



LEVEL ONE REPORT

Inspection & Testing of Filling WHITSUNDAY LAKES ESTATE STAGE 10C

Prepared for: Eastcoast Civil

Job Number: BW/2910

Date: 03 February 2012



ABN 22 097 022 421

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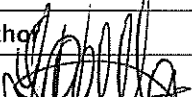
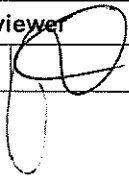
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Document Control

Version	Date	Author	Reviewer
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1 INTRODUCTION

Bowler Geotechnical was commissioned by Eastcoast Civil to provide Level 1 inspection and testing services for the placement of fill at Whitsunday Lakes Estate – Stage 10C.

The earthworks were carried out from 30/09/2011.

2 SPECIFICATION REQUIREMENTS

Filling was carried out in accordance with AS3798-2007 '*Guidelines on earthworks for commercial and residential developments*' and with the project specification prepared for the project.

The specification requirements were that all fill was to be placed and compacted in layers to a density ratio of not less than 95% of the maximum dry density as determined by AS1289.5.1.1 (standard compaction).

3 SITE WORKS

The area to be filled was stripped and proof rolled in accordance with the specification requirements.

The fill material generally comprised of Sandy Gravely Clay and was sourced from onsite cut area.

4 COMPACTION CONTROL TESTING

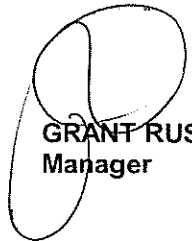
Compaction control tests were carried out at regular intervals throughout the placement of fill in accordance with the minimum test frequency recommendations included in AS3798-2007 '*Guidelines on earthworks for commercial and residential developments*'. All test results are included in the Annex C. A summary of the test results is in the Annex B. A total of seven field density tests were carried out throughout the earthworks. The average density ratio was 99% with a standard deviation of 0.9431%

The location of all tests is shown on the attached Field Density Tests Location Plan in Annex C.

5 CONCLUSION

It is considered that the placement of fill at Whitsunday Lakes Estate stage 10C was carried out in a controlled manner and the fill was compacted to a dry density ratio not less than the specified requirement. It is concluded that the fill may be deemed to be "*controlled fill*" in accordance with AS2870 – 1996 '*Residential Slabs & Footings*'.

BOWLER GEOTECHNICAL WHITSUNDAY



GRANT RUSSELL
Manager

Annex A

Summary of Field Density Results

BOWLER GEOTECHNICAL, WHITSUNDAY
P O BOX 6735
MACKAY MAIL CENTRE
QLD
4741

Field Density Ratio (Nuclear Meter) Summary

Date Compiled: 4/12/2012

Compiled By · TIANNA VELLA

Client : EASTCOAST CIVIL

Project : WHITSUNDAY LAKES - STAGE 10C

Project Number: BW/2910

Project Location : CANNONVALE

Suburb :

Sample Number	Project Number	Date Sampled	Location	Test Number	Test Depth	Layer Depth	MDD (lbm^3)	CMC (%)	Oversize Wet (%)	Oversize Dry (%)	Oversize Density (lbm^3)	Dry Density (lbm^3)	Field MC (%)	Density Ratio (%)
11/12446	BW/2910	05-Oct-2011	WHITSUNDAY LAKES STAGE 10C LOT 235 REF TO MAP		150		1.581	22.4	0	0		1.565	11.6	99
11/12447	BW/2910	05-Oct-2011	WHITSUNDAY LAKES STAGE 10C LOT 232 REF TO MAP		150		1.54	23.2	0	0		1.511	19.2	98.1
11/12477	BW/2910	06-Jan-2012	235/236 LEVEL 3		150		1.9	15	0	0		1.91	15.7	100.5
11/12489	BW/2910	13-Oct-2011	Abandon No LOT 234 Offset CENTRE Location WHITSUNDAY LAKES STAGE 10C Level 4		150		1.779	17.1	0	0		1.776	16.4	99.8
11/12490	BW/2910	13-Oct-2011	Abandon No LOT 235 Offset CENTRE Location WHITSUNDAY LAKES STAGE 10C Level 3		150		1.891	14.9	0	0		1.854	14	98
11/12491	BW/2910	18-Oct-2011	Abandon No LOT 237 Offset CENTRE Location WHITSUNDAY LAKES STAGE 10C Level TOP		150		1.8	16	0	0		1.784	13.5	99.1
11/12492	BW/2910	18-Oct-2011	Abandon No LOT 237 Offset CENTRE Location WHITSUNDAY LAKES STAGE 10C Level TOP		150		1.75	16.5	0	0		1.718	14.1	98.2

SM40-17

Annex B

**Field Density Test
Certificates**

Dry Density Ratio Report

Client :	EASTCOAST CIVIL	Report Number:	BW/2910 - 3
Address:	P.O. BOX 106 BEENLEIGH QLD 4207	Report Date :	19/01/2012
Job Number :	BW/2910	Order Number:	
Project :	WHITSUNDAY LAKES - STAGE 10C	Test Method:	AS1289.5.4.1
Location :	CANNONVALE		

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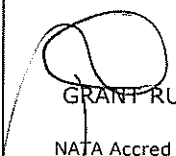
Lab No :	11/12477			
ID No :	-			
Lot No :	-			
Item No :	-			
Date Sampled :	6/1/2012			
Date/Time Tested :	6/1/2012 / -			
Material Source :	ONSITE			
For Use As :	Fill Material			
Sample Location :	235/236 LEVEL 3			
Test/Layer Depth (mm)	150 /			
Max Size (mm) :	19.0			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Field Moisture (%) :	15.7			
MDR No :				
Assigned MDR :	No			
Field Dry Density (t/m ³)	1.910			
MDD (t/m ³) :	1.90			
OMC (%) :	15.0			
Variation from OMC	0.5% wet of omc			
Field Density Method :	AS1289.5.8.1			
MC Method :	AS1289.2.1.1			
Compactive Effort :	Standard			
Moisture Ratio / Spec(%) :	104.5 / -			
Dry Density Ratio (%) :	100.5			
Min Dry Dens Ratio (%)	95			

Remarks :



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APPROVED SIGNATORY


 GRANT RUSSELL
 NATA Accred No:5683

FORM NUMBER

RP55-44

Dry Density Ratio Report

Client :	EASTCOAST CIVIL	Report Number:	BW/2910 - 4
Address:	P.O. BOX 106 BEENLEIGH QLD 4207	Report Date :	3/02/2012
Job Number :	BW/2910	Order Number:	
Project :	WHITSUNDAY LAKES - STAGE 10C	Test Method:	AS1289.5.4.1
Location :	CANNONVALE		

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Lab No :	11/12446	11/12447		
ID No :	-	-		
Lot No :	-	-		
Item No :	-	-		
Date Sampled :	5/10/2011	5/10/2011		
Date/Time Tested :	5/10/2011 / -	5/10/2011 / -		
Material Source :	ONSITE	ONSITE		
For Use As :	Natural	Fill Material		
Sample Location :	WHITSUNDAY LAKES STAGE 10C LOT 236 REF TO MAP	WHITSUNDAY LAKES STAGE 10C LOT 232 REF TO MAP		
Test/Layer Depth (mm)	150 /	150 /		
Max Size (mm) :	19.0	19.0		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Field Moisture (%) :	11.6	19.2		
MDR No :	11/12446	11/12447		
Assigned MDR :	No	No		
Field Dry Density (t/m ³)	1.565	1.511		
MDD (t/m ³) :	1.58	1.54		
OMC (%) :	22.5	23.0		
Variation from OMC	11% dry of omc	4% dry of omc		
Field Density Method :	AS1289.5.8.1	AS1289.5.8.1		
MC Method :	AS1289.2.1.1	AS1289.2.1.1		
Compactive Effort :	Standard	Standard		
Moisture Ratio / Spec(%) :	52 / -	83 / -		
Dry Density Ratio (%) :	99.0	98.0		
Min Dry Dens Ratio (%)	95	95		

Remarks :



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GRANT RUSSELL

NATA Accred No:5683

FORM NUMBER

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Dry Density Ratio Report

Client :	EASTCOAST CIVIL	Report Number:	BW/2910 - 5
Address:	P.O. BOX 106 BEENLEIGH QLD 4207	Report Date :	3/02/2012
Job Number :	BW/2910	Order Number:	
Project :	WHITSUNDAY LAKES - STAGE 10C	Test Method:	AS1289.5.4.1
Location :	CANNONVALE		

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Lab No :	11/12489			
ID No :	-			
Lot No :	CAPP-159			
Item No :	-			
Date Sampled :	13/10/2011			
Date/Time Tested :	13/10/2011 / -			
Material Source :	ONSITE			
For Use As :	FILL			
Sample Location :	LOT 234 CENTRE WHITSUNDAY LAKES STAGE 10C 4			
Test/Layer Depth (mm)	150 /			
Max Size (mm) :	19.0			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Field Moisture (%) :	16.4			
MDR No :	11/12489			
Assigned MDR :	No			
Field Dry Density (t/m ³)	1.776			
MDD (t/m ³) :	1.78			
OMC (%) :	17.0			
Variation from OMC	0.5% dry of omc			
Field Density Method :	AS1289.5.8.1			
MC Method :	AS1289.2.1.1			
Compactive Effort :	Standard			
Moisture Ratio / Spec(%) :	96 / -			
Dry Density Ratio (%) :	100.0			
Min Dry Dens Ratio (%)	95			

Remarks :



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Dry Density Ratio Report

Client :	EASTCOAST CIVIL	Report Number:	BW/2910 - 6
Address:	P.O. BOX 106 BEENLEIGH QLD 4207	Report Date :	3/02/2012
Job Number :	BW/2910	Order Number:	
Project :	WHITSUNDAY LAKES - STAGE 10C	Test Method:	AS1289.5.4.1
Location :	CANNONVALE		

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Lab No :	11/12490			
ID No :	-			
Lot No :	CAPP-159			
Item No :	-			
Date Sampled :	13/10/2011			
Date/Time Tested :	13/10/2011 / -			
Material Source :	ONSITE			
For Use As :	FILL			
Sample Location :	LOT 236 CENTRE WHITSUNDAY LAKES STAGE 10C 3			
Test/Layer Depth (mm)	150 /			
Max Size (mm) :	19.0			
Oversize Wet (%) :	-			
Oversize Dry (%) :	-			
Field Moisture (%) :	14.0			
MDR No :	11/12490			
Assigned MDR :	No			
Field Dry Density (t/m ³)	1.854			
MDD (t/m ³) :	1.89			
OMC (%) :	15.0			
Variation from OMC	1% dry of omc			
Field Density Method :	AS1289.5.8.1			
MC Method :	AS1289.2.1.1			
Compactive Effort :	Standard			
Moisture Ratio / Spec(%) :	94 / -			
Dry Density Ratio (%) :	98.0			
Min Dry Dens Ratio (%)	95			

Remarks :



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(Signature)
 GRANT RUSSELL

NATA Accred No:5683

FORM NUMBER

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Dry Density Ratio Report

Client :	EASTCOAST CIVIL	Report Number:	BW/2910 - 7
Address:	P.O. BOX 106 BEENLEIGH QLD 4207	Report Date :	3/02/2012
Job Number :	BW/2910	Order Number:	
Project :	WHITSUNDAY LAKES - STAGE 10C	Test Method:	AS1289.5.4.1
Location :	CANNONVALE		

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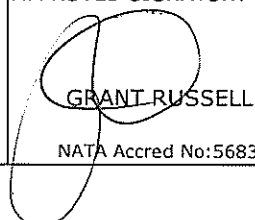
Lab No :	11/12491	11/12492		
ID No :	-	-		
Lot No :	CAPP-159	CAPP-159		
Item No :	-	-		
Date Sampled :	18/10/2011	18/10/2011		
Date/Time Tested :	18/10/2011 / -	18/10/2011 / -		
Material Source :	ONSITE	ONSITE		
For Use As :	FILL	FILL		
Sample Location :	LOT 232 CENTRE WHITSUNDAY LAKES STAGE 10C TOP	LOT 237 CENTRE WHITSUNDAY LAKES STAGE 10C TOP		
Test/Layer Depth (mm)	150 /	150 /		
Max Size (mm) :	19.0	19.0		
Oversize Wet (%) :	-	-		
Oversize Dry (%) :	-	-		
Field Moisture (%) :	13.5	14.1		
MDR No :	11/12491	11/12492		
Assigned MDR :	No	No		
Field Dry Density (t/m³)	1.784	1.718		
MDD (t/m³) :	1.80	1.75		
OMC (%) :	16.0	16.5		
Variation from OMC	2.5% dry of omc	2.5% dry of omc		
Field Density Method :	AS1289.5.8.1	AS1289.5.8.1		
MC Method :	AS1289.2.1.1	AS1289.2.1.1		
Compactive Effort :	Standard	Standard		
Moisture Ratio / Spec(%) :	84.5 / -	85.5 / -		
Dry Density Ratio (%) :	99.0	98.0		
Min Dry Dens Ratio (%)	95	95		

Remarks :



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RP55-44

Annex C

Site Visit Records

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	30/09/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:

Type of Trees/Large Shrubs Removed: Clearing rubble, grass, trees, scrub & top soil. Cleaning out gully.

Type of Material after Stripping & Comments:

Area of Earthworks in Progress/Type of Material used:

Instructions/Advise (Received or Given):

Camera No: **Photos No's From:** **To:**

Test No.	Type of Test	Location	Material	Level

Remarks/Equipment:

Time on Site: 1 HR

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	05/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:

Type of Trees/Large Shrubs Removed: Clearing grass & scrub to reveal ground surface. Boxing out road corridor & using for allotment fill.

Type of Material after Stripping & Comments:

Area of Earthworks in Progress/Type of Material used:

Instructions/Advise (Received or Given):

Camera No: **Photos No's From:** **To:**

Test No.	Type of Test		Location	Material	Level
11/12446	FD	MDD	REFER TO MAP	NATURAL	G/S
11/12447	FD	MDD	REFER TO MAP	FILL	G/S

Remarks/Equipment:

Time on Site: 1 HR

Reference: SV2

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	06/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:**Type of Trees/Large Shrubs Removed:** Filling lots 238 to gully.**Type of Material after Stripping & Comments:****Area of Earthworks in Progress/Type of Material used:****Instructions/Advise (Received or Given):****Camera No:** **Photos No's From:** **To:**

Test No.	Type of Test		Location	Material	Level

Remarks/Equipment:**Time on Site:** 1 HR**Reference: SV3**

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	07/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:**Type of Trees/Large Shrubs Removed:** Filling gully, sifting rocks from stock plies .**Type of Material after Stripping & Comments:****Area of Earthworks in Progress/Type of Material used:****Instructions/Advise (Received or Given):****Camera No:****Photos No's From:****To:**

Test No.	Type of Test		Location	Material	Level
	FD	MDD			

Remarks/Equipment:**Time on Site:** 1 HR**Reference: SV4**

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	10/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:**Type of Trees/Large Shrubs Removed:** Sifting rocks & cleaning rest of lots. Removing stock piles.**Type of Material after Stripping & Comments:****Area of Earthworks in Progress/Type of Material used:****Instructions/Advise (Received or Given):****Camera No:** **Photos No's From:** **To:**

Test No.	Type of Test		Location	Material	Level

Remarks/Equipment:**Time on Site:** 1 HR**Reference:** SV5

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	11/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:**Type of Trees/Large Shrubs Removed:** Filling lots 235-231**Type of Material after Stripping & Comments:****Area of Earthworks in Progress/Type of Material used:****Instructions/Advise (Received or Given):**

Camera No:	Photos No's From:	To:
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Test No.	Type of Test		Location	Material	Level

Remarks/Equipment:**Time on Site:** 1 HR

Reference: SV6

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	12/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:

Type of Trees/Large Shrubs Removed: Filling and removing stockpiles.

Type of Material after Stripping & Comments:

Area of Earthworks in Progress/Type of Material used:

Instructions/Advise (Received or Given):

Camera No: **Photos No's From:** **To:**

Test No.	Type of Test		Location	Material	Level

Remarks/Equipment:

Time on Site: 1 HR

Reference: SV7

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	13/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:

Type of Trees/Large Shrubs Removed: Filling Lots

Type of Material after Stripping & Comments:

Area of Earthworks in Progress/Type of Material used:

Instructions/Advise (Received or Given):

Camera No: **Photos No's From:** **To:**

Test No.	Type of Test	Location	Material	Level

Remarks/Equipment:

Time on Site: 1 HR

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	14/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:

Type of Trees/Large Shrubs Removed: Filling Lots

Type of Material after Stripping & Comments:

Area of Earthworks in Progress/Type of Material used:

Instructions/Advise (Received or Given):

Camera No: **Photos No's From:** **To:**

Test No.	Type of Test	Location	Material	Level

Remarks/Equipment:

Time on Site: 1 HR

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	17/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:**Type of Trees/Large Shrubs Removed:** Filling Lots**Type of Material after Stripping & Comments:****Area of Earthworks in Progress/Type of Material used:****Instructions/Advise (Received or Given):****Camera No:** **Photos No's From:** **To:**

Test No.	Type of Test		Location	Material	Level

Remarks/Equipment:**Time on Site:** 1 HR**Reference: SV10**

SITE VISIT RECORD – EARTHWORKS

Client:	EAST COAST CIVIL	Job No:	BW/2910
Project:	WHITSUNDAY LAKES STAGE 10C	Test Request No:	
Location:	CONNONVALE	Date:	18/10/2011
		By:	G.S.
Requested By:	CLIENT	Weather:	FINE

Level After Stripping:**Type of Trees/Large Shrubs Removed:** Filling Lots. Only Entry road to finish.**Type of Material after Stripping & Comments:****Area of Earthworks in Progress/Type of Material used:****Instructions/Advise (Received or Given):**

Camera No:	Photos No's From:	To:
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Test No.	Type of Test		Location	Material	Level

Remarks/Equipment:**Time on Site:** 1 HR**Reference: SV11**