



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

6<sup>th</sup> December 2019

Our Reference: 18607:NB623

Winslow Constructors Pty Ltd  
50 Barry Road  
CAMPBELLFIELD VIC 3061

Dear Sirs/Madams,

**RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING  
FLORIAN ESTATE – STAGE 1 (BONSHAW)**

Please find attached our Report No's 18607/R001 to 18607/R004 which 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 September 2018 and was completed in October 2018.

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 experienced geotechnicians 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).

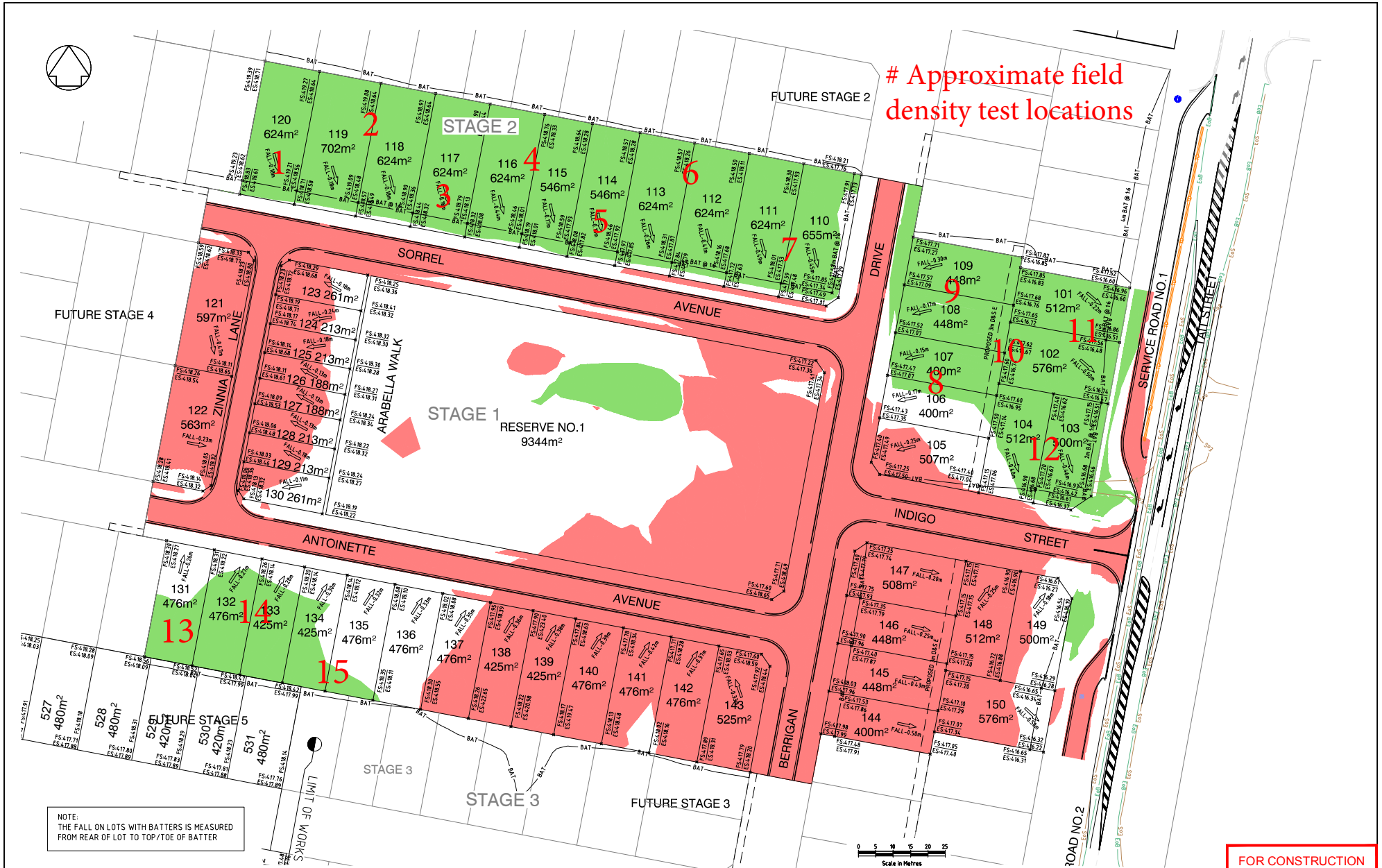
Please contact the undersigned if you require any additional information.

Civil Geotechnical Services

A handwritten signature in blue ink, appearing to read 'Nick Brock', is written over a faint circular stamp.

Nick Brock

# FIGURE 1



NOTE:  
THE FALL ON LOTS WITH BATTERS IS MEASURED FROM REAR OF LOT TO TOP/TOE OF BATTER

ISSUE	DESCRIPTION	DATE
A	ISSUED FOR APPROVAL	16/02/2018
C	AMENDED ACCORDING TO COUNCIL COMMENTS	06/06/2018
D	CHANGED SOUTHBOUND TURNING LANE DECL. AND STORAGE LENGTH	23/07/2018
1	ISSUED FOR CONSTRUCTION	30/07/2018

LEGEND	
	LOT CUT (CUT GREATER THAN 200mm DEEP)
	LOT FILL (FILL GREATER THAN 200mm DEEP)
	CUT/FILL BATTERS
	FINISHED SURFACE LEVEL ES:4.0.00
	EXISTING SURFACE LEVEL ES:4.0.00
	SLOPE & FALL ARROW

DESIGNED BY: D MILLAR  
CHECKED BY: M PARKER  
APPROVED BY: C COUGHLAN  
DATE: 16/02/2018

SCALE: 1:500  
SHEET SIZE: A1

AXIOM CONSULTING ENGINEERS  
ACN 100 926 496  
W: axiome.com.au  
E: info@axiome.com.au

PROJECT: FLORIAN - STAGE 1 TAIT ST BONSHAW  
CLIENT: BONSHAW PROJECTS PTY LTD

REGISTERED: D MILLAR  
CHECKED: M PARKER  
APPROVED: C COUGHLAN  
DATE: 16/02/2018

Scale in Metres: 0 5 10 15 20 25

**FOR CONSTRUCTION**

CENTR REF. No: 802RD-01-05  
SHEET: 5  
REV: 1

DRAWING TITLE: EARTHWORKS LAYOUT PLAN



## COMPACTION ASSESSMENT

Job No 18607  
 Report No 18607/R001  
 Date Issued 04/10/2018

**CIVIL GEOTECHNICAL SERVICES**

6 - 8 Rose Avenue, Croydon 3136

Tested by WS  
 Date tested 27/09/18  
 Checked by JHF

Client WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)  
 Project FLORIAN ESTATE - STAGE 1  
 Location BALLARAT

**Feature** EARTHWORKS                      *Layer thickness* 200 mm                      *Time:* 08:00

*Test procedure AS 1289.2.1.1 & 5.8.1*

Test No		1	2	3	-	-	-
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>	2.06	2.06	2.06	-	-	-
Field moisture content	%	13.1	13.3	13.9	-	-	-

*Test procedure AS 1289.5.7.1*

Test No		1	2	3	-	-	-
Compactive effort		Standard					
Oversize rock retained on sieve	mm	19.0	19.0	19.0	-	-	-
Percent of oversize material	wet	2	3	2	-	-	-
Peak Converted Wet Density	t/m <sup>3</sup>	2.15	2.16	2.15	-	-	-
Adjusted Peak Converted Wet Density	t/m <sup>3</sup>	2.16	-	2.15	-	-	-
Optimum Moisture Content	%	12.0	13.0	13.0	-	-	-

Moisture Variation From Optimum Moisture Content	1.0% wet	0.5% wet	1.0% wet	-	-	-
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<b>Density Ratio ( R<sub>HD</sub> )</b>	<b>%</b>	<b>95.5</b>	<b>95.5</b>	<b>96.0</b>	<b>-</b>	<b>-</b>	<b>-</b>
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*Material description*

No 1 - 3 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 18607  
 Report No 18607/R002  
 Date Issued 09/01/2019

**CIVIL GEOTECHNICAL SERVICES**

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	WS
Project	FLORIAN ESTATE - STAGE 1	Date tested	04/10/18
Location	BONSHAW	Checked by	JHF

<b>Feature</b>	EARTHWORKS	Layer thickness	200 mm	Time: 08:15
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	4	5	6	7	8	9
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>	2.06	2.11	2.35	2.32	2.08	2.02
Field moisture content <i>%</i>	16.2	16.7	19.8	18.2	18.3	19.8

Test procedure AS 1289.5.7.1

Test No	4	5	6	7	8	9
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>	2.11	2.15	2.41	2.40	2.15	2.10
Adjusted Peak Converted Wet Density <i>t/m<sup>3</sup></i>	-	-	-	-	-	-
Optimum Moisture Content <i>%</i>	18.0	19.0	21.5	20.5	20.5	22.5

Moisture Variation From Optimum Moisture Content	1.5% dry	2.0% dry	1.5% dry	2.0% dry	2.0% dry	2.5% dry
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<b>Density Ratio ( <math>R_{HD}</math> )</b>	<b>%</b>	<b>97.5</b>	<b>98.0</b>	<b>97.5</b>	<b>96.5</b>	<b>96.5</b>	<b>96.0</b>
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Material description

No 4 - 9 Clay Fill
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AVRLOT HILF V1.10 MAR 13



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## COMPACTION ASSESSMENT

Job No 18607  
 Report No 18607/R003  
 Date Issued 18/01/2019

**CIVIL GEOTECHNICAL SERVICES**

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	WS
Project	FLORIAN ESTATE - STAGE 1	Date tested	04/10/18
Location	BONSHAW	Checked by	JHF

<b>Feature</b>	EARTHWORKS	Layer thickness	200 mm	Time: 08:15
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	10	11	-	-	-	-
Location	REFER TO FIGURE 1	REFER TO FIGURE 1				
Approximate depth below FSL						
Measurement depth <i>mm</i>	175	175	-	-	-	-
Field wet density <i>t/m<sup>3</sup></i>	1.91	1.92	-	-	-	-
Field moisture content <i>%</i>	15.0	13.3	-	-	-	-

Test procedure AS 1289.5.7.1

Test No	10	11	-	-	-	-
Compactive effort	Standard					
Oversize rock retained on sieve <i>mm</i>	19.0	19.0	-	-	-	-
Percent of oversize material <i>wet</i>	0	0	-	-	-	-
Peak Converted Wet Density <i>t/m<sup>3</sup></i>	1.95	2.00	-	-	-	-
Adjusted Peak Converted Wet Density <i>t/m<sup>3</sup></i>	-	-	-	-	-	-
Optimum Moisture Content <i>%</i>	17.0	15.5	-	-	-	-

Moisture Variation From Optimum Moisture Content	2.0% dry	2.0% dry	-	-	-	-
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<b>Density Ratio ( R<sub>HD</sub> )</b>	<b>%</b>	<b>98.0</b>	<b>96.0</b>	-	-	-
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Material description

No 10 - 11 Clay Fill
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AVRLOT HILF V1.10 MAR 13



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## COMPACTION ASSESSMENT

Job No 18607  
 Report No 18607/R004  
 Date Issued 18/01/2019

**CIVIL GEOTECHNICAL SERVICES**

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	WS
Project	FLORIAN ESTATE - STAGE 1	Date tested	04/10/18
Location	BONSHAW	Checked by	JHF

<b>Feature</b>	EARTHWORKS	Layer thickness	200 mm	Time: 08:15
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	12	13	14	-	-	-
Location	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1			
Approximate depth below FSL						
Measurement depth <i>mm</i>	175	175	175	-	-	-
Field wet density <i>t/m<sup>3</sup></i>	1.98	1.96	1.95	-	-	-
Field moisture content <i>%</i>	24.9	23.2	28.9	-	-	-

Test procedure AS 1289.5.7.1

Test No	12	13	14	-	-	-
Compactive effort	Standard					
Oversize rock retained on sieve <i>mm</i>	19.0	19.0	19.0	-	-	-
Percent of oversize material <i>wet</i>	2	1	5	-	-	-
Peak Converted Wet Density <i>t/m<sup>3</sup></i>	1.95	1.96	1.92	-	-	-
Adjusted Peak Converted Wet Density <i>t/m<sup>3</sup></i>	2.00	1.98	2.02	-	-	-
Optimum Moisture Content <i>%</i>	23.0	22.0	26.5	-	-	-

Moisture Variation From Optimum Moisture Content	2.0% wet	1.5% wet	2.5% wet	-	-	-
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<b>Density Ratio ( <math>R_{HD}</math> )</b>	<b>99.0</b>	<b>99.0</b>	<b>96.5</b>	-	-	-
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Material description

No 12 - 14 Clay Fill
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