



CIVIL GEOTECHNICAL SERVICES
ABN 26 474 013 724
PO Box 678 Croydon Vic 3136
Telephone: 9723 0744 Facsimile: 9723 0799

14th November 2016

Our Reference: 16289:GB067

Winslow Constructors Pty Ltd
50 Barry Road
CAMPBELLFIELD VIC 3061

Dear Sirs,

**RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING
LIVINGSTON ESTATE – STAGE 15, CRANBOURNE**

Please find attached our Report Nos 16289/R001 – 16289/R004 that relate to the field density testing that was conducted within the filled allotments at the above subdivision. The level 1 inspections and associated field density testing commenced in mid September 2016 and was completed in early October 2016.

The inspections and testing of the earthworks was undertaken in general accordance with the Level 1 requirements of AS 3798 - Guidelines on Earthworks for Commercial and Residential Developments.

The site inspections and testing was performed by an experienced geotechnician from this office. Any areas that were deemed unsatisfactory were reworked and retested under their supervision. The testing was performed to the relevant Australian Standards and the accompanying test reports carry NATA endorsement. The attached compaction results, which were located randomly throughout the fill profile, are considered to be representative of the bulk fill materials that were placed across the filled allotments by Winslow Constructors during the aforementioned period. The approximate locations of the field density tests can be seen on the attached plan (Figure 1).

We are of the view that the bulk fill materials that have been placed across the filled allotments by Winslow Constructors during the aforementioned period can be considered as having been placed in a controlled manner to a minimum density ratio of 95% (standard compactive effort).

Please contact the undersigned if you require any additional information.

Civil Geotechnical Services

Griffin Brown

FIGURE 1

APPROXIMATE
FIELD DEMS ITTY
LOCATION

EXISTING
STAGE 9

WARNING
PROPOSED SERVICES
THE LOCATION AND EXTENT OF PROPOSED SERVICES IS
CONTINGENT UPON THE RESULTS OF FIELD DEMS AND
BY RELEVANT AUTHORITY FOR CONSTRUCTION DETAILS

WARNING
BEWARE OF UNDERGROUND SERVICES
THE LOCATION OF UNDERGROUND SERVICES IS
CONTINGENT UPON THE RESULTS OF FIELD DEMS AND
BY RELEVANT AUTHORITY FOR CONSTRUCTION DETAILS



0 5 10 15 20 25m
SCALE 1:500 AT ORIGINAL SIZE

LIVINGSTON
PEET



MENNARD
Manufactured Landscapes Pty Ltd
1000 South Street, Warrington NSW 2240
Tel: 02 4030 1000
www.mennard.com.au

PEET LTD
1000 South Street, Warrington NSW 2240
Tel: 02 4030 1000
www.peet.com.au

LIVINGSTON ESTATE
STAGE 15
CITY OF CASEY
FOR CONSTRUCTION

City of Casey
Approved By: Khurshedul Alam
File No: 122619.sc-15 & Seng00178/15
Date: 14/04/2016
DRAWING NO: 4720

EARTHWORKS LEGEND

- NEW BATTER
- EXISTING SURFACE LEVEL
- FINISHED SURFACE LEVEL
- TOP OF TOP OF WATER LEVEL
- NEW FINISHED SURFACE LEVEL
- EXISTING SURFACE CONTOUR
- DIRECTION OF FILL AND PALL MOVERS LOT
- LOT BOUNDARY ENVELOPE
- LOT FILLING
- FILL UP TO 300mm DEEP
- LOT FILLING LEVEL, 1.0m+ DEEP
- FILL GREATER THAN 300mm DEEP
- LOT CUT

NO.	DESCRIPTION	DATE	BY	CHKD
1	ISSUED FOR PERMIT	14/04/2016	KL	KL
2	FOR CONSTRUCTION	14/04/2016	KL	KL
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100	FOR CONSTRUCTION	14/04/2016	KL	KL





COMPACTION ASSESSMENT

Job No 16289
 Report No 16289/R001
 Date Issued 11/11/16

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JWM
Project	LIVINGSTON ESTATE - STAGE 15	Date tested	14/09/16
Location	CRANBOURNE	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 12:33
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	1	2	3	4	5	6
Location	REFER TO FIGURE 1					
Approximate depth below FSL						
Measurement depth mm	175	175	175	175	175	175
Field wet density t/m ³	1.82	1.82	1.90	1.92	1.85	1.81
Field moisture content %	33.4	32.5	23.2	22.3	32.6	33.8

Test procedure AS 1289.5.7.1

Test No	1	2	3	4	5	6
Compactive effort	Standard					
Oversize rock retained on sieve mm	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material wet	0	0	0	0	0	0
Peak Converted Wet Density t/m ³	1.87	1.89	1.96	1.97	1.89	1.84
Adjusted Peak Converted Wet Density t/m ³	-	-	-	-	-	-
Optimum Moisture Content %	31.5	30.0	22.0	21.5	30.0	32.0

Moisture Variation From Optimum Moisture Content	1.5% wet	2.5% wet	1.5% wet	1.0% wet	2.5% wet	2.0% wet
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Density Ratio (R _{HD})	%	97.5	96.0	96.5	97.5	98.0	98.5
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Material description

No 1 - 6 Clay Fill



The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/National standards. Accredited for compliance to ISO/IEC 17025. Accreditation No 9909

Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 16289
 Report No 16289/R002
 Date Issued 11/11/16

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JWM
Project	LIVINGSTON ESTATE - STAGE 15	Date tested	16/09/16
Location		Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 12:51
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	7	8	9	10	11	12
Location	REFER TO FIGURE 1					
Approximate depth below FSL						
Measurement depth mm	175	175	175	175	175	175
Field wet density t/m ³	1.87	1.87	1.83	1.81	1.82	1.82
Field moisture content %	29.5	27.1	33.9	31.6	30.9	31.1

Test procedure AS 1289.5.7.1

Test No	7	8	9	10	11	12
Compactive effort	Standard					
Oversize rock retained on sieve mm	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material wet	0	0	0	0	0	0
Peak Converted Wet Density t/m ³	1.89	1.87	1.89	1.90	1.89	1.92
Adjusted Peak Converted Wet Density t/m ³	-	-	-	-	-	-
Optimum Moisture Content %	27.5	25.5	31.5	29.5	29.0	28.5

Moisture Variation From Optimum Moisture Content	2.0% wet	1.5% wet	2.5% wet	2.0% wet	1.5% wet	2.5% wet
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Density Ratio (R _{HD})	%	99.5	100.5	97.0	95.5	96.0	95.0
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Material description

No 7 - 12 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 16289
 Report No 16289/R003
 Date Issued 11/11/16

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JWM
Project	LIVINGSTON ESTATE - STAGE 15	Date tested	05/10/16
Location	CRANBOURNE	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 09:45
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	13	14	15	16	17	18
Location	REFER TO FIGURE 1					
Approximate depth below FSL						
Measurement depth mm	175	175	175	175	175	175
Field wet density t/m ³	1.91	1.94	1.94	1.94	1.95	1.94
Field moisture content %	20.4	21.0	24.3	22.9	26.3	26.3

Test procedure AS 1289.5.7.1

Test No	13	14	15	16	17	18
Compactive effort	Standard					
Oversize rock retained on sieve mm	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material wet	0	0	0	0	1	2
Peak Converted Wet Density t/m ³	2.00	2.03	1.98	2.00	1.93	1.94
Adjusted Peak Converted Wet Density t/m ³	-	-	-	-	1.95	1.97
Optimum Moisture Content %	19.5	20.0	22.5	20.5	24.0	23.5

Moisture Variation From Optimum Moisture Content	1.0% wet	1.0% wet	2.0% wet	2.0% wet	2.0% wet	2.5% wet
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Density Ratio (R _{HD})	%	96.0	95.5	98.0	96.5	100.0	98.0
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Material description

No 13 - 18 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 16289
 Report No 16289/R004
 Date Issued 11/11/16

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JWM
Project	LIVINGSTON ESTATE - STAGE 15	Date tested	06/10/16
Location	CRANBOURNE	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 10:24
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	19	20	21	22	23	24
Location	REFER TO FIGURE 1					
Approximate depth below FSL						
Measurement depth mm	175	175	175	175	175	175
Field wet density t/m ³	1.81	1.85	1.61	1.62	1.75	1.71
Field moisture content %	28.6	29.2	30.5	31.2	33.2	32.4

Test procedure AS 1289.5.7.1

Test No	19	20	21	22	23	24
Compactive effort	Standard					
Oversize rock retained on sieve mm	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material wet	1	0	0	0	0	0
Peak Converted Wet Density t/m ³	1.87	1.88	1.68	1.70	1.76	1.75
Adjusted Peak Converted Wet Density t/m ³	1.88	-	-	-	-	-
Optimum Moisture Content %	26.5	27.0	28.5	29.0	31.0	30.0

Moisture Variation From Optimum Moisture Content	2.5% wet	2.5% wet	2.5% wet	2.5% wet	2.0% wet	2.5% wet
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Density Ratio (R _{HD})	%	96.5	98.5	95.5	95.0	99.5	97.5
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Material description

No 19 - 24 Clay Fill



The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/National standards. Accredited for compliance to ISO/IEC 17025. Accreditation No 9909

Approved Signatory : Justin Fry