

Reference
No.: 1917-069

LEVEL ONE

SURVEILLANCE

AND INSPECTION REPORT

*Carried Out
By*



PREPARED FOR: -

DRAPERS CIVIL CONTRACTING PTY LTD



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Appendix A Construction Drawings

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Client Name: Drapers Civil Contracting Pty Ltd

Project Name: Wandana Estate Stage 4

Date: 9th of September 2019

Author: Mr. Sam Loza

Reference No.: 1917-069

Revision: 01

Project Manager: Mr. Matthew Jackman

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 26th of October 2018 to the 23rd of May 2019 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). Earthworks Detail Plan Project Reference No. 14817E.

General site works involved the placement of fill, using on-site derived clay, to construct a total of three basin liners and allotment fill to the required finished levels as indicated on the faceplan drawings.

2. Site Preparation

Site inspections were undertaken on the 26th of October 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, medium plasticity, slightly silty, slightly moist to moist with basalt gravel and cobbles.

The addition of lime was undertaken for the basin liners construction as required.

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 and / or highway trucks
- A watercart
- A sheepsfoot compactor (815)

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

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 ninety compaction tests were performed on the allotment filling and basin liners 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 hilt density ratio not less than 95 percent of the maximum hilt density value as determined by the Standard Hilt 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 26th of October 2018 to the 23rd of May 2019 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



LEVEL ONE
SURVEILLANCE
AND INSPECTION REPORT

APPENDIX B



GEOTECHNICAL LABORATORIES
ACN 102 571 077
Factory 1/8-10 Catalina Drive, Tullamarine Vic 3043
PO Box 2693 Gladstone Park VIC 3043
PH: (03) 9335 1225

DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/029

LOCATION: DRAPERS - Wandana 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)
26/10/18	1	<i>Refer to #1992/030 for approx. test site locations.</i>	1.89	28.0	101.5	1.85	28.5	175	0.5 Drier	99.0	0	0	500
26/10/18	2		1.97	16.5	99.5	1.98	18.5	175	2.0 Drier	88.5	0	0	500
26/10/18	3		1.91	15.5	95.0	2.01	18.5	175	2.5 Drier	86.0	0	0	500
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 12.27pm 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.

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)



Accredited for compliance with ISO/IEC 17025 - Testing

NATA Accredited Laboratory Number 14561

M. Crowe

MICK CROWE
(Approved Signatory)

Issue Date: 30/10/2018



EXISTING UNDERGROUND ELECTRICAL
SUPPLY TO SALES OFFICE

NOTE:
EXISTING UNDERGROUND ELECTRICAL SUPPLY TO SALES
OFFICE TO BE MAINTAINED DURING STAGE
ONE WORKS. THIS IS TO BE MAINTAINED AT
ALL TIMES. ANY WORKS TO BE CARRIED OUT
BY THE CLIENT.



**GEOTECHNICAL
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GEOTECHNICAL LABORATORIES
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PO Box 184 Kellor VIC 3036
PH: (03) 9335 1225 Fax: (03) 9335 1775

CLIENT: DRAPERS

LOCATION: Wandana Estate Stage 4

Sketch indicating compaction test locations

DATE: 26/10/18

OPERATOR: NW

SCALE: NTS

JOB No.: 1992/030

CHECKED: EG

FIGURE No: -



GEOTECHNICAL LABORATORIES
ACN 102 571 077
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PH: (03) 9335 1225

DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/031

LOCATION: DRAPERS - Wandana 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)
29/10/18	1	<i>Refer to #1992/032 for approx. test site locations.</i>	2.02	17.0	101.0	2.00	19.0	175	2.0 Drier	90.0	0	0	300
29/10/18	2		2.00	17.5	100.0	2.00	19.5	175	2.0 Drier	90.5	0	0	300
29/10/18	3		1.98	15.5	99.5	✱ 1.99	18.0	175	2.5 Drier	86.0	9	0	300
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 12.47pm Finish Time: 1.06pm

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)

✱ Indicates APCWD



Accredited for compliance with ISO/IEC
17025 - Testing

NATA Accredited Laboratory Number 14561

MICK CROWE
(Approved Signatory)

Issue Date: 31/10/2018



EXISTING UNDERGROUND ELECTRICAL
SUPPLY TO SALES OFFICE

NOTE:
EXISTING ELECTRICAL SUPPLY TO SALES
OFFICE TO BE MAINTAINED DURING STAGE
4 AND STAGE 5. THIS IS NOT TO BE
DISRUPTED BY ANY WORKS CARRIED OUT
DURING STAGE 4.



**GEOTECHNICAL
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CLIENT: DRAPERS

LOCATION: Wandana Estate Stage 4

Sketch indicating compaction test locations

DATE: 29/10/18

OPERATOR: NW

SCALE: NTS

JOB No.: 1992/032

CHECKED: EG

FIGURE No: -



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/033

LOCATION: DRAPERS - Wandana 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)
30/10/18	1	<i>Refer to #1992/034 for approx. test site locations.</i>	2.03	17.5	99.0	2.04	17.5	175	0.0 Wetter	101.5	0	0	200
30/10/18	2		2.01	18.5	99.0	2.03	18.5	175	0.0 Drier	100.0	0	0	200
30/10/18	3		2.01	18.0	102.5	1.96	19.5	175	1.5 Drier	92.5	0	0	200
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 11.13am Finish Time: 11.22am

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)



Accredited for compliance with ISO/IEC 17025 - Testing

NATA Accredited Laboratory Number 14561

M. Crowe

MICK CROWE
(Approved Signatory)

Issue Date: 1/11/2018



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/035

LOCATION: DRAPERS - Wandana 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)
31/10/18	1	<i>Refer to #1992/036 for approx. test site locations.</i>	1.94	15.0	97.5	1.99	18.0	175	3.0 Drier	84.5	0	0	0
31/10/18	2		1.98	19.5	97.5	2.03	19.5	175	0.0 Drier	100.0	0	0	0
31/10/18	3		2.02	17.0	102.5	1.97	18.5	175	1.5 Drier	92.5	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 11.50am Finish Time: 12.05pm

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)



Accredited for compliance with ISO/IEC 17025 - Testing

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MICK CROWE
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Issue Date: 2/11/2018



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/120

LOCATION: DRAPERS - Wandana Estate Stage 4 Basin

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)
16/05/19	1	<i>Refer to #1992/121 for approx. test site locations.</i>	1.96	19.5	98.5	1.98	21.5	225	1.5 Drier	92.0	0	0	0
16/05/19	2		1.99	21.0	99.5	2.00	19.0	225	1.5 Wetter	109.0	0	0	0
16/05/19	3		1.96	20.5	100.5	1.95	20.5	225	0.0 Drier	99.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Lime Stabilised Clayey Liner Ex. Onsite

Compaction specimens sampled after compaction.

Test sites located - Geolab Procedure 4, Part 4.4.

Start Time: 10.56am Finish Time: 11.09am

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: 250mm

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)

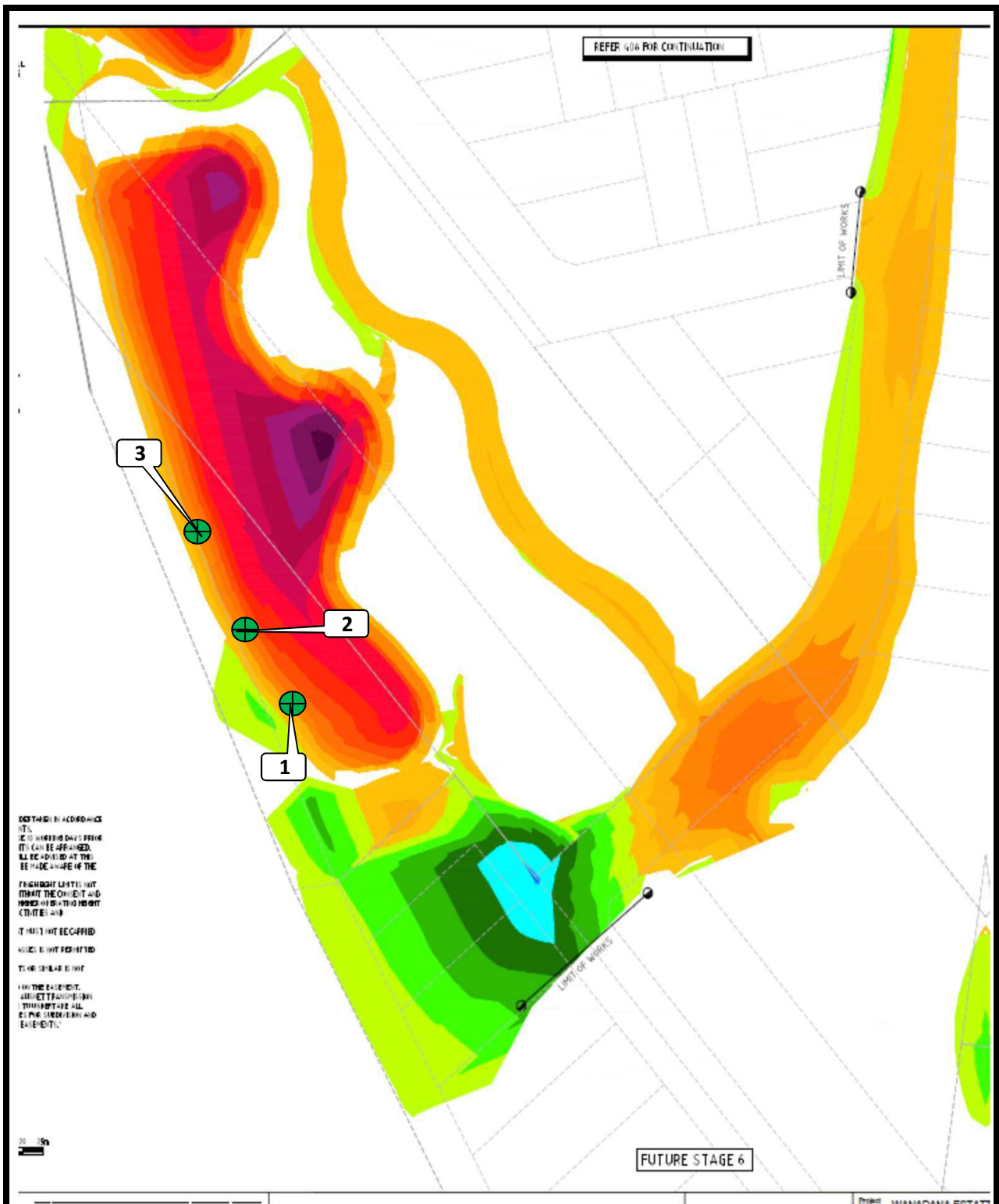


Accredited for compliance with ISO/IEC
17025 - Testing

NATA Accredited Laboratory Number 14561

MICK CROWE
 (Approved Signatory)

Issue Date: 17/5/2019



**GEOTECHNICAL
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CLIENT: DRAPERS

LOCATION: Wandana Stage 4

Sketch indicating compaction test locations

DATE: 16/5/19

OPERATOR: RW

SCALE: NTS

JOB No.: 1992/121

CHECKED: EG

FIGURE No: -



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/117

LOCATION: DRAPERS - Wandana 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)
8/05/19	1	<i>Refer to #1992/119 for approx. test site locations.</i>	2.08	19.5	104.0	2.00	21.0	225	1.0 Drier	94.5	0	0	350
8/05/19	2		2.06	19.5	104.5	1.97	21.0	225	1.5 Drier	92.0	0	0	350
8/05/19	3		2.02	20.0	103.5	1.95	22.5	225	2.5 Drier	88.5	0	0	350
8/05/19	4		2.07	20.0	104.5	1.98	21.0	225	1.0 Drier	95.5	0	0	350
8/05/19	5		2.02	19.5	103.5	1.96	21.5	225	2.0 Drier	90.0	0	0	350
8/05/19	6		1.98	18.5	101.0	1.96	21.0	225	2.5 Drier	87.5	0	0	350

NOTES: Clayey Liner Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 11.40am Finish Time: 12.25pm

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: 250mm

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)



Accredited for compliance with ISO/IEC
17025 - Testing

NATA Accredited Laboratory Number 14561

MICK CROWE
 (Approved Signatory)

Issue Date: 15/5/2019



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/118

LOCATION: DRAPERS - Wandana 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)
8/05/19	7	<i>Refer to #1992/119 for approx. test site locations.</i>	1.99	21.0	100.5	1.97	22.0	225	1.0 Drier	95.5	0	0	650
8/05/19	8		2.00	21.0	101.0	1.98	21.5	225	0.0 Drier	99.0	0	0	650
8/05/19	9		1.98	24.5	99.0	2.00	22.5	225	2.0 Wetter	110.0	0	0	650
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Liner Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 11.40am Finish Time: 12.25pm

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: 250mm

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)



Accredited for compliance with ISO/IEC 17025 - Testing

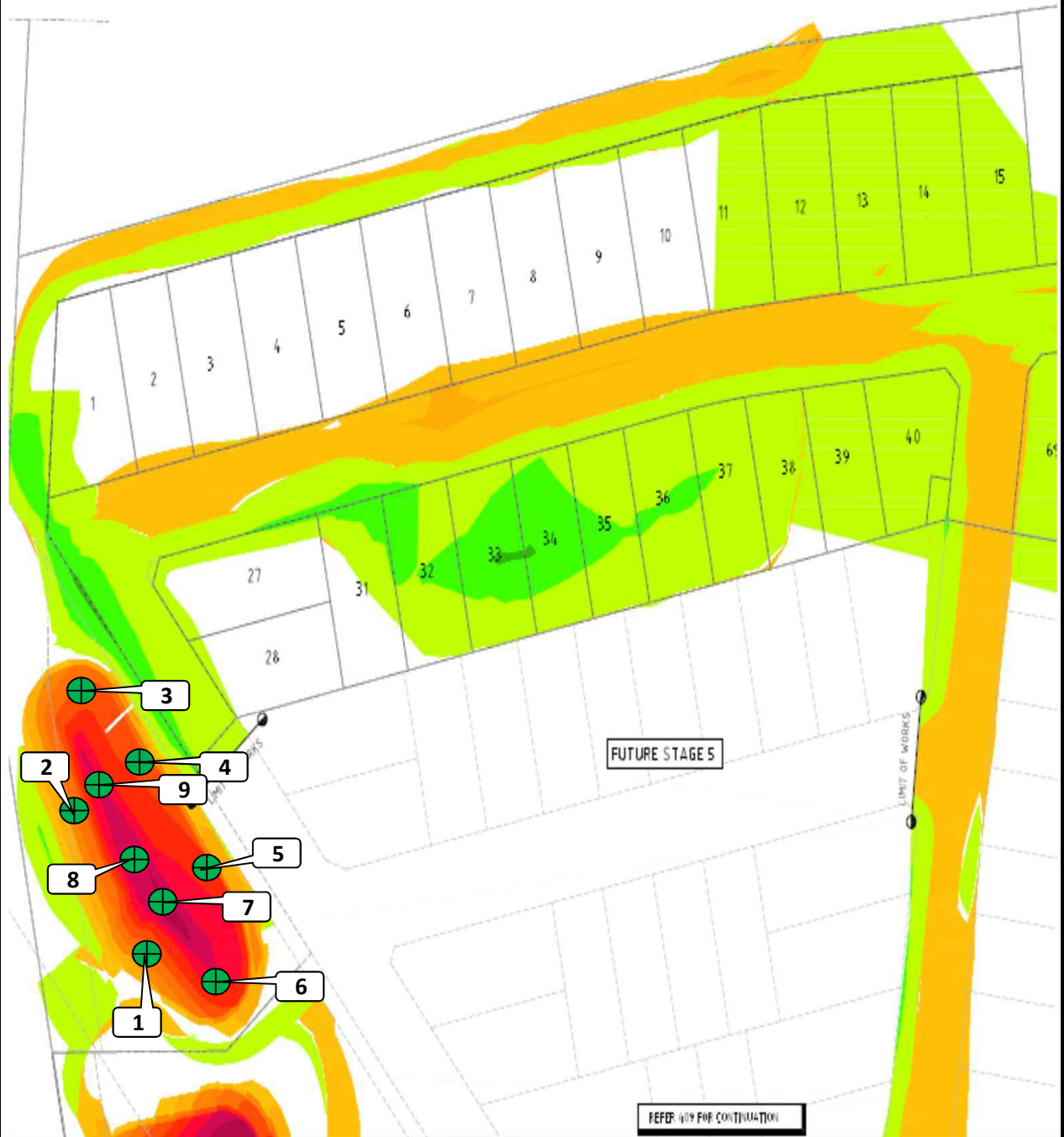
NATA Accredited Laboratory Number 14561

MICK CROWE
(Approved Signatory)

Issue Date: 15/5/2019

Approved by: *K. Smith*
Date: 06/08/2018

Geotechnical Test
Office 15-16-17-18
18/01/2007



**GEOTECHNICAL
LABORATORIES**

**GEOTECHNICAL LABORATORIES
ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023
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CLIENT: DRAPERS

LOCATION: Wandana Stage 4

Sketch indicating compaction test locations

DATE: 8/5/19

OPERATOR: MV+S

SCALE: NTS

JOB No.: 1992/119

CHECKED: EG

FIGURE No: -



GEOTECHNICAL LABORATORIES
ACN 102 571 077
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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/122
 LOCATION: DRAPERS - Wandana Stage 4 Basin

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)
15/05/19	1	<i>Refer to #1992/126 for approx. test site locations.</i>	2.03	21.5	101.0	2.01	21.5	225	0.0 Wetter	101.0	0	0	250
15/05/19	2		1.98	21.5	99.5	1.99	22.0	225	0.5 Drier	98.0	0	0	250
15/05/19	3		2.04	18.0	103.5	1.97	20.5	225	3.0 Drier	86.5	0	0	250
15/05/19	4		2.08	21.0	102.5	2.03	21.0	225	0.0 Drier	99.0	0	0	250
15/05/19	5		2.05	21.0	100.5	2.03	21.0	225	0.0 Drier	99.0	0	0	250
15/05/19	6		1.96	17.0	100.0	1.96	19.5	225	3.0 Drier	85.5	0	0	250

NOTES: Clayey Liner Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 8.51am Finish Time: 10.20am

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: 250mm

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)



Accredited for compliance with ISO/IEC 17025 - Testing

NATA Accredited Laboratory Number 14561

MICK CROWE
 (Approved Signatory)

Issue Date: 20/5/2019



GEOTECHNICAL LABORATORIES
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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/123
 LOCATION: DRAPERS - Wandana Stage 4 Basin

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)
15/05/19	7	<i>Refer to #1992/126 for approx. test site locations.</i>	2.09	19.0	104.5	2.00	20.0	225	1.0 Drier	95.0	0	0	250
15/05/19	8		1.99	16.0	102.5	1.94	20.0	225	4.0 Drier	80.5	0	0	250
15/05/19	9		1.99	19.5	99.0	2.01	19.5	225	0.0 Drier	99.0	0	0	250
15/05/19	10		1.94	17.5	101.0	1.92	21.0	225	4.0 Drier	82.5	0	0	250
15/05/19	11		2.01	17.0	103.0	1.95	19.5	225	3.0 Drier	86.0	0	0	250
15/05/19	12		2.05	16.5	106.0	1.94	20.0	225	3.5 Drier	82.5	0	0	250

NOTES: Clayey Liner Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.

Compaction specimens sampled after compaction.

Start Time: 8.51am Finish Time: 10.20am

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: 250mm

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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17025 - Testing

NATA Accredited Laboratory Number 14561

M. Crowe

MICK CROWE
 (Approved Signatory)

Issue Date: 20/5/2019



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/124
 LOCATION: DRAPERS - Wandana Stage 4 Basin

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)
15/05/19	13	Refer to #1992/126 for approx. test site locations.	2.06	21.5	102.0	2.03	20.0	225	1.5 Wetter	107.5	0	0	250
15/05/19	14		2.09	17.5	104.0	2.00	19.0	225	1.5 Drier	92.5	0	0	250
15/05/19	15		2.10	18.0	106.0	1.98	19.5	225	2.0 Drier	90.5	0	0	250
15/05/19	16		2.03	19.0	102.5	1.98	20.0	225	1.0 Drier	95.0	0	0	250
15/05/19	17		1.97	21.5	98.5	2.00	21.5	225	0.0 Drier	99.0	0	0	250
15/05/19	18		2.05	20.0	103.5	1.98	21.0	225	1.0 Drier	95.5	0	0	250

NOTES: Clayey Liner Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 8.51am Finish Time: 10.20am

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: 250mm

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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17025 - Testing

NATA Accredited Laboratory Number 14561

MICK CROWE
 (Approved Signatory)

Issue Date: 20/5/2019



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/125
 LOCATION: DRAPERS - Wandana Stage 4 Basin

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)
15/05/19	19	<i>Refer to #1992/126 for approx. test site locations.</i>	2.03	20.0	103.0	1.97	21.0	225	1.0 Drier	95.5	0	0	250
15/05/19	20		1.92	17.0	102.0	1.88	21.0	225	4.0 Drier	80.0	0	0	250
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Liner Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 8.51am Finish Time: 10.20am

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: 250mm

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
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Issue Date: 20/5/2019



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/127

LOCATION: DRAPERS - Wandana Heights Stage 4 Basin

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)
17/05/19	1	<i>Refer to #1992/128 for approx. test site locations.</i>	1.98	22.0	101.0	1.96	23.5	225	1.5 Drier	93.5	0	0	0
17/05/19	2		1.99	19.0	100.5	1.98	21.0	225	2.5 Drier	89.0	0	0	0
17/05/19	3		1.93	20.5	98.0	1.96	23.0	225	2.0 Drier	90.5	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Liner + 3% Lime Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 11.27am Finish Time: 11.41am

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: 250mm

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)

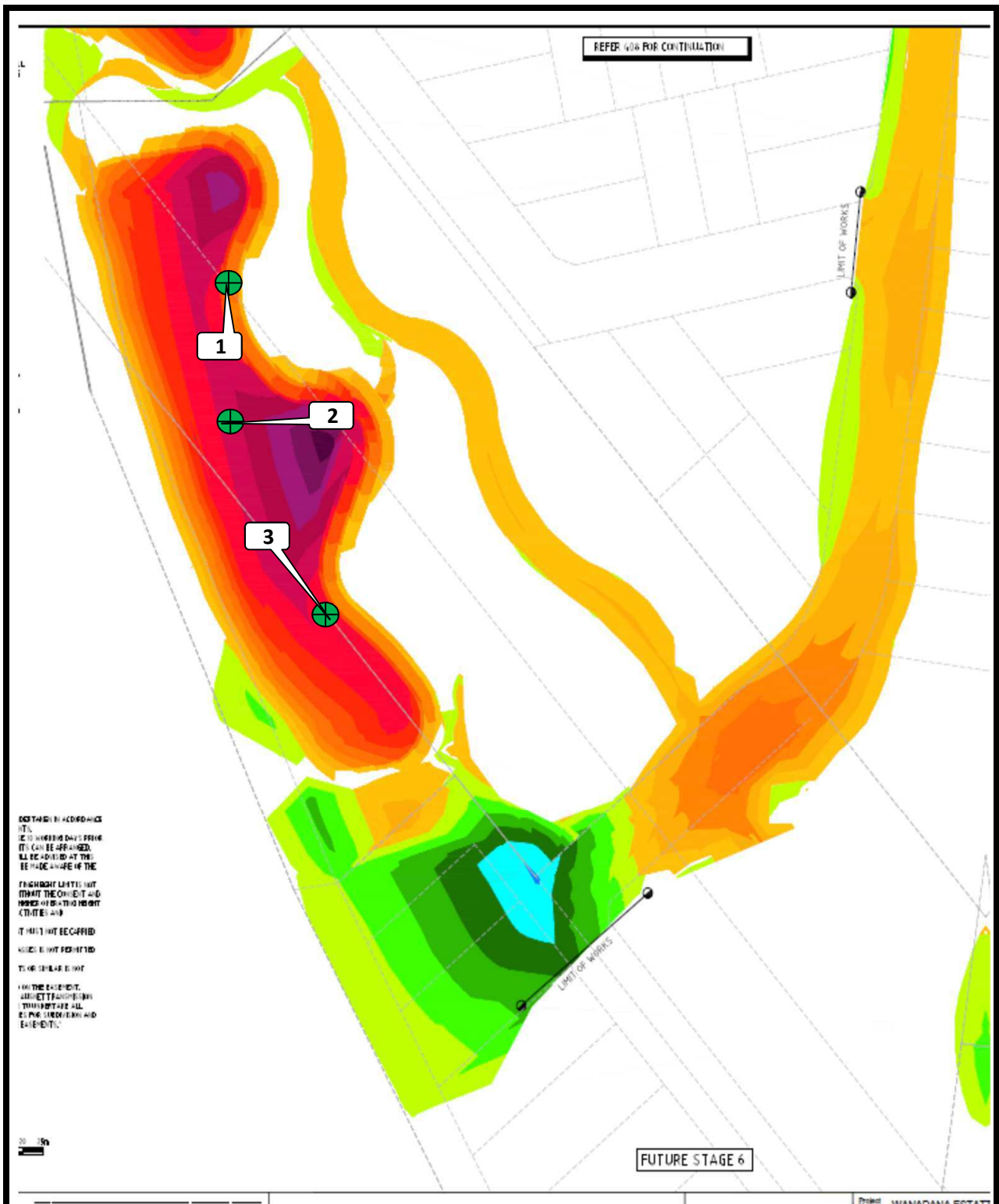


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MICK CROWE
 (Approved Signatory)

Issue Date: 21/5/2019



**GEOTECHNICAL
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**GEOTECHNICAL LABORATORIES
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CLIENT: DRAPERS

LOCATION: Wandana Stage 4

Sketch indicating compaction test locations

DATE: 17/5/19

OPERATOR: RW

SCALE: NTS

JOB No.: 1992/128

CHECKED: EG

FIGURE No: -



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/129

LOCATION: DRAPERS - Wandana Heights Stage 4 Basin

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)
21/05/19	1	Refer to #1992/133 for approx. test site locations.	1.93	21.0	98.5	1.96	22.5	225	1.5 Drier	92.5	0	0	0
21/05/19	2		1.89	20.5	95.5	1.98	22.5	225	2.0 Drier	90.5	0	0	0
21/05/19	3		1.97	20.0	98.5	2.00	21.5	225	1.5 Drier	93.5	0	0	0
21/05/19	4		1.98	21.0	98.5	2.01	21.5	225	0.0 Drier	99.0	0	0	250
21/05/19	5		2.04	19.5	101.5	2.00	21.5	225	1.5 Drier	92.0	0	0	250
21/05/19	6		2.04	19.5	101.5	2.01	20.5	225	0.5 Drier	96.5	0	0	250

NOTES: Clayey Liner + 3% Lime Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 8.50am Finish Time: 10.50am

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: 250mm

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)



Accredited for compliance with ISO/IEC 17025 - Testing

NATA Accredited Laboratory Number 14561

M. Crowe

MICK CROWE
(Approved Signatory)

Issue Date: 24/5/2019



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/130

LOCATION: DRAPERS - Wandana Heights Stage 4 Basin

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)
21/05/19	7	<i>Refer to #1992/133 for approx. test site locations.</i>	1.96	18.0	98.0	2.00	19.5	225	1.5 Drier	91.5	0	0	250
21/05/19	8		1.96	17.0	97.0	2.01	20.0	225	3.0 Drier	86.0	0	0	250
21/05/19	9		1.92	18.5	95.5	2.01	20.5	225	2.0 Drier	89.5	0	0	250
21/05/19	10		1.94	20.5	98.0	1.98	22.5	225	2.0 Drier	91.5	0	0	250
21/05/19	11		2.01	16.5	101.5	1.98	20.0	225	3.5 Drier	83.5	0	0	250
21/05/19	12		2.05	17.5	103.0	1.99	20.0	225	2.5 Drier	88.0	0	0	250

NOTES: Clayey Liner + 3% Lime Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 8.50am Finish Time: 10.50am

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: 250mm

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
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Issue Date: 24/5/2019



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/131

LOCATION: DRAPERS - Wandana Heights Stage 4 Basin

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)
21/05/19	13	<i>Refer to #1992/133 for approx. test site locations.</i>	2.00	19.5	100.0	2.00	20.5	225	0.5 Drier	96.5	0	0	250
21/05/19	14		1.99	21.0	101.5	1.96	23.0	225	2.0 Drier	90.5	0	0	250
21/05/19	15		2.01	19.5	101.5	1.98	21.5	225	2.0 Drier	91.0	0	0	250
21/05/19	16		2.01	21.5	103.0	1.94	24.0	225	2.0 Drier	91.0	0	0	250
21/05/19	17		2.04	20.0	104.0	1.96	22.0	225	2.0 Drier	91.5	0	0	250
21/05/19	18		1.92	22.0	96.5	1.99	21.5	225	0.5 Wetter	102.5	0	0	250

NOTES: Clayey Liner + 3% Lime Ex. Onsite

Compaction specimens sampled after compaction.

Test sites located - Geolab Procedure 4, Part 4.4.

Start Time: 8.50am Finish Time: 10.50am

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: 250mm

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: 24/5/2019



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/132

LOCATION: DRAPERS - Wandana Heights Stage 4 Basin

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)
21/05/19	19	<i>Refer to #1992/133 for approx. test site locations.</i>	1.97	24.0	97.0	2.03	22.5	225	1.0 Wetter	105.5	0	0	0
21/05/19	20		2.04	20.0	103.0	1.98	22.5	225	2.5 Drier	89.5	0	0	0
21/05/19	21		2.05	20.0	104.0	1.97	22.0	225	2.0 Drier	90.0	0	0	0
21/05/19	22		1.90	22.0	98.5	1.93	24.5	225	2.5 Drier	89.0	0	0	0
21/05/19	23		2.00	19.0	100.5	1.99	21.0	225	1.5 Drier	92.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Liner + 3% Lime Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.3.

Compaction specimens sampled after compaction.

Start Time: 8.50am Finish Time: 10.50am

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: 250mm

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)



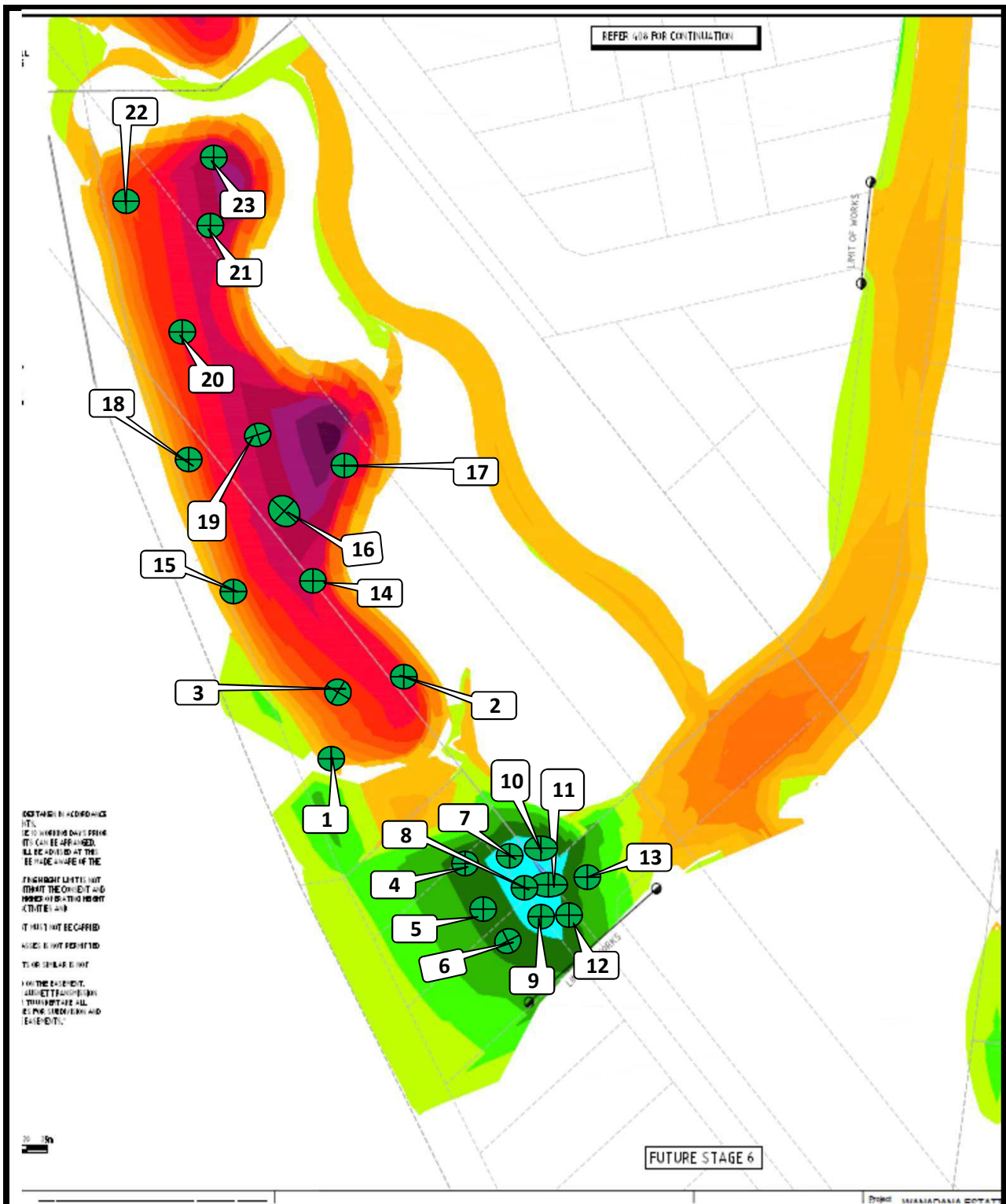
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Issue Date: 24/5/2019



**GEOTECHNICAL
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**GEOTECHNICAL LABORATORIES
ACN 102 571 077**

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CLIENT: DRAPERS

LOCATION: Wandana Stage 4 Basin

Sketch indicating compaction test locations

DATE: 21/5/19

OPERATOR: RW

SCALE: NTS

JOB No.: 1992/133

CHECKED: EG

FIGURE No: -



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/134
 LOCATION: DRAPERS - Wandana Stage 4 Basin

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)
22/05/19	1	<i>Refer to #1992/136 for approx. test site locations.</i>	1.94	25.5	98.5	1.96	24.5	225	1.0 Wetter	104.0	0	0	0
22/05/19	2		2.04	25.0	105.5	1.94	25.5	225	0.5 Drier	98.0	0	0	0
22/05/19	3		1.97	25.5	101.0	1.95	24.0	225	1.5 Wetter	105.0	0	0	0
22/05/19	4		1.98	24.5	101.5	1.95	24.5	225	0.0 Drier	100.0	0	0	0
22/05/19	5		2.05	25.0	106.0	1.93	24.0	225	1.0 Wetter	104.0	0	0	0
22/05/19	6		1.99	24.5	103.0	1.93	26.0	225	1.5 Drier	94.5	0	0	0

NOTES: Clayey Fill + 3% Lime Ex. Onsite

Compaction specimens sampled after compaction.

Test sites located - Geolab Procedure 4, Part 4.4.

Start Time: 10.00am Finish Time: 11.00am

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: 250mm

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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MICK CROWE
(Approved Signatory)

Issue Date: 30/5/2019



GEOTECHNICAL LABORATORIES
ACN 102 571 077
 14 Ravenhall Way, Ravenhall, Vic 3023
 Email: info@geolab.com.au PH: (03) 8361-9140

DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/135
 LOCATION: DRAPERS - Wandana Stage 4 Basin

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)
22/05/19	7	<i>Refer to #1992/136 for approx. test site locations.</i>	2.03	26.5	105.5	1.93	23.5	225	3.0 Wetter	113.0	0	0	0
22/05/19	8		2.01	24.5	105.0	1.91	26.5	225	1.5 Drier	93.5	0	0	0
22/05/19	9		2.00	23.5	100.5	1.99	23.0	225	0.0 Wetter	101.0	0	0	0
22/05/19	10		1.96	26.0	102.0	1.92	24.5	225	1.5 Wetter	106.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill + 3% Lime Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 10.00am Finish Time: 11.00am

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: 250mm

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)



Accredited for compliance with ISO/IEC
17025 - Testing

NATA Accredited Laboratory Number 14561

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Sketch indicating compaction test locations

SCALE: NTS

FIGURE No: -



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/137
 LOCATION: DRAPERS - Wandana Stage 4 Basin

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)
23/05/19	1	<i>Refer to #1992/139 for approx. test site locations.</i>	2.01	21.0	99.5	2.02	20.5	225	0.5 Wetter	102.5	0	0	0
23/05/19	2		2.10	20.0	105.0	2.00	20.5	225	0.5 Drier	97.5	0	0	0
23/05/19	3		2.06	20.0	103.0	2.00	20.5	225	1.0 Drier	95.5	0	0	0
23/05/19	4		2.02	24.5	102.5	1.96	22.5	225	2.0 Wetter	109.0	0	0	0
23/05/19	5		1.98	26.0	101.5	1.95	24.0	225	2.0 Wetter	107.5	0	0	0
23/05/19	6		1.92	23.5	100.5	1.91	22.0	225	1.5 Wetter	108.0	0	0	0

NOTES: Clayey Liner + 3% Lime Ex. Onsite Compaction specimens sampled after compaction.
 Test sites located - Geolab Procedure 4, Part 4.4. Start Time: 7.01am Finish Time: 8.10am

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: 250mm

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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Issue Date: 28/5/2019



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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1992/138
 LOCATION: DRAPERS - Wandana Stage 4 Basin

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)
23/05/19	7	<i>Refer to #1992/139 for approx. test site locations.</i>	2.04	22.0	105.5	1.94	24.5	225	2.5 Drier	90.0	0	0	0
23/05/19	8		2.01	21.5	104.0	1.93	24.5	225	3.0 Drier	88.0	0	0	0
23/05/19	9		1.92	27.0	98.0	1.96	24.5	225	2.5 Wetter	110.5	0	0	0
23/05/19	10		1.91	24.5	99.5	1.92	23.0	225	1.5 Wetter	106.5	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Liner + 3% Lime Ex. Onsite Compaction specimens sampled after compaction.
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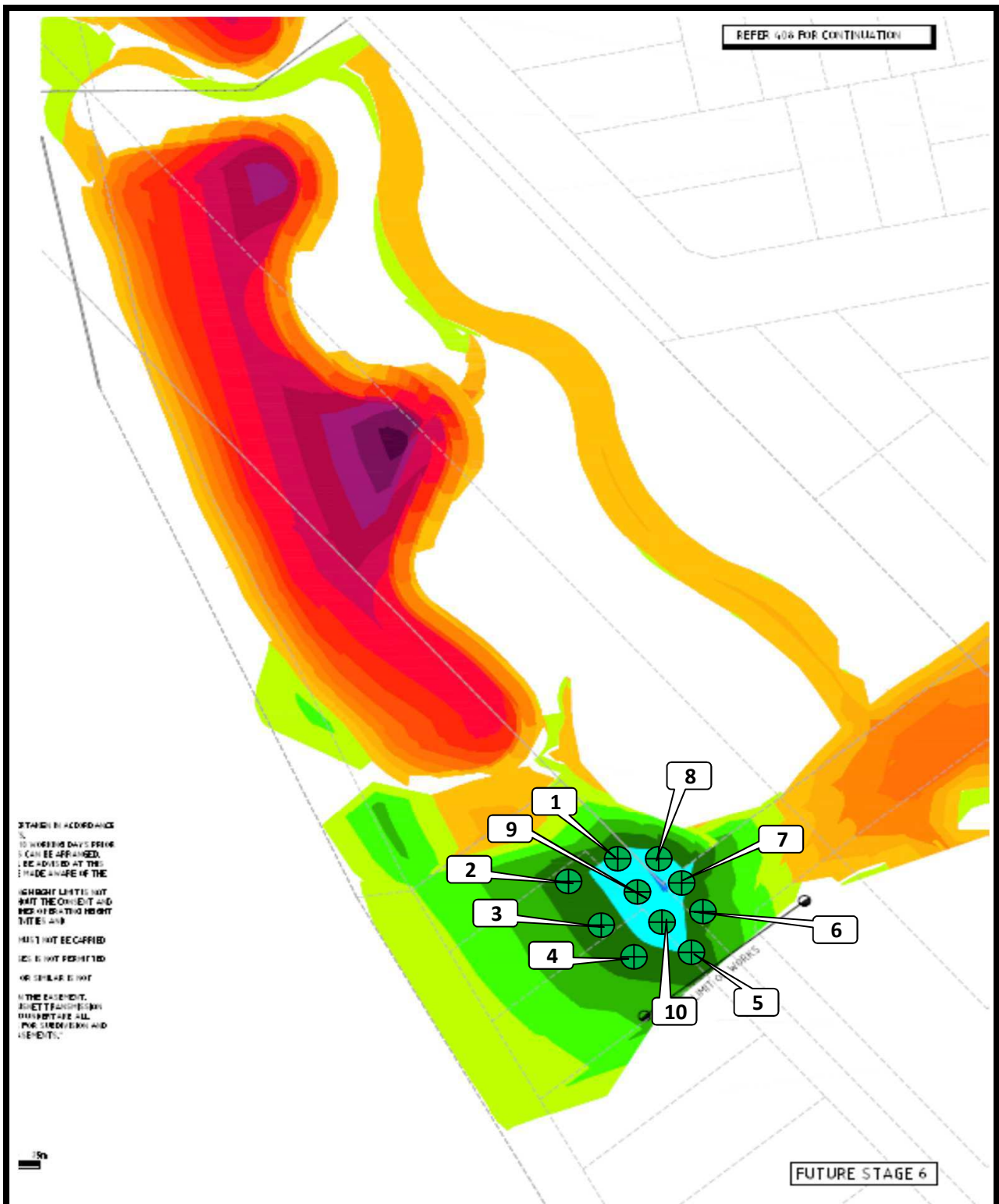
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CLIENT: DRAPERS

LOCATION: Wandana Stage 4 Basin

Sketch indicating compaction test locations

DATE: 23/5/19

OPERATOR: RW

SCALE: NTS

JOB No.: 1992/139

CHECKED: EG

FIGURE No: -