



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

23rd July 2018

Our Reference: 17665:NB237

Winslow Constructors Pty Ltd
50 Barry Road
CAMPBELLFIELD VIC 3061

Dear Sirs/Madams,

**RE: LEVEL 1 EARTHWORKS INSPECTION AND TESTING
AQUAREVO ESTATE – STAGE 2 (ROCKBANK)**

Please find attached our Report No's 17665/R001 to 17665/R005 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 November 2017 and was completed in March 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).

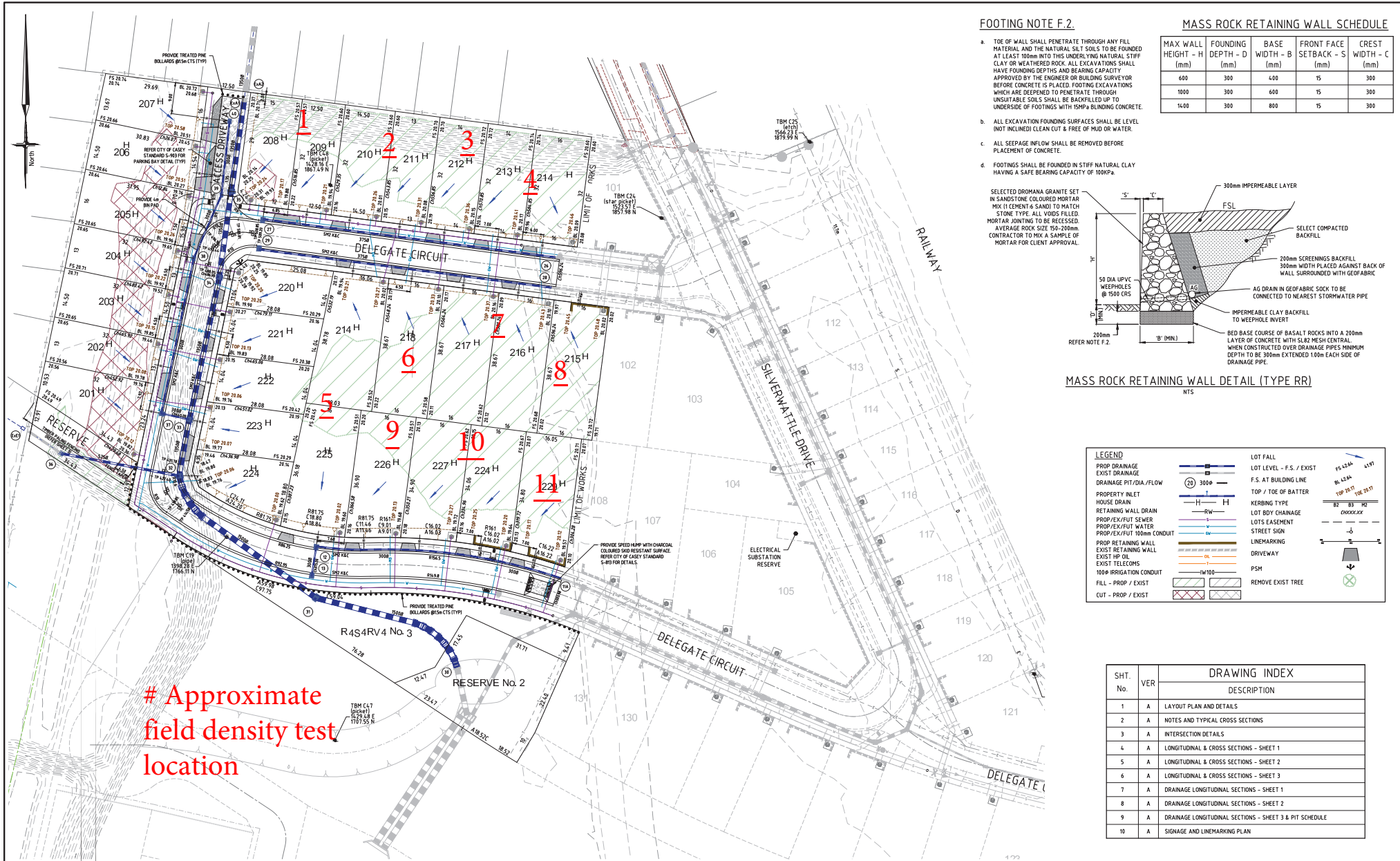
Please contact the undersigned if you require any additional information.

Civil Geotechnical Services

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

Nick Brock

FIGURE 1

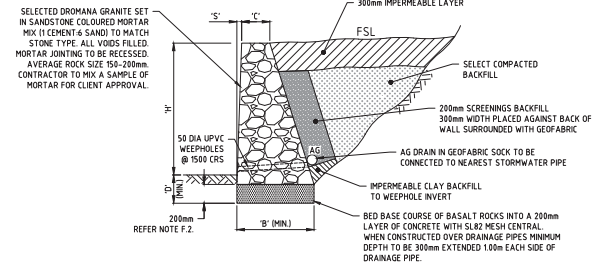


FOOTING NOTE F.2.

- TOE OF WALL SHALL PENETRATE THROUGH ANY FILL MATERIAL AND THE NATURAL SILT SOILS TO BE FOUND AT LEAST 100mm INTO THIS UNDERLYING NATURAL STIFF CLAY OR WEATHERED ROCK. ALL EXCAVATIONS SHALL HAVE FOUNDING DEPTHS AND BEARING CAPACITY APPROVED BY THE ENGINEER OR BUILDING SURVEYOR BEFORE CONCRETE IS PLACED. FOOTING EXCAVATIONS WHICH ARE DEEMED TO PENETRATE THROUGH UNSUITABLE SOILS SHALL BE BACKFILLED UP TO UNDERSIDE OF FOOTINGS WITH 15MPa BLINDING CONCRETE.
- ALL EXCAVATION FOUNDING SURFACES SHALL BE LEVEL (NOT INCLINED CLEAN CUT & FREE OF MUD OR WATER).
- ALL SEEPAGE INFLOW SHALL BE REMOVED BEFORE PLACEMENT OF CONCRETE.
- FOOTINGS SHALL BE FOUND IN STIFF NATURAL CLAY HAVING A SAFE BEARING CAPACITY OF 1000kPa.

MASS ROCK RETAINING WALL SCHEDULE

MAX WALL HEIGHT - H (mm)	FOUNDING DEPTH - D (mm)	BASE WIDTH - B (mm)	FRONT FACE SETBACK - S (mm)	CREST WIDTH - C (mm)
600	300	400	15	300
1000	300	600	15	300
1400	300	800	15	300



MASS ROCK RETAINING WALL DETAIL (TYPE RR)
NTS

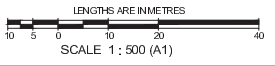
LEGEND		LOT FALL	
PROF DRAINAGE	EXIST DRAINAGE	LOT LEVEL - F.S. / EXIST	F.S. AT BUILDING LINE
PROF EX/FEUT WATER	PROF EX/FEUT SEWER	TOP / TOE OF BATTER	KERBING TYPE
PROF EX/FEUT WATER	PROF EX/FEUT WATER	LOT B'DY CHAINAGE	LOTS EASEMENT
PROF EX/FEUT 100mm CONDUIT	PROF EX/FEUT 100mm CONDUIT	STREET SIGN	STREET SIGN
PROF RETAINING WALL	EXIST RETAINING WALL	LINE MARKING	DRIVEWAY
EXIST TELECONS	100P IRRIGATION CONDUIT	PSM	REMOVE EXIST TREE
FILL - PROP / EXIST	CUT - PROP / EXIST		

Approximate field density test location

PLAN 1500

SERVICES OFFSETS AND LOCATIONS

STREET NAME	Rd RESERVE	WATER	SEWER	GAS	ELECTRICITY	FIBRE TO THE HOME	Blk. of KERB	JOINT TRENCHING	STREET CLASSIFICATION
DELEGATE CIRCUIT WEST	16.00	2.95 W	2.50 W	1.55 W	2.40 E	2.10 W	1.80 W	G/DW/NDW & FTTH/E	STREET - LEVEL 1
DELEGATE CIRCUIT SOUTH	16.00	2.95 S	2.50 S	1.55 S	2.20 N	1.80 N	1.80 S	G/DW/NDW & FTTH/E	STREET - LEVEL 1
DELEGATE CIRCUIT NORTH	16.00	2.95 N	2.50 N	1.55 N	2.10 N	1.80 S	1.80 N	G/DW/NDW & FTTH/E	STREET - LEVEL 1
ACCESS DRIVEWAY	12.50	2.95 W	2.50 W	1.55 W	2.10 W	1.80 W	1.75 W		ACCESS LANE



SHT. No.		DRAWING INDEX	
VER		DESCRIPTION	
1	A	LAYOUT PLAN AND DETAILS	
2	A	NOTES AND TYPICAL CROSS SECTIONS	
3	A	INTERSECTION DETAILS	
4	A	LONGITUDINAL & CROSS SECTIONS - SHEET 1	
5	A	LONGITUDINAL & CROSS SECTIONS - SHEET 2	
6	A	LONGITUDINAL & CROSS SECTIONS - SHEET 3	
7	A	DRAINAGE LONGITUDINAL SECTIONS - SHEET 1	
8	A	DRAINAGE LONGITUDINAL SECTIONS - SHEET 2	
9	A	DRAINAGE LONGITUDINAL SECTIONS - SHEET 3 & PIT SCHEDULE	
10	A	SIGNAGE AND LINE MARKING PLAN	

breese pitt dixon pty. ltd.
land surveyors civil engineers

1/19 calo street
hawthorn east, 3123
telephone 8823 2300
fax no. 8823 2310

HELVAY REF: 129-C5

SURVEY: BPD

DESIGN: DG

DRAWN: AI

CHECKED:

AQUAREVO ESTATE
STAGE 2
LAYOUT PLAN AND DETAILS

CASEY

REFERENCE: 8766 E/02

SHEET 1 OF 10

VER	DATE	ISSUED FOR CONSTRUCTION	REMARKS
A	12/02/18	ISSUED FOR CONSTRUCTION	

SCALE	DATUM	DATE	SHEET
1:500 (A1)	AHD	Feb'18	1 OF 10

1/19 calo street, Hawthorn East, VIC 3123. Telephone: 8823 2300. Fax: 8823 2310. BREASE PITT DIXON PTY. LTD. ABN 62 000 000 000. 1/19 CALO STREET, HAWTHORN EAST, VIC 3123. TEL: 8823 2300. FAX: 8823 2310.



COMPACTION ASSESSMENT

Job No 17665
 Report No 17665/R001
 Date Issued 13/11/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	CGS
Project	AQUAREVO ESTATE - STAGE 2	Date tested	08/11/17
Location	LYNDHURST	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 11:41
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	1	2	-	-	-	-
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/m³</i>	1.72	1.69	-	-	-	-
Field moisture content <i>%</i>	33.9	41.6	-	-	-	-

Test procedure AS 1289.5.7.1

Test No	1	2	-	-	-	-
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/m³</i>	1.77	1.78	-	-	-	-
Adjusted Peak Converted Wet Density <i>t/m³</i>	-	-	-	-	-	-
Optimum Moisture Content <i>%</i>	33.5	35.5	-	-	-	-

Moisture Variation From Optimum Moisture Content	0.5% wet	7.0% wet	-	-	-	-
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Density Ratio (R_{HD})	%	97.5	95.0	-	-	-
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Material description

No 1 - 2 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 17665
 Report No 17665/R002
 Date Issued 13/11/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	CGS
Project	AQUAREVO ESTATE - STAGE 2	Date tested	09/11/17
Location	LYNDHURST	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 11:41
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No		3	4	5	-	-	-
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 ³	1.72	1.71	1.71	-	-	-
Field moisture content	%	32.4	32.0	28.0	-	-	-

Test procedure AS 1289.5.7.1

Test No		3	4	5	-	-	-
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/m ³	1.77	1.79	1.79	-	-	-
Adjusted Peak Converted Wet Density	t/m ³	-	-	-	-	-	-
Optimum Moisture Content	%	30.5	30.0	28.5	-	-	-

Moisture Variation From Optimum Moisture Content		2.0% wet	2.0% wet	0.5% dry	-	-	-
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Density Ratio (R _{HD})	%	97.0	95.5	95.5	-	-	-
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Material description

No 3 - 5 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17665
 Report No 17665/R003
 Date Issued 20/12/2017

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Tested by CGS
 Date tested 13/11/17
 Checked by JHF

Client WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)
 Project SQUAREVO ESTATE - STAGE 2
 Location LYNDHURST

Feature EARTHWORKS *Layer thickness* 200 mm *Time:* 09:07

Test procedure AS 1289.2.1.1 & 5.8.1

Test No		6	7	8	-	-	-
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 ³	1.75	1.80	1.77	-	-	-
Field moisture content	%	27.9	29.0	22.6	-	-	-

Test procedure AS 1289.5.7.1

Test No		6	7	8	-	-	-
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/m ³	1.77	1.81	1.80	-	-	-
Adjusted Peak Converted Wet Density	t/m ³	-	-	-	-	-	-
Optimum Moisture Content	%	29.0	29.5	25.0	-	-	-

Moisture Variation From Optimum Moisture Content	1.0% dry	0.5% dry	2.5% dry	-	-	-
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Density Ratio (R_{HD})	%	98.5	99.5	98.5	-	-	-
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Material description

No 6 - 8 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17665
 Report No 17665/R004
 Date Issued 23/07/2018

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	CGS
Project	AQUAREVO ESTATE - STAGE 2	Date tested	22/02/18
Location	LYNDHURST	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time:	09:43
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No		9	10	11	-	-	-
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 ³	1.88	1.82	1.82	-	-	-
Field moisture content	%	22.4	21.7	24.8	-	-	-

Test procedure AS 1289.5.7.1

Test No		9	10	11	-	-	-
Compactive effort		Standard					
Oversize rock retained on sieve	mm	19.0	0.0	0.0	-	-	-
Percent of oversize material	wet	0	0	0	-	-	-
Peak Converted Wet Density	t/m ³	1.95	1.90	1.87	-	-	-
Adjusted Peak Converted Wet Density	t/m ³	-	-	-	-	-	-
Optimum Moisture Content	%	23.5	23.0	25.5	-	-	-

Moisture Variation From Optimum Moisture Content		1.0% dry	1.5% dry	0.5% dry	-	-	-
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Density Ratio (R _{HD})	%	96.5	96.0	97.5	-	-	-
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Material description

No 9 - 11 Clay Fill



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Approved Signatory : Justin Fry



COMPACTION ASSESSMENT

Job No 17665
 Report No 17665/R005
 Date Issued 23/07/2018

CIVIL GEOTECHNICAL SERVICES

6 - 8 Rose Avenue, Croydon 3136

Client	WINSLOW CONSTRUCTORS PTY LTD (CAMPBELLFIELD)	Tested by	CGS
Project	AQUAREVO ESTATE - STAGE 2	Date tested	01/03/18
Location	LYNDHURST	Checked by	JHF

Feature	EARTHWORKS	Layer thickness	200 mm	Time: 09:24
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Test procedure AS 1289.2.1.1 & 5.8.1

Test No	12	13	14	15	-	-
Location	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	-	-
Field wet density <i>t/m³</i>	1.81	1.89	1.79	1.77	-	-
Field moisture content %	24.9	24.0	21.9	23.9	-	-

Test procedure AS 1289.5.7.1

Test No	12	13	14	15	-	-
Compactive effort	Standard					
Oversize rock retained on sieve <i>mm</i>	19.0	19.0	19.0	19.0	-	-
Percent of oversize material <i>wet</i>	0	0	0	0	-	-
Peak Converted Wet Density <i>t/m³</i>	1.89	1.90	1.86	1.84	-	-
Adjusted Peak Converted Wet Density <i>t/m³</i>	-	-	-	1.84	-	-
Optimum Moisture Content %	26.0	26.0	24.0	26.0	-	-

Moisture Variation From Optimum Moisture Content	1.0% dry	2.0% dry	2.0% dry	2.0% dry	-	-
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Density Ratio (R_{HD})	%	96.0	99.5	96.0	96.5	-	-
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Material description

No 12 - 15 Clay Fill



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Approved Signatory : Justin Fry