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

21st September 2023

Our Reference: 21874:NB1670

Winslow Constructors Pty Ltd
50 Barry Road
CAMPBELLFIELD VIC 3061

Dear Sirs/Madams,

RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING
ARMSTRONG - STAGE 68 (MOUNT DUNEED)

Please find attached our Report No's 21874/R001 to 21874/R007 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 December 2021 and was completed in September 2023.

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).

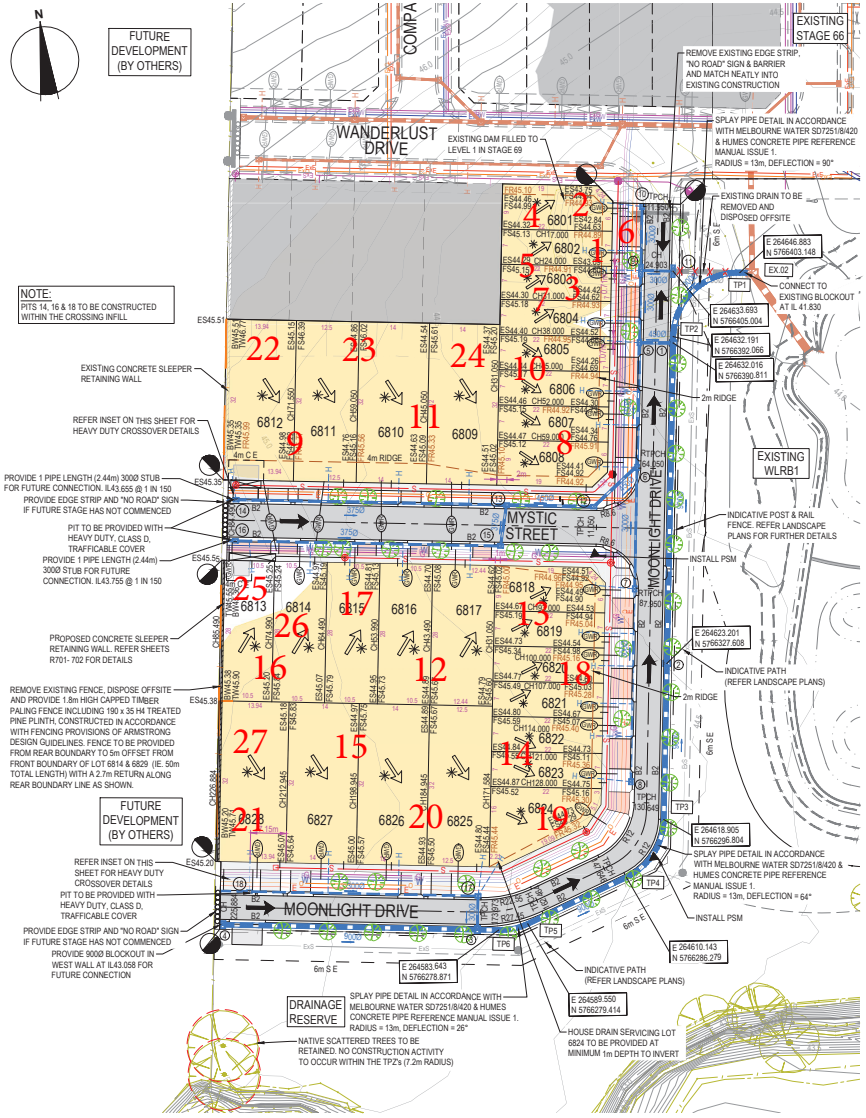
We are of the view that the bulk fill materials that have been placed across the reported allotments by Winslow Constructors during the aforementioned period can be considered as having been placed in a controlled manner to a minimum density ratio of 95% (standard compactive effort).

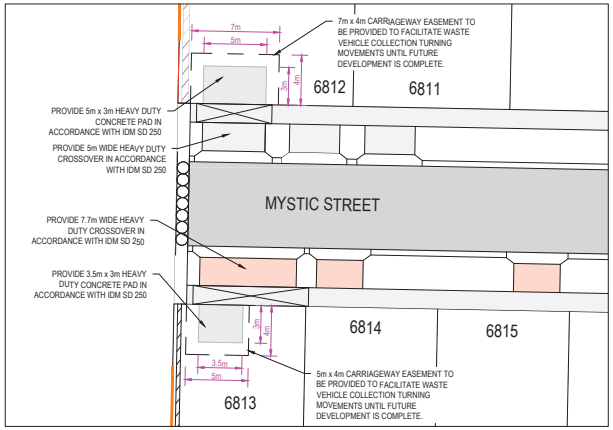
Please contact the undersigned if you require any additional information.

Civil Geotechnical Services

Nick Brock

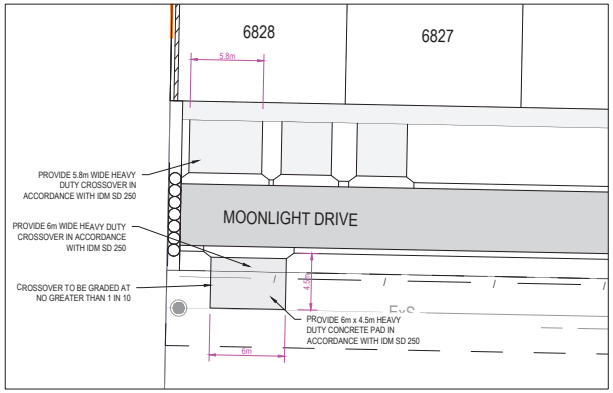
FIGURE 1





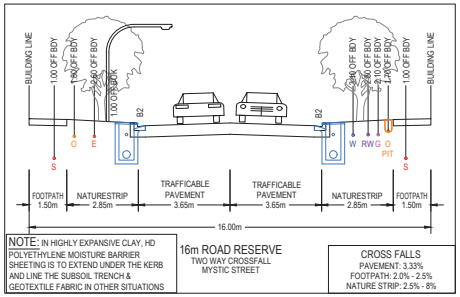
HEAVY DUTY CROSSOVER (MYSTIC STREET)

1:200 1:400 A1 A3



HEAVY DUTY CROSSOVER (MOONLIGHT DRIVE)

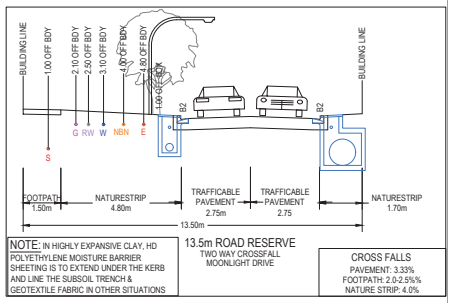
1:200 1:400 A1 A3



NOTE: IN HIGHLY EXPANSIVE CLAY, HD POLYETHYLENE MOISTURE BARRIER SHEETING IS TO EXTEND UNDER THE KERB AND LINE THE SUBSOIL TRENCH & GEOTEXTILE FABRIC IN OTHER SITUATIONS

16m ROAD RESERVE
TWO WAY CROSSFALL
MYSTIC STREET

CROSS FALLS
PAVEMENT: 3.33%
FOOTPATH: 2.0% - 2.5%
NATURE STRIP: 2.5% - 8%



NOTE: IN HIGHLY EXPANSIVE CLAY, HD POLYETHYLENE MOISTURE BARRIER SHEETING IS TO EXTEND UNDER THE KERB AND LINE THE SUBSOIL TRENCH & GEOTEXTILE FABRIC IN OTHER SITUATIONS

13.5m ROAD RESERVE
TWO WAY CROSSFALL
MOONLIGHT DRIVE

CROSS FALLS
PAVEMENT: 3.33%
FOOTPATH: 2.0-2.5%
NATURE STRIP: 4.0%

SERVICES OFFSET SCHEDULE

ROAD NAME	SEWER		GAS		RECYCLED WATER		POTABLE WATER		OPTIC FIBRE		ELECTRICITY		PUBLIC LIGHTING	
	SIDE	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE	OFFSET	SIDE	OFFSET
MYSTIC STREET	S/N	2.10	S	2.10	S	2.55	S	3.00	N	2.10	N	2.60	N	1.00*
MOONLIGHT DRIVE	W/N	2.10	W/N	2.10	W/N	2.55	W/N	3.10	W/N	4.00	W/N	4.80	W/N	1.00*

1. * DENOTES OFFSET FROM BACK OF KERB.

CITY OF GREATER GEELONG TO STAMP HERE UPON APPROVAL

NOTE: STREET TREE LOCATIONS SHOWN ARE INDICATIVE ONLY. ULTIMATE LOCATION IS TO BE PROVIDED/CONFIRMED BY LANDSCAPE ARCHITECTS

NOTES:
1. ALL VEHICLE AND PRAM CROSSING LAYBACKS, TO BE MINIMUM OF 1.0m FROM PITS.
2. ALL PRAM CROSSINGS TO BE A MINIMUM 2.0m FROM VEHICLE CROSSINGS.
3. ALL PRAM CROSSINGS TO BE DDA COMPLIANT.
4. VEHICLE EXCLUSION MEASURES BETWEEN ROAD RESERVE AND RESERVE TO FORM PART OF LANDSCAPE WORKS.
5. THE USE OF DIRECTIONAL AND HAZARD TACTILE PAVERS MUST ACCORD WITH SECTION 2.2.3.1 OF AS/NZS 1428.4:2002
6. SEWER MAINTENANCE HOLE CONVERTER SLAB OR CONE, TO BE ROTATED TO ENSURE COVER POSITION IS CENTRALLY LOCATED WITHIN FOOTPATH
7. CHAINAGES FOR SETOUT OF PROPERTY INLET POINTS, SERVICING FUTURE LOTS, ARE MEASURED FROM THE DOWNSTREAM PIT
8. CONTRACTOR TO LOCATE ALL EXISTING ASSETS PRIOR TO COMMENCEMENT OF WORKS. ANY DAMAGE TO EXISTING ASSETS TO BE RECTIFIED AT CONTRACTORS EXPENSE.
9. CONTRACTOR TO VERIFY DEPTH OF EXISTING SERVICES, PRIOR TO COMMENCEMENT OF CONSTRUCTION
10. LOTS WITH FRONTAGES OF 12.50m OR LESS ARE TO BE PROVIDED WITH CROSSOVERS OF MAXIMUM 3.50m WIDTH

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

LEGEND - LAYOUT PLAN
- STORMWATER DRAIN, PIT & PROPERTY INLET
- SWALE DRAIN
- SEWER & MAINTENANCE STRUCTURES
- HOUSE DRAIN
- SERVICE CONDUITS
- TACTILE PAVERS
- EXISTING ELECTRICITY (UNDERGROUND)
- EXISTING ELECTRICITY (OVERHEAD)
- EXISTING GAS
- EXISTING OPTIC FIBRE
- EXISTING TELSTRA
- EXISTING WATER
- EXISTING RECYCLED WATER
- EXISTING STORMWATER DRAIN
- EXISTING SEWER
- EXISTING HOUSE DRAIN
- EXISTING SWALE DRAIN
- EXISTING SURFACE LEVEL
- FINISHED BUILDING LINE LEVEL
- FINISHED RIDGE LINE LEVEL
- TOP OF RETAINING WALL
- BOTTOM OF RETAINING WALL
- RETAINING WALL
- BUILDING ENVELOPE
- PAVEMENT TREATMENT
- STRUCTURAL FILL > 200mm DEEP
- EX. STRUCTURAL FILL > 200mm DEEP
- DIRECTION OF FALL
- OVERLAND FLOW
- ALLOTMENT TO BE GRADED EVENLY IN DIRECTION OF FALL TO LEVELS INDICATED
- CONCRETE EDGE STRIP WITH SUBSOIL DRAIN, "NO ROAD" SIGN & BARRIER
- LIMIT OF WORKS
- EXISTING TREE TO BE REMOVED
- PERMANENT SURVEY MARK
- TEMPORARY BENCH MARK
- PROPOSED DRIVEWAY
- PROPOSED NON STANDARD DRIVEWAY
- TREE PROTECTION ZONE

Rec'd A.Hall 1/05/2023

Approximate field density test location

REVISION	DATE	ISSUE DESCRIPTION	DRAWN	CHECKED	APPROVED
0	06/04/23	ISSUED FOR CONSTRUCTION	K.MCKELVIE	M.TROUNCE	M.TROUNCE
C	28/03/23	REVISED IN ACCORDANCE WITH COUNCIL COMMENTS	K.MCKELVIE	M.TROUNCE	M.TROUNCE
B	20/02/23	REVISED IN ACCORDANCE WITH COUNCIL COMMENTS	K.MCKELVIE	M.TROUNCE	M.TROUNCE
A	12/12/22	ISSUED FOR APPROVAL	K.MCKELVIE	M.TROUNCE	M.TROUNCE

CLIENT: villawood properties — Communities Designed for Living

creo CONSULTANTS
Suite 1, 2 Bloomsbury Street
Geelong, VIC, Australia 3220

PROJECT: ARMSTRONG MT DUNEED

DRAWING TITLE: ARMSTRONG - STAGE 68 LAYOUT PLAN

PLANNING PERMIT No: PP-282-2019

STATUS: ISSUED FOR CONSTRUCTION

SCALE AT A1	DRAWN	DESIGNED
AS SHOWN	K.MCKELVIE	M.TROUNCE
PROJECT ENGINEER	PROJECT MANAGER	DATE FIRST ISSUE
M.TROUNCE	M.TROUNCE	DECEMBER 2022
PROJECT No.	DRAWING No.	REVISION
180016.68	R200	0

COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES
6 - 8 Rose Avenue, Croydon 3136

		Job No	21874
		Report No	21874/R001
		Date Issued	24/01/2022
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	BGG
Project	ARMSTRONG - STAGE 68	*Date tested*	14/12/21
Location	MOUNT DUNEED	*Checked by*	JHF

Feature	**EARTHWORKS**	*Layer thickness*	200 mm	*Time:*	14:33

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*	1.94	1.95	1.95	-	-	-
Field moisture content	*%*	16.9	17.4	18.4	-	-	-

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*	2.02	1.91	2.02	-	-	-
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	18.0	16.0	17.0	-	-	-

Moisture Variation From Optimum Moisture Content		1.0% dry	1.5% wet	1.5% wet	-	-	-

density and moisture ratio results relate only to the soil to the depth of test and not to the full depth of the layer

Density Ratio (R_{HD})	*%*	**96.0**	**102.0**	**96.0**	**-**	**-**	**-**

Material description

No 1 - 3 Clay Fill

Approved Signatory : Justin Fry

COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	21874
		Report No	21874/R002
		Date Issued	11/06/2022
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	BGG
Project	ARMSTRONG - STAGE 68	*Date tested*	15/12/21
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **DAM BACKFILL** *Layer thickness* 200 mm *Time:* 10:19

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	*m*	1.0	0.8	0.6			
Measurement depth	*mm*	175	175	175	-	-	-
Field wet density	*t/m³*	1.92	1.92	1.92	-	-	-
Field moisture content	*%*	13.2	15.6	14.4	-	-	-

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*	2.00	1.95	1.99	-	-	-
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	15.0	16.5	16.5	-	-	-

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

density and moisture ratio results relate only to the soil to the depth of test and not to the full depth of the layer

Density Ratio (R_{HD})	*%*	**96.0**	**98.5**	**96.5**	**-**	**-**	**-**

Material description

No 4 - 6 Clay Fill

Approved Signatory : Justin Fry

COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	21874
		Report No	21874/R003
		Date Issued	24/01/2022
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	BGG
Project	ARMSTRONG - STAGE 68	*Date tested*	16/12/21
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **DAM BACKFILL** *Layer thickness* 200 mm *Time:* 10:21

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	*m*	0.4	0.2	fsl			
Measurement depth	*mm*	175	175	175	-	-	-
Field wet density	*t/m³*	1.93	1.93	1.93	-	-	-
Field moisture content	*%*	23.4	25.9	17.4	-	-	-

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*	0	0	0	-	-	-
Peak Converted Wet Density	*t/m³*	1.98	1.99	1.99	-	-	-
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	26.0	28.0	20.0	-	-	-

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

density and moisture ratio results relate only to the soil to the depth of test and not to the full depth of the layer

Density Ratio (R_{HD})	*%*	**97.5**	**97.0**	**97.0**	**-**	**-**	**-**

Material description

No 7 - 9 Clay Fill

Approved Signatory : Justin Fry

COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES
6 - 8 Rose Avenue, Croydon 3136

		Job No	21874
		Report No	21874/R004
		Date Issued	09/06/2022
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	JD
Project	ARMSTRONG - STAGE 68	Date tested	13/04/22
Location	MOUNT DUNEED	Checked by	JHF

Feature	**EARTHWORKS**	*Layer thickness*	200 mm	*Time:*	16:29

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		**10**	**11**	**12**	**13**	**14**	**-**
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	mm	175	175	175	175	175	-
Field wet density	t/m³	1.67	1.72	1.80	1.81	1.79	-
Field moisture content	%	18.4	18.5	20.0	19.2	18.7	-

Test procedure AS 1289.5.7.1

Test No		10	11	12	13	14	-
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/m³	1.73	1.77	1.89	1.90	1.85	-
Adjusted Peak Converted Wet Density	t/m³	-	-	-	-	-	-
Optimum Moisture Content	%	20.5	18.5	21.5	20.5	21.0	-

Moisture Variation From Optimum Moisture Content	2.0% dry	0.0%	1.5% dry	1.5% dry	2.5% dry	-

density and moisture ratio results relate only to the soil to the depth of test and not to the full depth of the layer

Density Ratio (R_{HD})	%	**96.0**	**97.5**	**95.0**	**95.5**	**97.0**	**-**

Material description

No 10 - 14 Clay Fill

Approved Signatory : Justin Fry

COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	21874
		Report No	21874/R005
		Date Issued	26/10/2022
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	JD
Project	ARMSTRONG - STAGE 68	*Date tested*	17/10/22
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **EARTHWORKS** *Layer thickness* 200 mm *Time:* 12:53

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		**15**	**16**	**17**	**18**	**19**	**20**
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*	1.88	1.93	1.92	1.93	1.92	1.86
Field moisture content	*%*	26.4	27.6	29.7	27.5	29.0	29.4

Test procedure AS 1289.5.7.1

Test No		15	16	17	18	19	20
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	1.96	1.94	1.98	1.97	1.93
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	29.0	30.5	32.5	27.5	31.0	32.0

Moisture Variation From Optimum Moisture Content		2.5% dry	2.5% dry	2.5% dry	0.0%	1.5% dry	2.5% dry

density and moisture ratio results relate only to the soil to the depth of test and not to the full depth of the layer

Density Ratio (R_{HD})	*%*	**98.5**	**98.5**	**99.0**	**97.5**	**97.5**	**96.5**

Material description

No 15 - 20 Clay Fill

Approved Signatory : Justin Fry

COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	21874
		Report No	21874/R006
		Date Issued	26/10/2022
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	JD
Project	ARMSTRONG - STAGE 68	*Date tested*	17/10/22
Location	MOUNT DUNEED	*Checked by*	JHF

Feature	**EARTHWORKS**	*Layer thickness*	200 mm	*Time:*	12:55

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		**21**	**-**	**-**	**-**	**-**	**-**
Location		REFER TO FIGURE 1					
Approximate depth below FSL							
Measurement depth	*mm*	175	-	-	-	-	-
Field wet density	*t/m³*	1.87	-	-	-	-	-
Field moisture content	*%*	21.7	-	-	-	-	-

Test procedure AS 1289.5.7.1

Test No		21	-	-	-	-	-
Compactive effort		Standard					
Oversize rock retained on sieve	*mm*	19.0	-	-	-	-	-
Percent of oversize material	*wet*	0	-	-	-	-	-
Peak Converted Wet Density	*t/m³*	1.94	-	-	-	-	-
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	21.0	-	-	-	-	-

Moisture Variation From Optimum Moisture Content	0.5% wet	-	-	-	-	-

density and moisture ratio results relate only to the soil to the depth of test and not to the full depth of the layer

Density Ratio (R_{HD})	*%*	**96.5**	**-**	**-**	**-**	**-**	**-**

Material description

No 21 - 21 Clay Fill

Approved Signatory : Justin Fry

COMPACTION ASSESSMENT

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

		Job No	21874
		Report No	21874/R007
		Date Issued	21/09/2023
Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	*Tested by*	JD
Project	ARMSTRONG - STAGE 68	*Date tested*	13/09/23
Location	MOUNT DUNEED	*Checked by*	JHF

Feature **EARTHWORKS** *Layer thickness* 200 mm *Time:* 12:42

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*	1.79	1.72	1.74	1.81	1.86	1.84
Field moisture content	*%*	20.9	23.3	22.5	22.6	23.9	25.2

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*	1.83	1.81	1.81	1.84	1.91	1.93
Adjusted Peak Converted Wet Density	*t/m³*	-	-	-	-	-	-
Optimum Moisture Content	*%*	23.0	25.5	24.5	24.5	26.0	26.5

Moisture Variation From Optimum Moisture Content		2.5% dry	2.0% dry	2.0% dry	1.5% dry	2.0% dry	1.5% dry

density and moisture ratio results relate only to the soil to the depth of test and not to the full depth of the layer

Density Ratio (R_{HD})	*%*	**98.0**	**95.0**	**96.0**	**98.5**	**97.0**	**95.5**

Material description

No 22 - 27 Clay Fill

NATA Accredited Laboratory No 9909
Accredited for compliance with
ISO/IEC 17025 - Testing

Approved Signatory : Justin Fry