DRAPERS CIVIL
CONTRACTING PTY LTD

ARMSTRONG ESTATE
STAGE 32

MT. DUNEED

Report On

LEVEL 1
SURVEILLANCE
& COMPACTION CONTROL
OF EARTHWORKS

Carried Out
By

GEOTECHNICAL LABORATORIES

Project No.: 1862/118

GEOTECHNICAL LABORATORIES
Factory 1/8-10 Catalina Dve, Tullamarine, Vic 3043
PO Box 2693, Gladstone Park, Vic, 3043
ABN 51 102 571 077
PH (03) 9335-1225

11th September 2017
Project No.: 1862/118

Drapers Civil Contracting Pty Ltd
PO Box 287
Belmont, Vic 3216
Attention: - Mr. Chris Nation

Dear Sir,

RE: Armstrong Estate Stage 32 - Earthworks

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 August 2016 to the 28th of February 2017 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). Standard Faceplan Layout Drawing No. M100611.32-BE01 – Rev. A

General site works involved the placement of fill, using on-site derived clays, to bring the fill area to the required finished levels as indicated on the faceplan drawings.

Site Preparation

Site inspections were undertaken on the 25th of August 2016, the 8th of September 2016 and the 21st of February 2017 confirming that selected areas to be filled were completely stripped of all vegetation and topsoil prior to filling. The brown silty topsoils had been stockpiled around the site for later removal off-site.

Proof roll inspections were performed throughout the project duration to ensure no significant soft areas were present prior to filling.

Material

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

The materials are best described as **CLAY fill, brown, orange-brown, slightly sandy, slightly moist to moist considered to be of medium plasticity with fine to course gravel of a basalt origin.**

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

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

Compaction of Fill Material

A sheepsfoot compactor placed material in horizontal loose layers of approximately 200-250mm. 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). Moisture conditioning was carried out using a water cart and mixing with the compactor prior to sheepsfoot rolling.

Compaction 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 forty two compaction tests were performed on the earthworks. Results are presented in Appendix A of this report.

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

Acceptance of fill layers for minimum relative 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.

No moisture criteria was specified.

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

Remarks

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 August 2016 to the 28th of February 2017 can be categorised as CONTROLLED FILL in accordance with AS 2870-2011.

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

Yours Faithfully
GEOTECHNICAL LABORATORIES

Sam Loza
Laboratory Manager

DRAPERS CIVIL
CONTRACTING PTY LTD

ARMSTRONG ESTATE
STAGE 32

MT. DUNEED

Report On

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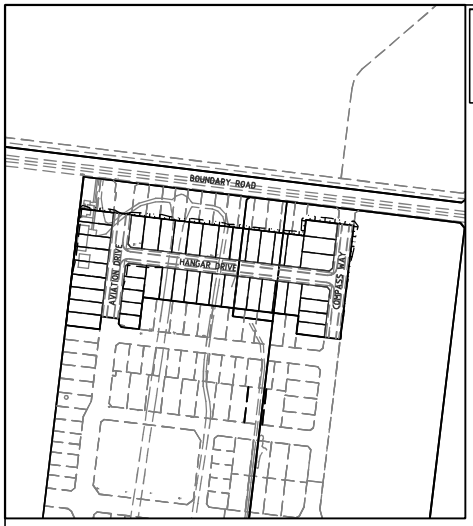
APPENDIX A



LOCALITY PLAN

WARNING

BEWARE OF UNDERGROUND SERVICES

THE LOCATIONS OF UNDERGROUND SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN.

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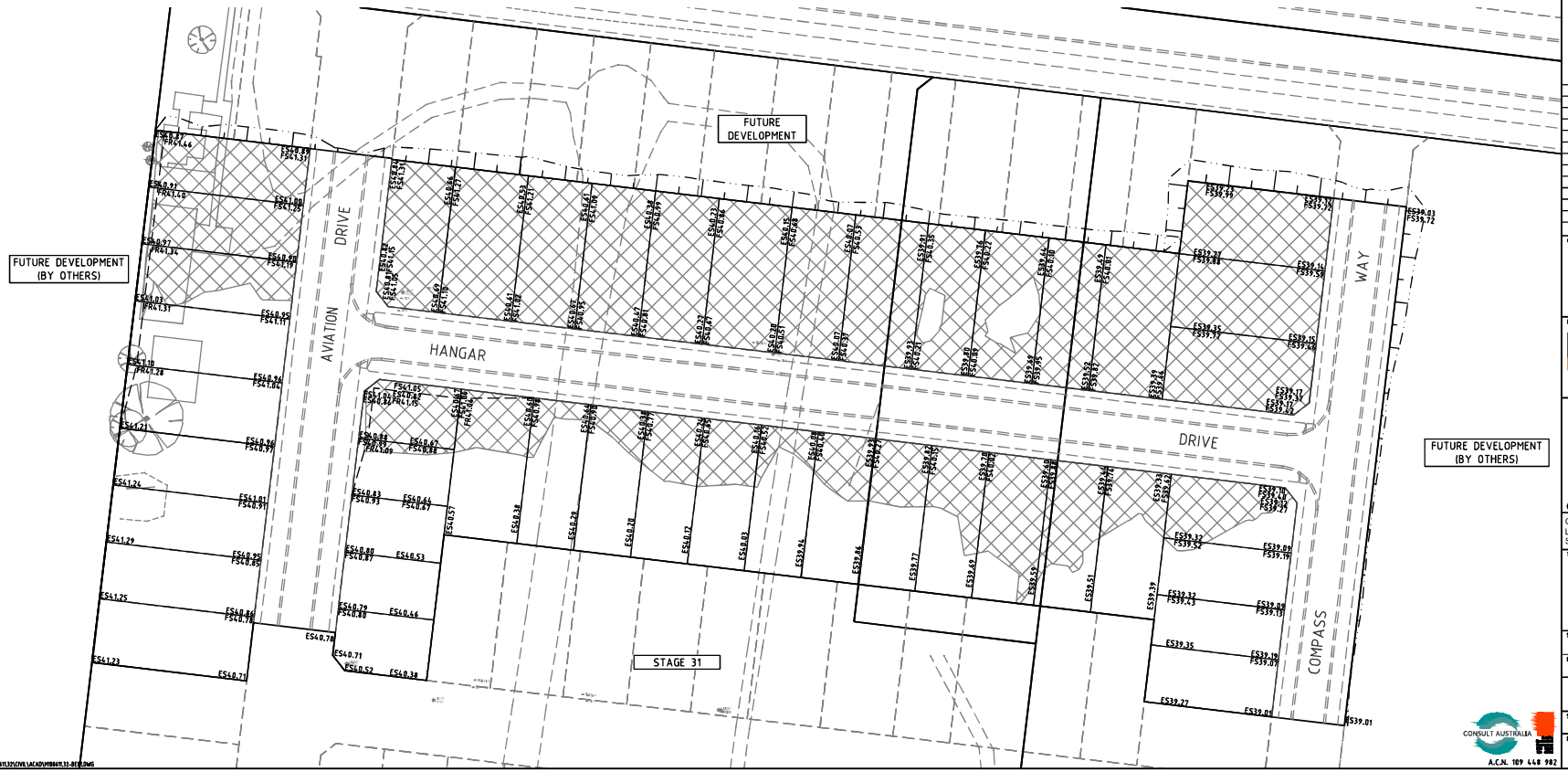
FILL PLAN NOTES

1. THIS PLAN SHOWS DETAILS OF WORKS AFFECTING THE NATURAL SURFACE OF THE LAND WITHIN THE SUBDIVISION WHICH HAVE BEEN CARRIED OUT OR ARE PROPOSED TO BE CARRIED OUT PRIOR TO REGISTRATION OF THE PLAN OF SUBDIVISION, BEING FILL PLACED ON THE LAND TO THE EXTENT AND DEPTH SHOWN ON THIS PLAN.
2. THIS PLAN DOES NOT SHOW ANY OTHER FILL WHICH MAY HAVE BEEN PLACED ON THE LAND.
3. THIS PLAN HAS BEEN PREPARED FOR THE PURPOSE OF CONSTRUCTING SUBDIVISIONAL WORKS AND IS NOT A RECORD OF "AS BUILT" DETAILS.
4. FILLING SHOWN LESS THAN 200mm DEEP IS GRADED OR SPREAD OVER ALLOTMENTS TO CORRECT MINOR SURFACE IRREGULARITIES SUCH AS FURROWS, ETC., AND LOT GRADING.
5. IRRESPECTIVE OF THE DEPTH OF FILLING, FOUNDATIONS MUST BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH A SOIL CLASSIFICATION AND REPORT PREPARED FOR THE PURPOSE AND IN ACCORDANCE WITH THE APPROPRIATE BUILDING REGULATIONS.
6. FINISHED SURFACE LEVELS (FS) ARE TO THE ULTIMATE FINISHED SURFACE/BOXING LEVELS. FOR STRIPPING/TOPSOILING/COMPACTION, REFER TO EARTHWORKS NOTES

EARTHWORKS NOTES

1. THE CONTRACTOR IS TO NOTIFY COUNCIL SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF WORKS.
2. THE LOCATION OF EXISTING SERVICES SHOULD BE DETERMINED BY THE CONTRACTOR PRIOR TO COMMENCING ANY EXCAVATION BY CONTACTING ALL RELEVANT SERVICE AUTHORITIES. ANY EXISTING SERVICES SHOWN ON THE DRAWINGS ARE OFFERED AS A GUIDE ONLY AND ARE NOT GUARANTEED AS CORRECT.
3. TREES MARKED ON THE APPROVED PLANS FOR REMOVAL MUST BE REMOVED IN ACCORDANCE WITH COUNCIL'S PLANNING PERMIT. NO EXCAVATION SHALL BE CARRIED OUT WITHIN THE TREE PROTECTION ZONE OF ANY EXISTING TREE WITHOUT WRITTEN APPROVAL FROM COUNCIL'S SUPERVISING OFFICER.
4. ALL EXCAVATED OR FILLED AREAS TO BE STRIPPED OF TOPSOIL AND STOCKPILED PRIOR TO EARTHWORKS COMMENCING.
5. NO TOPSOIL TO BE REMOVED FROM SITE.
6. ALL LEVELS ARE TO AUSTRALIAN HEIGHT DATUM.
7. FILLING TO BE LEVEL 1 SUPERVISION IN ACCORDANCE WITH AS3798-1996.
8. DRIVEWAYS AND FOOTPATH IS TO BE APPROVED BY THE SUPERINTENDENT IN LAYERS 150mm DEPTH. COMPACTION ACHIEVING 98% AUSTRALIAN STANDARD DENSITY.
9. CUT AND FILL BATTERS ARE NOT TO EXCEED 1 in 6 UNLESS SHOWN OTHERWISE.
10. LOT FILLING TESTING SHALL BE INCLUDED IN THE CONTRACTORS INSPECTION AND TEST PLANS SUBMITTED FOR COUNCILS CONSIDERATION
11. IDEALLY NO FILL SHOULD BE IMPORTED ONTO THE DEVELOPMENT SITE. WHERE FILL IS IMPORTED, WRITTEN RECORDS MUST BE PROVIDED TO INDICATE THE SOURCE OF THE FILL AND TO PROVIDE EVIDENCE THAT THE SOIL IS NOT CONTAMINATED AS PER THE DSE PRACTICE NOTE FOR POTENTIALLY CONTAMINATED LAND
12. ALL REASONABLE PRECAUTIONS MUST BE TAKEN TO PREVENT THE SPREAD OF NOXIOUS WEEDS
13. DUST, MUD AND DEBRIS SHALL BE PREVENTED FROM LEAVING THE DEVELOPMENT SITE DURING AND AFTER COMPLETION OF WORKS
14. UPON COMPLETION OF CONSTRUCTION THE WHOLE SITE SHALL BE CLEANED UP, GRADED, ALL RUBBISH REMOVED AND LEFT IN A CLEAN AND TIDY CONDITION TO THE SATISFACTION OF THE SUPERINTENDENT.



LEGEND

- Electricity (Underground)
- Gas
- Telstra
- Water
- Stormwater Drain, Pit and Property Inlet
- Swale Drain
- Sewer, Maintenance Structures and Property Connection
- House Drain
- Gas & Water Conduits
- Tactile Paver - Directional
- Tactile Paver - Hazard
- Existing Electricity (Underground)
- Existing Electricity (Overhead)
- Existing Gas
- Existing Telstra
- Existing Water
- Existing Stormwater Drain
- Existing Sewer
- Existing House Drain
- Existing Tree to Remain
- Existing Tree to be Removed
- Existing Swale Drain
- ES41.34 Existing Surface Level
- FS40.35 Finished Building Line Level
- FR57.40 Finished Ridge Line Level
- TW59.30 Top of Retaining Wall
- BW59.30 Bottom of Retaining Wall
- Retaining Wall
- Intersection Threshold Treatment
- Select Fill > 200mm Deep
- Ex. Select Fill > 200mm Deep
- Proposed Driveway
- Allotment to be graded evenly in direction of fall to levels indicated
- Direction of Fall
- Overland Flow
- Permanent Survey Mark
- Temporary Bench Mark
- Concrete Edge Strip with Subsoil Drain underneath "No Road " sign and Barrier
- Building Envelope
- Limit of Works

REV	DATE	COMMENTS
A		ISSUED FOR APPROVAL

CLIENT: villawood properties — COMMUNITIES DESIGNED FOR LIVING

PROJECT: ARMSTRONG — MT DUNEED

CALIBRE CONSULTING (MELB) PTY LTD
Level 2, 55 Southbank Boulevard
Southbank VIC 3006
T. 03 9203 9000

TITLE: BULK EARTHWORKS LAYOUT PLAN

1:500 10 5 0 10 20 A1
1:1000 A3

SCALE @ A1	DRAWN	DESIGNED
1:500	J.AMBROSE	J.AMBROSE
PROJECT ENGINEER	PROJECT MANAGER	DATE FIRST ISSUE
J.CONSIGLIO	T.PALIOS	APRIL 2016

ISSUED FOR APPROVAL

SIGNED | DATE

DRAWING NUMBER: M100611.32-BE01 | REVISION: A

CONSULT AUSTRALIA

A.C.N. 109 448 982

GEOTECHNICAL LABORATORIES
ACN 102 571 077
Factory 1/8-10 Catalina Drive, Tullamarine Vic 3043
PO Box 184 Keilor VIC 3036
PH: (03) 9335 1225 Fax: (03) 9335 1775

DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/217

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
26/08/16	1	***Refer to #1861/218 for approx. test site locations.***	2.05	19.0	100.0	2.05	18.5	175	0.5 Wetter	102.5	0	0	200
26/08/16	2		2.13	19.5	103.5	2.06	19.5	175	0.0 Drier	100.0	0	0	200
26/08/16	3		2.01	21.0	100.0	2.00	21.0	175	0.0 Drier	100.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 9:38am Finish Time: 10:00

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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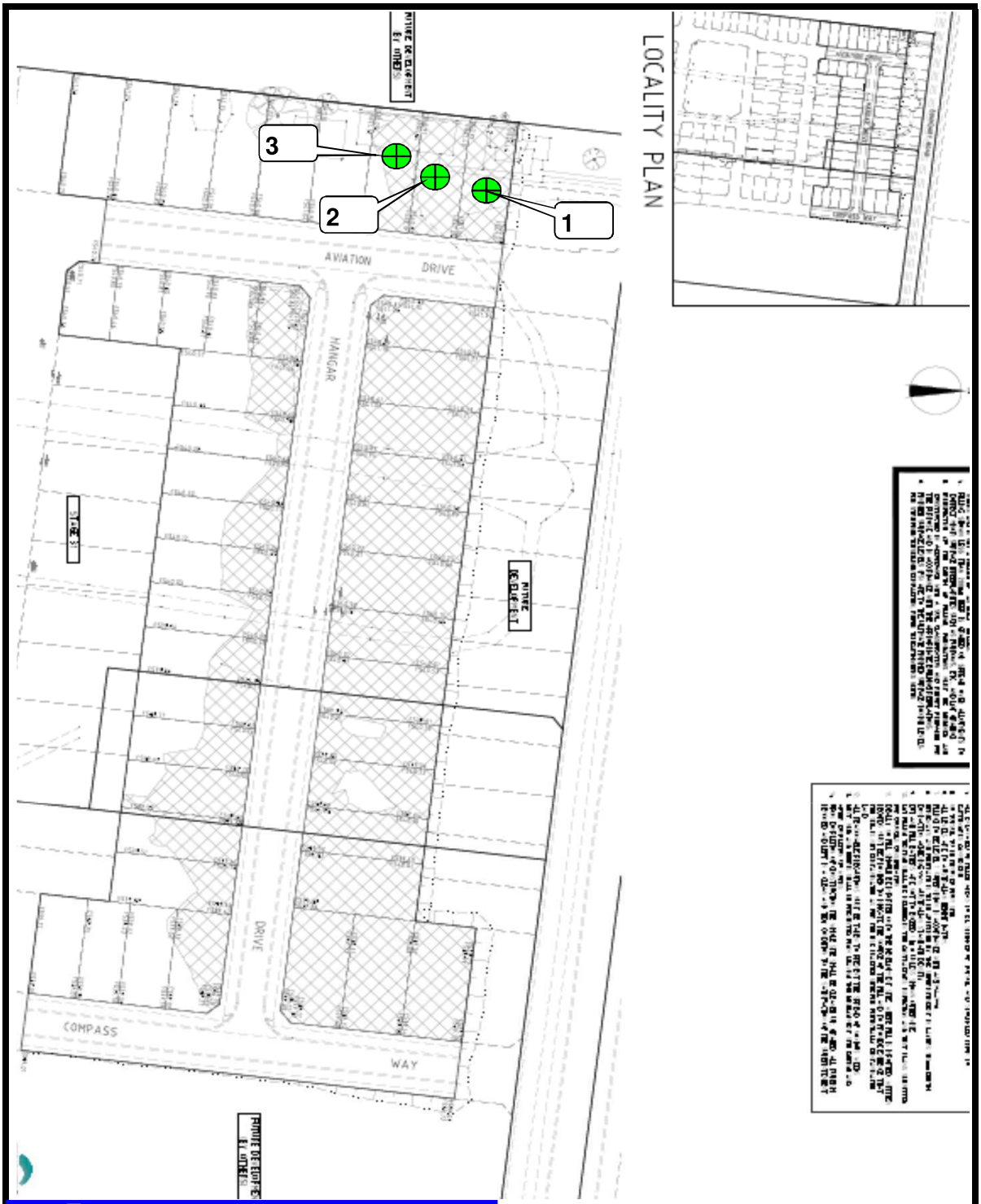
NATA Accredited Laboratory Number 14561

SAM LOZA

(Approved Signatory)

Issue Date: 1/9/2016



GEOTECHNICAL LABORATORIES

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CLIENT: DRAPERS	**DATE: 26/08/16**	**JOB No.: 1861/218**
LOCATION: Armstrong Creek Estate Stage 32	**OPERATOR: JC**	**CHECKED: CA**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/219

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
29/08/16	1	*Refer to #1861/220 for approx. test site locations.*	2.07	18.0	101.0	2.04	20.0	175	2.0 Drier	90.5	0	0	400
29/08/16	2		2.13	16.0	101.0	2.11	15.5	175	0.5 Wetter	104.5	0	0	200
29/08/16	3		2.19	16.0	105.5	2.08	18.0	175	2.5 Drier	87.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 11:50am Finish Time: 12:10pm

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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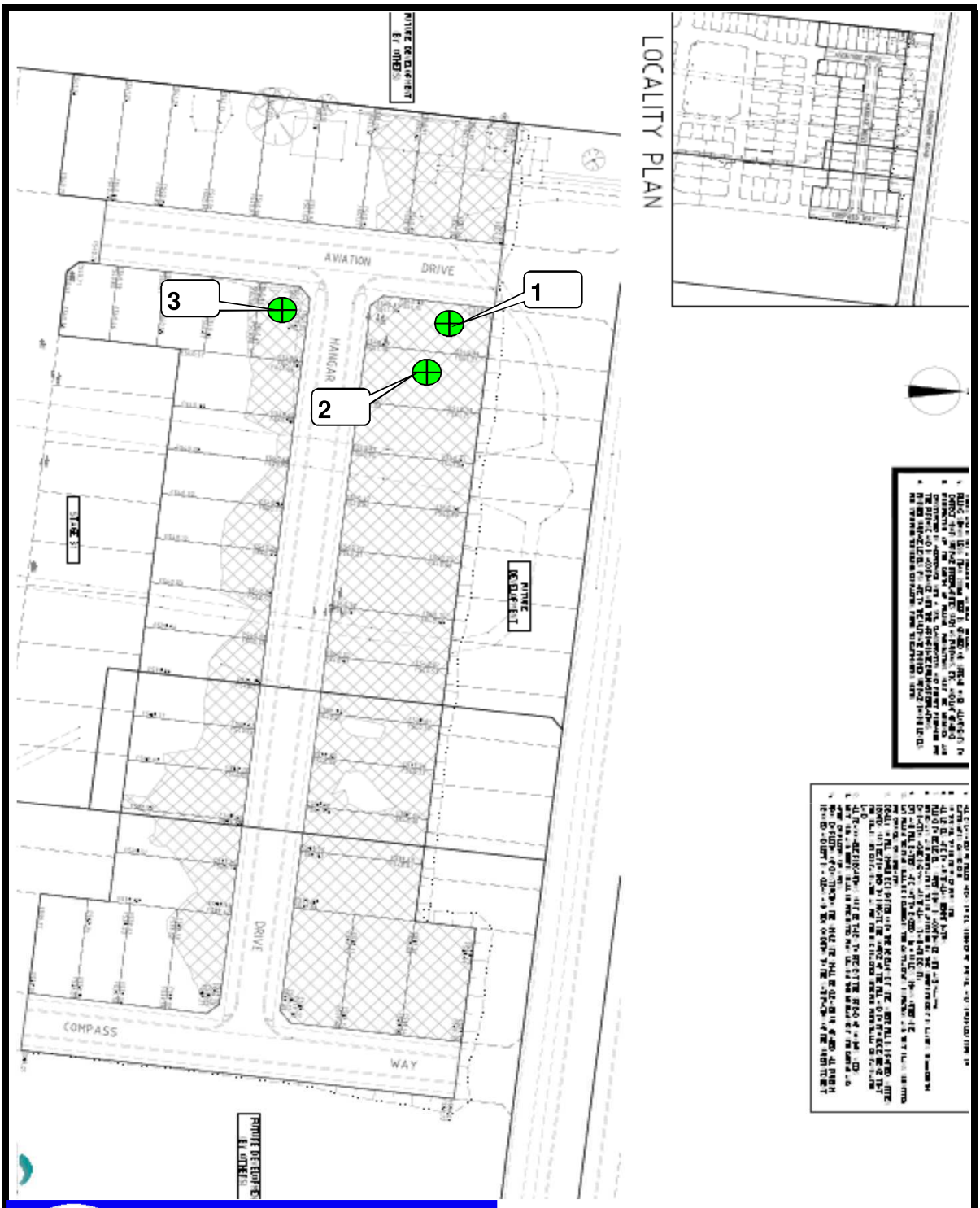
SAM LOZA

(Approved Signatory)

Issue Date: 2/9/2016



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CLIENT: DRAPERS	**DATE: 29/08/16**	**JOB No.: 1861/220**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: JC**	**CHECKED: CA**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/221

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
31/08/16	1	*Refer to #1861/222 for approx. test site locations.*	2.05	20.0	100.0	2.06	20.0	175	0.0 Wetter	101.0	0	0	200
31/08/16	2		2.14	18.0	100.5	2.13	17.5	175	0.0 Wetter	101.5	0	0	0
31/08/16	3		2.10	19.0	103.5	2.03	19.5	175	0.5 Drier	97.5	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 10:26am Finish Time: 10:42am

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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SAM LOZA

(Approved Signatory)

Issue Date: 5/9/2016

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CLIENT: DRAPERS	**DATE: 31/08/16**	**JOB No.: 1861/222**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: JC**	**CHECKED: CA**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/223

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
2/09/16	1	*Refer to #1861/224 for approx. test site locations.*	1.99	20.5	101.0	1.97	23.5	175	3.0 Drier	87.0	0	0	0
2/09/16	2		2.02	20.0	101.0	2.00	23.0	175	3.0 Drier	86.5	0	0	0
2/09/16	3		2.06	20.5	102.0	2.02	23.5	175	3.0 Drier	87.5	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 9:45am Finish Time: 10:02am

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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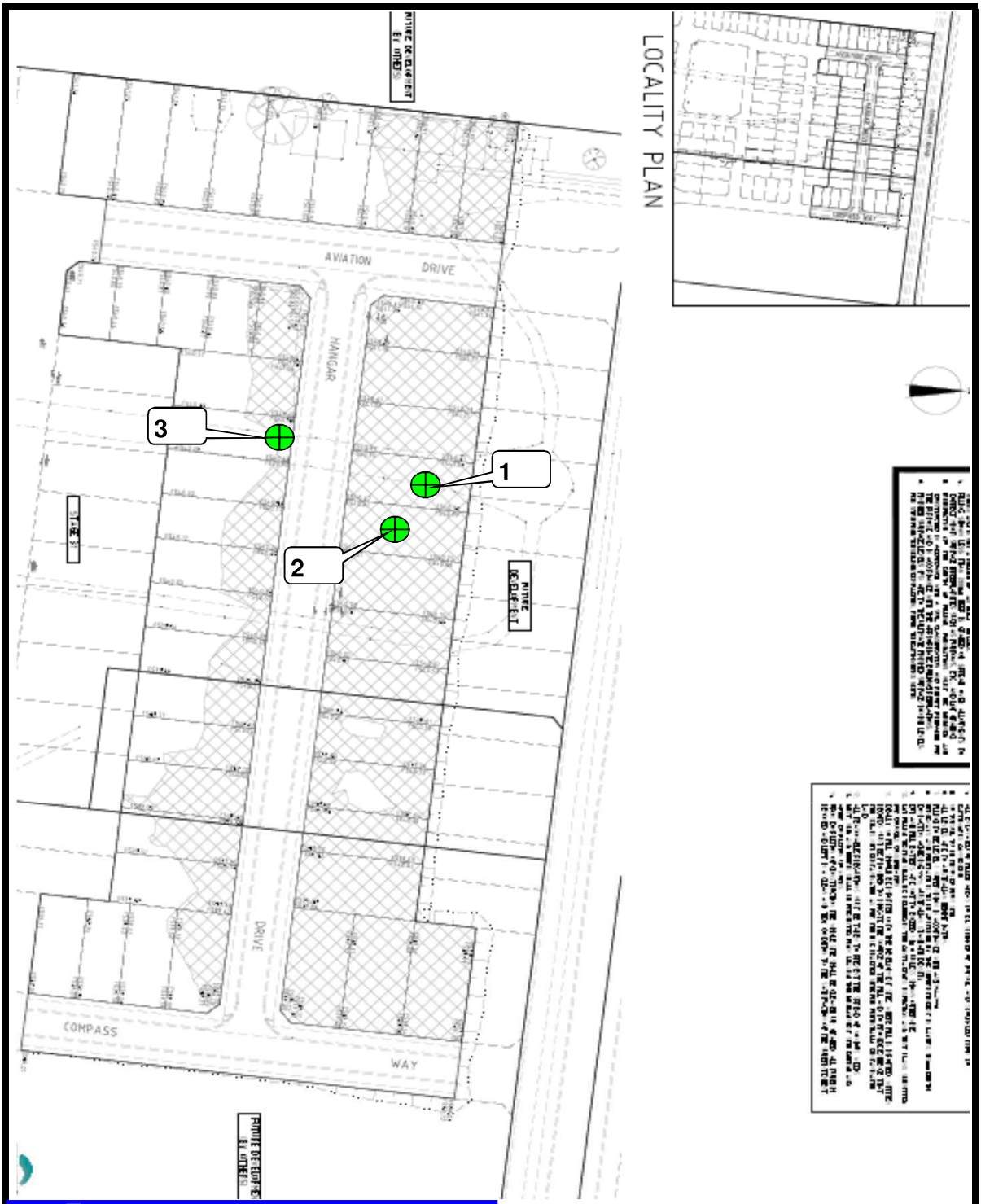
Issue Date: 5/9/2016



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Factory 1/8-10 Catalina Drive, Tullamarine Vic 3043
PO Box 184 Keilor VIC 3036
PH: (03) 9335 1225 Fax: (03) 9335 1775

CLIENT: DRAPERS	**DATE: 2/09/16**	**JOB No.: 1861/224**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: JC**	**CHECKED: CA**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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PO Box 184 Keilor VIC 3036
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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/225

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
6/09/16	1	*Refer to #1861/226 for approx. test site locations.*	1.96	24.0	99.5	1.97	24.0	175	0.0 Drier	99.0	0	0	0
6/09/16	2		1.99	23.5	100.5	1.98	23.5	175	0.0 Drier	100.0	0	0	0
6/09/16	3		1.93	24.0	99.0	1.95	24.0	175	0.0 Drier	99.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 9:33am Finish Time: 9:57am

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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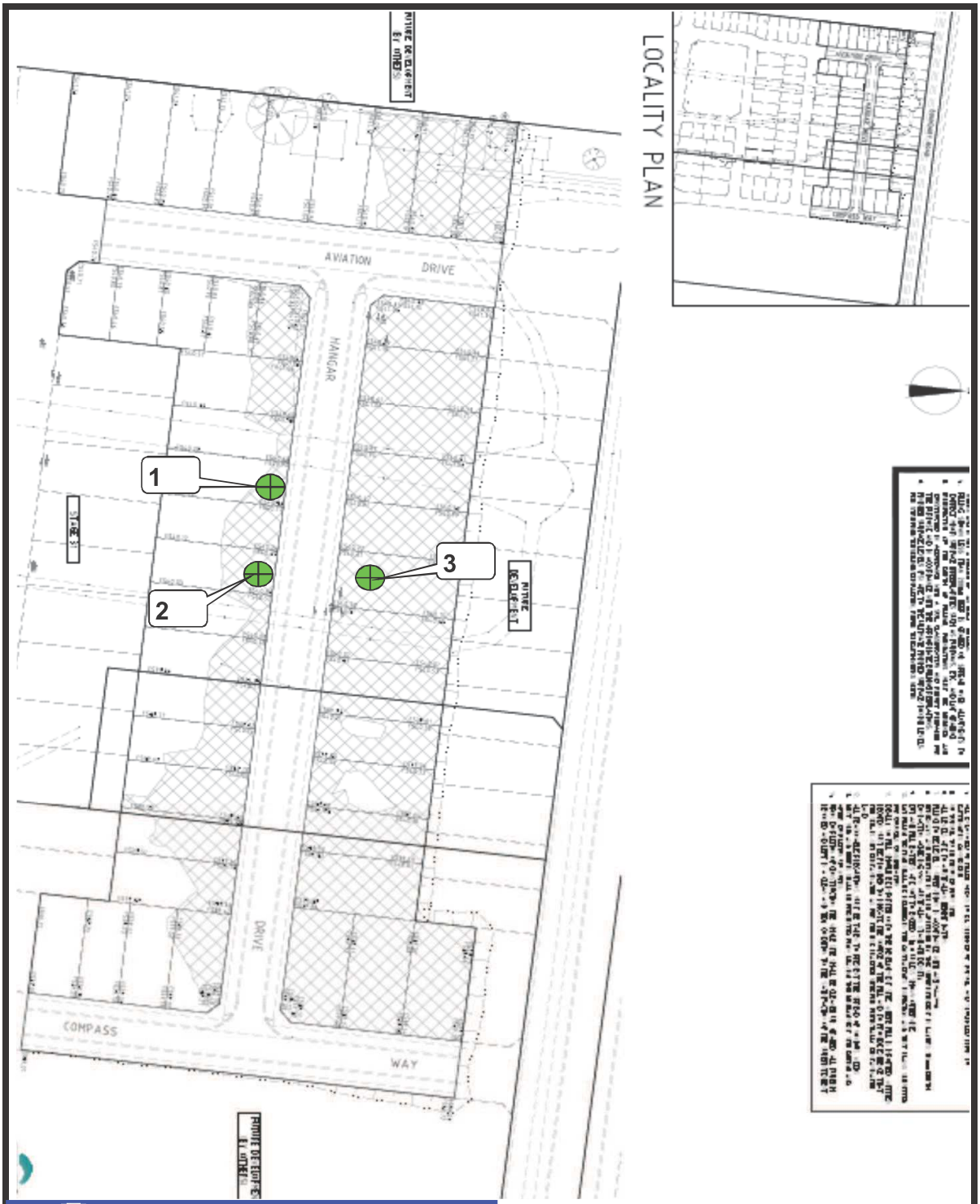
SAM LOZA

(Approved Signatory)

Issue Date: 12/9/2016



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PO Box 184 Keilor VIC 3036
PH: (03) 9335 1225 Fax: (03) 9335 1775

CLIENT: DRAPERS	DATE: 6/09/16	JOB No.: 1861/226
LOCATION: Armstrong Estate Stage 32	OPERATOR: JC	CHECKED: CA
Sketch indicating approx. compaction test locations	SCALE: NTS	FIGURE No: -

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/229

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
21/09/16	1	***Refer to #1861/230 for approx. test site locations.***	1.91	27.0	99.5	1.92	26.5	175	0.5 Wetter	101.0	0	0	200
21/09/16	2		1.96	23.5	97.0	2.02	23.5	175	0.0 Drier	100.0	0	0	0
21/09/16	3		1.91	22.5	95.0	2.00	22.5	175	0.0 Drier	99.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 1:50pm Finish Time: 2:05pm

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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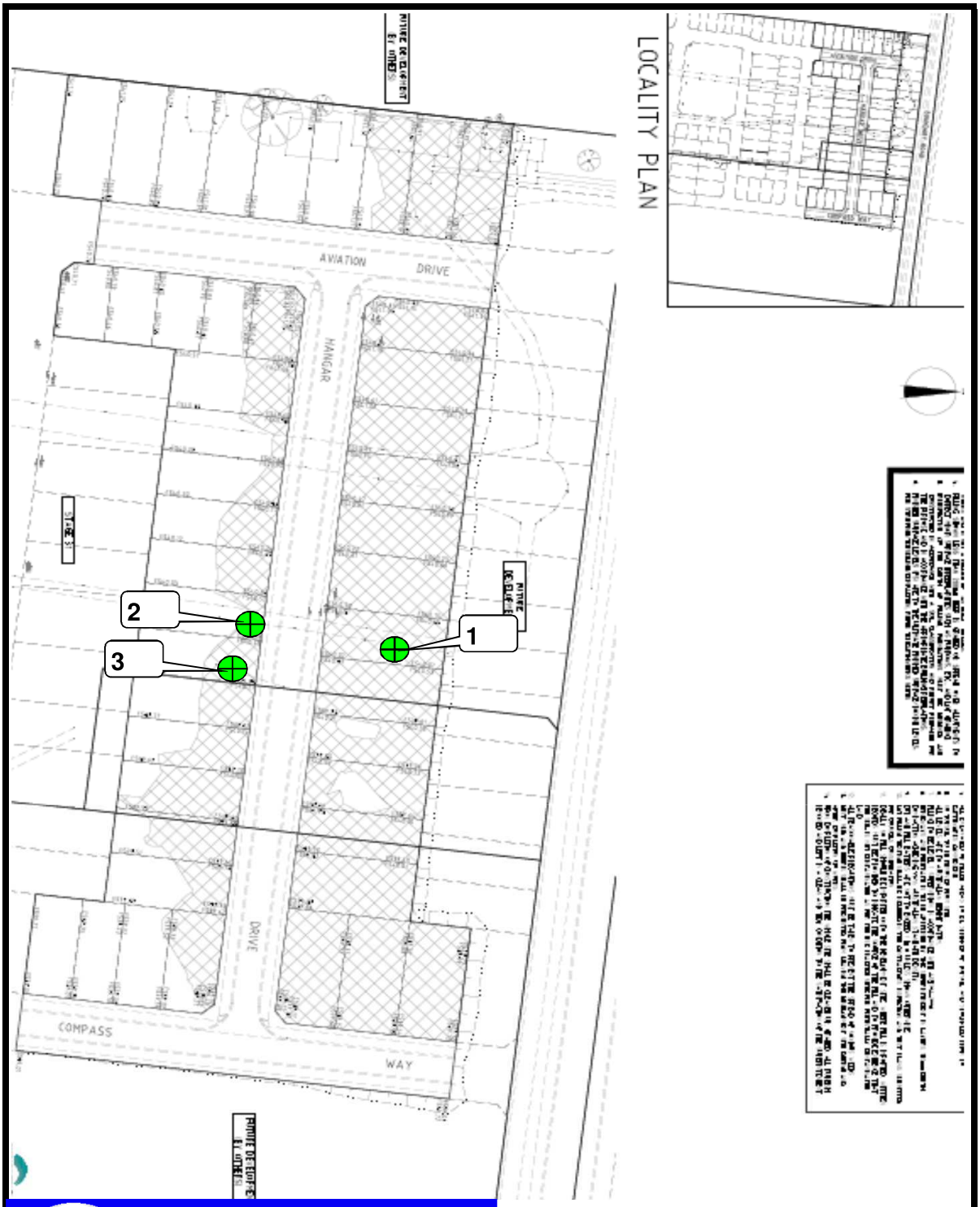
Issue Date: 27/9/2016



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CLIENT: DRAPERS	**DATE: 21/09/16**	**JOB No.: 1861/230**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: JC**	**CHECKED: JC**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/234

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
22/09/16	1	***Refer to #1861/235 for approx. test site locations.***	1.99	24.0	102.0	1.95	24.0	175	0.0 Wetter	101.0	0	0	200
22/09/16	2		2.09	20.5	102.5	2.04	20.5	175	0.0 Wetter	101.0	0	0	200
22/09/16	3		2.08	21.0	102.0	2.04	21.5	175	0.0 Drier	99.0	0	0	200
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 3:30pm Finish Time: 3:48pm

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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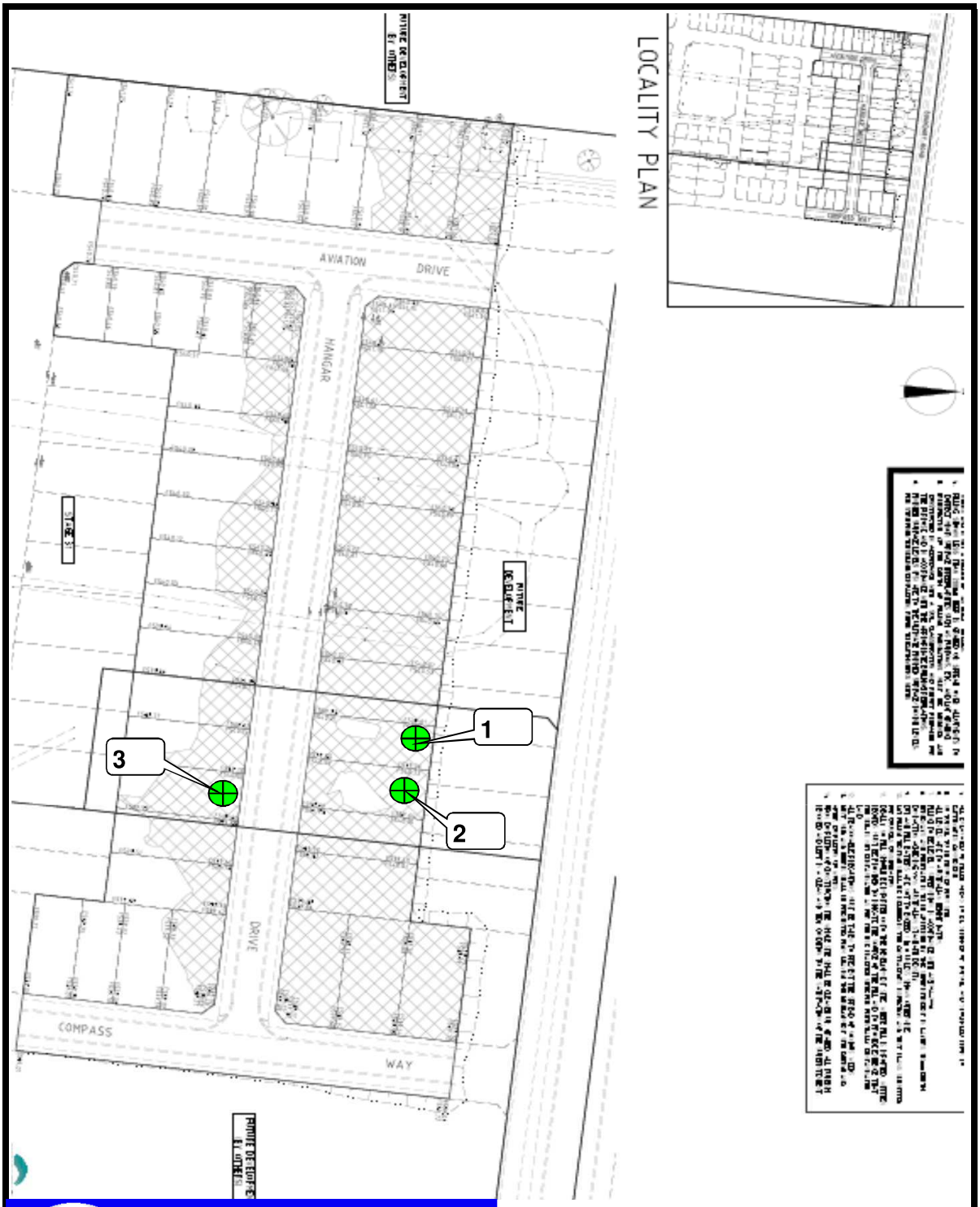
Issue Date: 29/9/2016



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CLIENT: DRAPERS	**DATE: 22/09/16**	**JOB No.: 1861/235**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: VR**	**CHECKED: JC**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/236

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
23/09/16	1	*Refer to #1861/237 for approx. test site locations.*	2.03	21.5	100.5	2.02	21.5	175	0.0 Drier	100.0	0	0	200
23/09/16	2		2.13	19.5	103.0	2.07	21.0	175	1.5 Drier	93.0	0	0	200
23/09/16	3		2.06	22.0	102.0	2.02	21.0	175	1.0 Wetter	104.5	0	0	200
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 12:25pm Finish Time: 12:42pm

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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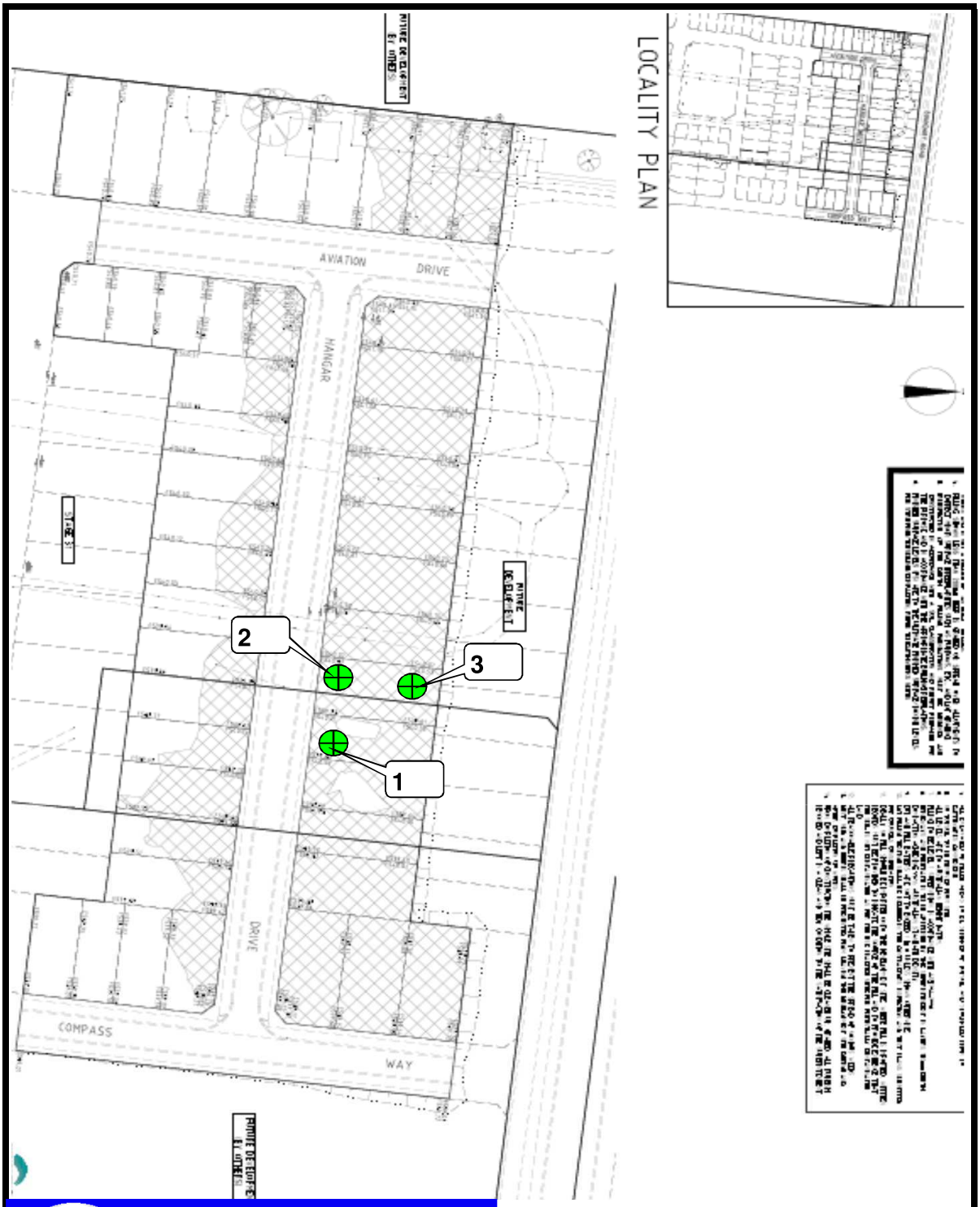
Issue Date:29/9/2016



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CLIENT: DRAPERS	**DATE: 23/09/16**	**JOB No.: 1861/237**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: VR**	**CHECKED: JC**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/238

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
26/09/16	1	***Refer to #1861/239 for approx. test site locations.***	1.99	26.0	99.5	2.01	26.0	175	0.0 Drier	100.0	0	0	200
26/09/16	2		1.96	25.5	98.0	2.00	25.5	175	0.5 Wetter	101.0	0	0	200
26/09/16	3		1.96	21.5	97.0	2.02	22.0	175	0.5 Drier	98.0	0	0	200
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 11:52am Finish Time: 12:08pm

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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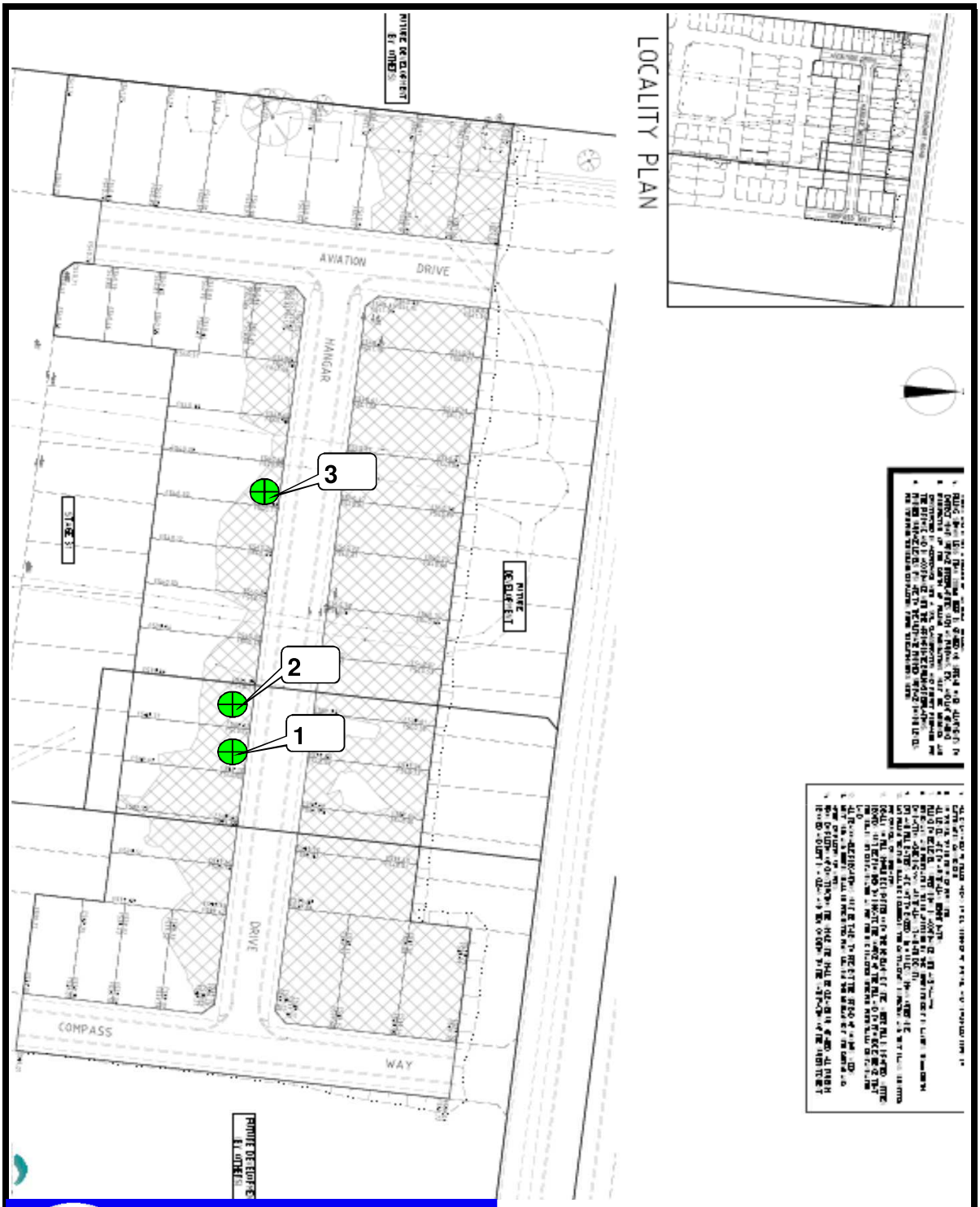
Issue Date: 3/10/2016



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CLIENT: DRAPERS	**DATE: 26/09/16**	**JOB No.: 1861/239**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: VR**	**CHECKED: JC**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/243

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
27/09/16	1	***Refer to #1861/244 for approx. test site locations.***	2.00	24.5	100.5	1.99	24.5	175	0.0 Wetter	101.0	0	0	0
27/09/16	2		1.95	25.0	99.5	1.95	25.5	175	0.5 Drier	99.0	0	0	0
27/09/16	3		2.01	22.0	102.5	1.97	23.0	175	1.0 Drier	96.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 9:00am Finish Time: 9:24am

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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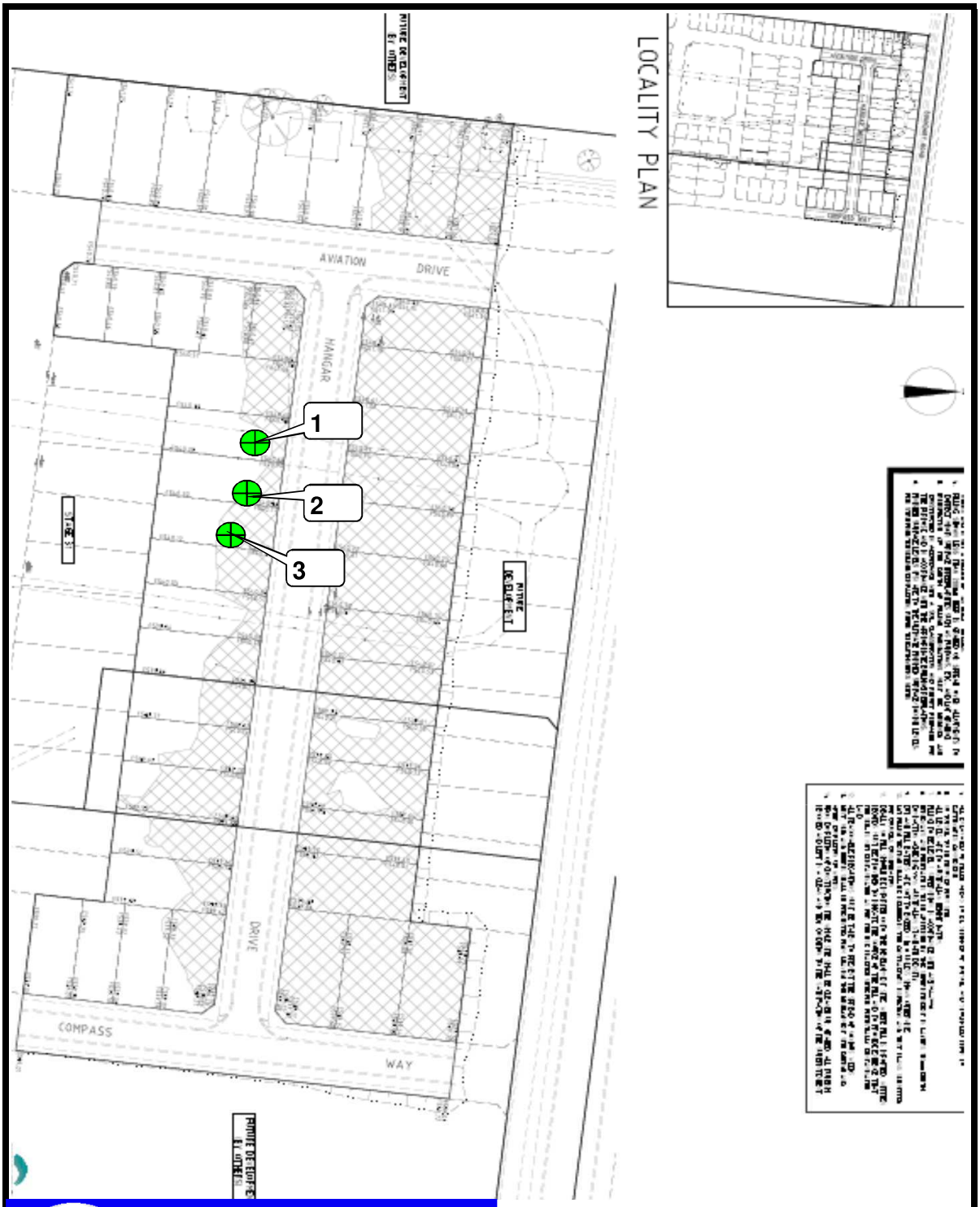
Issue Date: 5/10/2016



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CLIENT: DRAPERS	**DATE: 27/09/16**	**JOB No.: 1861/244**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: VR**	**CHECKED: JC**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/245

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
29/09/16	1	***Refer to #1861/246 for approx. test site locations.***	1.94	24.5	101.5	1.92	26.0	175	1.0 Drier	95.0	0	0	0
29/09/16	2		1.99	24.0	102.5	1.94	25.0	175	0.5 Drier	97.0	0	0	0
29/09/16	3		1.95	26.5	101.0	1.92	29.5	175	3.0 Drier	90.5	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 11:20am 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.

Moisture Content: AS 1289 2.1.1

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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SAM LOZA

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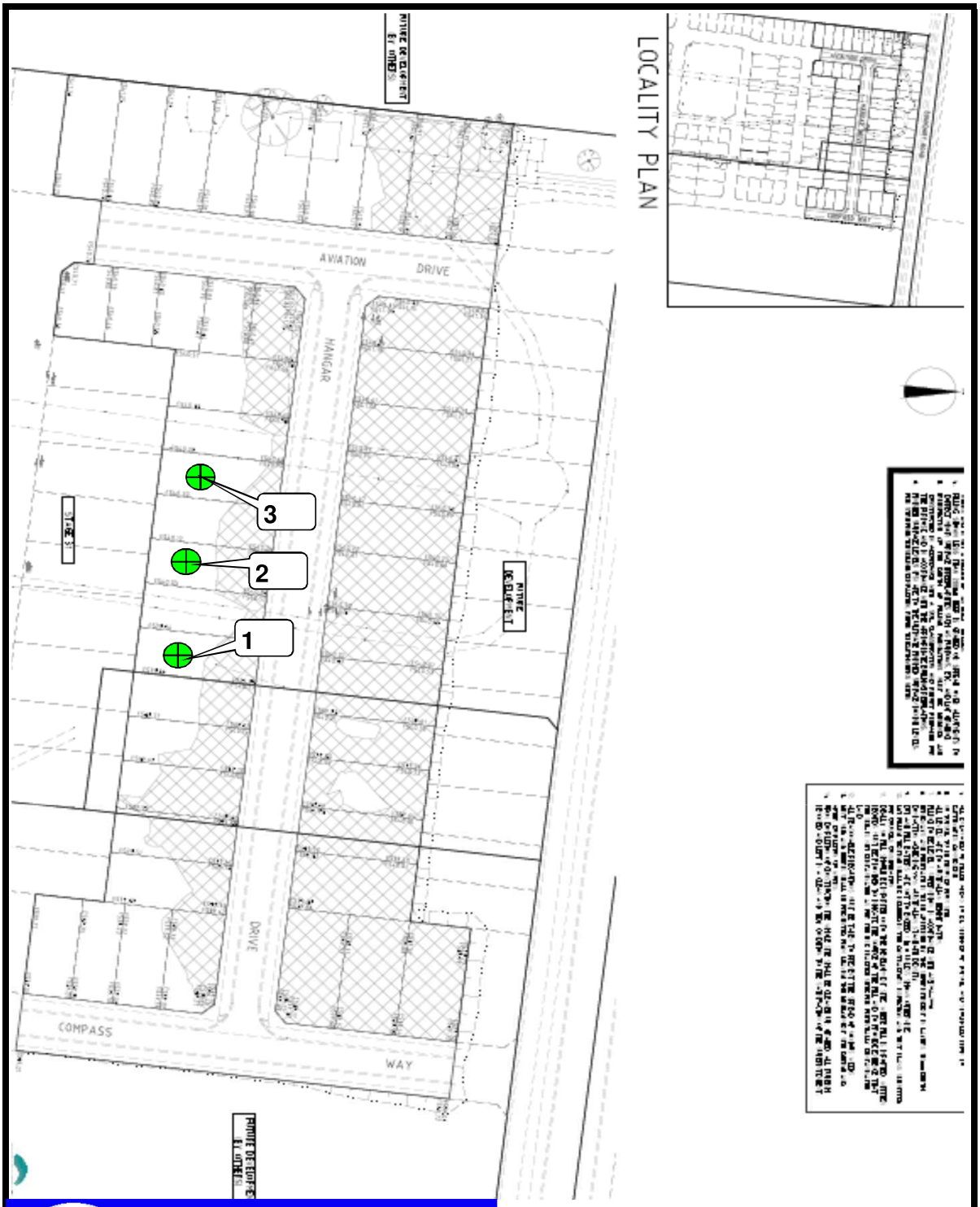
Issue Date: 7/10/2016



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CLIENT: DRAPERS	**DATE: 29/09/16**	**JOB No.: 1861/246**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: VR**	**CHECKED: JC**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/260

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
23/02/17	1	***Refer to #1861/261 for approx. test site locations.***	2.05	21.0	100.5	2.04	21.0	175	0.0 Drier	99.0	0	0	0
23/02/17	2		2.05	23.5	103.5	1.98	24.0	175	0.5 Drier	98.0	0	0	0
23/02/17	3		1.93	24.5	99.5	1.94	25.5	175	1.0 Drier	96.0	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 12:28pm Finish Time: 12:52pm

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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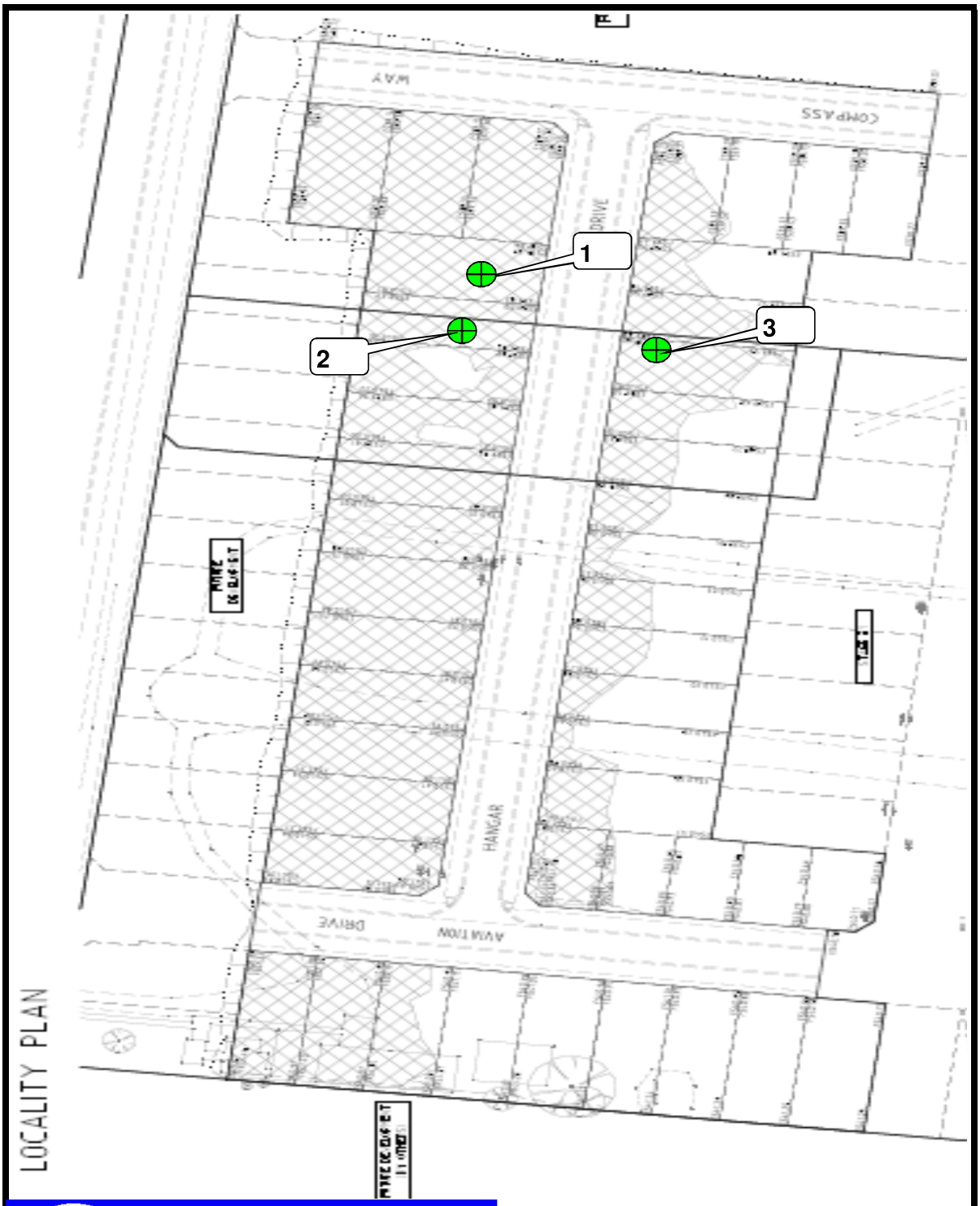
MICK CROWE

(Approved Signatory)

Issue Date: 20/3/2017



LOCALITY PLAN

GEOTECHNICAL LABORATORIES

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ACN 102 571 077
Factory 1/8-10 Catalina Drive, Tullamarine Vic 3043
PO Box 184 Keilor VIC 3036
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CLIENT: DRAPERS	**DATE: 23/02/17**	**JOB No.: 1861/261**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: JC**	**CHECKED: CA**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

GEOTECHNICAL LABORATORIES
ACN 102 571 077
Factory 1/8-10 Catalina Drive, Tullamarine Vic 3043
PO Box 184 Keilor VIC 3036
PH: (03) 9335 1225 Fax: (03) 9335 1775

DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/262

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
27/02/17	1	*Refer to #1861/263 for approx. test site locations.*	1.91	16.5	102.0	1.87	19.5	175	3.5 Drier	83.5	0	0	0
27/02/17	2		1.89	16.5	102.0	1.85	20.0	175	3.0 Drier	84.5	0	0	0
27/02/17	3		2.04	16.5	103.5	1.97	19.5	175	3.0 Drier	84.5	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 8:45am Finish Time: 9:10am

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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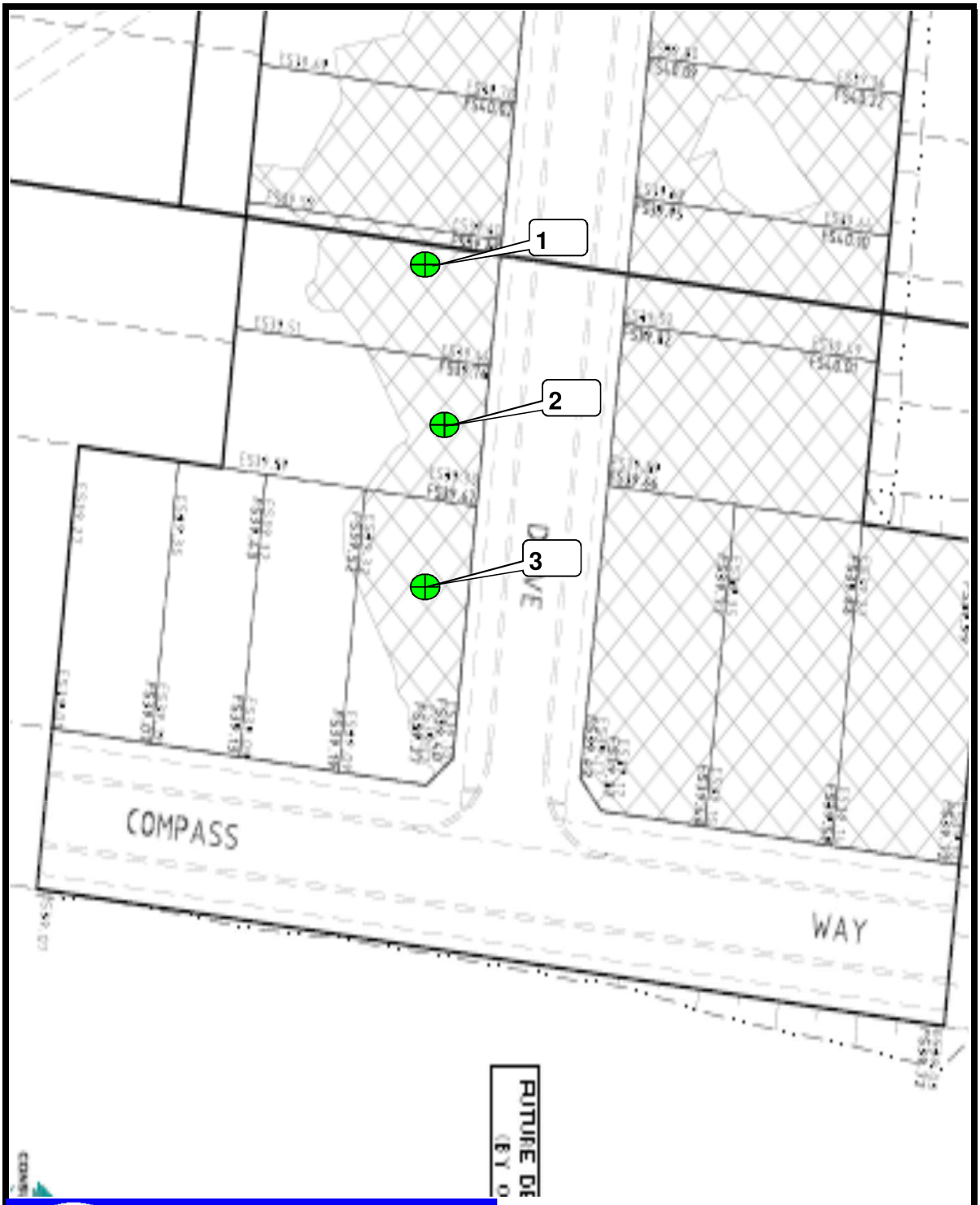
Accredited for compliance with ISO/IEC 17025. The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/National standards. This document may not be reproduced except in full.

NATA Accredited Laboratory Number 14561

MICK CROWE

(Approved Signatory)

Issue Date: 20/3/2017



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CLIENT: DRAPERS	**DATE: 27/02/17**	**JOB No.: 1861/263**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: JC**	**CHECKED: BE**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**

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DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 1861/264

LOCATION: DRAPERS - Armstrong Estate Stage 32

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)
28/02/17	1	*Refer to #1861/265 for approx. test site locations.*	1.90	23.5	102.5	1.85	27.0	175	3.5 Drier	87.0	0	0	0
28/02/17	2		1.92	25.0	101.5	1.89	28.0	175	3.0 Drier	88.5	0	0	0
28/02/17	3		1.90	25.5	100.5	1.89	29.0	175	3.5 Drier	88.5	0	0	0
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-

NOTES: Onsite Clay Fill

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 12:10pm Finish Time: 12:32pm

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

Soil Layer thickness: 200mm

Compaction Test: AS 1289 5.7.1

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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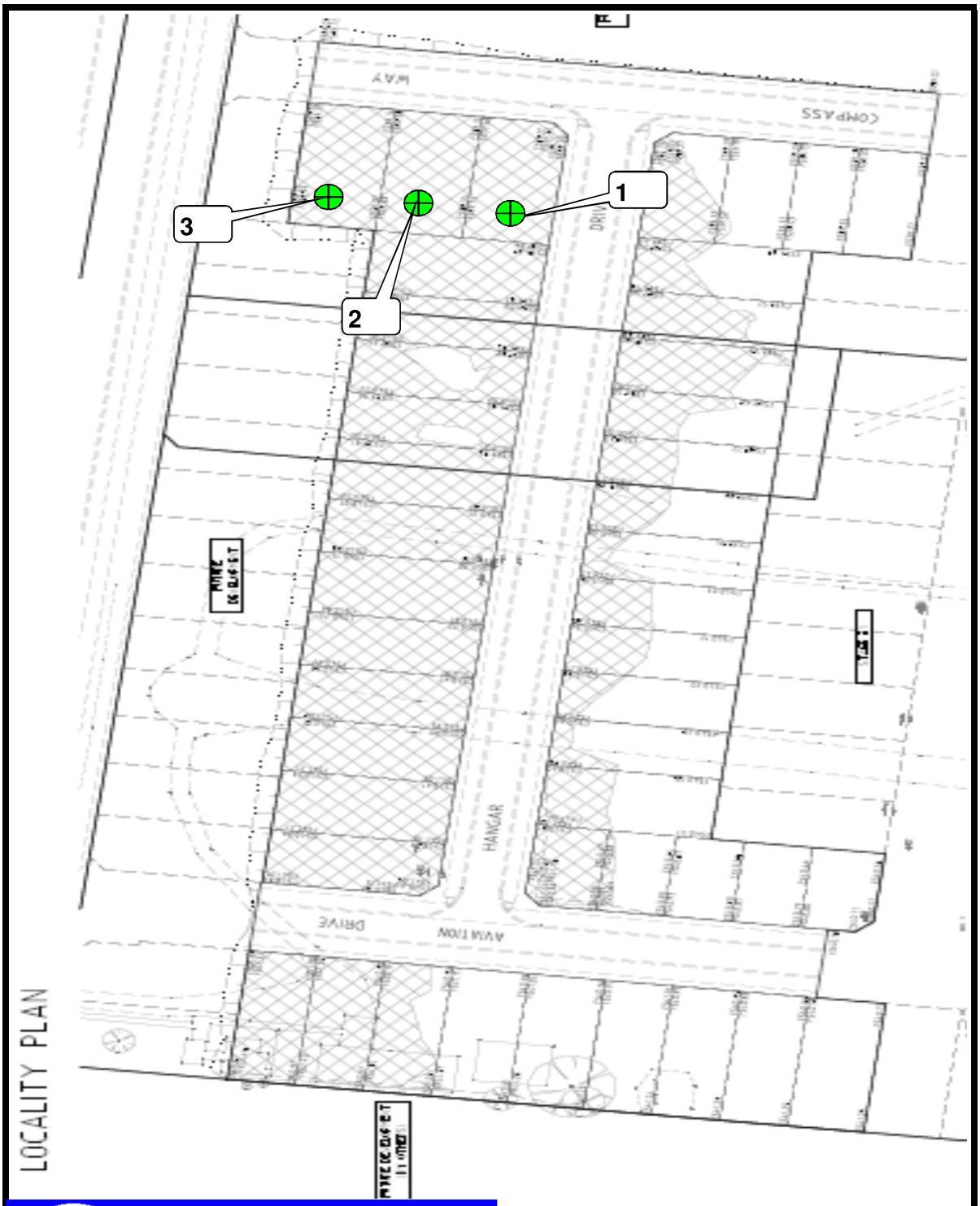
NATA Accredited Laboratory Number 14561

MICK CROWE

(Approved Signatory)

Issue Date: 20/3/2017



LOCALITY PLAN

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PO Box 184 Keilor VIC 3036
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CLIENT: DRAPERS	**DATE: 28/02/17**	**JOB No.: 1861/265**
LOCATION: Armstrong Estate Stage 32	**OPERATOR: JC**	**CHECKED: CA**
Sketch indicating approx. compaction test locations	**SCALE: NTS**	**FIGURE No: -**