

WORKS INSPECTION & TESTING Bulk Earthworks

**PROPOSED
RESIDENTIAL
DEVELOPMENT**

Pebble Creek Stage 1

JOB NO: P1720 comp01



Prepared for CCA Winslow

26 July 2018

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Appendix A Bulk Earthworks - Compaction

INTRODUCTION

Construction Sciences was commissioned by **CCA Winslow** to carry out the geotechnical inspection and testing required for the proposed residential development at 230 Mountain Ridge Road – Pebble Creek Stage 1, Logan which was carried out from the 28th February to 3rd April 2018.

SCOPE OF WORKS

Works on this development were monitored in accordance with the scope of our commission as follows:-

Level 1 : Bulk earthworks stripping and filling was inspected and tested on a Level 1 basis, in accordance with AS 3798.

Scope of Level 1 responsibility: ***“The primary objective of Level 1 Inspection and Testing is for the geotechnical inspection and testing authority (GITA) to be able to express an opinion on the compliance of the work. The GITA is responsible for ensuring that the inspection and testing is sufficient for this purpose.***

The GITA needs to have competent personnel on site at all times while earthwork operations are undertaken. Such operations include the following:

- (a) ***Completion of removal of topsoil.***
- (b) ***Placing of imported or cut material.***
- (c) ***Compaction and adding/removal of moisture.***
- (d) ***Trenching and backfilling, where applicable.***
- (e) ***Test rolling.***
- (f) ***Testing.***

The superintendent should agree on a suitable inspection and testing plan prior to the commencement of the works”.

reference AS3798 – Section 8.2

SPECIFICATION REQUIREMENTS

Earthworks on this development was inspected and tested in accordance with the specification of the design engineer, **Peakurban** and / or to the specifications of the local authority, **Logan City Council**.

The following table is a summary of the basic compaction and quality requirements for the project.

Testing procedures used to confirm that these requirements were met were all in accordance with Australian Standard test methods.

SPECIFICATIONS

Item**Minimum Compaction Requirement**

Bulk Earthworks Fill

95% Dry Density Ratio - Standard

SITE WORKS - BULK EARTHWORKS

General : Full time site inspection was maintained in accordance with Level 1 requirements whilst earthworks were carried out on this development. Fill areas included residential allotments, roads and embankments.

The areas to be filled were stripped and proof rolled in accordance with the specification requirements. Areas displaying instability were generally excavated until competent conditions were encountered. Benching was provided on slopes where filling was to be placed.

The natural ground in the areas of filling generally comprised medium to high plasticity residual clays, silty or sandy clays and weathered rock.

The material used in the bulk earthworks filling was sourced from site cutting to design levels.

Compaction Control Testing : Compaction control testing via the nuclear densometer method was carried out at regular intervals throughout the placement of fill, in accordance with the minimum test frequency recommendations included in AS3798 "Guidelines on Earthworks for Commercial and Residential Developments".

All test results are included in Appendix A. A summary of the test results is included as Table 1. A total of 69 field density tests were carried out throughout the earthworks. The average wet density ratio was recorded to be 99.6%.

CONCLUSION

We confirm that:

(a) Our representative was in full time site attendance whilst bulk earthworks filling was in progress between 28th February to 3rd April 2019 at :- 230 Mountain Ridge Road.

(b) Pre – fill ground preparation was carried out in accordance with the specifications and site instruction given.

(c) The structural filling placed to design levels (per supplied construction drawing numbers 117584-CGL-01-B to 117584-CGL-32-B) during the term of our engagement on a “Level 1” basis can be termed “controlled filling”.

(d) The results of the compaction control testing indicate that the fill placed during the term of our site attendance, was compacted to at least the minimum specified dry density ratio.

(f) All test results pertaining to the development are included within appendix A of this report.



WAYNE GORMAN
LABORATORY MANAGER
Construction Sciences

COMPACTION TESTING RESULT SUMMARY

Page 1 of 1

Client:	CCA Winslow	Date Range:	No Date Range Specified
Project:	1979/P/1720 - Pebble Creek Stg 1	Material Source / Type:	<None> / <Not Supplied>

Sample Code	Sample Date	Test Location				Field Moisture (%)	OMC (%)	Moisture Ratio (%)	Field Density (t/m³)	MDD (t/m³)	Dry Density Ratio (%)
1979/S/107840	22/03/2019	6858.820	25814.050	33.340	Road 2	9.6	10.5	90.5	1.90	1.90	99.5
1979/S/107841	22/03/2019	6854.869	25812.472	33.225	Road 2	9.3	10.0	95.0	1.84	1.87	98.5
1979/S/107924	23/03/2019	6866.800	25808.661	33.560	Road 2	11.4	12.0	96.5	1.92	1.89	101.5
1979/S/107925	23/03/2019	6858.382	25807.645	33.840	Road 2	9.3	10.0	91.0	1.89	1.87	101.0
1979/S/107967	25/03/2019	6857.870	25811.940	34.150	Road 2	6.8	8.0	87.0	1.98	1.94	101.5
1979/S/107968	25/03/2019	6868.545	25809.755	34.051	Road 2	7.5	7.5	98.5	1.95	1.96	99.5
1979/S/108072	21/03/2019	1/6 To 2/6	15m From 1/6	CL of Trench	FSL	7.8	10.5	73.5	1.91	1.94	98.5
1979/S/108073	21/03/2019	2/6 To 3/6	10m From 2/6	CL of Trench	0.9m Below FSL	6.3	9.0	71.0	1.80	1.84	97.5
1979/S/108332	1/04/2019	1/8 To 1/6	12m From 1/8	CL of Trench	1.8m Below FSL	10.5	9.5	111.5	1.91	1.90	100.5
1979/S/108333	1/04/2019	1/8 To 1/6	17m From 1/8	CL of Trench	0.9m Below FSL	11.1	10.0	113.5	1.87	1.91	98.5
1979/S/108334	1/04/2019	1/6 To 1/5	21m From 1/6	CL of Trench	FSL	8.7	9.5	89.5	1.91	1.89	101.0
1979/S/108074	27/03/2019	3/6 To 5/6	5.0m From 5/6	CL of Trench	FSL	9.0	7.0	127.0	1.71	1.77	96.5
1979/S/108075	27/03/2019	4/7 To 3/7	6.0m From 4/7	CL of Trench	0.9m Below FSL	8.3	10.5	79.0	1.84	1.77	103.5
1979/S/108076	27/03/2019	6/6 To 7/6	10m From 6/6	CL of Trench	FSL	8.9	9.0	101.0	1.82	1.82	100.0
1979/S/108077	27/03/2019	6/6 To 7/6	15m From 6/6	CL of Trench	0.9m Below FSL	8.4	8.0	102.5	1.84	1.83	100.5
1979/S/106058	1/03/2019	6913.7	25769.7	35.5	106	8.0	10.0	81.0	2.02	2.02	100.0
1979/S/106059	1/03/2019	6926.9	25773.9	35.3	105	7.6	9.5	81.0	1.87	1.89	99.0
1979/S/106060	1/03/2019	6954.2	25766.4	35.4	102	8.0	10.0	81.0	1.95	1.97	99.0
1979/S/106057	28/02/2019	6915.6	25785.8	35.07		9.1	11.0	84.5	2.08	2.11	98.5
1979/S/106812	12/03/2019	6858.6	25808.8	32.18		12.4	12.5	99.0	2.09	2.08	100.0
1979/S/106813	12/03/2019	6859.5	25811.0	31.50		12.4	12.5	100.0	2.10	2.07	101.5
1979/S/106814	12/03/2019	6857.2	25806.2	30.88		11.5	11.5	98.5	2.04	2.10	97.5
1979/S/107251	12/03/2019	6857.1	25809.08	32.46		12.4	12.5	98.5	2.07	2.06	100.5
1979/S/107252	12/03/2019	6867.2	25808.2	32.53		11.9	12.0	100.0	1.94	1.99	97.5
1979/S/107262	13/03/2019	Lot 101	15m North,5m West	FSL of Lot	Location From South,East corner	8.1	10.0	81.0	2.01	2.06	97.5
1979/S/107263	13/03/2019	Lot 102	10m North 4m West	FSL of Lot	Location From South,East corner	8.6	10.5	80.5	2.00	2.09	96.0
1979/S/107264	13/03/2019	Lot 103	12m North 6m West	FSL of Lot	Location From South,East corner	9.0	11.0	81.0	2.01	2.10	96.0
1979/S/107265	13/03/2019	Lot 104	8m North 4m West	FSL of Lot	Location From South,East corner	8.3	10.5	80.0	2.05	2.09	98.0
1979/S/107266	13/03/2019	Lot 105	17m North 6m West	FSL of Lot	Location From South,East corner	3.9	6.0	66.0	1.97	2.02	97.5
1979/S/107267	13/03/2019	Lot 106	20m North 3m West	FSL of Lot	Location From South,East corner	10.3	12.5	83.0	2.00	2.06	97.5
1979/S/107268	13/03/2019	Lot 126	20m North 5m West	FSL of Lot	Location From South,East corner	6.9	9.0	76.0	1.94	2.00	97.0
1979/S/107269	13/03/2019	Lot 127	14m North 4m West	FSL of Lot	Location From South,East corner	11.1	13.0	84.0	2.15	2.20	98.0
1979/S/107270	13/03/2019	Lot 128	14m North 2m West	FSL of Lot	Location From South,East corner	10.6	13.0	82.0	2.16	2.21	97.5
1979/S/108063	27/03/2019	6860.07	25811.23	34.70		12.9	13.0	97.5	2.02	2.01	100.0
1979/S/108064	27/03/2019	6872.47	25810.16	34.70		12.0	12.0	101.5	1.99	1.98	100.0



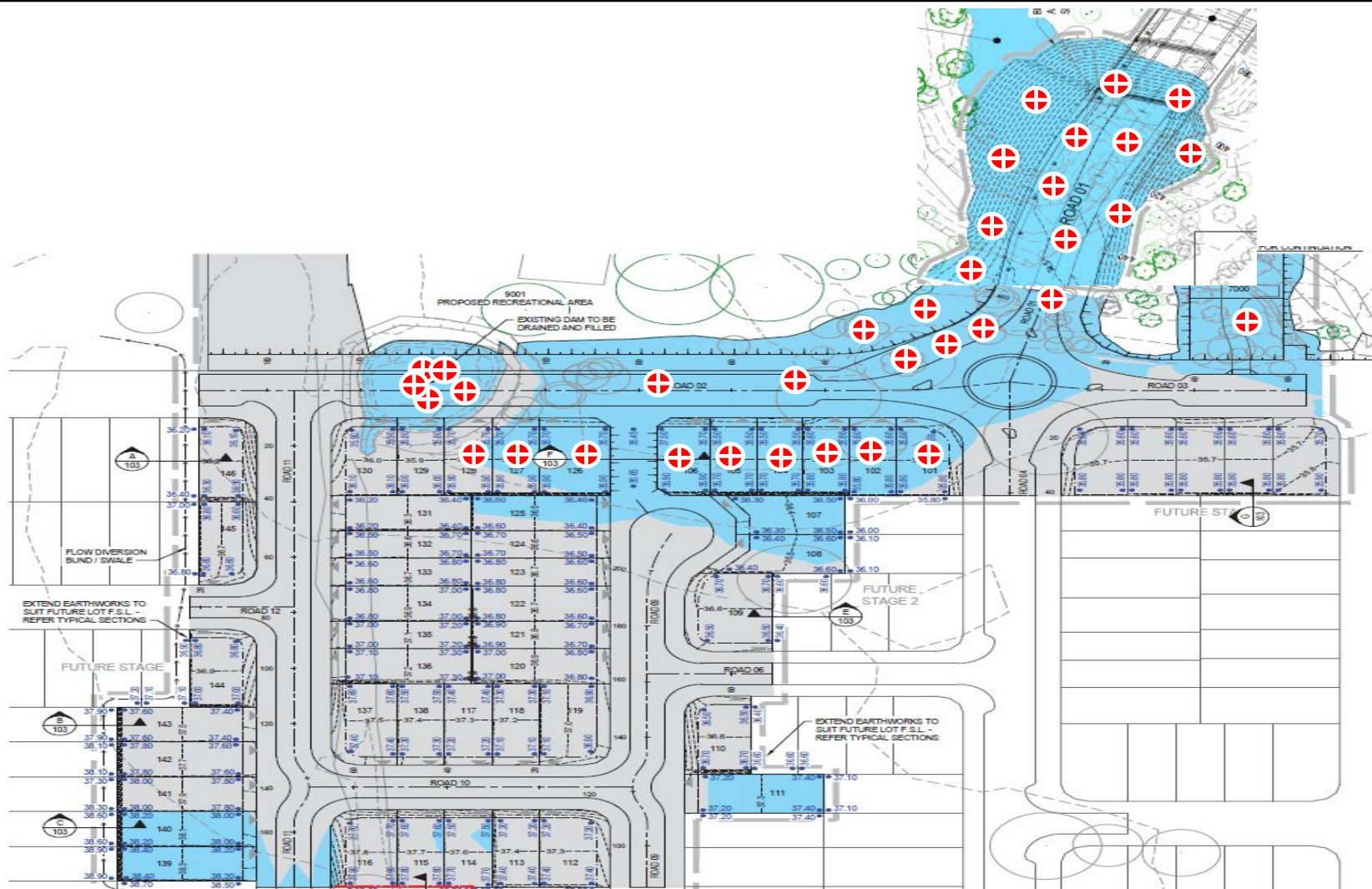
CLIENT: CCA Winslow - Residential Development	JOB No.: P1720
PROJECT: Stage 1 Pebble Creek Road	SKETCH No.: SK 1
TEST ITEM: Bulk Earthworks	DATE ISSUED: 26.07.2019

APPENDIX

A

BULK EARTHWORKS FILL





Denotes Approximate Density Location



DRY DENSITY RATIO / MOISTURE RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40729-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21645
Supplied To:	n/a	Client Reference/s:	Sewer Back Fill testing
Area Description:	Stage 1 Pebble Creek	Report Date / Page:	29/03/2019 Page 1 of 1

Test Procedures:	AS1289.5.4.1, AS1289.5.1.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/108072	1979/S/108073		
ID / Client ID	Sewer Line	Sewer Line		
Lot Number	-	-		
Date / Time Tested	21/03/2019 11:45	21/03/2019 11:55		
Material Source	On-Site	On-Site		
Material Type	Trench Fill	Trench Fill		
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b		
Depths: Test / Nom / Actual (mm)	275 / 300 / 300	275 / 300 / 300		
Standard or Modified	Standard	Standard		
Stabilised Material Curing Time	-	-		
SEWER LINE NUMB	1/6 To 2/6	2/6 To 3/6		
MH OFFSET	m	15m From 1/6	10m From 2/6	
OFFSET	m	CL of Trench	CL of Trench	
LEVEL	m	FSL	0.9m Below FSL	
Test Fraction (mm)	< 19.0 mm	< 19.0 mm		
Sample Oversize Wet (%)	0	0		
Sample Oversize Dry (%)	0	0		
MDR Sample Number	1979/S/108072	1979/S/108073		
MDR Sample Date / Update	21/03/2019	21/03/2019		
Assigned MDR (Yes / No)	No	No		
Moisture Test Results:				
Field Moisture Content (%)	7.8	6.3		
Optimum Moisture Content (%)	10.5	9.0		
Variation from OMC (%)	3.0% Drier than OMC	2.5% Drier than OMC		
Moisture Ratio (%)	73.5	71.0		
Density Test Results:				
Field Dry Density (t/m ³)	1.91	1.80		
Maximum Dry Density (t/m ³)	1.94	1.84		
Dry Density Ratio Required (%)	95	95		
Dry Density Ratio (%)	98.5	97.5		

Remarks

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	Accreditation Number:	1986	
	Corporate Site Number:	1979	
	Approved Signatory: Brendan Wild		
	Form ID: W27ASRep Rev 1		

DRY DENSITY RATIO / MOISTURE RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40684-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	-
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21576
Component:	Bulk Earthworks	Client Reference/s:	Bulk Earthworks
Area Description:	Stage 1	Report Date / Page:	28/03/2019 Page 1 of 1

Test Procedures:	AS1289.5.4.1, AS1289.5.1.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/107840	1979/S/107841		
ID / Client ID	-	-		
Lot Number	-	-		
Date / Time Tested	22/03/2019 07:20	22/03/2019 07:30		
Material Source	On-Site	On-Site		
Material Type	Bulk Fill	Bulk Fill		
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b		
Depths: Test / Nom / Actual (mm)	175 / 200 / -	175 / 200 / -		
Standard or Modified	Standard	Standard		
Stabilised Material Curing Time	-	-		
Easting: m	6858.820	6854.869		
Northing m	25814.050	25812.472		
RL: m	33.340	33.225		
Allotment:	Road 2	Road 2		
Test Fraction (mm)	< 19.0 mm	< 19.0 mm		
Sample Oversize Wet (%)	0	0		
Sample Oversize Dry (%)	0	0		
MDR Sample Number	1979/S/107840	1979/S/107841		
MDR Sample Date / Update	22/03/2019	22/03/2019		
Assigned MDR (Yes / No)	No	No		
Moisture Test Results:				
Field Moisture Content (%)	9.6	9.3		
Optimum Moisture Content (%)	10.5	10.0		
Variation from OMC (%)	1.0% Drier than OMC	0.5% Drier than OMC		
Moisture Ratio (%)	90.5	95.0		
Density Test Results:				
Field Dry Density (t/m³)	1.90	1.84		
Maximum Dry Density (t/m³)	1.90	1.87		
Dry Density Ratio Required (%)	98	98		
Dry Density Ratio (%)	99.5	98.5		

Remarks



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DRY DENSITY RATIO / MOISTURE RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40687-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	-
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21593
Component:	Bulk Earthworks	Client Reference/s:	Bulk Earthworks
Area Description:	Stage 1	Report Date / Page:	28/03/2019 Page 1 of 1

Test Procedures:	AS1289.5.4.1, AS1289.5.1.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/107924	1979/S/107925		
ID / Client ID	-	-		
Lot Number	-	-		
Date / Time Tested	23/03/2019 08:40	23/03/2019 08:50		
Material Source	On-Site	On-Site		
Material Type	Bulk Fill	Bulk Fill		
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b		
Depths: Test / Nom / Actual (mm)	175 / 200 / -	175 / 200 / -		
Standard or Modified	Standard	Standard		
Stabilised Material Curing Time	-	-		
Easting: m	6866.800	6858.382		
Northing m	25808.661	25807.645		
RL: m	33.560	33.840		
Allotment:	Road 2	Road 2		
Test Fraction (mm)	< 19.0 mm	< 19.0 mm		
Sample Oversize Wet (%)	0	0		
Sample Oversize Dry (%)	0	0		
MDR Sample Number	1979/S/107924	1979/S/107925		
MDR Sample Date / Update	23/03/2019	23/03/2019		
Assigned MDR (Yes / No)	No	No		
Moisture Test Results:				
Field Moisture Content (%)	11.4	9.3		
Optimum Moisture Content (%)	12.0	10.0		
Variation from OMC (%)	0.5% Drier than OMC	1.0% Drier than OMC		
Moisture Ratio (%)	96.5	91.0		
Density Test Results:				
Field Dry Density (t/m³)	1.92	1.89		
Maximum Dry Density (t/m³)	1.89	1.87		
Dry Density Ratio Required (%)	98	98		
Dry Density Ratio (%)	101.5	101.0		

Remarks



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DRY DENSITY RATIO / MOISTURE RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40679-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	-
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21613
Component:	Bulk Earthworks	Client Reference/s:	Bulk Earthworks
Area Description:	Stage 1	Report Date / Page:	28/03/2019 Page 1 of 1

Test Procedures:	AS1289.5.4.1, AS1289.5.1.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/107967	1979/S/107968		
ID / Client ID	-	-		
Lot Number	-	-		
Date / Time Tested	25/03/2019 14:45	25/03/2019 14:50		
Material Source	On-Site	On-Site		
Material Type	Bulk Fill	Bulk Fill		
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b		
Depths: Test / Nom / Actual (mm)	175 / 200 / -	175 / 200 / -		
Standard or Modified	Standard	Standard		
Stabilised Material Curing Time	-	-		
Easting: m	6857.870	6868.545		
Northing m	25811.940	25809.755		
RL: m	34.150	34.051		
Allotment:	Road 2	Road 2		
Test Fraction (mm)	< 19.0 mm	< 19.0 mm		
Sample Oversize Wet (%)	0	0		
Sample Oversize Dry (%)	0	0		
MDR Sample Number	1979/S/107967	1979/S/107968		
MDR Sample Date / Update	25/03/2019	25/03/2019		
Assigned MDR (Yes / No)	No	No		
Moisture Test Results:				
Field Moisture Content (%)	6.8	7.5		
Optimum Moisture Content (%)	8.0	7.5		
Variation from OMC (%)	1.0% Drier than OMC	0.0% Drier than OMC		
Moisture Ratio (%)	87.0	98.5		
Density Test Results:				
Field Dry Density (t/m³)	1.98	1.95		
Maximum Dry Density (t/m³)	1.94	1.96		
Dry Density Ratio Required (%)	98	98		
Dry Density Ratio (%)	101.5	99.5		

Remarks



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DRY DENSITY RATIO / MOISTURE RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40742-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21646
Supplied To:	n/a	Client Reference/s:	Sewer Back Fill Testing
Area Description:	Stage 1 Pebble Creek	Report Date / Page:	29/03/2019 Page 1 of 1

Test Procedures:	AS1289.5.4.1, AS1289.5.1.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/108074	1979/S/108075	1979/S/108076	1979/S/108077
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	27/03/2019 10:40	27/03/2019 10:50	27/03/2019 13:00	27/03/2019 13:10
Material Source	On-Site	On-Site	On-Site	On-Site
Material Type	Trench Fill	Trench Fill	Trench Fill	Trench Fill
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b
Depths: Test / Nom / Actual (mm)	275 / 300 / 300	275 / 300 / 300	275 / 300 / 300	275 / 300 / 300
Standard or Modified	Standard	Standard	Standard	Standard
Stabilised Material Curing Time	-	-	-	-
SEWER LINE NUMB	3/6 To 5/6	4/7 To 3/7	6/6 To 7/6	6/6 To 7/6
MH OFFSET m	5.0m From 5/6	6.0m From 4/7	10m From 6/6	15m From 6/6
OFFSET m	CL of Trench	CL of Trench	CL of Trench	CL of Trench
LEVEL m	FSL	0.9m Below FSL	FSL	0.9m Below FSL
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize Wet (%)	0	0	0	0
Sample Oversize Dry (%)	0	0	0	0
MDR Sample Number	1979/S/108074	1979/S/108075	1979/S/108076	1979/S/108077
MDR Sample Date / Update	27/03/2019	27/03/2019	27/03/2019	27/03/2019
Assigned MDR (Yes / No)	No	No	No	No
Moisture Test Results:				
Field Moisture Content (%)	9.0	8.3	8.9	8.4
Optimum Moisture Content (%)	7.0	10.5	9.0	8.0
Variation from OMC (%)	2.0% Wetter than OMC	2.0% Drier than OMC	0.0% Wetter than OMC	0.0% Wetter than OMC
Moisture Ratio (%)	127.0	79.0	101.0	102.5
Density Test Results:				
Field Dry Density (t/m ³)	1.71	1.84	1.82	1.84
Maximum Dry Density (t/m ³)	1.77	1.77	1.82	1.83
Dry Density Ratio Required (%)	95	95	95	95
Dry Density Ratio (%)	96.5	103.5	100.0	100.5

Remarks

	The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards. Accredited for compliance with ISO/IEC 17025 - Testing		
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	Corporate Site Number:	1979	
	Approved Signatory: Brendan Wild		
	Form ID: W27ASRep Rev 1		



DRY DENSITY RATIO / MOISTURE RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40863-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	
Location:	230 Mountain Ridge Road, South McLean	Internal Test Request:	1979/T/21700
Supplied To:	n/a	Client Reference/s:	Sewer Backfill Testing
Area Description:	Stage 1 Pebble Creek	Report Date / Page:	3/04/2019 Page 1 of 1

Test Procedures:	AS1289.5.4.1, AS1289.5.1.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/108332	1979/S/108333	1979/S/108334	
ID / Client ID	-	-	-	
Lot Number	-	-	-	
Date / Time Tested	1/04/2019 08:30	1/04/2019 08:35	1/04/2019 08:40	
Material Source	On-Site	On-Site	On-Site	
Material Type	Trench Fill	Trench Fill	Trench Fill	
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	
Depths: Test / Nom / Actual (mm)	275 / 300 / 300	275 / 300 / 300	275 / 300 / 300	
Standard or Modified	Standard	Standard	Standard	
Stabilised Material Curing Time	-	-	-	
SEWER LINE NUMB	1/8 To 1/6	1/8 To 1/6	1/6 To 1/5	
MH OFFSET	m	12m From 1/8	17m From 1/8	21m From 1/6
OFFSET	m	CL of Trench	CL of Trench	CL of Trench
LEVEL	m	1.8m Below FSL	0.9m Below FSL	FSL
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	
Sample Oversize Wet (%)	0	0	0	
Sample Oversize Dry (%)	0	0	0	
MDR Sample Number	1979/S/108332	1979/S/108333	1979/S/108334	
MDR Sample Date / Update	1/04/2019	1/04/2019	1/04/2019	
Assigned MDR (Yes / No)	No	No	No	
Moisture Test Results:				
Field Moisture Content (%)	10.5	11.1	8.7	
Optimum Moisture Content (%)	9.5	10.0	9.5	
Variation from OMC (%)	1.0% Wetter than OMC	1.5% Wetter than OMC	1.0% Drier than OMC	
Moisture Ratio (%)	111.5	113.5	89.5	
Density Test Results:				
Field Dry Density (t/m³)	1.91	1.87	1.91	
Maximum Dry Density (t/m³)	1.90	1.91	1.89	
Dry Density Ratio Required (%)	95	95	95	
Dry Density Ratio (%)	100.5	98.5	101.0	

Remarks

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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/39763-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	-
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21198
Supplied To:	n/a	Client Reference/s:	
Area Description:		Report Date / Page:	6/03/2019 Page 1 of 1

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/106057			
ID / Client ID	-			
Lot Number	-			
Date / Time Tested	28/02/2019 13:35			
Material Source	On-Site			
Material Type	Embankment Fill			
Sampling Method	AS1289.1.2.1 CI 6.4b			
Depths: Test / Nom / Actual (mm)	275 / 300 / -			
Standard or Modified	Standard			
Easting: m	6915.6			
Northing m	25785.8			
RL: m	35.07			
Allotment:				
Test Fraction (mm)	< 19.0 mm			
Sample Oversize (%)	0			
Compaction Sample Number	1979/S/106057			
Sample Description	Sandy Clay - Brown			
Moisture Test Results:				
Field Moisture Content (%)	9.1			
Adjusted / Moisture Variation (%)	2.0			
Optimum Moisture Content (%)	11.0			
Moisture Variation from OMC	(Drier than OMC)			
Moisture Ratio (%)	84.5			
Density Test Results:				
Field Wet Density (t/m³)	2.08			
Adj/Peak Conv Wet Density (t/m³)	2.11			
Density Ratio Required (%)	95			
Hilf Density Ratio (%)	98.5			

Remarks



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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/39765-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21199
Supplied To:	n/a	Client Reference/s:	
Area Description:		Report Date / Page:	6/03/2019 Page 1 of 1

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/106058	1979/S/106059	1979/S/106060	
ID / Client ID	-	-	-	
Lot Number	-	-	-	
Date / Time Tested	1/03/2019 10:20	1/03/2019 10:30	1/03/2019 12:00	
Material Source	On-Site	On-Site	On-Site	
Material Type	Embankment Fill	Embankment Fill	Embankment Fill	
Sampling Method	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	
Depths: Test / Nom / Actual (mm)	275 / 300 / -	275 / 300 / -	275 / 300 / -	
Standard or Modified	Standard	Standard	Standard	
Easting: m	6913.7	6926.9	6954.2	
Northing m	25769.7	25773.9	25766.4	
RL: m	35.5	35.3	35.4	
Allotment:	106	105	102	
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	
Sample Oversize (%)	0	0	0	
Compaction Sample Number	1979/S/106058	1979/S/106059	1979/S/106060	
Sample Description	Sandy Clay - Brown	Sand - Light Brown	Sand - Light Brown	
Moisture Test Results:				
Field Moisture Content (%)	8.0	7.6	8.0	
Adjusted / Moisture Variation (%)	2.0	2.0	2.0	
Optimum Moisture Content (%)	10.0	9.5	10.0	
Moisture Variation from OMC	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)	
Moisture Ratio (%)	81.0	81.0	81.0	
Density Test Results:				
Field Wet Density (t/m³)	2.02	1.87	1.95	
Adj/Peak Conv Wet Density (t/m³)	2.02	1.89	1.97	
Density Ratio Required (%)	95	95	95	
Hilf Density Ratio (%)	100.0	99.0	99.0	

Remarks



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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40439-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21339
Supplied To:	n/a	Client Reference/s:	
Area Description:	Stage 1 CBR	Report Date / Page:	22/03/2019 Page 1 of 2

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/106812	1979/S/106813	1979/S/106814	1979/S/107251
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	12/03/2019 08:00	12/03/2019 08:10	12/03/2019 08:20	12/03/2019 13:05
Material Source	On-Site	On-Site	On-Site	On-Site
Material Type	Embankment Fill	Embankment Fill	Embankment Fill	Embankment Fill
Sampling Method	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b
Depths: Test / Nom / Actual (mm)	275 / 300 / -	275 / 300 / -	275 / 300 / -	275 / 300 / -
Standard or Modified	Standard	Standard	Standard	Standard
Easting: m	6858.6	6859.5	6857.2	6857.1
Northing m	25808.8	25811.0	25806.2	25809.08
RL: m	32.18	31.50	30.88	32.46
Allotment:				
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)	0	0	0	0
Compaction Sample Number	1979/S/106812	1979/S/106813	1979/S/106814	1979/S/107251
Sample Description	sandy clay red clay brown	sand clay red clay brown	Sandy clay red clay brown	Sandy clay red clay brown
Moisture Test Results:				
Field Moisture Content (%)	12.4	12.4	11.5	12.4
Adjusted / Moisture Variation (%)	0.0	0.0	0.0	0.0
Optimum Moisture Content (%)	12.5	12.5	11.5	12.5
Moisture Variation from OMC	(Drier than OMC)	(at OMC)	(Drier than OMC)	(Drier than OMC)
Moisture Ratio (%)	99.0	100.0	98.5	98.5
Density Test Results:				
Field Wet Density (t/m³)	2.09	2.10	2.04	2.07
Adj/Peak Conv Wet Density (t/m³)	2.08	2.07	2.10	2.06
Density Ratio Required (%)	95	95	95	95
Half Density Ratio (%)	100.0	101.5	97.5	100.5

Remarks



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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40439-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21339
Supplied To:	n/a	Client Reference/s:	
Area Description:	Stage 1 CBR	Report Date / Page:	22/03/2019 Page 2 of 2

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/107252			
ID / Client ID	-			
Lot Number	-			
Date / Time Tested	12/03/2019 13:10			
Material Source	On-Site			
Material Type	Embankment Fill			
Sampling Method	AS1289.1.2.1 CI 6.4b			
Depths: Test / Nom / Actual (mm)	275 / 300 / -			
Standard or Modified	Standard			
Easting: m	6867.2			
Northing m	25808.2			
RL: m	32.53			
Allotment:				
Test Fraction (mm)	< 19.0 mm			
Sample Oversize (%)	0			
Compaction Sample Number	1979/S/107252			
Sample Description	sand clay reddy brown			
Moisture Test Results:				
Field Moisture Content (%)	11.9			
Adjusted / Moisture Variation (%)	0.0			
Optimum Moisture Content (%)	12.0			
Moisture Variation from OMC	(at OMC)			
Moisture Ratio (%)	100.0			
Density Test Results:				
Field Wet Density (t/m³)	1.94			
Adj/Peak Conv Wet Density (t/m³)	1.99			
Density Ratio Required (%)	95			
Hilf Density Ratio (%)	97.5			

Remarks



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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40521-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	-
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21431
Component:	Bulk Fill	Client Reference/s:	13/03/19
Area Description:	Pebble creek Stage 1	Report Date / Page:	23/03/2019 Page 1 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/107262	1979/S/107263	1979/S/107264	1979/S/107265
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	13/03/2019 07:00	13/03/2019 07:35	13/03/2019 07:40	13/03/2019 07:45
Material Source	On-Site	On-Site	On-Site	On-Site
Material Type	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Sampling Method	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b
Depths: Test / Nom / Actual (mm)	275 / 300 / 300	275 / 300 / 300	275 / 300 / 300	275 / 300 / 300
Standard or Modified	Standard	Standard	Standard	Standard
Location	Lot 101 15m North, 5m West FSL of Lot	Lot 102 10m North 4m West FSL of Lot	Lot 103 12m North 6m West FSL of Lot	Lot 104 8m North 4m West FSL of Lot
Level	Location From South, East corner	Location From South, East corner	Location From South, East corner	Location From South, East corner
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)	0	0	0	0
Compaction Sample Number	1979/S/107262	1979/S/107263	1979/S/107264	1979/S/107265
Sample Description	silty sand brown	silty sand brown	clayey sand brown	silty sand brown
Moisture Test Results:				
Field Moisture Content (%)	8.1	8.6	9.0	8.3
Adjusted / Moisture Variation (%)	2.0	2.0	2.0	2.0
Optimum Moisture Content (%)	10.0	10.5	11.0	10.5
Moisture Variation from OMC	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)
Moisture Ratio (%)	81.0	80.5	81.0	80.0
Density Test Results:				
Field Wet Density (t/m³)	2.01	2.00	2.01	2.05
Adj/Peak Conv Wet Density (t/m³)	2.06	2.09	2.10	2.09
Density Ratio Required (%)	95	95	95	95
Hilf Density Ratio (%)	97.5	96.0	96.0	98.0

Remarks


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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40521-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	-
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21431
Component:	Bulk Fill	Client Reference/s:	13/03/19
Area Description:	Pebble creek Stage 1	Report Date / Page:	23/03/2019 Page 2 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/107266	1979/S/107267	1979/S/107268	1979/S/107269
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	13/03/2019 07:50	13/03/2019 08:00	13/03/2019 08:05	13/03/2019 08:10
Material Source	On-Site	On-Site	On-Site	On-Site
Material Type	Bulk Fill	Bulk Fill	Bulk Fill	Bulk Fill
Sampling Method	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b
Depths: Test / Nom / Actual (mm)	275 / 300 / 300	275 / 300 / -	275 / 300 / -	275 / 300 / -
Standard or Modified	Standard	Standard	Standard	Standard
Location	Lot 105 17m North 6m West FSL of Lot	Lot 106 20m North 3m West FSL of Lot	Lot 126 20m North 5m West FSL of Lot	Lot 127 14m North 4m West FSL of Lot
Level	Location From South,East corner	Location From South,East corner	Location From South,East corner	Location From South,East corner
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)	0	0	0	0
Compaction Sample Number	1979/S/107266	1979/S/107267	1979/S/107268	1979/S/107269
Sample Description	silty sand brown	clayey sand brown	clayey sand brown	clayey sand brown
Moisture Test Results:				
Field Moisture Content (%)	3.9	10.3	6.9	11.1
Adjusted / Moisture Variation (%)	2.0	2.0	2.5	2.0
Optimum Moisture Content (%)	6.0	12.5	9.0	13.0
Moisture Variation from OMC	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)
Moisture Ratio (%)	66.0	83.0	76.0	84.0
Density Test Results:				
Field Wet Density (t/m³)	1.97	2.00	1.94	2.15
Adj/Peak Conv Wet Density (t/m³)	2.02	2.06	2.00	2.20
Density Ratio Required (%)	95	95	95	95
Hilf Density Ratio (%)	97.5	97.5	97.0	98.0

Remarks



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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40521-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	-
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21431
Component:	Bulk Fill	Client Reference/s:	13/03/19
Area Description:	Pebble creek Stage 1	Report Date / Page:	23/03/2019 Page 3 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/107270			
ID / Client ID	-			
Lot Number	-			
Date / Time Tested	13/03/2019 08:15			
Material Source	On-Site			
Material Type	Bulk Fill			
Sampling Method	AS1289.1.2.1 CI 6.4b			
Depths: Test / Nom / Actual (mm)	275 / 300 / -			
Standard or Modified	Standard			
Location	Lot 128			
	14m North 2m West			
	FSL of Lot			
Level	Location From South,East corner			
Test Fraction (mm)	< 19.0 mm			
Sample Oversize (%)	0			
Compaction Sample Number	1979/S/107270			
Sample Description	clayey sand brown			
Moisture Test Results:				
Field Moisture Content (%)	10.6			
Adjusted / Moisture Variation (%)	2.5			
Optimum Moisture Content (%)	13.0			
Moisture Variation from OMC	(Drier than OMC)			
Moisture Ratio (%)	82.0			
Density Test Results:				
Field Wet Density (t/m³)	2.16			
Adj/Peak Conv Wet Density (t/m³)	2.21			
Density Ratio Required (%)	95			
Hilf Density Ratio (%)	97.5			

Remarks


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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40740-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1720
Project:	Pebble Creek Stg 1	Lot Number:	
Location:	230 Mountain Ridge Road	Internal Test Request:	1979/T/21644
Supplied To:	n/a	Client Reference/s:	Bulk Fill Compaction Testing
Area Description:	Stage 1 Bulk Fill	Report Date / Page:	29/03/2019 Page 1 of 1

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	1979/S/108063	1979/S/108064		
ID / Client ID	-	-		
Lot Number	-	-		
Date / Time Tested	27/03/2019 15:10	27/03/2019 15:15		
Material Source	On-Site	On-Site		
Material Type	Bulk Fill	Bulk Fill		
Sampling Method	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b		
Depths: Test / Nom / Actual (mm)	275 / 300 / 300	275 / 300 / 300		
Standard or Modified	Standard	Standard		
Easting: m	6860.07	6872.47		
Northing m	25811.23	25810.16		
RL: m	34.70	34.70		
Allotment:				
Test Fraction (mm)	< 19.0 mm	< 19.0 mm		
Sample Oversize (%)	0	0		
Compaction Sample Number	1979/S/108063	1979/S/108064		
Sample Description	Clayey Sand	Clayey Sand		
Moisture Test Results:				
Field Moisture Content (%)	12.9	12.0		
Adjusted / Moisture Variation (%)	0.5	0.0		
Optimum Moisture Content (%)	13.0	12.0		
Moisture Variation from OMC	(Drier than OMC)	(Wetter than OMC)		
Moisture Ratio (%)	97.5	101.5		
Density Test Results:				
Field Wet Density (t/m³)	2.02	1.99		
Adj/Peak Conv Wet Density (t/m³)	2.01	1.98		
Density Ratio Required (%)	100	100		
Hilf Density Ratio (%)	100.0	100.0		

Remarks


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Approved Signatory: Brendan Wild

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