

Shadforth Pty Ltd
99 Sandalwood Lane,
Forest Glen, QLD, 4556

Project Number: PTP/05735
Letter Number: PTP/05735 – 0001 – Rev2
Project Name: Spring Mountain, Stage 17C,
New Beith

Attention: Lincoln Redgen
Email: Lincoln.Redgen@shadcivil.com.au

Report on Level 1 Earthworks
Residential Development
Spring Mountain, Stage 17C,
New Beith, QLD, 4124

1. Introduction

This report summarises the results of inspection and testing provided by Protest Engineering (Protest) for the bulk earthworks as part of the Spring Mountain, Stage 17C project located at New Beith undertaken between 25th November 2020 to 19th May 2021. The works were undertaken at the request of Shadforth.

The scope of inspection and testing undertaken was in general accordance with AS3798-2007 *Guidelines on Earthworks for Commercial and Residential Developments*. As part of the inspection and testing undertaken, Protest provided Level 1 supervision in accordance with Section 8.2 of AS3798-2007.

Approximately 26,800m³ of fill was placed at the site. Drawing Nos. 19-154-06, Revision B – *Earthworks Contour Plan Sheet 1*; and 19-154-07, Revision B – *Earthworks Contour Plan Sheet 2* attached are the bulk earthworks cut to fill plans. The frequency of field density testing adopted for this project was based on AS3798-2007, Table 8.1 with a minimum of one test per 500m³ placed for a *Type 1 – Large Scale Operation*.

Based off the information provided within the general notes (Drawing No. 19-154-01, Revision B – *General Locality Plan, Drawing Index and Notes*), the minimum relative compaction requirements were not specified and therefore the criteria in AS3798, Table 5.1 was adopted. A summary of the criteria is summarized in Table 1.

Table 1. Test Request Compaction and Moisture Content Specification

Fill Types	Maximum Dry Density Ratio (%)	Optimum Moisture Content Variation (%)
Residential – lot, fill, house, sites	>95%	±2% (Dry/Wet of OMC ⁽¹⁾)

(Notes: ⁽¹⁾ Optimum Moisture Content)

2. Earthworks Activities

Foundation preparation observed by Protest comprised the removal of topsoil and unsuitable materials across the cut to fill area exposing the underlying natural materials. A test roll was performed on the natural soils using a pad foot roller and no noticeable movement was observed on the final pass.

Following successful proof rolling, filling operations comprised the placement and compaction of material obtained from onsite cuts which were typically sandy gravelly clay. Filling materials were placed onsite in uniform layers not exceeding 150mm thick compacted layers with the plant detailed below. The material used as fill was moisture conditioned at the fill source and during placement and blended to achieve suitable moisture content for compaction. The following heavy plant were used throughout the bulk earthworks component:

- Water Trucks
- Dump Trucks
- Pad Foot Rollers/ Compactors
- Excavators
- Dozers
- Scrapers
- Graders

A total of fifty-eight field density ratio tests were undertaken at select locations during the filling operations. Field density testing was carried out using a nuclear gauge and in accordance with the test method outlined in AS1289.5.8.1. The relative compaction was then determined by comparing the recorded field density with the laboratory maximum dry density (standard compaction) outlined in test method AS1289.5.1.1.

A summary of the test results is presented in Table 2 with the individual reports attached and the approximate test locations are shown on the marked earthworks layout plan attached.

Table 2. Summary of Density Testing

Item	Compaction	Moisture Variation
No. of tests	60	60
Mean	100%	1.5% (Dry of OMC ⁽¹⁾)

(Notes: ⁽¹⁾ Optimum Moisture Content)

3. Compliance

Based on the level 1 supervision and test results, it is our opinion that the bulk earthworks placed and compacted at Spring Mountain, Stage 17C in New Beith by Shadforth between 25th November 2020 to 19th May 2021 comply with the above-mentioned specifications and can be considered as Level 1 'controlled' or structural fill.

4. Comments

Based on the results of the inspections and field density testing whilst Protest were on-site, it is considered that the bulk earthworks at Spring Mountain, Stage 17C, New Beith 25th November 2020 to 19th May 2021 have been undertaken in general accordance with AS3798-2007 *Guidelines on Earthworks for Commercial and Residential Developments*. Protest believes consideration should be given to the following:

- I. This report only certifies the bulk earthworks activities supervised by Protest between 25th November 2020 to 19th May 2021. Protest does not take responsibility for any other bulk earthworks activities that have occurred before or after these dates;
- II. The installation of services or any activities that may cause disruption of the compacted filling;

- III. The suitability of the filled land to support the proposed structures; and
- IV. Any variation in filling depth of extent of areas that is not noted within this report or on the individual test report sheets.

5. Constraints

- I. Protest has prepared this report for the bulk earthworks at Spring Mountain, Stage 17C, New Beith. This report was produced for the sole use of Shadforth. It should not be used by or depended upon for other projects or purposes on the same or other site or by a third party. In the preparation of this report Protest has relied upon information provided by the client and/or their agents.
- II. The results provided in this report are indicative of the subsurface conditions on the site only at the specific sampling or testing locations, and then only to the depths investigated along with the time the work was carried out. It is known that subsurface conditions can suddenly change due to irregular geological processes and as a result of human influences. Such changes may occur after Protest field testing has been completed.
- III. Certain ground conditions and the materials behaviour observed or contained at the test locations may alter from those which may be encountered elsewhere on the site. Should variations in subsurface conditions be encountered, then additional advice should be sought from Protest and, if required, amendments made.
- IV. Protest cannot be held responsible for interpretations or conclusions made by others unless they are supported by an expressed statement, interpretation, outcome or conclusion given in this report.

We trust that the above information is suitable for your present requirements. Should you have any queries, please do not hesitate to contact the undersigned.

Written By:



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Reviewed By:



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- Attachments:
- 1. Site Images;
 - 2. Test Location Plan;
 - 3. Density Reports;
 - 4. Referenced Drawings.

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Attachment 1

Site Images



Figure 1 – Scrapers running circuits placing and spreading fill material. (Taken 25.11.2020)



Figure 2 – Pad foot rollers working compaction on lower southern end of site. (Taken 27.11.2020)



Figure 3 – Scrapers running circuits with a water truck adding moisture. (Taken 30.11.2020)



Figure 4 Heavy machinery used throughout bulk earthwork activities. (Taken 1.12.2020)



Figure 5 – Water cart used to moisture condition the fill material placed. (Taken 2.12.2020)



Figure 6. Dozer spreading and placing fill materials on house lots. (Taken 02.12.2020)



Figure 7 – Water cart working with compactor to condition and compact fill material. (Taken 7.12.2020)



Figure 8 – Overview of top end of the strip. (Taken 9.12.2020)

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Attachment 2
Testing Location Plan

Spring Mountain Stage 17C

Field Density Test Location Plan

Legend

 Field Density

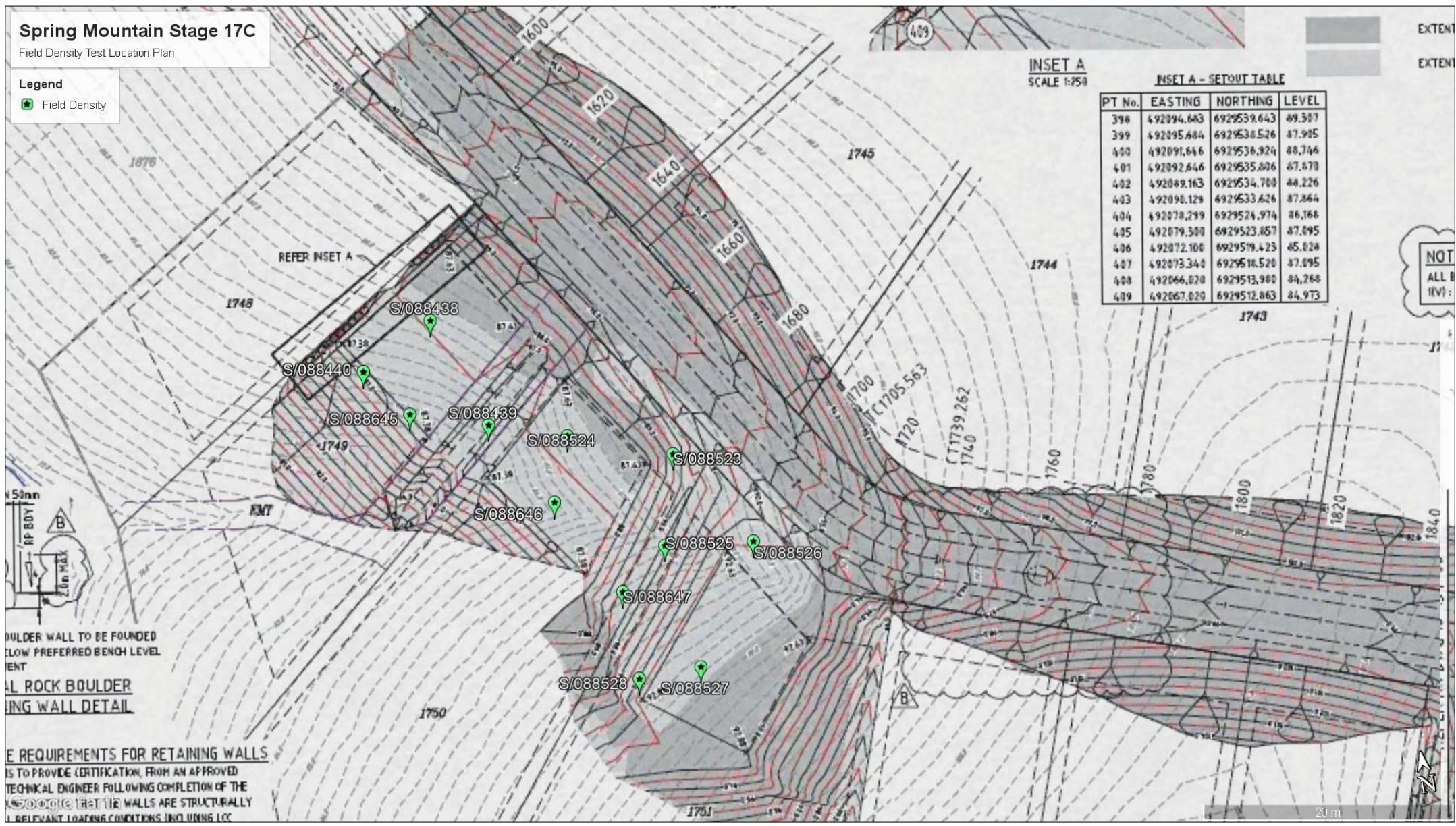
INSET A
SCALE 1:250

INSET A - SETOUT TABLE

PT No.	EASTING	NORTHING	LEVEL
398	492094.643	6929539.643	89.307
399	492095.684	6929538.526	87.985
400	492091.646	6929536.924	88.746
401	492092.646	6929535.806	87.870
402	492089.163	6929534.700	88.226
403	492090.129	6929533.626	87.864
404	492078.299	6929524.974	86.168
405	492079.300	6929523.857	87.895
406	492072.100	6929519.423	85.028
407	492073.340	6929518.520	87.895
408	492066.020	6929513.980	84.268
409	492067.020	6929512.863	84.973

EXTENT
EXTENT

NOT
ALL B
(RVI) :



BOULDER WALL TO BE FOUNDED
LOW PREFERRED BENCH LEVEL
ENT
ALL ROCK BOULDER
ING WALL DETAIL

REQUIREMENTS FOR RETAINING WALLS
IS TO PROVIDE CERTIFICATION, FROM AN APPROVED
TECHNICAL ENGINEER FOLLOWING COMPLETION OF THE
WALLS ARE STRUCTURALLY
RELEVANT LOADING CONDITIONS INCLUDING LCC

03	Field Density Location Plan	24/06/2021	KP	KP	KP
Issue	Description	Date	DRN	CHK	APP



CLIENT
Shadforth

TITLE
Spring Mountain Stage 17C



Job No.
PTP/05735
Drawing No.
01

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Attachment 3
Density Reports



Dry Density / Moisture Ratio Report

Client :	Shadforth					Report Number :	SR/PTP/05735 - 1/1
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD					Report Date :	21/12/2020
Project Name :	Spring Mountain Stage 17C					Test Request :	-
Project Number :	PTP/05735					Page 1 of 1	
Location :	Spring Mountain						
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1						
Sample Number :	S/089117	S/089118	S/089119	S/089120	S/089121	S/089122	
Date Tested :	1/12/2020	1/12/2020	1/12/2020	1/12/2020	1/12/2020	1/12/2020	
Material Source :	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	
For use as :	General Fill	General Fill	General Fill	General Fill	General Fill	General Fill	
Test / Layer Depths :	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	
Time :	12:53	12:54	12:54	12:54	12:54	12:54	
Lot Number :	-	-	-	-	-	-	
Location 1 :	E- 492328	E- 492336	E- 492339	E- 492347	E- 492354	E- 492359	
Location 2 :	N- 6929410	N- 6929416	N- 6929418	N- 6929419	N- 6929417	N- 6929412	
Location 3 :	RL- 90.48	RL- 90.48	RL- 90.48	RL- 90.48	RL- 90.48	RL- 90.48	
Location 4 :	-	-	-	-	-	-	
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	
Oversize Wet :	-	9%	-	-	-	-	
Oversize Dry :	-	10%	-	-	-	-	
Oversize Density - Dry (t/m ³) :	-	2.50	-	-	-	-	
Assigned MDR (Yes/No) :	No	No	No	No	No	No	
MDR Sample Number :	S/089117	S/089118	S/089119	S/089120	S/089121	S/089122	
MDR Test Date :	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	
Soil Description :	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	
<i>MDR Test Results</i>							
MDD (t/m ³) :	1.88	1.78	1.93	1.90	1.77	1.78	
OMC :	12.0%	12.5%	9.0%	9.0%	12.0%	11.0%	
ADJ MDD (t/m ³) :	-	1.83	-	-	-	-	
ADJ OMC :	-	11.5%	-	-	-	-	
<i>Moisture Test Results :</i>							
Field Moisture Content :	11.0%	11.5%	7.5%	7.0%	11.5%	10.0%	
Moisture Specification :	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	
Variation from OMC :	1.0% Dry of OMC	0.0% Wet of OMC	1.0% Dry of OMC	2.0% Dry of OMC	0.5% Dry of OMC	1.0% Dry of OMC	
Moisture Ratio :	92.0%	101.5%	86.0%	79.0%	97.0%	90.5%	
<i>Density Test Results</i>							
Field Dry Density (t/m ³) :	1.86	1.83	1.98	1.87	1.74	1.76	
Density Specification :	95%	95%	95%	95%	95%	95%	
Dry Density Ratio :	98.5%	100.0%	102.5%	98.5%	98.5%	99.0%	
Characteristic Value (Q020) :	CV(min) = 98.2%	CV(max) = 100.8%	Mean = 99.5%	Std. Dev. = 1.6%	n = 6	k = 0.828	
Degree of Saturation / Required :	-	-	-	-	-	-	
Remarks :	-						
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220					APPROVED SIGNATORY  Kenney Pham - Signatory	



Dry Density / Moisture Ratio Report

Client :	Shadforth				Report Number :	SR/PTP/05735 - 2/1
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD				Report Date :	21/12/2020
Project Name :	Spring Mountain Stage 17C				Test Request :	-
Project Number :	PTP/05735				Page 1 of 1	
Location :	Spring Mountain					
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1					
Sample Number :	S/089129	S/089130	S/089131	S/089132		
Date Tested :	1/12/2020	1/12/2020	1/12/2020	1/12/2020		
Material Source :	Onsite	Onsite	Onsite	Onsite		
For use as :	General Fill	General Fill	General Fill	General Fill		
Test / Layer Depths :	150 / 150	150 / 150	150 / 150	150 / 150		
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b		
Time :	13:20	13:20	13:20	13:20		
Lot Number :	-	-	-	-		
Location 1 :	E- 492320	E- 492345	E- 492349	E- 492351		
Location 2 :	N- 6929401	N- 6929422	N- 6929404	N- 6929404		
Location 3 :	RL- 90.00	RL- 90.00	RL- 90.00	RL- 90.00		
Location 4 :	-	-	-	-		
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm	< 19mm		
Oversize Wet :	-	-	-	-		
Oversize Dry :	-	-	-	-		
Oversize Density - Dry (t/m ³) :	-	-	-	-		
Assigned MDR (Yes/No) :	No	No	No	No		
MDR Sample Number :	S/089129	S/089130	S/089131	S/089132		
MDR Test Date :	4/12/2020	4/12/2020	4/12/2020	4/12/2020		
Soil Description :	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay		
<i>MDR Test Results</i>						
MDD (t/m ³) :	1.79	1.75	1.72	1.69		
OMC :	11.0%	13.5%	11.0%	13.0%		
ADJ MDD (t/m ³) :	-	-	-	-		
ADJ OMC :	-	-	-	-		
<i>Moisture Test Results :</i>						
Field Moisture Content :	9.0%	12.0%	9.0%	11.5%		
Moisture Specification :	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC		
Variation from OMC :	2.0% Dry of OMC	1.5% Dry of OMC	2.0% Dry of OMC	1.5% Dry of OMC		
Moisture Ratio :	82.0%	88.5%	81.5%	87.5%		
<i>Density Test Results</i>						
Field Dry Density (t/m ³) :	1.80	1.75	1.73	1.68		
Density Specification :	95%	95%	95%	95%		
Dry Density Ratio :	100.5%	100.0%	101.0%	99.5%		
Characteristic Value (Q020) :	CV(min) = 99.7%	CV(max) = 100.8%	Mean = 100.3%	Std. Dev. = 0.6%	n = 4	k = 0.828
Degree of Saturation / Required :	-	-	-	-		
Remarks :	-					
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220				APPROVED SIGNATORY  Kenney Pham - Signatory	



Dry Density / Moisture Ratio Report

Client :	Shadforths			Report Number :	SR/PTP/05735 - 3/1	
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD			Report Date :	21/12/2020	
Project Name :	Spring Mountain Stage 17C			Test Request :	-	
Project Number :	PTP/05735			Page 1 of 1		
Location :	Spring Mountain					
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1					
Sample Number :	S/088438	S/088439	S/088440			
Date Tested :	25/11/2020	25/11/2020	25/11/2020			
Material Source :	Onsite	Onsite	Onsite			
For use as :	General Fill	General Fill	General Fill			
Test / Layer Depths :	150 / 150	150 / 150	150 / 150			
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b			
Time :	06:34	06:35	06:35			
Lot Number :	-	-	-			
Location 1 :	E- 491862	E- 491880	E- 491855			
Location 2 :	N- 6929607	N- 6929569	N- 6929586			
Location 3 :	3.8m below F.L	3.8m below F.L	3.8m below F.L			
Location 4 :	-	-	-			
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm			
Oversize Wet :	-	-	-			
Oversize Dry :	-	-	-			
Oversize Density - Dry (t/m ³) :	-	-	-			
Assigned MDR (Yes/No) :	No	No	No			
MDR Sample Number :	S/088438	S/088439	S/088440			
MDR Test Date :	8/12/2020	8/12/2020	8/12/2020			
Soil Description :	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay			
<i>MDR Test Results</i>						
MDD (t/m ³) :	1.60	1.69	1.64			
OMC :	16.5%	16.5%	16.0%			
ADJ MDD (t/m ³) :	-	-	-			
ADJ OMC :	-	-	-			
<i>Moisture Test Results :</i>						
Field Moisture Content :	16.0%	15.0%	14.5%			
Moisture Specification :	±2% of OMC	±2% of OMC	±2% of OMC			
Variation from OMC :	0.5% Dry of OMC	1.5% Dry of OMC	1.5% Dry of OMC			
Moisture Ratio :	96.0%	89.5%	90.5%			
<i>Density Test Results</i>						
Field Dry Density (t/m ³) :	1.62	1.66	1.67			
Density Specification :	95%	95%	95%			
Dry Density Ratio :	101.5%	98.5%	102.0%			
Characteristic Value (Q020) :	CV(min) = 99.1%	CV(max) = 102.2%	Mean = 100.7%	Std. Dev. = 1.9%	n = 3	k = 0.828
Degree of Saturation / Required :	-	-	-			
Remarks :	-					
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast			APPROVED SIGNATORY  Kenney Pham - Signatory		
	Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220					



Dry Density / Moisture Ratio Report

Client :	Shadforth						Report Number :	SR/PTP/05735 - 4/1
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD						Report Date :	21/12/2020
Project Name :	Spring Mountain Stage 17C						Test Request :	-
Project Number :	PTP/05735						Page 1 of 1	
Location :	Spring Mountain							
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1							
Sample Number :	S/088523	S/088524	S/088525	S/088526	S/088527	S/088528		
Date Tested :	25/11/2020	25/11/2020	25/11/2020	25/11/2020	25/11/2020	25/11/2020		
Material Source :	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite		
For use as :	General Fill	General Fill	General Fill	General Fill	General Fill	General Fill		
Test / Layer Depths :	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150		
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b		
Time :	13:53	13:53	13:53	13:54	13:54	13:54		
Lot Number :	-	-	-	-	-	-		
Location 1 :	E- 492089	E- 492109	E- 492120	E- 492137	E- 492133	E- 492124		
Location 2 :	N- 6929496	N- 6929498	N- 6929491	N- 6929489	N- 6929479	N- 6929479		
Location 3 :	RL- 87.50	RL- 87.50	RL- 87.50	RL- 87.50	RL- 87.50	RL- 87.50		
Location 4 :	-	-	-	-	-	-		
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm		
Oversize Wet :	-	-	-	-	-	-		
Oversize Dry :	-	-	-	-	-	-		
Oversize Density - Dry (t/m ³) :	-	-	-	-	-	-		
Assigned MDR (Yes/No) :	No	No	No	No	No	No		
MDR Sample Number :	S/088523	S/088524	S/088525	S/088526	S/088527	S/088528		
MDR Test Date :	8/12/2020	8/12/2020	8/12/2020	8/12/2020	8/12/2020	8/12/2020		
Soil Description :	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay	Sandy Clay		
<i>MDR Test Results</i>								
MDD (t/m ³) :	1.85	1.84	1.87	1.85	1.66	1.67		
OMC :	14.5%	14.5%	14.0%	13.0%	15.0%	14.5%		
ADJ MDD (t/m ³) :	-	-	-	-	-	-		
ADJ OMC :	-	-	-	-	-	-		
<i>Moisture Test Results :</i>								
Field Moisture Content :	14.0%	13.0%	12.0%	12.0%	14.0%	13.5%		
Moisture Specification :	-	-	-	-	-	-		
Variation from OMC :	0.5% Dry of OMC	1.5% Dry of OMC	2.0% Dry of OMC	1.0% Dry of OMC	1.0% Dry of OMC	1.0% Dry of OMC		
Moisture Ratio :	97.0%	89.0%	87.0%	92.0%	93.5%	93.5%		
<i>Density Test Results</i>								
Field Dry Density (t/m ³) :	1.89	1.86	1.84	1.83	1.65	1.64		
Density Specification :	95%	95%	95%	95%	95%	95%		
Dry Density Ratio :	102.0%	101.0%	98.0%	99.0%	99.5%	98.5%		
Characteristic Value (Q020) :	CV(min) = 98.4%	CV(max) = 100.9%	Mean = 99.7%	Std. Dev. = 1.5%	n = 6	k = 0.828		
Degree of Saturation / Required :	-	-	-	-	-	-		
Remarks :	-							
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220						APPROVED SIGNATORY  Kenney Pham - Signatory	



Dry Density / Moisture Ratio Report

Client :	Shadforth			Report Number :	SR/PTP/05735 - 5/1	
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD			Report Date :	21/12/2020	
Project Name :	Spring Mountain Stage 17C			Test Request :	-	
Project Number :	PTP/05735			Page 1 of 1		
Location :	Spring Mountain					
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1					
Sample Number :	S/088645	S/088646	S/088647			
Date Tested :	27/11/2020	27/11/2020	27/11/2020			
Material Source :	Onsite	Onsite	Onsite			
For use as :	General Fill	General Fill	General Fill			
Test / Layer Depths :	150 / 150	150 / 150	150 / 150			
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b			
Time :	05:57	05:57	05:58			
Lot Number :	-	-	-			
Location 1 :	E- 492091	E- 492109	E- 492119			
Location 2 :	N- 6929514	N- 6929495	N- 6929485			
Location 3 :	0.3m Below F.L	0.3m Below F.L	0.3m Below F.L			
Location 4 :	-	-	-			
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm			
Oversize Wet :	-	-	-			
Oversize Dry :	-	-	-			
Oversize Density - Dry (t/m ³) :	-	-	-			
Assigned MDR (Yes/No) :	No	No	No			
MDR Sample Number :	S/088645	S/088646	S/088647			
MDR Test Date :	7/12/2020	7/12/2020	7/12/2020			
Soil Description :	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay			
<i>MDR Test Results</i>						
MDD (t/m ³) :	1.86	1.91	1.93			
OMC :	16.5%	13.5%	13.0%			
ADJ MDD (t/m ³) :	-	-	-			
ADJ OMC :	-	-	-			
<i>Moisture Test Results :</i>						
Field Moisture Content :	16.0%	12.0%	11.0%			
Moisture Specification :	±2% of OMC	±2% of OMC	±2% of OMC			
Variation from OMC :	0.0% Dry of OMC	1.5% Dry of OMC	2.0% Dry of OMC			
Moisture Ratio :	99.5%	88.5%	85.5%			
<i>Density Test Results</i>						
Field Dry Density (t/m ³) :	1.89	1.91	1.94			
Density Specification :	95%	95%	95%			
Dry Density Ratio :	101.5%	100.0%	100.5%			
Characteristic Value (Q020) :	CV(min) = 100.0%		CV(max) = 101.3%	Mean = 100.7%	Std. Dev. = 0.8%	n = 3
						k = 0.828
Degree of Saturation / Required :	-	-	-			
Remarks :	-					
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast			APPROVED SIGNATORY  Kenney Pham - Signatory		
	Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220					

Dry Density / Moisture Ratio Report

Client :	Shadforth					Report Number :	SR/PTP/05735 - 6/1
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD					Report Date :	21/12/2020
Project Name :	Spring Mountain Stage 17C					Test Request :	-
Project Number :	PTP/05735					Page 1 of 1	
Location :	Spring Mountain						
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1						
Sample Number :	S/089123	S/089124	S/089125	S/089126	S/089127	S/089128	
Date Tested :	1/12/2020	1/12/2020	1/12/2020	1/12/2020	1/12/2020	1/12/2020	
Material Source :	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	
For use as :	General Fill	General Fill	General Fill	General Fill	General Fill	General Fill	
Test / Layer Depths :	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	
Time :	12:58	12:58	12:58	12:58	12:58	12:58	
Lot Number :	-	-	-	-	-	-	
Location 1 :	E- 492386	E- 492379	E- 492369	E- 492347	E- 492338	E- 492327	
Location 2 :	N- 6929395	N- 6929394	N- 6929397	N- 6929403	N- 6929406	N- 6929409	
Location 3 :	RL- 91.97	RL- 91.97	RL- 91.97	RL- 91.97	RL- 91.97	RL- 91.97	
Location 4 :	-	-	-	-	-	-	
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	
Oversize Wet :	-	-	-	-	-	-	
Oversize Dry :	-	-	-	-	-	-	
Oversize Density - Dry (t/m ³) :	-	-	-	-	-	-	
Assigned MDR (Yes/No) :	No	No	No	No	No	No	
MDR Sample Number :	S/089123	S/089124	S/089125	S/089126	S/089127	S/089128	
MDR Test Date :	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	
Soil Description :	SANDY CLAYEY GRAVEL - BROWN	SANDY CLAYEY GRAVEL - BROWN	SANDY CLAYEY GRAVEL - BROWN	GRAVELLY SANDY CLAY - BROWN	SANDY CLAYEY GRAVEL - BROWN	CLAYEY GRAVEL - DARK BROWN	
<i>MDR Test Results</i>							
MDD (t/m ³) :	1.85	1.87	1.87	1.79	1.80	1.77	
OMC :	12.0%	12.0%	11.5%	15.0%	13.5%	15.0%	
ADJ MDD (t/m ³) :	-	-	-	-	-	-	
ADJ OMC :	-	-	-	-	-	-	
<i>Moisture Test Results</i>							
Field Moisture Content :	10.5%	10.5%	10.5%	13.0%	12.5%	15.0%	
Moisture Specification :	-	-	-	-	-	-	
Variation from OMC :	2.0% Dry of OMC	1.0% Dry of OMC	1.0% Dry of OMC	2.0% Dry of OMC	1.0% Dry of OMC	0.5% Dry of OMC	
Moisture Ratio :	85.0%	89.5%	93.0%	88.0%	92.0%	98.0%	
<i>Density Test Results</i>							
Field Dry Density (t/m ³) :	1.86	1.85	1.85	1.80	1.78	1.76	
Density Specification :	95%	95%	95%	95%	95%	95%	
Dry Density Ratio :	100.5%	99.0%	98.5%	100.5%	99.0%	99.5%	
Characteristic Value (Q020) :	CV(min) = 98.8%	CV(max) = 100.2%	Mean = 99.5%	Std. Dev. = 0.8%	n = 6	k = 0.828	
Degree of Saturation / Required :	-	-	-	-	-	-	
Remarks :	-						
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220					APPROVED SIGNATORY  Kenney Pham - Signatory	

Dry Density / Moisture Ratio Report

Client :	Shadforth						Report Number :	SR/PTP/05735 - 7/1
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD						Report Date :	21/12/2020
Project Name :	Spring Mountain Stage 17C						Test Request :	-
Project Number :	PTP/05735						Page 1 of 1	
Location :	Spring Mountain							
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1							
Sample Number :	S/089215	S/089216	S/089217	S/089218	S/089219	S/089220		
Date Tested :	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020	2/12/2020		
Material Source :	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite		
For use as :	General Fill	General Fill	General Fill	General Fill	General Fill	General Fill		
Test / Layer Depths :	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150		
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b		
Time :	13:22	13:23	13:23	13:23	13:23	13:24		
Lot Number :	-	-	-	-	-	-		
Location 1 :	E- 492310	E- 492341	E- 492356	E- 492341	E- 492332	E- 492359		
Location 2 :	N- 6929384	N- 6929434	N- 6929419	N- 6929401	N- 6929434	N- 6929408		
Location 3 :	RL- 88.94	RL- 88.94	RL- 88.94	RL- 88.94	RL- 88.94	RL- 88.94		
Location 4 :	-	-	-	-	-	-		
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm		
Oversize Wet :	-	-	-	-	14%	-		
Oversize Dry :	-	-	-	-	15%	-		
Oversize Density - Dry (t/m ³) :	-	-	-	-	2.50	-		
Assigned MDR (Yes/No) :	No	No	No	No	No	No		
MDR Sample Number :	S/089215	S/089216	S/089217	S/089218	S/089219	S/089220		
MDR Test Date :	7/12/2020	7/12/2020	7/12/2020	7/12/2020	7/12/2020	7/12/2020		
Soil Description :	Sandy, Gravelly Clay	Sandy, Gravelly Clay	Sandy, Gravelly Clay	Sandy, Gravelly Clay	Sandy, Gravelly Clay	Sandy, Gravelly Clay		
<i>MDR Test Results</i>								
MDD (t/m ³) :	1.78	1.83	1.80	1.78	1.85	1.83		
OMC :	15.0%	14.5%	15.0%	14.5%	12.5%	12.5%		
ADJ MDD (t/m ³) :	-	-	-	-	1.93	-		
ADJ OMC :	-	-	-	-	10.5%	-		
<i>Moisture Test Results :</i>								
Field Moisture Content :	13.0%	13.0%	13.0%	13.0%	8.5%	11.0%		
Moisture Specification :	-	-	-	-	-	-		
Variation from OMC :	2.0% Dry of OMC	1.5% Dry of OMC	2.0% Dry of OMC	1.5% Dry of OMC	2.0% Dry of OMC	2.0% Dry of OMC		
Moisture Ratio :	85.5%	90.0%	87.0%	90.5%	79.5%	85.5%		
<i>Density Test Results</i>								
Field Dry Density (t/m ³) :	1.81	1.80	1.76	1.76	1.89	1.84		
Density Specification :	95%	95%	95%	95%	95%	95%		
Dry Density Ratio :	102.0%	98.5%	98.0%	99.0%	98.5%	100.5%		
Characteristic Value (Q020) :	CV(min) = 98.1%	CV(max) = 100.7%	Mean = 99.4%	Std. Dev. = 1.5%	n = 6	k = 0.828		
Degree of Saturation / Required :	-	-	-	-	-	-		
Remarks :	-							
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220						APPROVED SIGNATORY  Kenney Pham - Signatory	

Dry Density / Moisture Ratio Report

Client :	Shadforth	Report Number :	SR/PTP/05735 - 8/1
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD	Report Date :	21/12/2020
Project Name :	Spring Mountain Stage 17C	Test Request :	-
Project Number :	PTP/05735	Page 1 of 1	
Location :	Spring Mountain		

Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1
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Sample Number :	S/089622	S/089623	S/089624	S/089625	S/089626	S/089627
Date Tested :	4/12/2020	4/12/2020	4/12/2020	4/12/2020	4/12/2020	4/12/2020
Material Source :	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite
For use as :	General Fill	General Fill	General Fill	General Fill	General Fill	General Fill
Test / Layer Depths :	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150

Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b
Time :	13:47	13:47	13:47	13:48	13:48	13:48
Lot Number :	-	-	-	-	-	-
Location 1 :	E- 492328	E- 492344	E- 492350	E- 492362	E- 492373	E- 492384
Location 2 :	N- 6929416	N- 6929410	N- 6929406	N- 6929404	N- 6929404	N- 6929400
Location 3 :	0.35m Below F.L	0.35m Below F.L	0.35m Below F.L	0.6m Below F.L	0.6m Below F.L	0.6m Below F.L
Location 4 :	-	-	-	-	-	-

Test Fraction (mm) :	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm
Oversize Wet :	-	-	-	7%	5%	7%
Oversize Dry :	-	-	-	8%	6%	8%
Oversize Density - Dry (t/m ³) :	-	-	-	2.50	2.50	2.50
Assigned MDR (Yes/No) :	No	No	No	No	No	No
MDR Sample Number :	S/089622	S/089623	S/089624	S/089625	S/089626	S/089627
MDR Test Date :	14/12/2020	14/12/2020	14/12/2020	14/12/2020	14/12/2020	14/12/2020
Soil Description :	CLAYEY GRAVEL - BROWN	CLAYEY GRAVEL - BROWN	CLAYEY GRAVEL - BROWN	GRAVELLY SILTY CLAY - BROWN	GRAVELLY SILTY CLAY - BROWN	GRAVELLY SILTY CLAY - BROWN

<i>MDR Test Results</i>						
MDD (t/m ³) :	1.88	1.94	1.92	1.62	1.61	1.65
OMC :	16.0%	15.5%	15.5%	14.0%	15.0%	14.5%
ADJ MDD (t/m ³) :	-	-	-	1.66	1.64	1.70
ADJ OMC :	-	-	-	13.0%	14.5%	13.5%



<i>Moisture Test Results :</i>						
Field Moisture Content :	14.0%	14.5%	13.5%	11.0%	13.0%	12.5%
Moisture Specification :	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC
Variation from OMC :	2.0% Dry of OMC	0.5% Dry of OMC	2.0% Dry of OMC	2.0% Dry of OMC	1.0% Dry of OMC	1.0% Dry of OMC
Moisture Ratio :	87.0%	95.5%	86.5%	86.0%	92.0%	91.5%

<i>Density Test Results</i>						
Field Dry Density (t/m ³) :	1.90	1.91	1.90	1.68	1.68	1.69
Density Specification :	95%	95%	95%	95%	95%	95%
Dry Density Ratio :	101.5%	98.5%	99.0%	101.0%	102.0%	99.5%



Characteristic Value (Q020) :	CV(min) = 99.1%	CV(max) = 101.4%	Mean = 100.3%	Std. Dev. = 1.4%	n = 6	k = 0.828
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Degree of Saturation / Required :	-	-	-	-	-	-
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Remarks :	-
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 Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220	APPROVED SIGNATORY  Kenney Pham - Signatory
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Dry Density / Moisture Ratio Report

Client :	Shadforth						Report Number :	SR/PTP/05735 - 9/1
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD						Report Date :	21/12/2020
Project Name :	Spring Mountain Stage 17C						Test Request :	-
Project Number :	PTP/05735						Page 1 of 1	
Location :	Spring Mountain							
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1							
Sample Number :	S/089628	S/089629	S/089630	S/089631	S/089632	S/089633		
Date Tested :	4/12/2020	4/12/2020	4/12/2020	4/12/2020	4/12/2020	4/12/2020		
Material Source :	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite		
For use as :	General Fill	General Fill	General Fill	General Fill	General Fill	General Fill		
Test / Layer Depths :	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150		
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b		
Time :	13:50	13:50	13:50	13:50	13:50	13:51		
Lot Number :	-	-	-	-	-	-		
Location 1 :	E- 492394	E- 492401	E- 492412	E- 492449	E- 492453	E- 492462		
Location 2 :	N- 6929410	N- 6929423	N- 6929432	N- 6929409	N- 6929391	N- 6929381		
Location 3 :	0.75m Below F.L	0.75m Below F.L	0.75m Below F.L	0.8m Below F.L	0.8m Below F.L	0.8m Below F.L		
Location 4 :	0	0	0	0	0	0		
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm		
Oversize Wet :	-	-	-	-	-	-		
Oversize Dry :	-	-	-	-	-	-		
Oversize Density - Dry (t/m ³) :	-	-	-	-	-	-		
Assigned MDR (Yes/No) :	No	No	No	No	No	No		
MDR Sample Number :	S/089628	S/089629	S/089630	S/089631	S/089632	S/089633		
MDR Test Date :	15/12/2020	15/12/2020	15/12/2020	15/12/2020	15/12/2020	15/12/2020		
Soil Description :	SANDY GRAVELLY CLAY - BROWN	SANDY GRAVELLY CLAY - BROWN	SANDY GRAVELLY CLAY - BROWN	SANDY GRAVELLY CLAY - BROWN	SANDY GRAVELLY CLAY - BROWN	SANDY GRAVELLY CLAY - BROWN		
<i>MDR Test Results</i>								
MDD (t/m ³) :	1.87	1.85	1.78	1.85	1.86	1.89		
OMC :	13.5%	16.0%	16.0%	15.5%	15.0%	12.5%		
ADJ MDD (t/m ³) :	-	-	-	-	-	-		
ADJ OMC :	-	-	-	-	-	-		
<i>Moisture Test Results :</i>								
Field Moisture Content :	12.0%	14.0%	14.5%	14.5%	13.5%	12.0%		
Moisture Specification :	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC		
Variation from OMC :	1.5% Dry of OMC	2.0% Dry of OMC	1.5% Dry of OMC	0.5% Dry of OMC	1.0% Dry of OMC	0.5% Dry of OMC		
Moisture Ratio :	88.5%	87.5%	91.0%	96.5%	92.0%	95.5%		
<i>Density Test Results</i>								
Field Dry Density (t/m ³) :	1.85	1.84	1.81	1.82	1.82	1.88		
Density Specification :	95%	95%	95%	95%	95%	95%		
Dry Density Ratio :	99.0%	99.5%	102.0%	98.5%	98.0%	99.0%		
Characteristic Value (Q020) :	CV(min) = 98.2%	CV(max) = 100.5%	Mean = 99.3%	Std. Dev. = 1.4%	n = 6	k = 0.828		
Degree of Saturation / Required :	-	-	-	-	-	-		
Remarks :	-							
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220						APPROVED SIGNATORY  Kenney Pham - Signatory	



Dry Density / Moisture Ratio Report

Client :	Shadforth					Report Number :	SR/PTP/05735 - 10/1
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD					Report Date :	21/12/2020
Project Name :	Spring Mountain Stage 17C					Test Request :	-
Project Number :	PTP/05735					Page 1 of 1	
Location :	Spring Mountain						
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1						
Sample Number :	S/090316	S/090317	S/090318	S/090319	S/090320	S/090321	
Date Tested :	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	
Material Source :	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite	
For use as :	General Fill	General Fill	General Fill	General Fill	General Fill	General Fill	
Test / Layer Depths :	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	
Time :	06:11	06:11	06:11	06:11	06:11	06:11	
Lot Number :	-	-	-	-	-	-	
Location 1 :	E- 492307	N- 492309	N- 492321	N- 492332	N- 492343	N- 492351	
Location 2 :	N- 6929411	N- 6929416	N- 6929427	N- 6929427	N- 6929423	N- 6929424	
Location 3 :	F.L	F.L	F.L	F.L	F.L	F.L	
Location 4 :	0	0	0	0	0	0	
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	
Oversize Wet :	-	-	-	-	-	-	
Oversize Dry :	-	-	-	-	-	-	
Oversize Density - Dry (t/m ³) :	-	-	-	-	-	-	
Assigned MDR (Yes/No) :	No	No	No	No	No	No	
MDR Sample Number :	S/090316	S/090317	S/090318	S/090319	S/090320	S/090321	
MDR Test Date :	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	
Soil Description :	SANDY CLAYEY GRAVEL - BROWN	SANDY CLAYEY GRAVEL - BROWN	SANDY CLAYEY GRAVEL - BROWN	SANDY GRAVELLY CLAY - BROWN	SANDY GRAVELLY CLAY - BROWN	SANDY GRAVELLY CLAY - BROWN	
<i>MDR Test Results</i>							
MDD (t/m ³) :	2.00	2.04	1.94	1.75	1.77	1.79	
OMC :	12.0%	9.5%	12.0%	16.5%	18.0%	16.5%	
ADJ MDD (t/m ³) :	-	-	-	-	-	-	
ADJ OMC :	-	-	-	-	-	-	
<i>Moisture Test Results</i>							
Field Moisture Content :	10.5%	7.5%	10.0%	16.0%	16.0%	14.5%	
Moisture Specification :	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	
Variation from OMC :	1.5% Dry of OMC	2.0% Dry of OMC	2.0% Dry of OMC	0.5% Dry of OMC	2.0% Dry of OMC	1.5% Dry of OMC	
Moisture Ratio :	88.0%	81.5%	84.5%	97.0%	88.5%	89.5%	
<i>Density Test Results</i>							
Field Dry Density (t/m ³) :	1.97	2.01	1.93	1.74	1.75	1.78	
Density Specification :	98%	98%	98%	98%	98%	98%	
Dry Density Ratio :	98.5%	98.5%	100.0%	99.0%	98.5%	99.5%	
Characteristic Value (Q020) :	CV(min) = 98.5%	CV(max) = 99.5%	Mean = 99.0%	Std. Dev. = 0.6%	n = 6	k = 0.828	
Degree of Saturation / Required :	-	-	-	-	-	-	
Remarks :	-						
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220					APPROVED SIGNATORY  Kenney Pham - Signatory	

Dry Density / Moisture Ratio Report

Client :	Shadforth						Report Number :	SR/PTP/05735 - 11/1
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD						Report Date :	21/12/2020
Project Name :	Spring Mountain Stage 17C						Test Request :	-
Project Number :	PTP/05735						Page 1 of 1	
Location :	Spring Mountain							
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1							
Sample Number :	S/090322	S/090323	S/090324	S/090325	S/090326	S/090327		
Date Tested :	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020	10/12/2020		
Material Source :	Onsite	Onsite	Onsite	Onsite	Onsite	Onsite		
For use as :	General Fill	General Fill	General Fill	General Fill	General Fill	General Fill		
Test / Layer Depths :	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150	150 / 150		
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b		
Time :	06:11	06:11	06:12	06:12	06:12	06:12		
Lot Number :	-	-	-	-	-	-		
Location 1 :	N- 492355	N- 492362	N- 492378	N- 492379	N- 492388	N- 492431		
Location 2 :	N- 6929412	N- 6929396	N- 6929428	N- 6929413	N- 6929399	N- 6929431		
Location 3 :	F.L	F.L	F.L	F.L	F.L	F.L		
Location 4 :	0	0	0	0	0	0		
Test Fraction (mm) :	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm	< 19mm		
Oversize Wet :	-	-	-	9%	11%	7%		
Oversize Dry :	-	-	-	10%	11%	8%		
Oversize Density - Dry (t/m ³) :	-	-	-	2.50	2.50	2.50		
Assigned MDR (Yes/No) :	No	No	No	No	No	No		
MDR Sample Number :	S/090322	S/090323	S/090324	S/090325	S/090326	S/090327		
MDR Test Date :	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020	16/12/2020		
Soil Description :	CLAYEY GRAVEL - BROWN	CLAYEY GRAVEL - BROWN	CLAYEY GRAVEL - BROWN	CLAYEY GRAVEL - BROWN	CLAYEY GRAVEL - BROWN	CLAYEY GRAVEL - BROWN		
<i>MDR Test Results</i>								
MDD (t/m ³) :	1.88	1.86	1.87	1.90	1.94	1.95		
OMC :	16.0%	14.5%	18.0%	12.5%	11.0%	11.0%		
ADJ MDD (t/m ³) :	-	-	-	1.95	1.99	1.99		
ADJ OMC :	-	-	-	11.0%	10.0%	10.0%		
<i>Moisture Test Results :</i>								
Field Moisture Content :	14.0%	13.5%	17.5%	9.5%	8.0%	9.0%		
Moisture Specification :	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC	±2% of OMC		
Variation from OMC :	2.0% Dry of OMC	1.0% Dry of OMC	0.5% Dry of OMC	2.0% Dry of OMC	2.0% Dry of OMC	1.0% Dry of OMC		
Moisture Ratio :	87.0%	94.5%	97.0%	84.0%	79.0%	88.5%		
<i>Density Test Results</i>								
Field Dry Density (t/m ³) :	1.90	1.89	1.84	1.99	1.97	1.98		
Density Specification :	98%	98%	98%	98%	98%	98%		
Dry Density Ratio :	101.0%	101.5%	98.5%	102.0%	99.0%	99.5%		
Characteristic Value (Q020) :	CV(min) = 99.1%	CV(max) = 101.4%	Mean = 100.3%	Std. Dev. = 1.4%	n = 6	k = 0.828		
Degree of Saturation / Required :	-	-	-	-	-	-		
Remarks :	-							
	Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 1/9 Greg Chappell Drive, BURLEIGH HEADS, QLD, 4220						APPROVED SIGNATORY  Kenney Pham - Signatory	

Dry Density / Moisture Ratio Report

Client :	Shadforth		Report Number :	SR/PTP/05735 - 42/1		
Client Address :	99 Sandalwood Lane, Forest Glen, 4556, QLD		Report Date :	28/05/2021		
Project Name :	Spring Mountain Stage 17C		Test Request :	J30		
Project Number :	PTP/05735		Page 1 of 1			
Location :	Spring Mountain					
Test Methods :	AS1289.5.4.1, AS1289.5.8.1, AS1289.2.1.1, AS1289.5.1.1					
Sample Number :	S/107426	S/107427				
Date Tested :	19/05/2021	19/05/2021				
Material Source :	Onsite	Onsite				
For use as :	General Fill	General Fill				
Test / Layer Depths :	150 / 200	150 / 200				
Sampling Method :	AS1289.1.2.1 - cl6.4b	AS1289.1.2.1 - cl6.4b				
Time :	08:00	08:10				
Lot Number :	BF	BF				
Location 1 :	Basin Backfill	Basin Backfill				
Location 2 :	E: 492075	E:492078				
Location 3 :	N: 6929517	N: 6929499				
Location 4 :	Layer 2	Layer 3				
Test Fraction (mm) :	< 19mm	< 19mm				
Oversize Wet :	0%	0%				
Oversize Dry :	0%	0%				
Oversize Density - Dry (t/m ³) :	-	-				
Assigned MDR (Yes/No) :	No	No				
MDR Sample Number :	S/107426	S/107427				
MDR Test Date :	24/05/2021	25/05/2021				
Soil Description :	Sandy CLAY	Sandy CLAY				
MDR Test Results						
MDD (t/m ³) :	1.81	1.88				
OMC :	15.5%	13.5%				
ADJ MDD (t/m ³) :	-	-				
ADJ OMC :	-	-				
Moisture Test Results						
Field Moisture Content :	16.0%	13.5%				
Moisture Specification :	±2% of OMC	±2% of OMC				
Variation from OMC :	0.5% Wet of OMC	0.0% Dry of OMC				
Relative Moisture Ratio (Q250) :	-	-				
Moisture Ratio :	103.5%	99.5%				
Density Test Results						
Field Dry Density (t/m ³) :	1.84	1.90				
Density Specification :	98%	98%				
Dry Density Ratio :	101.5%	101.0%				
Degree of Saturation / Required :						
	-	-				
Remarks :						
 <p style="font-size: small;">Note: The results contained in this report relate only to the item/s that were tested/sampled Accredited for Compliance with ISO/ IEC 17025 - Testing Protest Engineering (Gold Coast) Accreditation Number - 19667 Base Laboratory Site Number - 22838 - Gold Coast Base Laboratory Address - 8/36 Blanck Street, ORMEAU, QLD 4208</p>			APPROVED SIGNATORY  Kenney Pham - Signatory			

PROTEST
ENGINEERING

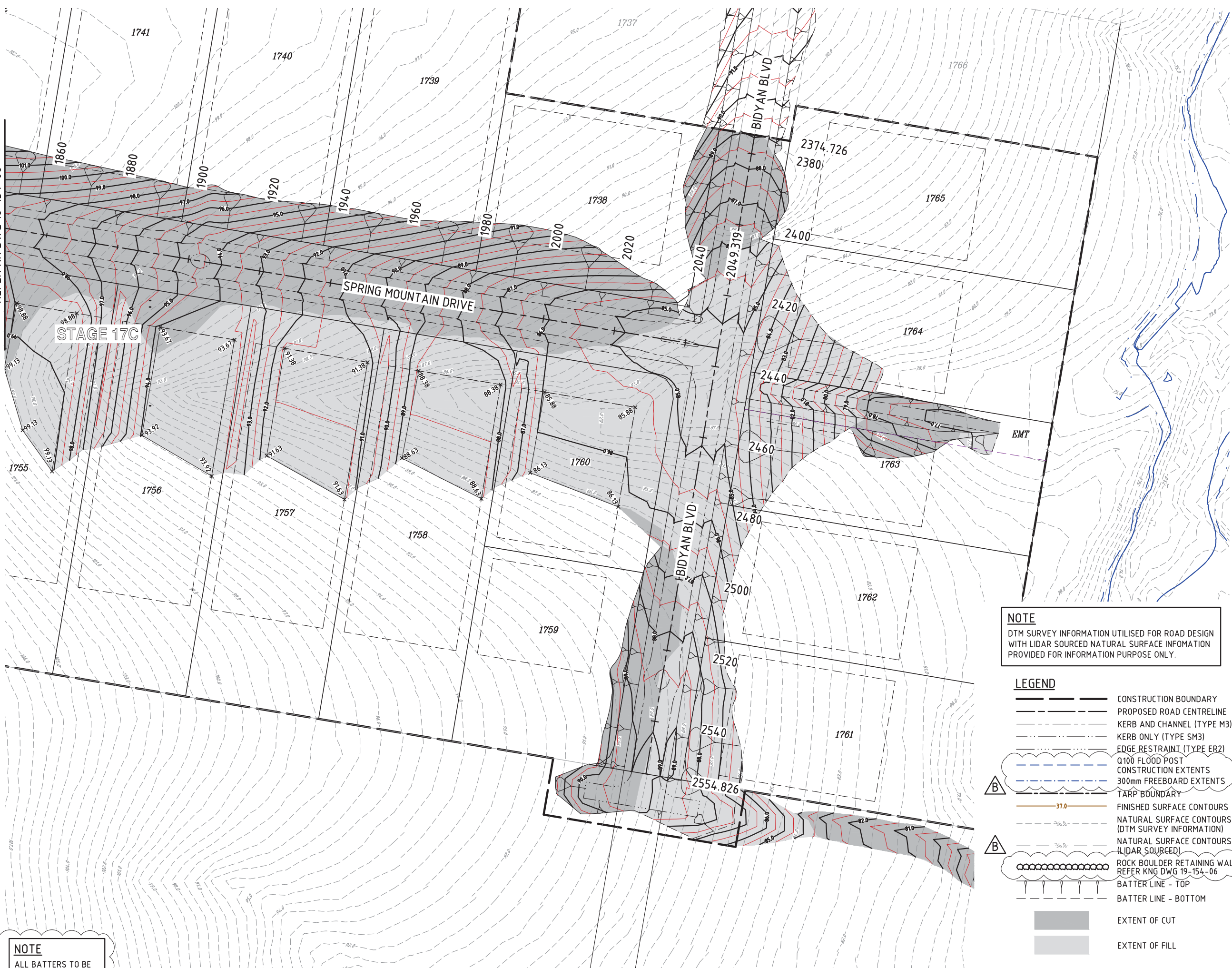
GEOTECHNICAL // TESTING SERVICES // STRUCTURAL

Attachment 4

Referenced Drawings

REFER KN DWG 18-154-06

M:\2019\19154_Spring Mountain Stage 17C\Engineering\A\18-154-06-07-EW-CONTOUR.dwg Printed by: DS on 10/09/2020 3:23:46 PM



NOTE
ALL BATTERS TO BE
1(V) : 4(H) MAXIMUM.

LAYOUT PLAN
SCALE 1:500

NOTE
DTM SURVEY INFORMATION UTILISED FOR ROAD DESIGN
WITH LIDAR SOURCED NATURAL SURFACE INFORMATION
PROVIDED FOR INFORMATION PURPOSE ONLY.

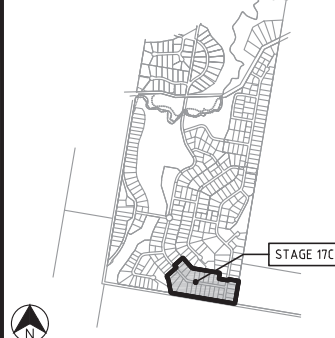
- LEGEND**
- CONSTRUCTION BOUNDARY
 - PROPOSED ROAD CENTRELINE
 - KERB AND CHANNEL (TYPE M3)
 - KERB ONLY (TYPE SM3)
 - EDGE RESTRAINT (TYPE ER2)
 - Q100 FLOOD POST
 - CONSTRUCTION EXTENTS
 - 300mm FREEBOARD EXTENTS
 - TARP BOUNDARY
 - FINISHED SURFACE CONTOURS
 - NATURAL SURFACE CONTOURS (DTM SURVEY INFORMATION)
 - NATURAL SURFACE CONTOURS (LIDAR SOURCED)
 - ROCK BOULDER RETAINING WALL REFER KNG DWG 19-154-06
 - BATTER LINE - TOP
 - BATTER LINE - BOTTOM
 - EXTENT OF CUT
 - EXTENT OF FILL



DO NOT SCALE THIS DRAWING
IF IN DOUBT - ASK!



LOCALITY PLAN



REVISIONS

No	Description	Date	By
A	ISSUED FOR APPROVAL	16.07.20	DES
B	REVISED NOTES AND LEGEND	10.09.20	DES

Client
RECEIVED
By Document Control at 12:51 pm, Oct 28, 2020

PEET

Project
**SPRING MOUNTAIN
ACREAGE ESTATE
STAGE 17C**

Approved
M. Shaw Mark Andrew Shaw BEng (Civil), MIEAust, RPEQ 17544
2020.09.10 15:54:31 +10'00"

Drawing Title
**EARTHWORKS
CONTOUR PLAN
SHEET 2**

Drawn	Designed	Checked	Date
DES	JB	GG	JUL 20
Scale	AS SHOWN		Sheet 07 of 35
A1	Drawing No 19-154-07	Revision B	

