



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

7<sup>th</sup> March 2014

Our Reference: 14015:JHF766

Winslow Constructors Pty Ltd  
50 Barry Road  
CAMPBELLFIELD VIC 3061

Dear Sirs,

**RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING  
ESTUARY ESTATE (STAGE 12) – LEOPOLD**

Please find attached our Report Nos 14015/R001 to 14015/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 was performed in early February 2014.

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 reported 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 reported 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

A handwritten signature in black ink, appearing to read 'Justin Fry', is written in a cursive style.

Justin Fry


# FIGURE 1



25.05.12	CB/CB	JG
05.03.12	FR/FR	IG

  
 Principal  
 Lennart Property Developments Pty Ltd

Designed  
 C. Barker  
 Drawn  
 C. Barker  
 Checked  
 C. Birkett  
 Authorised  
 J. Golden

  
 Scale @ A1  
 1:500



# COMPACTION ASSESSMENT

Job No 14015  
 Report No 14015/R001  
 Date Issued 19/02/14

## CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	AG
Project	ESTUARY - STAGE 12	Date tested	03/02/14
Location	LEOPOLD	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time:	10:02
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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	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1
Approximate depth below FSL	-	-	-	-	-	-
Measurement depth	mm 175	mm 175	mm 175	mm 175	mm 175	mm 175
Field wet density	t/m <sup>3</sup> 1.89	t/m <sup>3</sup> 2.01	t/m <sup>3</sup> 2.07	t/m <sup>3</sup> 2.09	t/m <sup>3</sup> 1.94	t/m <sup>3</sup> 1.88
Field moisture content	% 17.0	% 14.8	% 15.9	% 19.9	% 16.2	% 20.5

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	mm 19.0	mm 19.0	mm 19.0	mm 19.0	mm 19.0
Percent of oversize material	wet 0	wet 0	wet 0	wet 0	wet 0	wet 0
Peak Converted Wet Density	t/m <sup>3</sup> 1.99	t/m <sup>3</sup> 1.98	t/m <sup>3</sup> 1.99	t/m <sup>3</sup> 2.06	t/m <sup>3</sup> 2.00	t/m <sup>3</sup> 1.98
Adjusted Peak Converted Wet Density	t/m <sup>3</sup> -	t/m <sup>3</sup> -	t/m <sup>3</sup> -	t/m <sup>3</sup> -	t/m <sup>3</sup> -	t/m <sup>3</sup> -
Optimum Moisture Content	% 19.5	% 17.5	% 18.5	% 19.0	% 18.5	% 23.5

Moisture Variation From Optimum Moisture Content	2.5% dry	2.5% dry	2.5% dry	1.0% wet	2.5% dry	2.5% dry
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Density Ratio ( R <sub>HD</sub> )	% 95.0	% 101.5	% 104.5	% 101.5	% 97.0	% 95.0
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Material description

No 1 - 6 Clay Fill
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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 14015  
 Report No 14015/R002  
 Date Issued 17/02/14

## CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	AG
Project	ESTUARY - STAGE 12	Date tested	03/02/14
Location	LEOPOLD	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 11:06
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	7	-	-	-	-	-
Location	REFER TO FIGURE 1					
Approximate depth below FSL	-	-	-	-	-	-
Measurement depth	mm 175	-	-	-	-	-
Field wet density	t/m <sup>3</sup> 1.92	-	-	-	-	-
Field moisture content	% 21.7	-	-	-	-	-

Test procedure AS 1289.5.7.1

Test No	7	-	-	-	-	-
Compactive effort	Standard					
Oversize rock retained on sieve	mm 19.0	-	-	-	-	-
Percent of oversize material	wet 0	-	-	-	-	-
Peak Converted Wet Density	t/m <sup>3</sup> 2.03	-	-	-	-	-
Adjusted Peak Converted Wet Density	t/m <sup>3</sup> -	-	-	-	-	-
Optimum Moisture Content	% 21.5	-	-	-	-	-

Moisture Variation From Optimum Moisture Content	0.0%	-	-	-	-	-
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Density Ratio ( R <sub>HD</sub> )	% 95.0	-	-	-	-	-
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Material description

No 7 - 7 Clay Fill

AVRLOT HILF V1.10 MAR 13



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Approved Signatory : Justin Fry



# COMPACTION ASSESSMENT

Job No 14015  
 Report No 14015/R003  
 Date Issued 04/03/14

## CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JWM
Project	ESTUARY - STAGE 12	Date tested	05/02/14
Location	LEOPOLD	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time:	08:20
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	8	9	10	-	-	-
Location	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1			
Approximate depth below FSL	-	-	-	-	-	-
Measurement depth	mm	175	175	175	-	-
Field wet density	t/m <sup>3</sup>	2.09	2.00	1.99	-	-
Field moisture content	%	20.8	15.1	14.0	-	-

Test procedure AS 1289.5.7.1

Test No	8	9	10	-	-	-
Compactive effort	Standard					
Oversize rock retained on sieve	mm	19.0	19.0	19.0	-	-
Percent of oversize material	wet	0	0	0	-	-
Peak Converted Wet Density	t/m <sup>3</sup>	2.09	2.05	2.09	-	-
Adjusted Peak Converted Wet Density	t/m <sup>3</sup>	-	-	-	-	-
Optimum Moisture Content	%	18.0	17.0	16.5	-	-

Moisture Variation From Optimum Moisture Content	2.5% wet	1.5% dry	2.5% dry	-	-	-
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Density Ratio ( R <sub>HD</sub> )	%	100.0	98.0	95.0	-	-
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Material description

No 8 - 10 Clay Fill



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Approved Signatory : Justin Fry



## COMPACTION ASSESSMENT

Job No 14015  
 Report No 14015/R004  
 Date Issued 27/02/14

**CIVIL GEOTECHNICAL SERVICES**

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JWM
Project	ESTUARY - STAGE 12	Date tested	06/02/14
Location	LEOPOLD	Checked by	JHF

<b>Feature</b>	<b>EARTHWORKS</b>	Layer thickness	200 mm	Time: 10:00
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	11	12	13	-	-	-
Location	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1			
Approximate depth below FSL	-	-	-	-	-	-
Measurement depth <span style="float: right;">mm</span>	175	175	175	-	-	-
Field wet density <span style="float: right;">t/m<sup>3</sup></span>	2.03	1.95	1.97	-	-	-
Field moisture content <span style="float: right;">%</span>	20.5	19.4	15.9	-	-	-

Test procedure AS 1289.5.7.1

Test No	11	12	13	-	-	-
Compactive effort	Standard					
Oversize rock retained on sieve <span style="float: right;">mm</span>	19.0	19.0	19.0	-	-	-
Percent of oversize material <span style="float: right;">wet</span>	0	0	0	-	-	-
Peak Converted Wet Density <span style="float: right;">t/m<sup>3</sup></span>	2.01	2.05	2.04	-	-	-
Adjusted Peak Converted Wet Density <span style="float: right;">t/m<sup>3</sup></span>	-	-	-	-	-	-
Optimum Moisture Content <span style="float: right;">%</span>	21.0	19.5	17.0	-	-	-

Moisture Variation From Optimum Moisture Content	0.5% dry	0.0%	1.0% dry	-	-	-
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<b>Density Ratio ( R<sub>HD</sub> )</b>	<b>101.0</b>	<b>95.0</b>	<b>96.5</b>	-	-	-
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Material description

No 11 - 13 Clay Fill



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Approved Signatory : Justin Fry