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

10th October 2018

Our Reference: 18207:NB294

Winslow Constructors Pty Ltd
50 Barry Road
CAMPBELLFIELD VIC 3061

Dear Sirs/Madams,

RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING
ARMSTRONG ESTATE – STAGE 39 (MOUNT DUNEED)

Please find attached our Report No's 18207/R001 to 18207/R009 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 March 2018 and was completed in April 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).

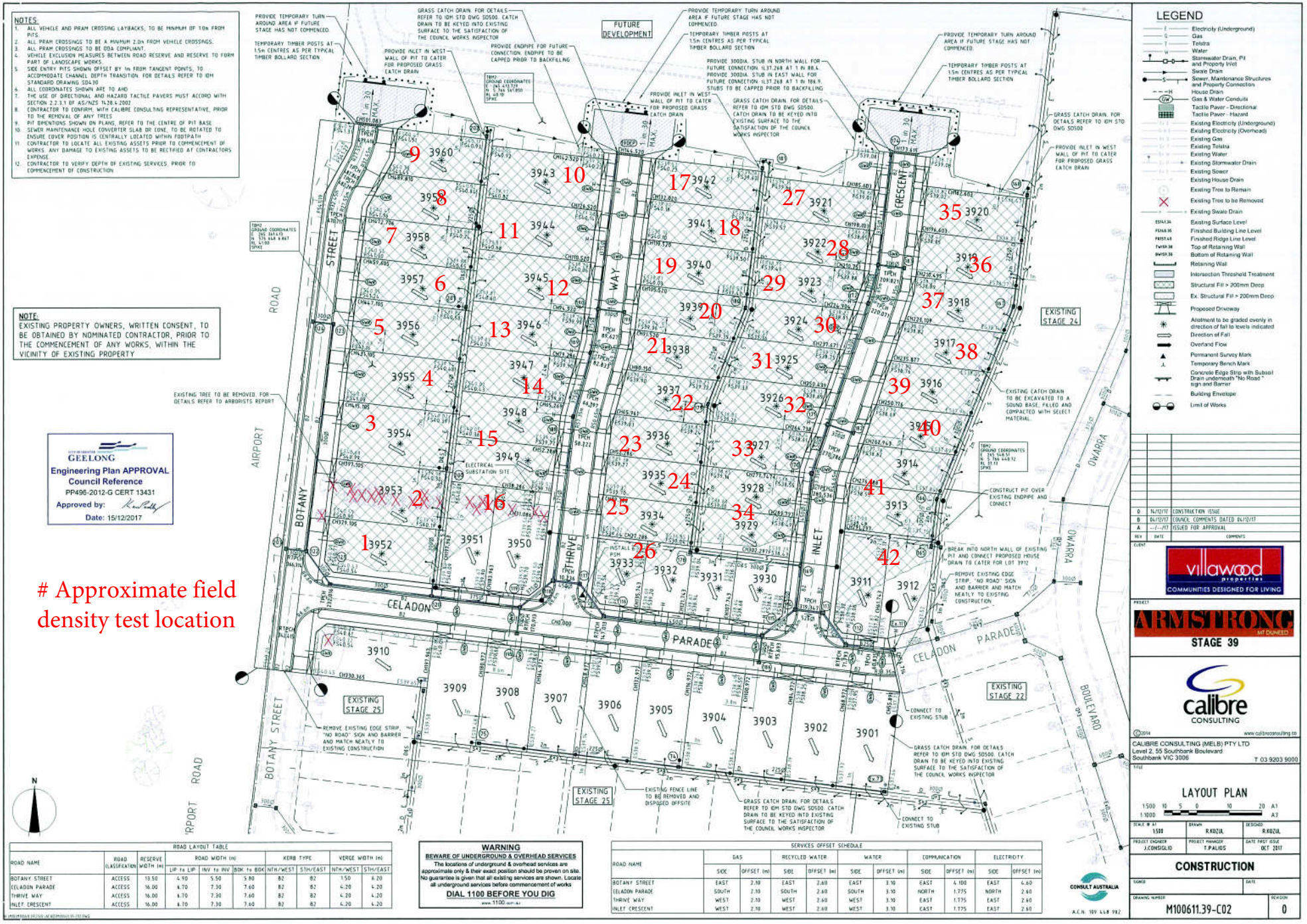
We are of the view that the bulk fill materials that have been placed across the reported allotments by Winslow Constructors during the aforementioned period can be considered as having been placed in a controlled manner to a minimum density ratio of 95% (standard compactive effort).

Please contact the undersigned if you require any additional information.

Civil Geotechnical Services

Nick Brock

FIGURE 1



Approximate field density test location

ROAD LAYOUT TABLE

ROAD NAME	ROAD CLASSIFICATION	RESERVE WIDTH (m)	ROAD WIDTH (m)			KERB TYPE		VERGE WIDTH (m)	
			LIP to LIP	INV to INV	BOK to BOK	NTH/WEST	STH/EAST	NTH/WEST	STH/EAST
BOTANY STREET	ACCESS	19.50	4.90	5.50	5.80	B2	B2	1.50	6.20
CELADON PARADE	ACCESS	16.00	6.70	7.30	7.60	B2	B2	4.20	4.20
THRIVE WAY	ACCESS	16.00	6.70	7.30	7.60	B2	B2	4.20	4.20
INLET CRESCENT	ACCESS	16.00	6.70	7.30	7.60	B2	B2	4.20	4.20

WARNING
BEWARE OF UNDERGROUND & OVERHEAD SERVICES
The locations of underground & overhead services are approximate only & their exact position should be proven on site. No guarantee is given that all existing services are shown. Locate all underground services before commencement of works
DIAL 1100 BEFORE YOU DIG
www.1100.com.au

SERVICES OFFSET SCHEDULE

ROAD NAME	GAS		RECYCLED WATER		WATER		COMMUNICATION		ELECTRICITY	
	SIDE	OFFSET (m)	SIDE	OFFSET (m)	SIDE	OFFSET (m)	SIDE	OFFSET (m)	SIDE	OFFSET (m)
BOTANY STREET	EAST	2.10	EAST	2.60	EAST	3.10	EAST	4.100	EAST	4.60
CELADON PARADE	SOUTH	2.10	SOUTH	2.60	SOUTH	3.10	NORTH	1.775	NORTH	2.60
THRIVE WAY	WEST	2.10	WEST	2.60	WEST	3.10	EAST	1.775	EAST	2.60
INLET CRESCENT	WEST	2.10	WEST	2.60	WEST	3.10	EAST	1.775	EAST	2.60

COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	18207
		Report No	18207/R001
		Date Issued	13/07/2018
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	CGS
Project	ARMSTRONG - STAGE 39	*Date tested*	26/03/18
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **EARTHWORKS** *Layer thickness* 200 mm *Time:* 14:46

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/m³*	1.85	1.87	1.87	-	-	-
Field moisture content	*%*	18.7	22.7	21.2	-	-	-

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*	0	0	0	-	-	-
Peak Converted Wet Density	*t/m³*	1.88	1.91	1.90	-	-	-
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	18.5	23.5	21.5	-	-	-

Moisture Variation From Optimum Moisture Content		0.0%	0.5% dry	0.5% dry	-	-	-

Density Ratio (R_{HD})	***%***	**98.5**	**98.0**	**98.0**	**-**	**-**	**-**

Material description

No 1 - 3 Clay Fill

NATA ACCREDITED FOR TECHNICAL COMPETENCE

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Accreditation No 9909

Approved Signatory : Justin Fry

COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	18207
		Report No	18207/R002
		Date Issued	10/10/2018
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	CGS
Project	ARMSTRONG - STAGE 39	*Date tested*	27/03/18
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **EARTHWORKS** *Layer thickness* 200 mm *Time:* 15:11

Test procedure 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			
Approximate depth below FSL							
Measurement depth	*mm*	175	175	175	-	-	-
Field wet density	*t/m³*	1.83	1.78	1.75	-	-	-
Field moisture content	*%*	17.9	18.9	16.8	-	-	-

Test procedure AS 1289.5.7.1

Test No		4	5	6	-	-	-
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/m³*	1.88	1.84	1.74	-	-	-
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	20.0	21.0	19.0	-	-	-

Moisture Variation From Optimum Moisture Content		2.0% dry	2.0% dry	2.5% dry	-	-	-

Density Ratio (R_{HD})	***%***	**97.0**	**97.0**	**100.5**	**-**	**-**	**-**

Material description

No 4 - 6 Clay Fill

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COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	18207
		Report No	18207/R003
		Date Issued	16/07/2018
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	CGS
Project	ARMSTRONG - STAGE 39	*Date tested*	28/03/18
Location	MOUNT DUNEED	*Checked by*	JHF

Feature	**EARTHWORKS**	*Layer thickness*	200 mm	*Time:*	15:31

Test procedure AS 1289.2.1.1 & 5.8.1

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	*t/m³*	1.87	1.90	1.91	-	-	-
Field moisture content	*%*	17.6	18.2	17.8	-	-	-

Test procedure AS 1289.5.7.1

Test No		7	8	9	-	-	-
Compactive effort		Standard					
Oversize rock retained on sieve	*mm*	19.0	19.0	19.0	-	-	-
Percent of oversize material	*wet*	1	0	1	-	-	-
Peak Converted Wet Density	*t/m³*	1.97	1.92	1.99	-	-	-
Adjusted Peak Converted Wet Density	*t/m³*	1.97	-	1.99	-	-	-
Optimum Moisture Content	*%*	19.5	20.5	19.0	-	-	-

Moisture Variation From Optimum Moisture Content		2.0% dry	2.0% dry	1.0% dry	-	-	-

Density Ratio (R_{HD})	***%***	**95.0**	**99.0**	**96.0**	**-**	**-**	**-**

Material description

No 7 - 9 Clay Fill

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COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	18207
		Report No	18207/R004
		Date Issued	06/08/2018
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	CGS
Project	ARMSTRONG - STAGE 39	*Date tested*	29/03/18
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **EARTHWORKS** *Layer thickness* 200 mm *Time:* 17:18

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		**10**	**11**	**12**	**13**	**14**	**15**
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	175
Field wet density	*t/m³*	1.93	2.02	1.90	1.91	1.94	1.90
Field moisture content	*%*	18.6	14.8	18.1	19.3	17.7	18.4

Test procedure AS 1289.5.7.1

Test No		10	11	12	13	14	15
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/m³*	2.01	2.10	1.99	1.98	2.00	1.99
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	19.0	17.5	20.5	19.5	17.5	21.0

Moisture Variation From Optimum Moisture Content		0.0%	2.5% dry	2.5% dry	0.0%	0.0%	2.5% dry
Density Ratio (R_{HD})	*%*	**96.5**	**96.5**	**95.5**	**96.0**	**97.0**	**95.5**

Material description

No 10 - 15 Clay Fill

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COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	18207
		Report No	18207/R005
		Date Issued	10/08/2018
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	CGS
Project	ARMSTRONG - STAGE 39	*Date tested*	29/03/18
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **EARTHWORKS** *Layer thickness* 200 mm *Time:* 17:19

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		**16**	**17**	**18**	**19**	**20**	**21**
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	175
Field wet density	*t/m³*	1.82	1.77	2.03	1.87	1.89	1.77
Field moisture content	*%*	22.4	23.2	24.2	23.9	21.3	19.6

Test procedure AS 1289.5.7.1

Test No		16	17	18	19	20	21
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/m³*	1.91	1.80	2.10	1.90	1.90	1.81
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	25.0	25.5	27.5	26.0	24.0	21.5

Moisture Variation From Optimum Moisture Content		2.5% dry	2.5% dry	2.5% dry	2.0% dry	2.5% dry	2.0% dry
Density Ratio (R_{HD})	*%*	**95.5**	**98.0**	**96.5**	**98.5**	**99.5**	**98.0**

Material description

No 16 - 21 Clay Fill

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COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	18207
		Report No	18207/R006
		Date Issued	21/08/2018
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	CGS
Project	ARMSTRONG - STAGE 39	*Date tested*	29/03/18
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **EARTHWORKS** *Layer thickness* 200 mm *Time:* 17:20

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		**22**	**23**	**24**	**25**	**26**	**27**
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	175
Field wet density	*t/m³*	1.98	1.88	1.81	1.75	1.98	1.90
Field moisture content	*%*	14.2	18.2	17.6	18.2	18.3	17.8

Test procedure AS 1289.5.7.1

Test No		22	23	24	25	26	27
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/m³*	2.00	1.90	1.80	1.80	2.00	1.90
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	16.0	20.5	19.5	20.5	21.0	20.5

Moisture Variation From Optimum Moisture Content		2.0% dry	2.0% dry	2.0% dry	2.0% dry	2.5% dry	2.5% dry
Density Ratio (R_{HD})	*%*	**99.0**	**98.5**	**100.5**	**97.0**	**99.0**	**100.0**

Material description

No 22 - 27 Clay Fill

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COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	18207
		Report No	18207/R007
		Date Issued	13/08/2018
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	CGS
Project	ARMSTRONG - STAGE 39	*Date tested*	29/03/18
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **EARTHWORKS** *Layer thickness* 200 mm *Time:* 17:27

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		**28**	**29**	**30**	**31**	**32**	**33**
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	175
Field wet density	*t/m³*	1.83	1.87	2.00	1.84	1.84	1.86
Field moisture content	*%*	23.7	20.7	23.6	26.7	21.7	20.2

Test procedure AS 1289.5.7.1

Test No		28	29	30	31	32	33
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/m³*	1.91	1.90	2.00	1.91	1.90	1.91
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	21.5	19.0	21.0	26.5	22.0	22.5

Moisture Variation From Optimum Moisture Content		2.5% wet	2.0% wet	2.5% wet	0.0%	0.0%	2.0% dry

Density Ratio (R_{HD})	***%***	**96.0**	**98.0**	**99.5**	**96.5**	**97.0**	**97.0**

Material description

No 28 - 33 Clay Fill

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COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	18207
		Report No	18207/R008
		Date Issued	15/08/2018
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	CGS
Project	ARMSTRONG - STAGE 39	*Date tested*	03/04/18
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **EARTHWORKS** *Layer thickness* 200 mm *Time:* 15:06

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		**34**	**35**	**36**	**-**	**-**	**-**
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/m³*	1.97	1.99	1.90	-	-	-
Field moisture content	*%*	23.2	20.8	27.0	-	-	-

Test procedure AS 1289.5.7.1

Test No		34	35	36	-	-	-
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/m³*	2.00	2.00	1.90	-	-	-
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	26.0	23.5	29.5	-	-	-

Moisture Variation From Optimum Moisture Content		2.5% dry	2.5% dry	2.0% dry	-	-	-

Density Ratio (R_{HD})	***%***	**98.5**	**99.5**	**100.0**	**-**	**-**	**-**

Material description

No 34 - 36 Clay Fill

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COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	18207
		Report No	18207/R009
		Date Issued	21/08/2018
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	CGS
Project	ARMSTRONG - STAGE 39	*Date tested*	05/04/18
Location	MOUNT DUNEED	*Checked by*	JHF

Feature	**EARTHWORKS**	*Layer thickness*	200 mm	*Time:*	11:32

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		**37**	**38**	**39**	**40**	**41**	**42**
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	175
Field wet density	*t/m³*	1.90	1.95	1.87	1.88	1.88	1.88
Field moisture content	*%*	17.0	18.0	17.7	19.8	19.4	18.3

Test procedure AS 1289.5.7.1

Test No		37	38	39	40	41	42
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/m³*	1.91	2.00	1.90	1.90	1.90	1.90
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	19.0	20.5	19.5	19.5	19.5	18.0

Moisture Variation From Optimum Moisture Content		2.0% dry	2.5% dry	2.0% dry	0.0%	0.0%	0.5% wet
Density Ratio (R_{HD})	*%*	**99.5**	**97.5**	**98.0**	**98.5**	**98.5**	**99.0**

Material description

No 37 - 42 Clay Fill

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