

Reference
No.: 2066-005

LEVEL ONE

SURVEILLANCE

AND INSPECTION REPORT

*Carried Out
By*



PREPARED FOR: -

DRAPERS CIVIL CONTRACTING PTY LTD



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Appendix A Construction Drawings

Appendix B Daily Field Compaction Summary Results



Client Name: Drapers Civil Contracting Pty Ltd
Project Name: Sanctuary Estate Stage 4 Armstrong Creek
Date: 18th of February 2019
Author: Mr. Sam Loza
Reference No.: 2066-005
Revision: 0
Project Manager: Mr. Chris Nation

1. Introduction & Scope

At the request of Drapers Civil Contracting Pty Ltd, Geotechnical Laboratories has carried out inspection and testing of the above-mentioned site from the 8th of February 2018 to the 12th of April 2018 where a residential development is being constructed. Inspection and testing of stripping, material quality and compaction control tests were carried out to comply with the requirements of AS 3798 Appendix B, Level 1.

The following documentation was submitted to Geotechnical Laboratories by Drapers Civil Contracting Pty Ltd and was used to determine compliance of earthworks in conjunction with the requirements of AS 3798 – 2007 (See Appendix A).

(1). Calibre Consulting Construction Drawing No. C02 Rev 03, CO3 Rev 01.

General site works involved the placement of fill, using on-site derived clay, to bring the fill region to the required finished levels as indicated on the construction drawings.

2. Site Preparation

Site inspections were undertaken on the 8th of February 2018 confirming that selected areas to be filled were completely stripped of topsoil prior to filling. The brown silty topsoils had been stockpiled around the site for later removal off-site.

Initial proof roll inspections were performed and subsequently throughout the project duration to ensure no significant soft areas were present prior to filling.

3. Fill Material

It is understood that the fill material used was sourced from on-site excavations, mainly service trenches and road boxing.



The fill material is best described as a CLAY, brown, grey-brown, slightly moist to moist, slightly silty, medium plasticity with basalt gravels and cobbles.

The fill material is consistent with the naturally occurring soils for this region.

Source material was deemed a **Suitable Material** in accordance with guidelines set out in AS 3798 - 2007 Section 4.4.

4. Fill Construction Procedure

The following plant (but not always limited to) were engaged in the fill placement process:

- Dump trucks / highway trucks
- A watercart
- A sheepsfoot compactor (815)

The sheepsfoot compactor placed material in horizontal loose layers of approximately 250mm-300mm. The sheepsfoot compactor also performed compaction of the clay fill operating in a criss-cross pattern.

The moisture condition of the fill was closely monitored and moisture conditioning procedures were applied to bring the material closer to its Standard Optimum Moisture Content (AS 1289 5.7.1).

5. Compaction Control Testing

Compaction control testing was performed on-site using a Nuclear Densometer in accordance with AS 1289 5.8.1. Laboratory reference densities were determined from material sampled at each test site location using the Hilf Rapid Compaction Method in accordance with AS 1289 5.7.1.

A total of ten compaction tests were performed on the fill construction. Results are presented in Appendix B of this report.

6. Testing Frequency

Testing frequencies were in accordance with **AS 3798 - 2007 Table 8.1** for **Large Scale Operations**.

Acceptance of fill layers for compaction was based on the requirements of **AS 3798 - 2007 Table 5.1 Item 1. Residential**. As a result, the compliance criteria adopted by Geotechnical Laboratories was a hilf density ratio not less than 95 percent of the maximum hilf density value as determined by the Standard Hilf Rapid Compaction Method in accordance with AS 1289 5.7.1.



Test results indicate that the above-mentioned requirements have been successfully achieved.

No moisture criteria was specified.

7. Statement of Compliance

So far as can be determined, Drapers Civil Contracting Pty Ltd has satisfactorily complied with the compaction and construction processes required for the structural filling of this site. As such, structural filling placed on this site by Drapers Civil Contracting Pty Ltd from the 8th of February 2018 to the 12th of April 2018 can be categorised as CONTROLLED FILL in accordance with AS 2870-2011.

8. Limitations and Liability of this Report

This report has been produced for and remains the property of Drapers Civil Contracting Pty Ltd.

The release of this report to a third party will only occur if Geotechnical Laboratories Pty Ltd has received, in writing, the authority to do so by our client.

Geotechnical Laboratories Pty Ltd will not engage in any third-party communication regarding this report.

Where information has been supplied by the client or third party, the assumption is made that this is correct. Geotechnical Laboratories Pty Ltd will not be held responsible for any inaccuracies supplied.

Test results and controlled fill compliance relates only to fill placed by Drapers Civil Contracting Pty Ltd and for earthworks completed at the time of inspection and testing. Any previous or subsequent earthworks will require a separate evaluation.

For & on behalf of
Geotechnical Laboratories Pty Ltd.

Sam Loza
Laboratory Manager.



LEVEL ONE
SURVEILLANCE
AND INSPECTION REPORT

APPENDIX A



WARNING

NOTES:

1. ALL VEHICLE AND PRAM CROSSING LAYBACKS TO BE MINIMUM OF 1.0m FROM PITS.

ROAD LAYOUT TABLE	ROAD_LENGTH_Feet	ROAD_TYPE	LENGTH_Mileage_Feet

ACCESS	16.00	6.70	7.30	7.60	B2	4.20	4.20
ACCESS					B2		

9. ALL COORDINATES SHOWN ARE TO AND FROM THE USE OF DIRECTIONAL ANGLE	82	7.30	6.70	20.00	82	7.60	6.20	6.20
7. THE USE OF DIRECTIONAL ANGLE	82	7.30	6.70	20.00	82	7.60	6.20	6.20
6. TACTILE PAVERS MUST ACCORD WITH	82	7.30	6.70	20.00	82	7.60	6.20	6.20
5. LEAVARD ACCESS	82	7.30	6.70	20.00	82	7.60	6.20	6.20
4. LEAVARD ACCESS	82	7.30	6.70	20.00	82	7.60	6.20	6.20
3. LEAVARD ACCESS	82	7.30	6.70	20.00	82	7.60	6.20	6.20
2. LEAVARD ACCESS	82	7.30	6.70	20.00	82	7.60	6.20	6.20
1. LEAVARD ACCESS	82	7.30	6.70	20.00	82	7.60	6.20	6.20

ACCELOS	7000	7100	7200	7300	7400	7500	7600	7700	7800	7900	8000	8100	8200	8300	8400	8500	8600	8700	8800	8900	9000	9100	9200	9300	9400	9500	9600	9700	9800	9900	10000
ACCELOS	7000	7100	7200	7300	7400	7500	7600	7700	7800	7900	8000	8100	8200	8300	8400	8500	8600	8700	8800	8900	9000	9100	9200	9300	9400	9500	9600	9700	9800	9900	10000

	TREE	BUSH	VINE	CRAWLER	SPECIALTY SERVICE	MISC.	DATE	TIME	TECH	TRUCK	FUEL	EQUIP	REMARKS
10. REFER ARBORIST REPORT FOR DETAILS OF EXISTING TREES TO BE REMOVED													

SANCTUARY ESTATE

LAYOUT PLAN - 1

COMMUNITIES DESIGNED FOR LIVING
CONSULTING



LEVEL ONE
SURVEILLANCE
AND INSPECTION REPORT

APPENDIX B



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1897/643

LOCATION: DRAPERS - Sanctuary Estate Stage 4,5,6

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m ³)	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m ³)	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)
8/02/18	1	<i>Refer to #1897/644 for approx. test site locations.</i>	1.96	16.5	97.0	2.01	17.0	175	0.5 Drier	97.5	0	0	0
8/02/18	2		2.00	14.5	99.5	2.01	15.0	175	0.5 Drier	95.5	0	0	0
8/02/18	3		2.07	13.0	102.0	2.03	15.5	175	2.5 Drier	84.0	0	0	0
8/02/18	4		2.00	15.5	99.5	2.00	17.5	175	2.0 Drier	88.0	0	0	200
8/02/18	5		2.03	15.5	102.0	2.00	18.0	175	3.0 Drier	84.5	0	0	0
8/02/18	6		1.96	16.5	104.0	1.89	19.5	175	3.0 Drier	84.5	0	0	0

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 10.55am Finish Time: 11.34am

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)

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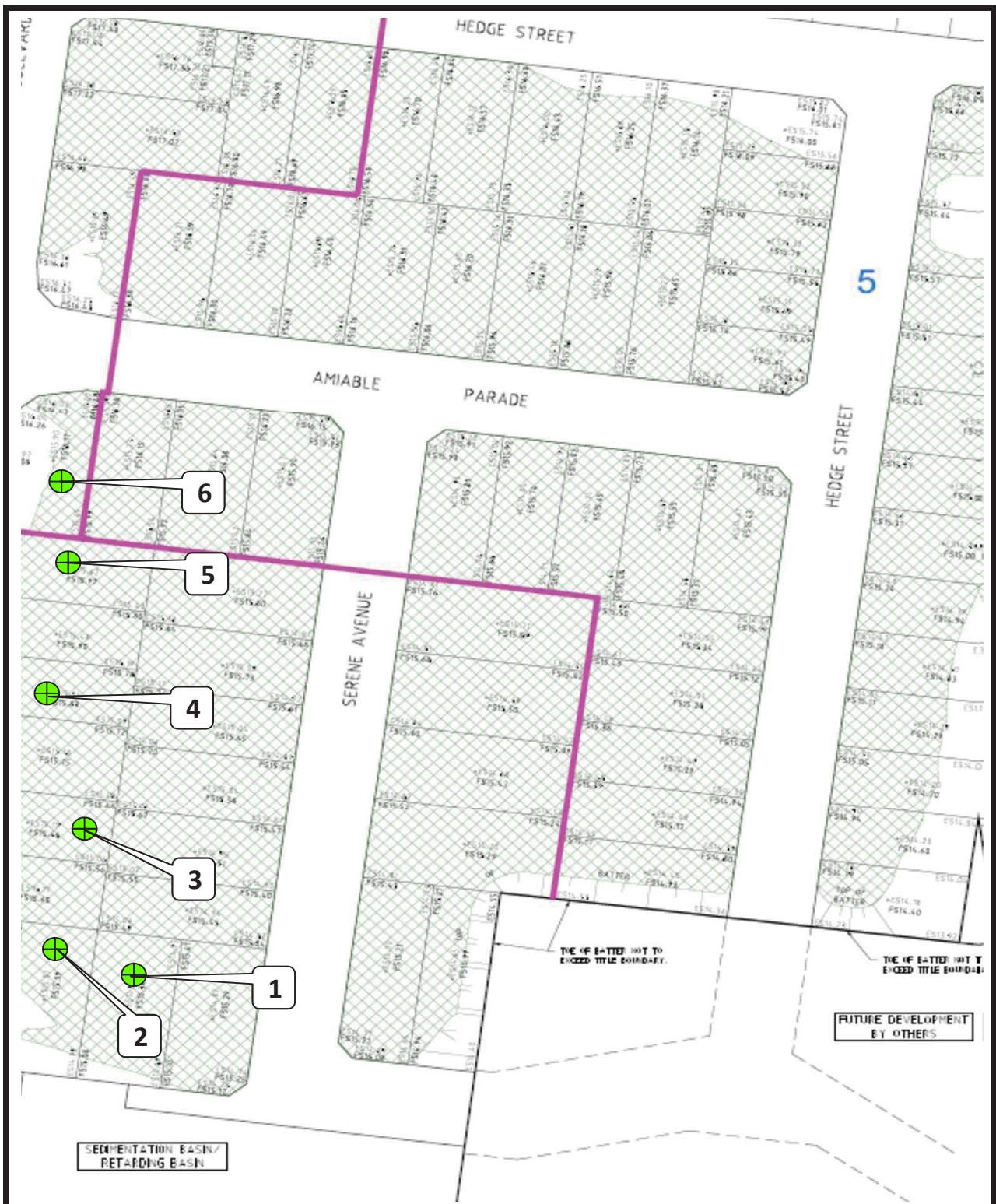
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NATA Accredited Laboratory Number 14561

SAM LOZA

(Approved Signatory)

Issue Date: 12/2/2018



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CLIENT: DRAPERS

LOCATION: Sanctuary Estate Stage 4, 5, 6

Sketch indicating compaction test locations

DATE: 8/2/18

OPERATOR: JC

SCALE: NTS

JOB No.: 1897/644

CHECKED: EG



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1897/651

LOCATION: DRAPERS - Sanctuary Estate Stage 4,5,6

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m³)	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m³)	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)
13/02/18	1	<i>Refer to #1897/652 for approx. test site locations.</i>	2.10	14.5	101.5	2.07	15.5	175	1.0 Drier	94.0	0	0	200
13/02/18	2		2.08	13.0	100.5	2.07	14.0	175	1.0 Drier	93.5	0	0	200
13/02/18	3		2.11	13.5	100.5	2.09	15.0	175	1.0 Drier	92.5	0	0	200
13/02/18	4		2.01	14.5	99.5	2.02	16.0	175	1.5 Drier	91.5	0	0	200
13/02/18	5		2.00	19.5	98.0	2.04	19.0	175	0.5 Wetter	102.5	0	0	0
13/02/18	6		2.01	17.5	97.0	2.08	18.0	175	0.5 Drier	97.5	0	0	0

NOTES: Onsite Clayey Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 10.35am Finish Time: 11.25am

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)

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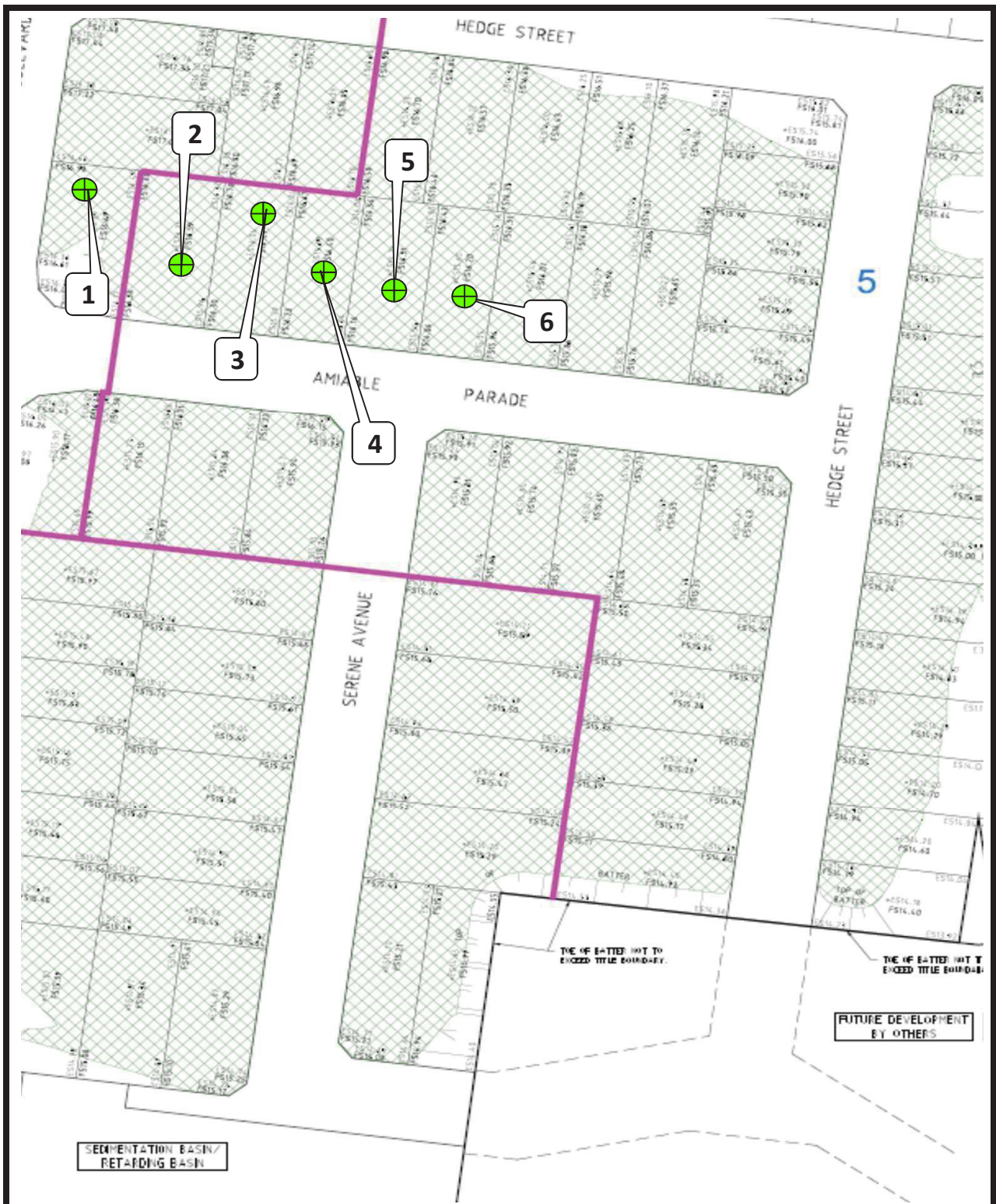
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SAM LOZA

(Approved Signatory)

Issue Date: 15/2/2018



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CLIENT: DRAPERS

LOCATION: Sanctuary Estate Stage 4, 5, 6

Sketch indicating compaction test locations

DATE: 13/2/18

OPERATOR: NM

SCALE: NTS

JOB No.: 1897/652

CHECKED: EG



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1897/704

LOCATION: DRAPERS - Sanctuary Estate Stage 4,5,6

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m ³)	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m ³)	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)
29/03/18	7	<i>Refer to #1897/705 for approx. test site locations.</i>	1.90	19.5	98.0	1.94	22.0	175	2.5 Drier	88.0	0	0	200
29/03/18	8		1.92	25.5	105.5	1.82	28.0	175	3.0 Drier	90.0	0	0	200
29/03/18	9		1.93	19.0	102.0	1.90	23.0	175	4.0 Drier	82.5	0	0	200
29/03/18	10		1.95	18.0	101.0	1.93	21.5	175	3.5 Drier	84.5	0	0	200
29/03/18	11		1.93	19.0	98.5	1.96	22.0	175	3.0 Drier	87.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clayey Fill

Test sites located - Geolab Procedure 4, Part 4.3.

Compaction specimens sampled after compaction.

Start Time: 9.45am Finish Time: 10.15am

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)

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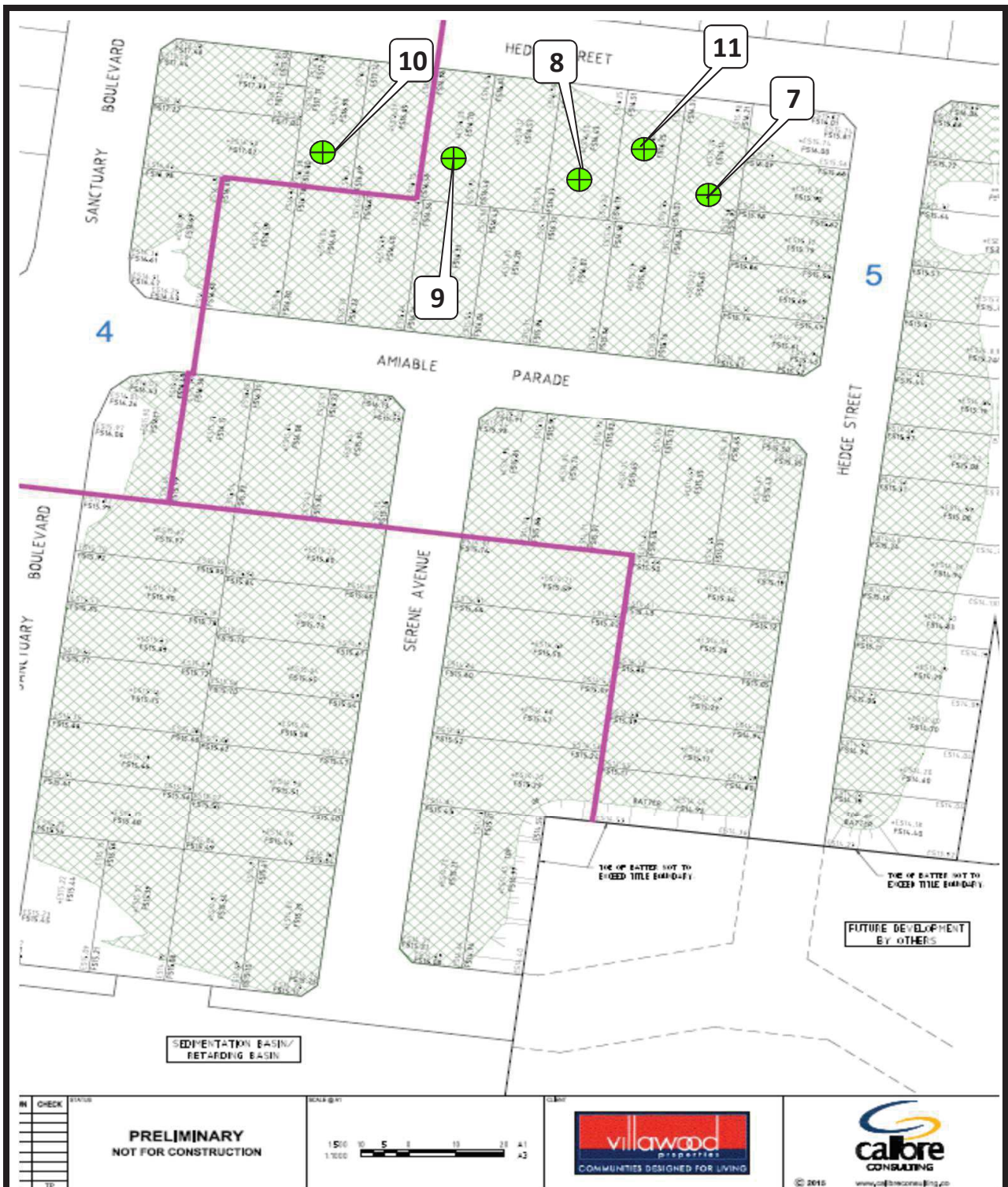
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SAM LOZA

(Approved Signatory)

Issue Date: 5/4/2018



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CLIENT: DRAPERS

LOCATION: Sanctuary Estate Stage 4, 5, 6

Sketch indicating compaction test locations

DATE: 29/3/18

OPERATOR: JC

SCALE: NTS

JOB No.: 1897/705

CHECKED: EG



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1897/706

LOCATION: DRAPERS - Sanctuary Estate Stage 4,5

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m ³)	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m ³)	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)
4/04/18	1	<i>Refer to #1897/707 for approx. test site locations.</i>	1.90	12.0	97.5	1.94	15.5	175	3.5 Drier	77.0	0	0	0
4/04/18	2		1.94	12.0	102.5	1.90	16.5	175	4.5 Drier	73.0	0	0	0
4/04/18	3		1.91	12.0	101.0	1.89	17.0	175	5.0 Drier	71.0	0	0	0
4/04/18	4		1.95	12.5	103.5	1.88	17.0	175	4.5 Drier	73.5	0	0	0
4/04/18	5		1.89	14.0	99.0	1.91	18.0	175	4.5 Drier	76.0	0	0	0
4/04/18	6		1.98	14.0	105.5	1.88	18.0	175	4.0 Drier	77.5	0	0	0

NOTES: Onsite Clayey Fill

Test sites located - Geolab Procedure 4, Part 4.3.

Compaction specimens sampled after compaction.

Start Time: 12.00pm Finish Time: 1.00pm

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)

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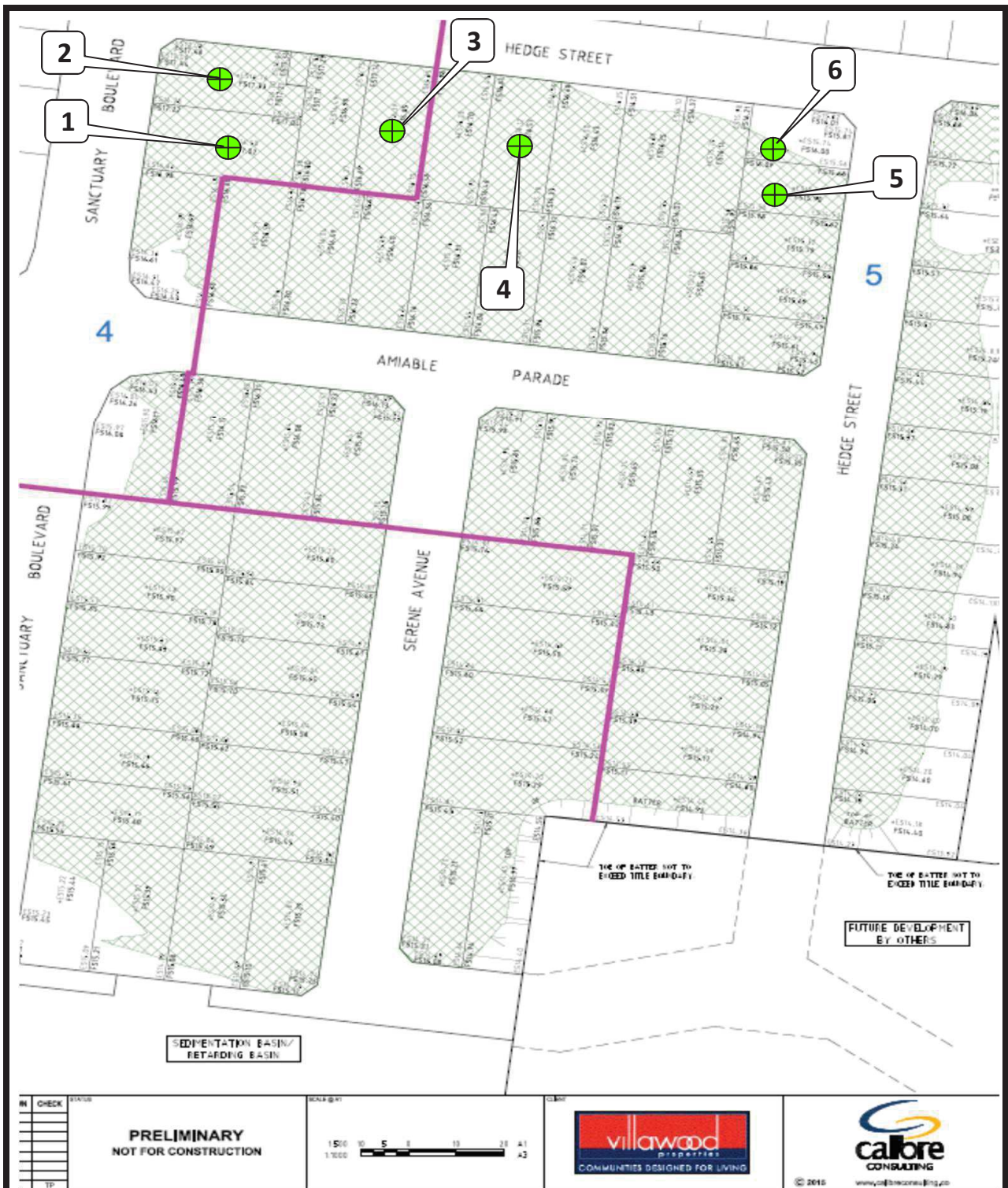
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SAM LOZA

(Approved Signatory)

Issue Date: 6/4/2018



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CLIENT: DRAPERS

LOCATION: Sanctuary Estate Stage 4,5

Sketch indicating compaction test locations

DATE: 4/4/18

OPERATOR: JC

SCALE: NTS

JOB No.: 1897/707

CHECKED: EG



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1897/718

LOCATION: DRAPERS - Sanctuary Estate Stage 4

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m ³)	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m ³)	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)
12/04/18	1	<i>Refer to #1897/719 for approx. test site locations.</i>	1.89	21.0	98.0	1.93	22.5	175	1.0 Drier	94.5	0	0	0
12/04/18	2		1.89	24.0	101.5	1.86	26.5	175	3.0 Drier	89.0	0	0	0
12/04/18	3		1.90	17.5	96.5	1.97	19.5	175	2.0 Drier	89.0	0	0	0
12/04/18	4		1.87	20.5	99.0	1.89	24.0	175	3.5 Drier	85.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4

Compaction specimens sampled after compaction.

Start Time: 9.00am Finish Time: 9.40am

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation, Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)



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NATA Accredited Laboratory Number 14561

MICK CROWE
(Approved Signatory)

Issue Date: 19/4/2018



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CLIENT: DRAPERS LOCATION:Sanctuary Estate Stage 4 Sketch indicating compaction test locations	DATE: 12/4/18	JOB No.: 1897/719
	OPERATOR: JC	CHECKED: EG
	SCALE: NTS	