiire***	Figure No:	7
Project:	**Mambourin Estate**	Project No:	754- MELGE221991
Location:	***Wydham Vale***	Date of Issue:	Refer Report 754-MELGE2219911F
Standard Used (eg AS, RTA	***DCP No. 04, Calibration Due on 23/06/2020***		

Sample Details

Test Procedure: *DCP* Test Date: 16/8/2019

Depth below surface (m)	Test Numbers									*Reading Recorded in Blows per 100mm*
	9	***10***	***11***	***12***	***13***	***14***	***15***	***16***	***17***	Test Locations/ Remarks
0.1	1	3	2	2	3	2	2	2	3	Uppermost layer is Topsoil material
0.2	5	6	4	5	5	6	6	4	6	DCP results in Topsoil layer are not analysed
0.3	6	8	8	7	6	7	9	7	8	For DCP Test Locations, refer to Figure 4 of Level 1 GITA report under reference 754-MELGE221991
0.4	9	10	10	9	11	9	8	9	8	
0.5	12	10	8	9	7	10	9	11	11	
0.6	11	7	8	10	9	10	11	11	10	
0.7	11	9	12	10	9	11	11	14	9	
0.8	14	11	11	11	11	15	12	12	13	
0.9	13	11	15	11	14	12	10	15	14	
1	12	13	12	14	14	16	15	15	13	
1.1										
1.2										
1.3										
1.4										
1.5										
1.6										
1.7										
1.8										
1.9										
2										
2.1										
2.2										
2.3										
2.4										
2.5										
2.6										

Remarks:

General Information:

AS 1289 6.3.2

- ■ Drop height 510mm ± 5
- ■ Cone tip
- □ Blunt tip

AS 1289 6.3.3

- □ Drop height 600mm ± 5

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:MELB18W00192
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-00681					
Field Sample ID	00017					
Client Sample ID	32					
Date Tested	4/09/2018					
Time Tested	04:30					
LOT Number	201					
Layer Number	1					
Field and Laboratory Data						
Depth of Test (mm)	275					
Depth of Layer (mm)	300					
AS Sieve Size (mm)	19.5					
Oversize Wet (%)	0					
Field Moisture Content (%)	40.9					
Field Moisture Content Method	AS 1289.2.1.1					
Field Wet Density (t/m³)	1.76					
Field Dry Density (t/m³)	1.25					
Peak Converted Wet Density* (t/m³)	1.78					
Optimum Moisture Content (%)	38.5					
Compactive Effort	Standard					
Moisture Ratio (%)	105.5					
Moisture Variation (%)	2.0 wet					
Hilf Density Ratio (%)	**98.5**					
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:MELB18W00197
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-00694	MELB18S-00695	MELB18S-00696			
Field Sample ID	00021	00022	00023			
Client Sample ID	36	37	38			
Date Tested	6/09/2018	6/09/2018	6/09/2018			
Lot#	255	251	248			
Layer	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	34.7	33.7	36.9			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.74	1.73	1.72			
Field Dry Density (t/m³)	1.29	1.29	1.26			
Peak Converted Wet Density* (t/m³)	1.79	1.69	1.70			
Optimum Moisture Content (%)	35.0	31.5	37.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	99.0	107.0	98.0			
Moisture Variation (%)	0.5 dry	2.5 wet	1.0 dry			
Hilf Density Ratio (%)	**97.0**	**102.0**	**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:MELB18W00199
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 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-00701	MELB18S-00702	MELB18S-00703			
Field Sample ID	00024	00025	00026			
Client Sample ID	39	40	41			
Date Tested	7/09/2018	7/09/2018	7/09/2018			
Time Tested	16:10	16:20	16:30			
LOT #	242	232	259			
Layer	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
Field Moisture Content (%)	27.5	20.0	39.6			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.87	1.81	1.80			
Field Dry Density (t/m³)	1.46	1.51	1.29			
Peak Converted Wet Density* (t/m³)	1.91	1.85	1.81			
Optimum Moisture Content (%)	29.0	23.0	37.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	94.5	87.5	106.5			
Moisture Variation (%)	1.5 dry	3.0 dry	2.5 wet			
Hilf Density Ratio (%)	**97.5**	**98.0**	**99.5**			
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:MELB18W00200
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 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-00704	MELB18S-00705				
Field Sample ID	00027	00028				
Client Sample ID	42	43				
Date Tested	8/09/2019	8/09/2019				
Time Tested	12:30	12:45				
LOT Number	241	234				
Layer	2	2				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	28.5	24.8				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.88	1.80				
Field Dry Density (t/m³)	1.46	1.45				
Peak Converted Wet Density* (t/m³)	1.87	1.82				
Optimum Moisture Content (%)	31.0	25.5				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	92.0	97.5				
Moisture Variation (%)	2.0 dry	0.5 dry				
Hilf Density Ratio (%)	**100.0**	**99.5**				
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:MELB18W00203
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 Moiusture 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-00711	MELB18S-00712	MELB18S-00713			
Field Sample ID	00029	00030	00031			
Client Sample ID	44	45	46			
Date Tested	10/09/2018	10/09/2018	10/09/2018			
Time Tested	17:20	17:30	17:40			
Lot #	224	211	227			
Layer	1	1	1			
Field and Laboratory Data						
Depth of Test (mm)	275	275	225			
Depth of Layer (mm)	300	300	250			
Field Moisture Content (%)	25.1	28.0	21.0			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	2.04	1.84	1.82			
Field Dry Density (t/m³)	1.63	1.43	1.50			
Peak Converted Wet Density* (t/m³)	1.87	1.87	1.93			
Optimum Moisture Content (%)	28.0	29.0	23.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	90.0	97.5	89.5			
Moisture Variation (%)	2.5 dry	0.5 dry	2.5 dry			
Hilf Density Ratio (%)	**108.5**	**98.5**	**94.5**			
legend * adjusted for oversize material						

Comments

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Coffey Services Australia Pty Ltd
15 Marine Parade
Melbourne VIC 3067

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

Report No: HDR:MELB18W00207
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 Moiusture 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-00727	MELB18S-00728	MELB18S-00729	MELB18S-00730		
Field Sample ID	00032	00033	00034	00035		
Client Sample ID	47	48	49	50		
Date Tested	11/09/2018	11/09/2018	11/09/2018	11/09/2018		
Time Tested	15:10	15:15	15:30	16:00		
LOT #	247	257	202	227		
Layer	2	2	2	1		
Re-Teast of				46		
Field and Laboratory Data						
Depth of Test (mm)	275	275	275	275		
Depth of Layer (mm)	300	300	300	300		
Field Moisture Content (%)	43.6	36.1	31.1	21.3		
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1		
Field Wet Density (t/m³)	1.73	1.79	1.69	2.00		
Field Dry Density (t/m³)	1.20	1.31	1.29	1.65		
Peak Converted Wet Density* (t/m³)	1.79	1.79	1.71	1.85		
Optimum Moisture Content (%)	44.0	35.5	32.0	24.5		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Ratio (%)	99.0	101.5	97.0	87.5		
Moisture Variation (%)	0.5 dry	0.5 wet	1.0 dry	3.0 dry		
Hilf Density Ratio (%)	**96.0**	**100.0**	**99.0**	**108.0**		
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:MELB18W00209
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-00733	MELB18S-00734	MELB18S-00735			
Field Sample ID	00036	00037	00038			
Client Sample ID	51	52	53			
Date Tested	12/09/2018	12/09/2018	12/09/2018			
Time Tested	01:30	01:40	02:20			
LOT Number	254	250	215			
Layer Number	3	3	2			
Field and Laboratory Data						
Depth of Test (mm)	275	275	275			
Depth of Layer (mm)	300	300	300			
AS Sieve Size (mm)	19.0	19.0	19.0			
Oversize Wet (%)	1	1	26			
Field Moisture Content (%)	38.4	29.1	16.1			
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1	AS 1289.2.1.1			
Field Wet Density (t/m³)	1.77	1.79	1.95			
Field Dry Density (t/m³)	1.28	1.39	1.68			
Peak Converted Wet Density* (t/m³)	1.79	1.82	1.88			
Optimum Moisture Content (%)	40.0	27.0	20.5			
Compactive Effort	Standard	Standard	Standard			
Moisture Ratio (%)	95.5	108.5	79.5			
Moisture Variation (%)	1.5 dry	2.5 wet	4.0 dry			
Hilf Density Ratio (%)	**99.0**	**98.5**	**104.0**			
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:MELB18W00211
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 1289.2.1.1, AS 1289.5.7.1
Sampling Method: AS1289.1.2.1 Clause 6.4 (b)
Source:
Material:

Sample Data

Sample ID	MELB18S-00738	MELB18S-00739	MELB18S-00740	MELB18S-00741		
Field Sample ID	00039	00040	00041	00042		
Client Sample ID	54	55	56	57		
Date Tested	13/09/2018	13/09/2018	13/09/2018	13/09/2018		
Time Tested	13:30	13:50	14:10	14:30		
Lot #	204	208	252	247		
Layer	2	2	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 (%)	16.5	22.1	28.5	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		
Field Wet Density (t/m³)	1.86	1.94	1.73	1.72		
Field Dry Density (t/m³)	1.60	1.59	1.35	1.43		
Peak Converted Wet Density* (t/m³)	1.89	1.87	1.73	1.76		
Optimum Moisture Content (%)	19.0	25.0	32.0	23.5		
Compactive Effort	Standard	Standard	Standard	Standard		
Moisture Ratio (%)	87.0	89.0	89.5	87.0		
Moisture Variation (%)	2.5 dry	2.5 dry	3.5 dry	3.0 dry		
Hilf Density Ratio (%)	**99.0**	**103.5**	**100.0**	**98.0**		
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:MELB18W00213
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 DRY 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-00747	MELB18S-00748				
Field Sample ID	00044	00045				
Client Sample ID	58	59				
Date Tested	15/09/2018	15/09/2018				
Time Tested	11:40	12:10				
LOT Number	259	252				
Layer number	4	3				
Re-test		Re-test of 56				
Field and Laboratory Data						
Depth of Test (mm)	275	275				
Depth of Layer (mm)	300	300				
Field Moisture Content (%)	34.2	23.0				
Field Moisture Content Method	AS 1289.2.1.1	AS 1289.2.1.1				
Field Wet Density (t/m³)	1.75	1.79				
Field Dry Density (t/m³)	1.30	1.46				
Peak Converted Wet Density* (t/m³)	1.72	1.81				
Optimum Moisture Content (%)	37.0	27.5				
Compactive Effort	Standard	Standard				
Moisture Ratio (%)	92.5	83.0				
Moisture Variation (%)	2.5 dry	4.5 dry				
Hilf Density Ratio (%)	**101.5**	**99.0**				
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: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

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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: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

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Appendix B – Survey Drawings

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

dlcs AS/NZS ISO 9001 certified

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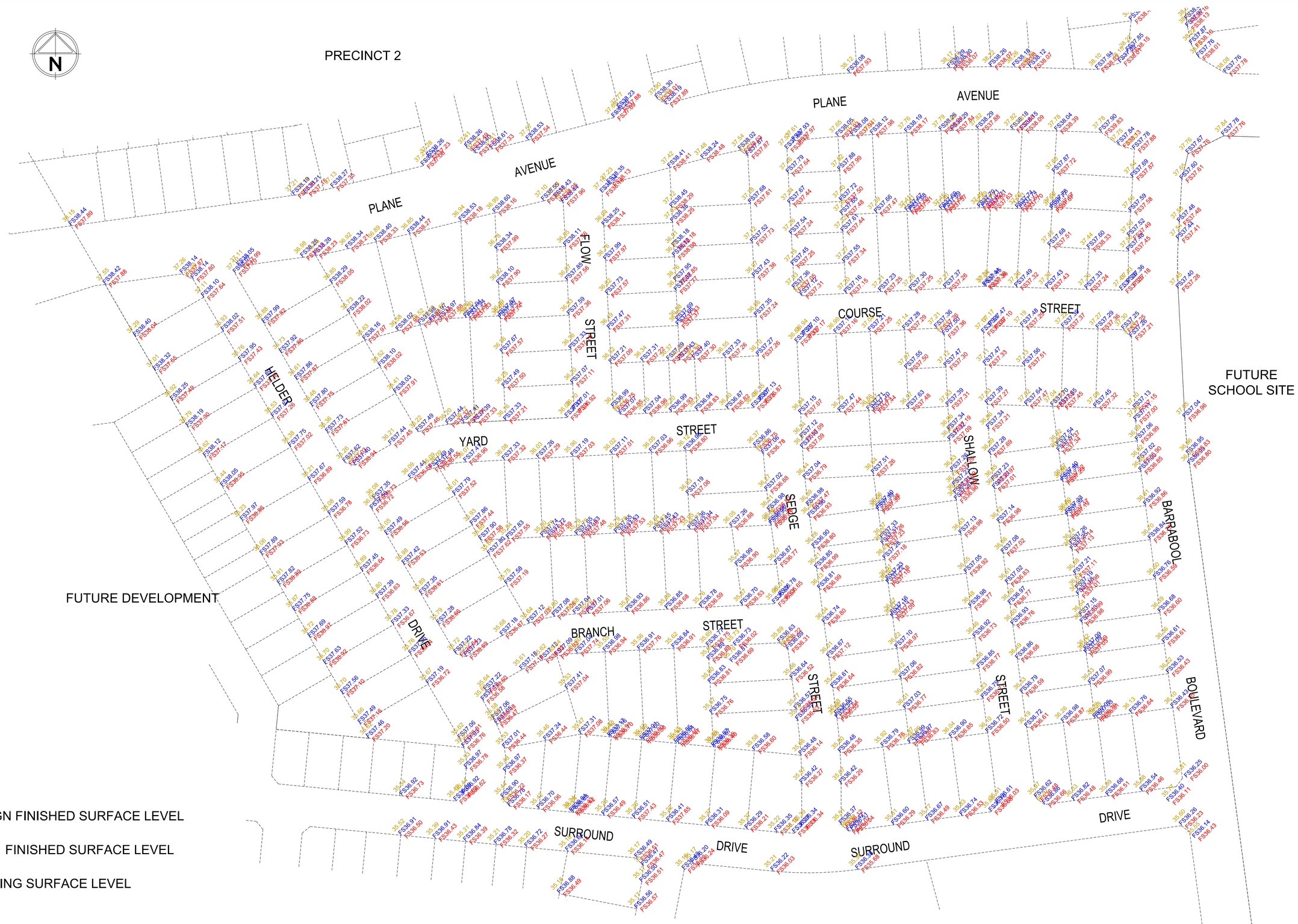
Designed: R. WEINBER
Checked: M.LETSON
Authorised: M.LETSON
Date: 14/06/19

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

FOR CONTINUATION REFER 303540SK05

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

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MAMBOURIN ESTATE
PRECINCT 1
EARTHWORKS FILLING PLAN - SPOT LEVEL COMPARISON
SHEET 2 OF 2
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