



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

2<sup>nd</sup> May 2012

Our Reference: 12115:JHF577

Winslow Constructors Pty Ltd  
50 Barry Road  
CAMPBELLFIELD VIC 3061

Dear Sirs,

**RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING  
ESTUARY ESTATE (STAGE 8) – LEOPOLD**

Please find attached our Report Nos 12115/R001 to 12115/R003 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 late March 2012 and was completed in late April 2012.

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 inspection and testing was performed by an experienced geotechnician from this office. Any areas that were deemed unsatisfactory were reworked and retested under his 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', written in a cursive style.

Justin Fry





## COMPACTION ASSESSMENT

### CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Job No 12115  
 Report No 12115/R001  
 Date Issued 28/03/12  
 Tested by JWM  
 Date tested 23/03/12  
 Checked by JHF

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JWM
Project	ESTUARY - STAGE 8	Date tested	23/03/12
Location	LEOPOLD	Checked by	JHF

<b>Feature</b>	<b>EARTHWORKS</b>	Layer thickness	200 mm	Time: 02:00
----------------	-------------------	-----------------	--------	-------------

Test procedure AS 1289.2.1.1 & 5.8.1

Test No	1	2	3	4	5	-
Location	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 <i>mm</i>	175	175	175	175	175	-
Field wet density <i>t/m<sup>3</sup></i>	1.93	1.82	2.11	2.09	1.90	-
Field moisture content %	10.5	5.4	6.9	8.0	11.1	-

Test procedure AS 1289.5.7.1

Test No	1	2	3	4	5	-
Compactive effort	Standard					
Override rock retained on sieve <i>mm</i>	19.0	19.0	19.0	19.0	19.0	-
Percent of oversize material <i>wet</i>	0	0	0	0	0	-
Peak Converted Wet Density <i>t/m<sup>3</sup></i>	2.03	1.76	2.08	1.99	2.00	-
Adjusted Peak Converted Wet Density <i>t/m<sup>3</sup></i>	-	-	-	-	-	-
Optimum Moisture Content %	13.5	14.0	11.0	14.0	15.5	-

Moisture Variation From Optimum Moisture Content	3.0% dry	9.0% dry	4.0% dry	5.5% dry	4.0% dry	-
--	----------	----------	----------	----------	----------	---

Density Ratio ( $R_{HD}$ ) %	95.0	103.5	101.0	104.5	95.0	-
------------------------------	------	-------	-------	-------	------	---

Material description

Test No 1 - 5 Clay Fill
-------------------------

A581HILF V1.10 OCT 09



This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025  
 Accreditation No 9909

Approved Signatory : Justin Fry



# COMPACTION ASSESSMENT

Job No 12115  
 Report No 12115/R002  
 Date Issued 30/04/12

## CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JWM
Project	ESTUARY - STAGE 8	Date tested	20/04/12
Location	LEOPOLD	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time:	09:45
---------	------------	-----------------	--------	-------	-------

### Test procedure AS 1289.2.1.1 & 5.8.1

Test No	6	7	8	9	10	11	
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	175	175	175	175	
Field wet density	t/m <sup>3</sup>	1.85	1.94	1.97	2.10	1.94	1.98
Field moisture content	%	8.1	6.2	6.5	13.0	13.5	16.6

### Test procedure AS 1289.5.7.1

Test No	6	7	8	9	10	11	
Compactive effort	Standard						
Oversize rock retained on sieve	mm	19.0	19.0	19.0	19.0	19.0	
Percent of oversize material	wet	0	0	0	0	0	
Peak Converted Wet Density	t/m <sup>3</sup>	1.90	2.02	2.00	2.12	2.05	2.04
Adjusted Peak Converted Wet Density	t/m <sup>3</sup>	-	-	-	-	-	
Optimum Moisture Content	%	13.5	11.0	13.0	15.0	16.5	17.0

Moisture Variation From Optimum Moisture Content	5.5% dry	5.0% dry	6.5% dry	2.0% dry	3.0% dry	0.5% dry
--	----------	----------	----------	----------	----------	----------

Density Ratio ( R <sub>HD</sub> )	%	97.5	96.0	98.5	99.5	95.0	97.0
-----------------------------------	---	------	------	------	------	------	------

### Material description

No 6 - 11 Clay Fill

A581HILF V1.10 OCT 09



This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025

Accreditation No 9909

Approved Signatory : Justin Fry



## COMPACTION ASSESSMENT

Job No 12115  
 Report No 12115/R003  
 Date Issued 30/04/12  
 Tested by JWM  
 Date tested 20/04/12  
 Checked by JHF

### CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JWM
Project	ESTUARY - STAGE 8	Date tested	20/04/12
Location	LEOPOLD	Checked by	JHF

<b>Feature</b>	EARTHWORKS	Layer thickness	200 mm	Time: 10:30
----------------	------------	-----------------	--------	-------------

#### Test procedure AS 1289.2.1.1 & 5.8.1

Test No	12	13	14	15	16	17
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 <i>mm</i>	175	175	175	175	175	175
Field wet density <i>t/m<sup>3</sup></i>	2.02	1.91	1.92	1.94	2.04	1.92
Field moisture content <i>%</i>	6.9	7.0	8.4	4.2	10.4	10.9

#### Test procedure AS 1289.5.7.1

Test No	12	13	14	15	16	17
Compactive effort	Standard					
Oversize rock retained on sieve <i>mm</i>	19.0	19.0	19.0	19.0	19.0	19.0
Percent of oversize material <i>wet</i>	0	0	0	0	0	0
Peak Converted Wet Density <i>t/m<sup>3</sup></i>	1.90	2.01	2.00	2.02	2.01	2.00
Adjusted Peak Converted Wet Density <i>t/m<sup>3</sup></i>	-	-	-	-	-	-
Optimum Moisture Content <i>%</i>	13.5	13.0	12.5	12.0	13.0	15.0

Moisture Variation From Optimum Moisture Content	6.5% dry	6.0% dry	4.5% dry	7.5% dry	2.5% dry	4.0% dry
--	-------------	-------------	-------------	-------------	-------------	-------------

<b>Density Ratio ( <math>R_{HD}</math> )</b>	<b>%</b>	<b>106.5</b>	<b>95.0</b>	<b>96.0</b>	<b>96.0</b>	<b>102.0</b>	<b>96.0</b>
--	----------	--------------	-------------	-------------	-------------	--------------	-------------

#### Material description

No 12 - 17 Clay Fill

A581HILF V1.10 OCT 09



This document is issued in accordance with NATA's accreditation requirements. Accredited for compliance with ISO/IEC 17025

Accreditation No 9909

Approved Signatory : Justin Fry