

WORKS INSPECTION & TESTING Bulk Earthworks

PROPOSED
RESIDENTIAL
DEVELOPMENT

Pebble Creek
Stage 2

JOB NO: P1721 comp02



Prepared for CCA Winslow
26 July 2019

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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, South MaClean, which was carried out from the 21st of March to the 10th May 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, **Peak Urban** 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% Wet 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.

Construction equipment on site during the stripping and placement of fills included the following:

2 x Cat Padfoot Rollers	1 Cat D8 Dozer	1 x Cat D6 Dozer
2 x K-Tek 1233 Scrapers	1 x Cat 627 Scraper	1 x Sumitomo Excavator
2 x water carts		

The above list includes equipment employed on the project but not necessarily all at any one time.

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 35 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 21st March to 10th May 2018 at: Pebbel Creek Stage 2.

(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 wet density ratio.

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

A handwritten signature in blue ink, appearing to read 'W. Gorman', with a stylized flourish at the end.

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/1721 - Pebble Ck Stg 2	Material Source / Type:	<None> / <Not Supplied>

Sample Code	Sample Date	Test Location				Field Moisture (%)	Est OMC (%)	Moisture Ratio (%)	Field Density (t/m³)	PCWD (t/m³)	Wet Density Ratio (%)
1979/S/107240	11/03/2019	6978.5	25571.8	37.3	211	6.5	8.5	77.5	2.12	2.12	100.0
1979/S/107241	11/03/2019	6971.0	25545.5	37.6	214	8.1	10.0	81.0	2.13	2.13	100.0
1979/S/107242	11/03/2019	6963.8	25505.5	38.1	217	8.1	10.0	81.0	2.12	2.13	99.0
1979/S/107283	14/03/2019	Lot 218	7m North 10m East	Location From South West Corner	FSL	9.8	14.0	71.0	2.15	2.07	104.0
1979/S/107284	14/03/2019	Lot 216	6m North 20m East	Location From South West Corner	FSL	13.3	15.5	84.5	2.18	2.15	101.5
1979/S/107285	14/03/2019	Lot 215	5m North 10m East	Location From South West Corner	FSL	8.7	11.0	79.0	2.17	2.17	100.0
1979/S/107286	14/03/2019	Lot 213	6m North 15m East	Location From South West Corner	FSL	7.7	11.5	66.5	2.08	2.11	98.5
1979/S/107287	14/03/2019	Lot 212	5m North 10m East	Location From South West Corner	FSL	8.3	11.0	75.0	2.10	2.06	102.0
1979/S/107288	14/03/2019	Lot 210	4m North 21m East	Location From South West Corner	FSL	8.8	12.5	70.5	2.11	2.07	102.0
1979/S/107289	14/03/2019	6982.11	25341.11	36.87		9.0	10.5	84.0	1.99	2.07	96.0
1979/S/107290	14/03/2019	6980.76	25336.40	37.999		9.1	11.0	81.0	2.14	2.13	100.5
1979/S/107291	14/03/2019	6985.14	25356.26	37.242		10.2	12.5	83.0	2.07	2.12	97.5
1979/S/107842	22/03/2019	7011.310	25562.575	36.490		14.1	14.0	100.5	2.04	2.11	97.0
1979/S/107843	22/03/2019	7018.495	25557.500	36.230		14.4	14.0	103.5	2.13	2.16	98.5
1979/S/107916	23/03/2019	7012.790	25539.914	36.300		12.5	12.5	98.5	2.11	2.14	98.5
1979/S/107965	25/03/2019	497004	6925520	36.812		10.0	11.0	91.0	2.12	2.03	104.0
1979/S/107966	25/03/2019	496991	6925484	36.692		10.7	10.5	101.0	2.10	2.13	98.5
1979/S/108238	29/03/2019	Lot 230	8m West, 11m South		FSL	9.5	9.5	101.0	2.19	2.20	99.5
1979/S/108239	29/03/2019	Lot 231	6m West, 6m South		FSL	10.1	10.0	101.0	2.20	2.20	100.0
1979/S/108240	29/03/2019	Lot 232	7m West, 5m South		FSL	9.8	9.5	101.0	2.02	2.12	95.0
1979/S/108241	29/03/2019	Lot 233	10m West, 5m South		FSL	9.8	9.5	101.0	2.05	2.16	95.0
1979/S/108242	29/03/2019	Lot 234	20m West, 3m South		FSL	7.5	9.5	79.0	2.01	2.09	96.5
1979/S/108243	29/03/2019	Lot 235	22m West, 3m South		FSL	7.2	9.0	79.0	2.02	2.09	96.5
1979/S/108244	29/03/2019	Lot 236	11m West, 7m South		FSL	9.4	11.5	80.5	2.08	2.12	98.5
1979/S/108245	29/03/2019	Lot 237	23m West, 5m South		FSL	9.7	12.0	81.5	2.06	2.10	98.0
1979/S/108246	29/03/2019	Lot 238	25m West, 4m South		FSL	11.0	11.5	97.5	1.87	1.94	96.5
1979/S/109498	16/04/2019	6977.7	25441.8	35.3		9.2	11.5	80.5	2.27	2.21	102.5
1979/S/109499	16/04/2019	6976.9	25431.8	35.00		7.7	8.0	96.0	2.29	2.33	98.0
1979/S/109500	16/04/2019	6992.9	25411.7	36.3		8.7	10.5	81.5	2.40	2.24	107.0
1979/S/109501	16/04/2019	6997.9	25438.3	36.4		7.1	9.0	80.5	1.95	2.04	96.0
1979/S/107914	23/03/2019	Road 4	120	C/L	Subgrade	11.9	13.0	90.0	1.91	1.86	102.5
1979/S/107915	23/03/2019	Road 4	220	C/L	Subgrade	10.3	13.5	75.0	1.95	1.90	102.5
1979/S/107964	25/03/2019	Road 4	320	2m Left of C/L	Subgrade	7.5	11.0	67.5	1.99	1.96	101.5
1979/S/107965	25/03/2019	497004	6925520	36.812		10.0	10.0	91.0	2.12	2.03	104.0
1979/S/107966	25/03/2019	496991	6925484	36.692		10.7	10.7	101.0	2.1	2.03	98.5



CLIENT: CCA Winslow
PROJECT: Pebble Creek Stage 2
TEST ITEM: Bulk Earthworkis

JOB No.: **P1721**

SKETCH No.: **SK 1**

DATE ISSUED:



CLIENT: CCA Winslow	JOB No.: P1721
PROJECT: Pebble Creek Stage 2	SKETCH No.: SK 2
TEST ITEM: Bulk Earthworkis	DATE ISSUED:



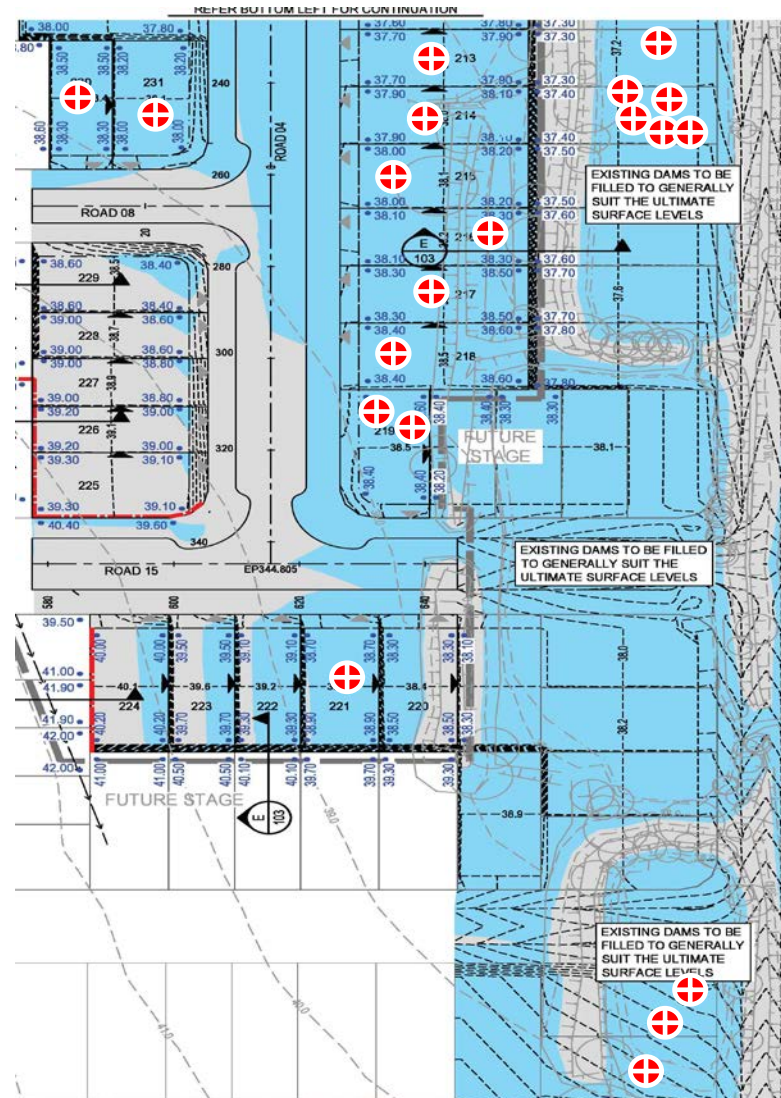
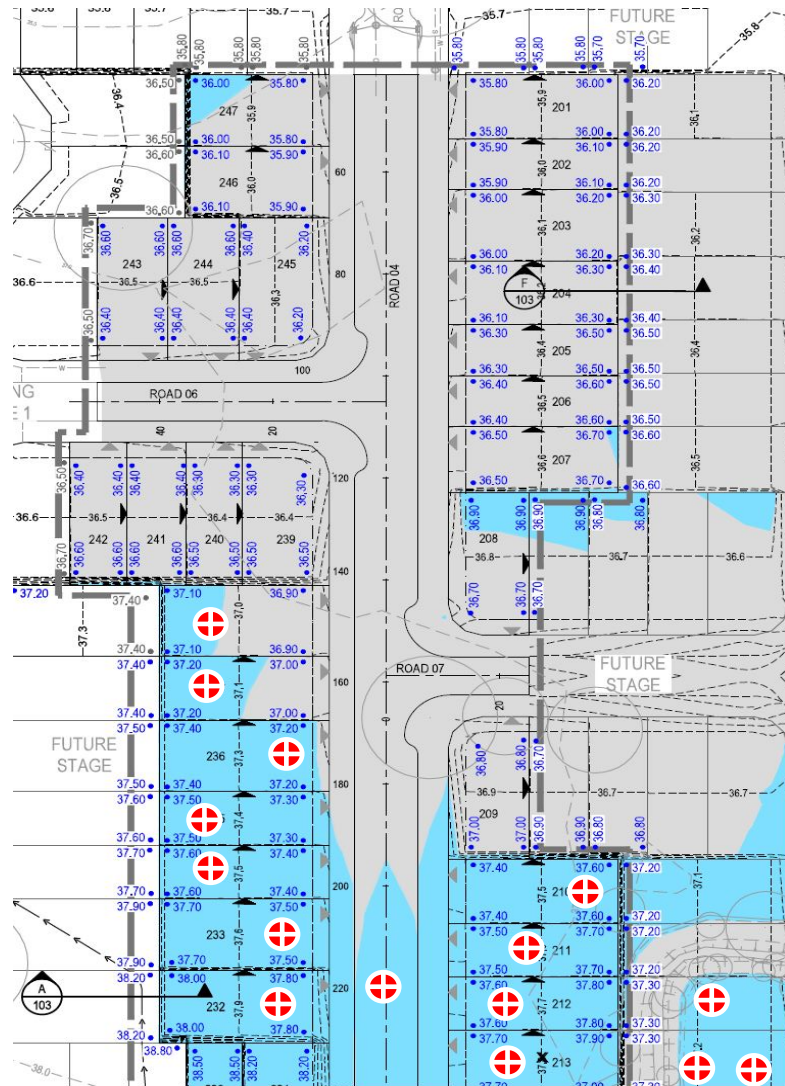
CLIENT: CCA Winslow	JOB No.: P1721
PROJECT: Pebble Creek Stage 2	SKETCH No.: SK 3
TEST ITEM: Bulk Earthworkis	DATE ISSUED:

APPENDIX

A

BULK EARTHWORKS FILL





Denotes Approximate Density Location

WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40435-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	-
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21428
Component:	Bulk Fill	Client Reference/s:	11/03/19
Area Description:	Pebble creek stage 2	Report Date / Page:	21/03/2019 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/107240	1979/S/107241	1979/S/107242	
ID / Client ID	-	-	-	
Lot Number	-	-	-	
Date / Time Tested	11/03/2019 10:00	11/03/2019 10:10	11/03/2019 10:20	
Material Source	Cut to Fill	Cut to Fill	Cut to Fill	
Material Type	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	
Depths: Test / Nom / Actual (mm)	275 / 300 / 300	275 / 300 / 300	275 / 300 / 300	
Standard or Modified	Standard	Standard	Standard	
Easting: m	6978.5	6971.0	6963.8	
Northing m	25571.8	25545.5	25505.5	
RL: m	37.3	37.6	38.1	
Allotment:	211	214	217	
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	
Sample Oversize (%)	0	0	0	
Compaction Sample Number	1979/S/107240	1979/S/107241	1979/S/107242	
Sample Description	clayey sand brown	clayey sand brown	clayey sand brown	
Moisture Test Results:				
Field Moisture Content (%)	6.5	8.1	8.1	
Adjusted / Moisture Variation (%)	2.0	2.0	2.0	
Optimum Moisture Content (%)	8.5	10.0	10.0	
Moisture Variation from OMC	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)	
Moisture Ratio (%)	77.5	81.0	81.0	
Density Test Results:				
Field Wet Density (t/m³)	2.12	2.13	2.12	
Adj/Peak Conv Wet Density (t/m³)	2.12	2.13	2.13	
Density Ratio Required (%)	95	95	95	
Hilf Density Ratio (%)	100.0	100.0	99.0	

Remarks



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Accreditation Number: 1986

Corporate Site Number: 1979



Approved Signatory: Wayne Gorman

Form ID: W5ASRep Rev 2

WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40446-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	-
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21437
Component:	Bulk Fill	Client Reference/s:	14/03/19
Area Description:	Stage 2	Report Date / Page:	21/03/2019 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/107283	1979/S/107284	1979/S/107285	1979/S/107286
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	14/03/2019 12:10	14/03/2019 12:20	14/03/2019 12:30	14/03/2019 12:40
Material Source	Cut to Fill	Cut to Fill	Cut to Fill	Cut to Fill
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 218 7m North 10m East Location From South West Corner	Lot 216 6m North 20m East Location From South West Corner	Lot 215 5m North 10m East Location From South West Corner	Lot 213 6m North 15m East Location From South West Corner
Level	FSL	FSL	FSL	FSL
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/107283	1979/S/107284	1979/S/107285	1979/S/107286
Sample Description	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay
Moisture Test Results:				
Field Moisture Content (%)	9.8	13.3	8.7	7.7
Adjusted / Moisture Variation (%)	4.0	2.5	2.5	4.0
Optimum Moisture Content (%)	14.0	15.5	11.0	11.5
Moisture Variation from OMC	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)
Moisture Ratio (%)	71.0	84.5	79.0	66.5
Density Test Results:				
Field Wet Density (t/m³)	2.15	2.18	2.17	2.08
Adj/Peak Conv Wet Density (t/m³)	2.07	2.15	2.17	2.11
Density Ratio Required (%)	95	95	95	95
Hiif Density Ratio (%)	104.0	101.5	100.0	98.5

Remarks


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Approved Signatory: Wayne Gorman

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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40446-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	-
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21437
Component:	Bulk Fill	Client Reference/s:	14/03/19
Area Description:	Stage 2	Report Date / Page:	21/03/2019 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/107287	1979/S/107288	1979/S/107289	1979/S/107290
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	14/03/2019 12:50	14/03/2019 13:00	14/03/2019 07:00	14/03/2019 10:00
Material Source	Cut to Fill	Cut to Fill	Cut to Fill	Cut to Fill
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 212 5m North 10m East Location From South West Corner	Lot 210 4m North 21m East Location From South West Corner	6982.11 25341.11 36.87	6980.76 25336.40 37.999
Level	FSL	FSL		
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/107287	1979/S/107288	1979/S/107289	1979/S/107290
Sample Description	Sandy Clay	Clay	Sandy Clay	Sandy Clay
Moisture Test Results:				
Field Moisture Content (%)	8.3	8.8	9.0	9.1
Adjusted / Moisture Variation (%)	3.0	3.5	2.0	2.0
Optimum Moisture Content (%)	11.0	12.5	10.5	11.0
Moisture Variation from OMC	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)
Moisture Ratio (%)	75.0	70.5	84.0	81.0
Density Test Results:				
Field Wet Density (t/m³)	2.10	2.11	1.99	2.14
Adj/Peak Conv Wet Density (t/m³)	2.06	2.07	2.07	2.13
Density Ratio Required (%)	95	95	95	95
Hiif Density Ratio (%)	102.0	102.0	96.0	100.5

Remarks


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 Accreditation Number: 1986
Corporate Site Number: 1979



Approved Signatory: Wayne Gorman

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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40446-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	-
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21437
Component:	Bulk Fill	Client Reference/s:	14/03/19
Area Description:	Stage 2	Report Date / Page:	21/03/2019 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/107291			
ID / Client ID	-			
Lot Number	-			
Date / Time Tested	14/03/2019 10:10			
Material Source	Cut to Fill			
Material Type	Bulk Fill			
Sampling Method	AS1289.1.2.1 CI 6.4b			
Depths: Test / Nom / Actual (mm)	275 / 300 / 300			
Standard or Modified	Standard			
Location	6985.14			
	25356.26			
	37.242			
Level				
Test Fraction (mm)	< 19.0 mm			
Sample Oversize (%)	0			
Compaction Sample Number	1979/S/107291			
Sample Description	Sandy Clay			
Moisture Test Results:				
Field Moisture Content (%)	-			
Adjusted / Moisture Variation (%)	2.0			
Optimum Moisture Content (%)	-			
Moisture Variation from OMC	-			
Moisture Ratio (%)	-			
Density Test Results:				
Field Wet Density (t/m³)	2.07			
Adj/Peak Conv Wet Density (t/m³)	2.12			
Density Ratio Required (%)	95			
Hilf Density Ratio (%)	97.5			

Remarks



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Accreditation Number: 1986

Corporate Site Number: 1979



Approved Signatory: Wayne Gorman

Form ID: W5ASRep Rev 2

WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40649-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	-
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21577
Component:	Bulk Earthworks	Client Reference/s:	Bulk Earthworks
Area Description:	Stage 2	Report Date / Page:	27/03/2019 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/107842	1979/S/107843		
ID / Client ID	-	-		
Lot Number	-	-		
Date / Time Tested	22/03/2019 12:10	22/03/2019 12:20		
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)	175 / 200 / -	175 / 200 / -		
Standard or Modified	Standard	Standard		
Easting: m	7011.310	7018.495		
Northing m	25562.575	25557.500		
RL: m	36.490	36.230		
Allotment:				
Test Fraction (mm)	< 19.0 mm	< 19.0 mm		
Sample Oversize (%)	0	0		
Compaction Sample Number	1979/S/107842	1979/S/107843		
Sample Description	Sandy clay brown	sandy clay brown		
Moisture Test Results:				
Field Moisture Content (%)	14.1	14.4		
Adjusted / Moisture Variation (%)	0.0	-0.5		
Optimum Moisture Content (%)	14.0	14.0		
Moisture Variation from OMC	(Wetter than OMC)	(Wetter than OMC)		
Moisture Ratio (%)	100.5	103.5		
Density Test Results:				
Field Wet Density (t/m³)	2.04	2.13		
Adj/Peak Conv Wet Density (t/m³)	2.11	2.16		
Density Ratio Required (%)	95	95		
Hilf Density Ratio (%)	97.0	98.5		

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

Accreditation Number: 1986

Corporate Site Number: 1979



Approved Signatory: Dean Stimpson

Form ID: W5ASRep Rev 2

WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40676-1
Client Address:	1587 Ipswich Road, ROCKLEA	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	Stage 2
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21590
Component:	Bulk Earthworks	Client Reference/s:	Bulk Earthworks
Area Description:	Stage 2	Report Date / Page:	28/03/2019 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/107916			
ID / Client ID	-			
Lot Number	Stage 2			
Date / Time Tested	23/03/2019 09:40			
Material Source	On-Site			
Material Type	Bulk Fill			
Sampling Method	AS1289.1.2.1 CI 6.4b			
Depths: Test / Nom / Actual (mm)	175 / 200 / -			
Standard or Modified	Standard			
Easting: m	7012.790			
Northing m	25539.914			
RL: m	36.300			
Allotment:				
Test Fraction (mm)	< 19.0 mm			
Sample Oversize (%)	0			
Compaction Sample Number	1979/S/107916			
Sample Description	Claye Sand brown			
Moisture Test Results:				
Field Moisture Content (%)	12.5			
Adjusted / Moisture Variation (%)	0.0			
Optimum Moisture Content (%)	12.5			
Moisture Variation from OMC	(Drier than OMC)			
Moisture Ratio (%)	98.5			
Density Test Results:				
Field Wet Density (t/m³)	2.11			
Adj/Peak Conv Wet Density (t/m³)	2.14			
Density Ratio Required (%)	95			
Hilf Density Ratio (%)	98.5			

Remarks



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DRY DENSITY RATIO / MOISTURE RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40677-1
Client Address:	1587 Ipswich Road, ROCKLEA	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	Road 4
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21590
Component:	Bulk Earthworks	Client Reference/s:	Bulk Earthworks
Area Description:	Stage 2	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/107914	1979/S/107915		
ID / Client ID	-	-		
Lot Number	Road 4	Road 4		
Date / Time Tested	23/03/2019 09:20	23/03/2019 09:30		
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	-	-		
Road:	Road 4	Road 4		
Chainage	m 120	m 220		
Offset	m C/L	m C/L		
Level	m Subgrade	m Subgrade		
Test Fraction (mm)	< 19.0 mm	< 19.0 mm		
Sample Oversize Wet (%)	0	0		
Sample Oversize Dry (%)	0	0		
MDR Sample Number	1979/S/107914	1979/S/107915		
MDR Sample Date / Update	23/03/2019	23/03/2019		
Assigned MDR (Yes / No)	No	No		
Moisture Test Results:				
Field Moisture Content (%)	11.9	10.3		
Optimum Moisture Content (%)	13.0	13.5		
Variation from OMC (%)	1.5% Drier than OMC	3.5% Drier than OMC		
Moisture Ratio (%)	90.0	75.0		
Density Test Results:				
Field Dry Density (t/m³)	1.91	1.95		
Maximum Dry Density (t/m³)	1.86	1.90		
Dry Density Ratio Required (%)	100	100		
Dry Density Ratio (%)	102.5	102.5		

Remarks

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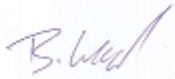
WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40736-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	Stage 2
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21611
Component:	Bulk Earthworks	Client Reference/s:	Bulk Earthworks
Area Description:	Stage 2	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/107965	1979/S/107966		
ID / Client ID	-	-		
Lot Number	Stage 2	Stage 2		
Date / Time Tested	25/03/2019 13:20	25/03/2019 13:30		
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)	175 / 200 / 200	175 / 200 / 200		
Standard or Modified	Standard	Standard		
Easting: m	497004	496991		
Northing m	6925520	6925484		
RL: m	36.812	36.692		
Allotment:				
Test Fraction (mm)	< 19.0 mm	< 19.0 mm		
Sample Oversize (%)	0	0		
Compaction Sample Number	1979/S/107965	1979/S/107966		
Sample Description	brown sandy clay	brown sandy clay		
Moisture Test Results:				
Field Moisture Content (%)	10.0	10.7		
Adjusted / Moisture Variation (%)	1.0	0.0		
Optimum Moisture Content (%)	11.0	10.5		
Moisture Variation from OMC	(Drier than OMC)	(Wetter than OMC)		
Moisture Ratio (%)	91.0	101.0		
Density Test Results:				
Field Wet Density (t/m³)	2.12	2.10		
Adj/Peak Conv Wet Density (t/m³)	2.03	2.13		
Density Ratio Required (%)	95	95		
Hilf Density Ratio (%)	104.0	98.5		

Remarks

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	Approved Signatory: Brendan Wild		
	Form ID: W5ASRep Rev 2		

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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DRY DENSITY RATIO / MOISTURE RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40741-1
Client Address:	1587 Ipswich Road, ROCKLEA	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	Road 4
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21611
Component:	Bulk Earthworks	Client Reference/s:	Bulk Earthworks
Area Description:	Stage 2	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/107964			
ID / Client ID	-			
Lot Number	Road 4			
Date / Time Tested	25/03/2019 13:05			
Material Source	On-Site			
Material Type	Bulk Fill			
Sampling Method	AS1289.1.2.1 Cl 6.4b			
Depths: Test / Nom / Actual (mm)	175 / 200 / 200			
Standard or Modified	Standard			
Stabilised Material Curing Time	-			
Road:	Road 4			
Chainage	m 320			
Offset	m 2m Left of C/L			
Level	m Subgrade			
Test Fraction (mm)	< 19.0 mm			
Sample Oversize Wet (%)	0			
Sample Oversize Dry (%)	0			
MDR Sample Number	1979/S/107964			
MDR Sample Date / Update	25/03/2019			
Assigned MDR (Yes / No)	No			
Moisture Test Results:				
Field Moisture Content (%)	7.5			
Optimum Moisture Content (%)	11.0			
Variation from OMC (%)	3.5% Drier than OMC			
Moisture Ratio (%)	67.5			
Density Test Results:				
Field Dry Density (t/m³)	1.99			
Maximum Dry Density (t/m³)	1.96			
Dry Density Ratio Required (%)	100			
Dry Density Ratio (%)	101.5			

Remarks

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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40858-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21678
Supplied To:	n/a	Client Reference/s:	Lot Testing
Area Description:	Stage 2 FSL lot Testing	Report Date / Page:	3/04/2019 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/108238	1979/S/108239	1979/S/108240	1979/S/108241
ID / Client ID	Location North,East	Location North,East	Location North,East	Location North,East
Lot Number	-	-	-	-
Date / Time Tested	29/03/2019	29/03/2019	29/03/2019	29/03/2019
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 230	Lot 231	Lot 232	Lot 233
	8m West, 11m South	6m West, 6m South	7m West, 5m South	10m West, 5m South
Level	FSL	FSL	FSL	FSL
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/108238	1979/S/108239	1979/S/108240	1979/S/108241
Sample Description	Clay sand	Clay sand	clay sand	clay sand
Moisture Test Results:				
Field Moisture Content (%)	9.5	10.1	9.8	9.8
Adjusted / Moisture Variation (%)	0.0	0.0	0.0	0.0
Optimum Moisture Content (%)	9.5	10.0	9.5	9.5
Moisture Variation from OMC	(Wetter than OMC)	(Wetter than OMC)	(Wetter than OMC)	(Wetter than OMC)
Moisture Ratio (%)	101.0	101.0	101.0	101.0
Density Test Results:				
Field Wet Density (t/m³)	2.19	2.20	2.02	2.05
Adj/Peak Conv Wet Density (t/m³)	2.20	2.20	2.12	2.16
Density Ratio Required (%)	95	95	95	95
Half Density Ratio (%)	99.5	100.0	95.0	95.0

Remarks



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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40858-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21678
Supplied To:	n/a	Client Reference/s:	Lot Testing
Area Description:	Stage 2 FSL lot Testing	Report Date / Page:	3/04/2019 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/108242	1979/S/108243	1979/S/108244	1979/S/108245
ID / Client ID	Location North,East	Location North,East	Location North,East	Location North,East
Lot Number	-	-	-	-
Date / Time Tested	29/03/2019	29/03/2019	29/03/2019	29/03/2019
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 234	Lot 235	Lot 236	Lot 237
	20m West, 3m South	22m West,3m South	11m West, 7m South	23m West, 5m South
Level	FSL	FSL	FSL	FSL
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/108242	1979/S/108243	1979/S/108244	1979/S/108245
Sample Description	clayey sand brown	clayey sand brown	sandy clay	sandy clay
Moisture Test Results:				
Field Moisture Content (%)	7.5	7.2	9.4	9.7
Adjusted / Moisture Variation (%)	2.0	2.0	2.5	2.0
Optimum Moisture Content (%)	9.5	9.0	11.5	12.0
Moisture Variation from OMC	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)
Moisture Ratio (%)	79.0	79.0	80.5	81.5
Density Test Results:				
Field Wet Density (t/m³)	2.01	2.02	2.08	2.06
Adj/Peak Conv Wet Density (t/m³)	2.09	2.09	2.12	2.10
Density Ratio Required (%)	95	95	95	95
Hilf Density Ratio (%)	96.5	96.5	98.5	98.0

Remarks



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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/40858-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21678
Supplied To:	n/a	Client Reference/s:	Lot Testing
Area Description:	Stage 2 FSL lot Testing	Report Date / Page:	3/04/2019 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/108246			
ID / Client ID	Location North,East			
Lot Number	-			
Date / Time Tested	29/03/2019			
Material Source	On-Site			
Material Type	Bulk Fill			
Sampling Method	AS1289.1.2.1 CI 6.4b			
Depths: Test / Nom / Actual (mm)	275 / 300 / 300			
Standard or Modified	Standard			
Location	Lot 238			
	25m West, 4m South			
Level	FSL			
Test Fraction (mm)	< 19.0 mm			
Sample Oversize (%)	0			
Compaction Sample Number	1979/S/108246			
Sample Description	sandy clay			
Moisture Test Results:				
Field Moisture Content (%)	11.0			
Adjusted / Moisture Variation (%)	0.5			
Optimum Moisture Content (%)	11.5			
Moisture Variation from OMC	(Drier than OMC)			
Moisture Ratio (%)	97.5			
Density Test Results:				
Field Wet Density (t/m³)	1.87			
Adj/Peak Conv Wet Density (t/m³)	1.94			
Density Ratio Required (%)	95			
Hilf Density Ratio (%)	96.5			

Remarks

<div style="display: flex; align-items: center;">  <div> <p>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</p> <p>Accreditation Number: 1986 Corporate Site Number: 1979</p> </div> </div>	 <p>Approved Signatory: Dean Stimpson Form ID: W5ASRep Rev 2</p>
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WET DENSITY RATIO REPORT

Client:	CCA Winslow	Report Number:	1979/R/41513-1
Client Address:	1587 Ipswich Road, Rocklea	Project Number:	1979/P/1721
Project:	Pebble Ck Stg 2	Lot Number:	
Location:	230 Mountain Ridge Rd	Internal Test Request:	1979/T/21976
Component:	Compaction on Level 1 Filling	Client Reference/s:	Bulk Fill
Area Description:	Pebble Creek Stage 2	Report Date / Page:	10/05/2019 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/109498	1979/S/109499	1979/S/109500	1979/S/109501
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	16/04/2019	16/04/2019	16/04/2019	16/04/2019
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
Easting: m	6977.7	6976.9	6992.9	6997.9
Northing m	25441.8	25431.8	25411.7	25438.3
RL: m	35.3	35.00	36.3	36.4
Allotment:				
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)	19	10	6	0
Compaction Sample Number	1979/S/109498	1979/S/109499	1979/S/109500	1979/S/109501
Sample Description	clay sand brown	Gravely Sand Brown	Clay sand brownn	clay sand brown
Moisture Test Results:				
Field Moisture Content (%)	9.2	7.7	8.7	7.1
Adjusted / Moisture Variation (%)	2.0	0.5	2.0	2.0
Optimum Moisture Content (%)	11.5	8.0	10.5	9.0
Moisture Variation from OMC	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)	(Drier than OMC)
Moisture Ratio (%)	80.5	96.0	81.5	80.5
Density Test Results:				
Field Wet Density (t/m³)	2.27	2.29	2.40	1.95
Adj/Peak Conv Wet Density (t/m³)	2.21	2.33	2.24	2.04
Density Ratio Required (%)	95	95	95	95
Hilf Density Ratio (%)	102.5	98.0	107.0	96.0

Remarks



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