

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

16<sup>th</sup> December 2015

Our Reference: 15593:DK105

Winslow Constructors Pty Ltd 50 Barry Road CAMPBELLFIELD VIC 3061

Dear Sirs,

### RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING ARMSTRONG (STAGE 17) – MOUNT DUNEED

Please find attached our Report Nos 15593/R001 to 15593/R007 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 early October 2014 and was completed in mid November 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.

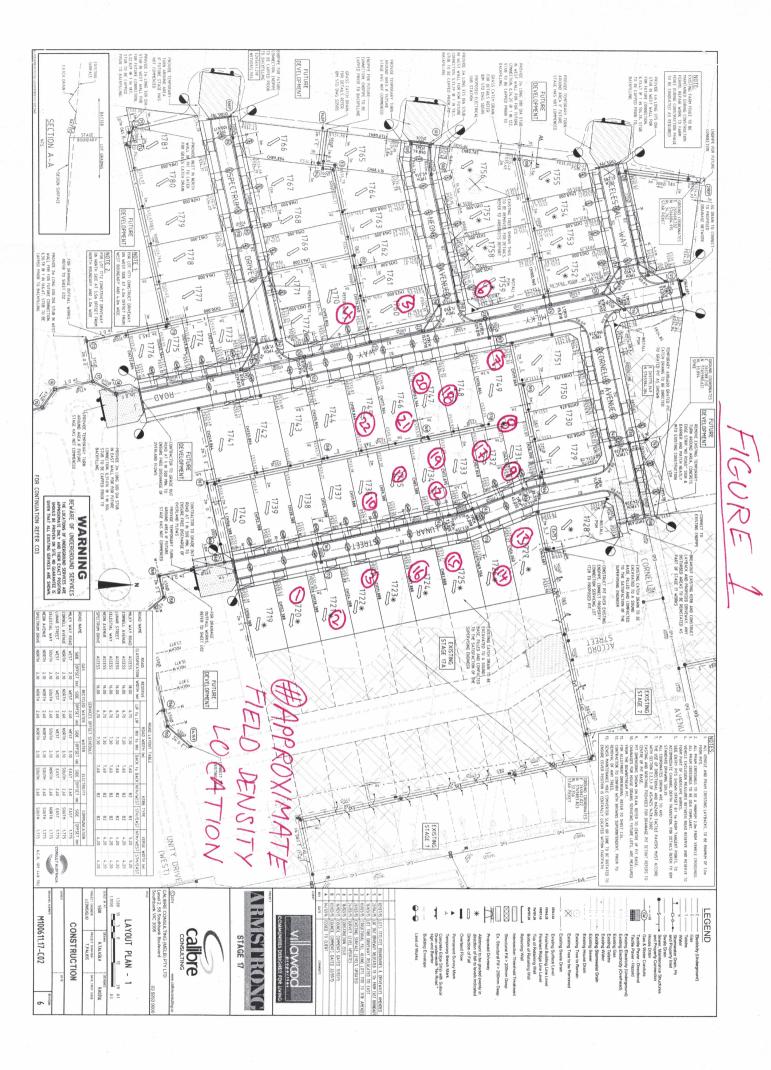
The site inspections and testing was performed by an experienced geotechnician from this office. Any areas that were deemed unsatisfactory were reworked and retested under their supervision. The testing was performed to the relevant Australian Standards and the accompanying test reports carry NATA endorsement. 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 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** 

Dino Kondzic





GE 17 <i>Laye</i> <b>1</b> CEFER TO GURE 1 175 1.94 14.4 1 1 19.0	er thickness 2 REFER TO FIGURE 1 175 2.05 14.1 2	200 3 REFER TO FIGURE 1 175 2.00 14.5 3	Ci	ate tested hecked by Time	05/09/14 JHF 2: 12:07 - - - -
<b>1</b> EFER TO GURE 1 175 1.94 14.4	<b>2</b> REFER TO FIGURE 1 175 2.05 14.1	<b>3</b> REFER TO FIGURE 1 175 2.00 14.5		-	-
<b>1</b> EFER TO GURE 1 175 1.94 14.4	<b>2</b> REFER TO FIGURE 1 175 2.05 14.1	<b>3</b> REFER TO FIGURE 1 175 2.00 14.5		-	-
EFER TO GURE 1 175 1.94 14.4	REFER TO FIGURE 1 175 2.05 14.1	REFER TO FIGURE 1 175 2.00 14.5	-		
EFER TO GURE 1 175 1.94 14.4	REFER TO FIGURE 1 175 2.05 14.1	REFER TO FIGURE 1 175 2.00 14.5	-		
TO GURE 1 175 1.94 14.4	TO FIGURE 1 175 2.05 14.1	TO FIGURE 1 175 2.00 14.5	-		_
1.94 14.4 1	2.05 14.1	2.00 14.5	-	- - -	_
1.94 14.4 1	2.05 14.1	2.00 14.5	-	-	_
14.4	14.1	14.5		-	-
1			-	-	-
19.0		Stand	-	-	-
	19.0	19.0	-	-	-
0	2	3	-	-	-
1.97			-	-	-
-		2.03	-	-	-
17.0	16.5	17.0	-	-	-
2.5%	2.5%	2.5%	-	-	- 1
dry	dry	dry			
98.5	101.5	98.0	-	-	- 1
	1.97 - 17.0 2.5% dry	1.97     2.02       -     2.02       17.0     16.5       2.5%     2.5%       dry     dry	1.97       2.02       2.03         -       2.02       2.03         17.0       16.5       17.0         2.5%       2.5%       2.5%         dry       dry       dry	1.97       2.02       2.03       -         -       2.02       2.03       -         17.0       16.5       17.0       -         2.5%       2.5%       2.5%       -         dry       dry       dry       -	1.97       2.02       2.03       -       -         -       2.02       2.03       -       -         17.0       16.5       17.0       -       -         2.5%       2.5%       2.5%       -       -         dry       dry       dry       -       -

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CIVIL GEOTECHNICAL SERVICES 6 - 8 Rose Avenue, Croydon 3136 Client WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)							Job No Report No Date Issued Tested by	15593 15593/R00 30/09/14 DK	
Project Location	ARMSTRONG, MT DUNI MOUNT DUNEED	•			Date tested Checked by	11/09/14 JHF			
Feature	EARTHWORKS		Lay	er thickness	200	mm	Time	e: 09:45	
Test proce	dure AS 1289.2.1.1 & 5.8.	.1							
Test No			4	5	6	-	-	-	
Location			REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1				
	e depth below FSL				175				
Measureme		mm	175	175	175	-	-	-	
Field wet de Field moistu	· · ·	t/m³ %	2.06 19.4	2.03 20.7	1.97 14.5	-		-	
Test proce Test No Compactive	dure AS 1289.5.7.1		4	5	6 Stan	- dard	-	-	
	ck retained on sieve	mm	19.0	19.0	19.0	-	-	-	
	oversize material	wet	0	1	0	-	-	-	
Peak Conve	erted Wet Density	t∕m³	2.04	2.04	1.97	-	-	-	
Adjusted Pe	ak Converted Wet Density	t∕m³	-	2.05	-	-	-	-	
Optimum Me	oisture Content	%	19.0	20.5	17.0	-	-	-	
	sture Variation From		0.0%	0.0%	2.5%	-	-	-	
-	num Moisture Content	0/	101.0	99.0	dry 100.0				
Density Ra		%	101.0	99.0	100.0	-	-	-	
<i>Material des</i> No 4 - 6									

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VIL GEOTECHNICAL SERVICES 8 Rose Avenue, Croydon 3136 Client WINSLOW CONSTRUC	PTY LTD (CA			Job No Report No Date Issued Tested by	15593 15593/R00 24/11/14 DK		
Project ARMSTRONG, MT DUN Location MOUNT DUNEED		•			Date tested Checked by	15/09/14 JHF	
Feature EARTHWORKS		Lay	er thickness	200	mm	Time	ə: 10:04
Test procedure AS 1289.2.1.1 & 5.8	3.1						
Test No		7	8	9	-	-	-
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 Field moisture content	<u>t/m³</u> %	1.96 14.4	2.03 15.5	1.96 16.5	-	-	-
Test procedure AS 1289.5.7.1 Test No Compactive effort		7	8	9 Stan	-	-	-
Oversize rock retained on sieve	тт	19.0	19.0	19.0	-	-	-
Percent of oversize material	wet	2	0	0	-	-	-
Peak Converted Wet Density	t∕m³	1.99	1.96	1.99	-	-	-
Adjusted Peak Converted Wet Density	t∕m³	1.99	-	-	-	-	-
Optimum Moisture Content	%	16.5	18.5	19.0	-	-	-
Moisture Variation From Optimum Moisture Content		2.5% dry	2.5% dry	2.5% dry	-	-	-
Density Ratio(R <sub>HD</sub> )	%	98.5	103.5	98.5	-	-	-
Material description No 7 - 9 Clay Fill							• 
The results of the tests, calibrations and/or measurements included in	/	<u> </u>				AV	RLOT HILF V1.10 M

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8 Rose Avenı Client	CHNICAL SERVICES ue, Croydon 3136 WINSLOW CONSTRUC		MPBELLFIE	Job No Report No Date Issued Tested by	15593 15593/R00 11/12/14 DK			
Project Location	ARMSTRONG, MT DUN MOUNT DUNEED	EED - S	STAGE 17			Date tested Checked by	16/09/14 JHF	
Feature	EARTHWORKS		Lay	er thickness	200 m	nm	Tim	e: 11:15
Test proced	dure AS 1289.2.1.1 & 5.8	1						
Test No			10	11	12	-	-	-
			10			-		
Location			REFER	REFER	REFER			
			TO	TO	TO			
			FIGURE 1	FIGURE 1	FIGURE 1			
			FIGURE I	FIGURE I	FIGURE I			
A	denth helen 501				<b>_</b>			
	depth below FSL		475	475	475			
Measuremer	-	mm	175	175	175	-	-	-
Field wet der Field moistur		t/m³ %	2.02 15.9	2.01 14.8	2.02 14.7	-	-	-
Test No	dure AS 1289.5.7.1		10	11	12	-	-	-
Compactive			10.0	40.0	Stand			<u> </u>
	k retained on sieve	mm	19.0	19.0	19.0	-	-	-
	versize material	wet	1	0	0	-	-	-
Peak Conve	rted Wet Density ak Converted Wet Density	t/m³ t/m³	2.02 2.02	1.99 1.99	1.98 1.98	-	-	-
	ak Convened vver Densilv	VIIIS	Z.UZ	1.99	1.90	-	-	
Adjusted Pea								-
Adjusted Pea	visture Content	%	18.5	17.5	17.0	-	-	-
Adjusted Pea Optimum Mo	isture Content		18.5	17.5	17.0	-	-	
Adjusted Pea Optimum Mo Mois	isture Content		18.5 2.5%	17.5 2.5%	17.0 2.5%	-	-	
Adjusted Pea Optimum Mo Mois	isture Content		18.5	17.5	17.0	-	-	



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	HNICAL SERVICES He, Croydon 3136 WINSLOW CONSTRUC	TORS			( <u>D</u> )		Job No Report No Date Issued Tested by	15593 15593/R00 27/11/14 DK
Project Location	ARMSTRONG, MT DUN MOUNT DUNEED				I	Date tested Checked by	05/11/14 JHF	
Feature	EARTHWORKS		Lay	er thickness	200	mm	Time	: 11:30
Test proced	lure AS 1289.2.1.1 & 5.8	2.1						
Test No			13	14	15	16	-	-
Location			REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE		
	depth below FSL							
Measuremen	-	mm	175	175	175	175	-	-
Field wet den Field moistur		<u>t/m³</u> %	1.97 17.8	1.99 18.7	1.93 16.0	1.95 15.6	-	-
Test proced Test No Compactive e	lure AS 1289.5.7.1		13	14	15 Stan	16 dard	-	-
Oversize rock	k retained on sieve	mm	19.0	19.0	19.0	19.0	-	-
Percent of ov	versize material	wet	0	0	0	2	-	-
	ted Wet Density	t∕m³	2.00	2.03	1.97	1.98	-	-
	ak Converted Wet Density	t∕m³	-	-	-	1.99	-	-
Optimum Moi	isture Content	%	18.0	18.0	18.0	18.0	-	-
	ture Variation From um Moisture Content		0.0%	0.5% wet	2.0% dry	2.5% dry	-	-
	io (R <sub>HD</sub> )	%	99.0	98.0	98.0	98.0	-	- 1

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, Croydon 3136 WINSLOW CONSTRUC ARMSTRONG, MT DUNE		MPBELLFIE		Job No Report No Date Issued Tested by Date tested	15593 15593/R00 27/11/14 DK 06/11/14		
MOUNT DUNEED						Checked by	JHF
EARTHWORKS		Lay	er thickness	200 n	nm	Time	e: 09:42
ıre AS 1289.2.1.1 & 5.8.	1						
		17	18	19	-	-	-
		REFER	REFER	REFER			
		то	то	то			
		FIGURE 1	FIGURE 1	FIGURE 1			
		475	475	475			
-			-				-
	-						-
content	%	19.5	16.7	17.2	-	-	-
ıre AS 1289.5.7.1							
		17	18	19	-	-	-
ffort					ard		
retained on sieve	mm	19.0	19.0	19.0	-	-	-
ersize material	wet	0	1	0	-	-	-
	t∕m³	2.02	2.00	2.04	-	-	-
-		-		-	-	-	-
	%	20.0	19.0	18.0	-	-	-
	,,,						
ura Variation From		0.50/	2.00/	1 00/			
					-	-	-
		ury	ury	ury			
		98.0	99.0	99.5	-		
	EARTHWORKS Ire AS 1289.2.1.1 & 5.8. Hepth below FSL depth sity content Ire AS 1289.5.7.1 ffort retained on sieve	EARTHWORKS	EARTHWORKS       Layer         Inter AS 1289.2.1.1 & 5.8.1         Inter AS 1289.2.1.1 & 5.8.1       IT         REFER       TO         TO       FIGURE 1         Inter AS 1289.5.7.1       Inter AS 1289.5.7.1         Inter AS 1289.5.7.1       Inter AS 1289.5.7.1	EARTHWORKS         Layer thickness           ure AS 1289.2.1.1 & 5.8.1         17         18           REFER TO FIGURE 1         REFER TO FIGURE 1         REFER TO FIGURE 1         REFER TO FIGURE 1           depth below FSL depth         175         175           depth         mm         175         175           sity         t/m³         1.98         1.99           content         %         19.5         16.7           ure AS 1289.5.7.1         17         18           ffort         17         18           retained on sieve         mm         19.0         19.0           orsize material         wet         0         1           ad Wet Density         t/m³         2.02         2.00           ac Converted Wet Density         t/m³         -         2.02           ature Content         %         20.0         19.0	EARTHWORKS         Layer thickness         200 m           ure AS 1289.2.1.1 & 5.8.1         17         18         19           REFER         REFER         REFER         TO           FIGURE 1         FIGURE 1         FIGURE 1         FIGURE 1           depth         mm         175         175         175           depth         mm         175         175         175           sity         t/m³         1.98         1.99         2.03           content         %         19.5         16.7         17.2           ure AS 1289.5.7.1         17         18         19         10           ffort         Stand         Stand         10         10           exize material         wet         0         1         0         10           exize material         wet         0         1         0         18.0         18.0	EARTHWORKS         Layer thickness         200 mm           Irre AS 1289.2.1.1 & 5.8.1         17         18         19         -           REFER         REFER         REFER         REFER         TO           FIGURE 1         FIGURE 1         FIGURE 1         FIGURE 1         FIGURE 1           depth         mm         175         175         -           depth         mm         175         175         -           content         %         19.5         16.7         17.2         -           tre AS 1289.5.7.1         17         18         19         -           ffort         Standard         retained on sieve         mm         19.0         19.0         -           ed Wet Density         t/m³         -         2.02         -         -           ed Wet Density         t/m³         -         2.02         -         -           ure Variation From         0.5%         2.0%         1.0%         -	EARTHWORKS         Layer thickness         200 mm         Time           ITE AS 1289.2.1.1 & 5.8.1         17         18         19         -           REFER         REFER         REFER         TO         -           ITE AS 1289.2.1.1 & 5.8.1         17         18         19         -           ITE AS 1289.2.1.1 & 5.8.1         ITE         REFER         REFER         TO         -           ITE AS 1289.2.1.1 & 5.8.1         ITE         ITE         -         -         -           ITE AS 1289.2.1.1 & 5.8.1         ITE         ITE         -         -         -         -           Itepth below FSL         ITE         ITE         ITE         -

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8 Rose Avenu Client	CHNICAL SERVICES le, Croydon 3136 WINSLOW CONSTRUC			MPBELLFIE		Job No Report No Date Issued Tested by	15593 15593/R00 27/11/14 SC	
Project Location	ARMSTRONG, MT DUNI MOUNT DUNEED	3ED - S	STAGE 17			Date tested Checked by	10/11/14 JHF	
Feature	EARTHWORKS		Lay	er thickness	200	mm	Time	e: 10:00
Test proced	dure AS 1289.2.1.1 & 5.8.	.1						
Test No			20	21	22	-	-	-
Location			REFER TO FIGURE 1	REFER TO FIGURE 1	REFER TO FIGURE 1			
	depth below FSL		175	475	175			
Measuremer		mm t/m³	2.01	175 2.10	2.01	-	-	-
Field wet der Field moistur		<u>////s</u> %	12.6	13.4	11.8	-		-
Test No Compactive	dure AS 1289.5.7.1		20	21	22 Stan	- dard	-	-
	k retained on sieve	тт	19.0	19.0	19.0	-	-	-
Percent of or	versize material	wet	0	0	0	-	-	-
Peak Conve	rted Wet Density	t∕m³	2.00	2.08	2.02	-	-	-
Adjusted Pea	ak Converted Wet Density	t∕m³	-	2.09	2.03	-	-	-
Optimum Mo	isture Content	%	14.5	16.0	14.0	-	-	-
			2.0%	2.5%	2.5%		-	-
	ture Variation From							
Mois	ture Variation From num Moisture Content		dry	dry	dry			

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( Approved Signatory : Justin Fry