

# DTC Edge Stage 3 Delacombe

## Earthworks Supervision Report for Madica

Report 20C 0912  
August 2020

# DTC Edge Stage 3 Delacombe

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## 1 INTRODUCTION

Madica commissioned Geotechnical Testing Services (GTS) to undertake Level 1 Supervision and testing (AS3798-2007) for the earthworks at DTC Edge Stage 3, Delacombe.

Level 1 testing was generally performed in line with *AS3798-2007 Guidelines on Earthworks for Commercial and Residential Development* and provides inspection of the construction of controlled fill and compaction testing in accordance with *AS1289 Methods of Testing Soils for Engineering Purposes*. The Level 1 testing was undertaken by geotechnicians with supervision provided by a geotechnical engineer from GTS.

## 2 SCOPE OF WORKS

### 2.1 Area of Work

GTS provided Level 1 inspection and testing of the engineered fill placed to fill a dam and raise the surface of Lots 3, 4 & 5.

The depth of fill across the site varied from none to 1.6 metres in Lot 4, with approximate locations shown on the attached site plan. It is noted that sites with less than 0.3 metres were not included in the controlled fill.

### 2.2 Placement Specification

The placement of the fill and associated works generally followed the recommendations outlined in *AS3798-2007 Guidelines for Earthworks for Commercial and Residential Developments* and the construction specification.

In summary, the earthworks comply with the following:

- The layers for residential lots are to be compacted to at least 95% of the density ratio in accordance with AS1289 5.1.1 (or 5.7.1), based on Standard compaction.

In accordance with Table 8.1 of *AS3798-2007*, the site would be considered large scale (greater than 1500 m<sup>2</sup>). Therefore, a minimum of 1 test per layer per 2500 m<sup>2</sup> per layer or 3 tests per visit are required. The testing conducted meets the minimum requirement

## 3 INSPECTION AND TESTING

Inspection of the excavated base was conducted by a geotechnical engineer and it was observed that the unsuitable material (vegetation, topsoil/silt) had been removed with the base consisting of a stiff silty clay or weathered basalt rock material of good strength.

Level 1 inspection and testing was undertaken by a geotechnician from GTS who nominated the timing and location of the in-situ density tests. The approximate location of each test is recorded on the test reports and attached fill plan.

Laboratory compaction testing was undertaken on a one to one basis at our Ballarat laboratory. A summary of the results of the compaction control testing is presented in a table below with the full NATA endorsed test reports included in the Appendix.

## 4 SUMMARY OF TEST RESULTS

A summary of the test results is included in the following table with the full NATA accredited reports included in the Appendix.

Project No.	Sample No.	Test Date	Location	Reduced Level (mm)	Moisture Variation % O.M.C.	Hilf Density Ratio %
1	D20-1846A	01/07/2020	Lot 4	-1000	3.5 wet	99.5
2	D20-1846B	01/07/2020	Lot 4	-1300	1.5 wet	99.5
3	D20-1846C	01/07/2020	Lot 4	-1000	3.5 wet	99.0
4	D20-1849A	02/07/2020	Lot 4	-700	2.0 wet	101.0
5	D20-1850A	03/07/2020	Lot 4	-400	3.5 wet	97.5
6	D20-1852A	10/07/2020	Lot 4	FSL	2.5 wet	105.5
7	D20-1852B	10/07/2020	Lot 4	-200	1.5 wet	104.5
8	D20-1852C	10/07/2020	Lot 4	-200	2.5 wet	102.0
9	D20-1876A	12/08/2020	Lot 5	FSL	0.5 wet	102.0
10	D20-1876B	12/08/2020	Lot 4	FSL	0.0	103.0
11	D20-1876C	12/08/2020	Lot 3	FSL	0.5 wet	101.5

## 5 STATEMENT OF COMPLIANCE

GTS personnel have provided Level 1 inspection and testing services during the placement of material for the filling the dam and of Lots 3, 4 & 5. The placement of fill and construction techniques adopted was observed throughout the project.

Based on observations made by GTS personnel and the results of field and laboratory tests, we consider that the fill has been placed and compacted and is considered to be engineered or controlled fill. Therefore, subject to residential site classifications, the controlled fill material is deemed a suitable founding medium for future residential buildings.

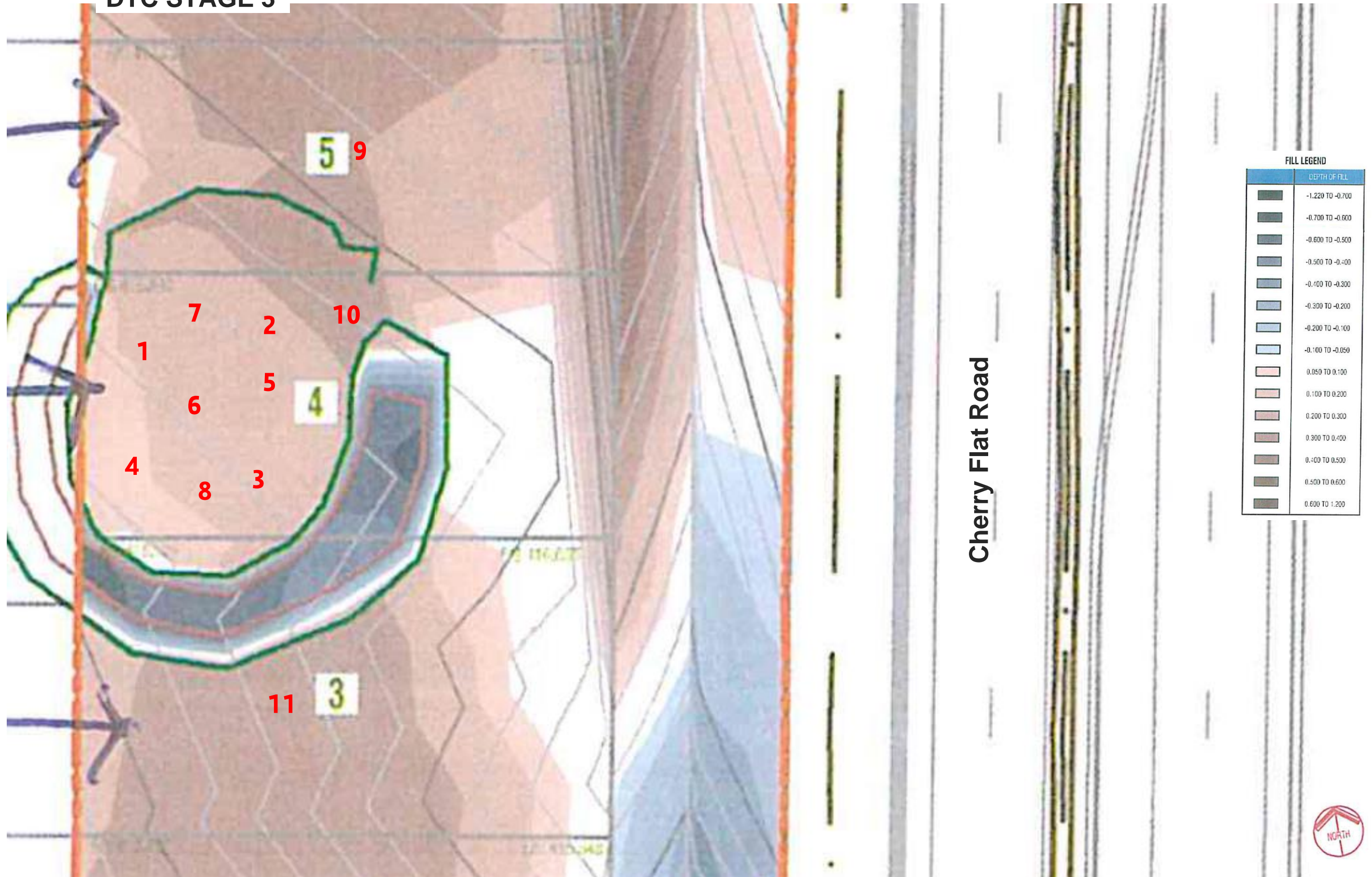


**Benj Beatty** BA/BSc (Hons), MPA, MAusIMM  
**Senior Engineering Geologist**

# APPENDIX



## DTC STAGE 3



# Material Test Report

**Report Number:** P20302-1  
**Issue Number:** 1  
**Date Issued:** 03/07/2020  
**Client:** Madica Pty Ltd  
 PO Box 173, Buninyong Victoria 3357  
**Contact:** Wayne Sheridan  
**Project Number:** P20302  
**Project Name:** DTC-EDGE STAGE 3  
**Project Location:** Delacombe  
**Work Request:** 1846  
**Date Sampled:** 02/07/2020  
**Dates Tested:** 02/07/2020 - 03/07/2020  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard  
**Site Selection:** Selected by Client  
**Material Source:** Test Location



Geotechnical Testing Services (Southern)  
 Ballarat Soil and Concrete Testing Laboratory  
 Unit 6, 33 Laidlaw Drive Delacombe VIC 3356  
 Phone: (03) 5335 6494  
 Email: matthewa@gts.com.au

Accredited for compliance with ISO/IEC 17025 - Testing



Approved Signatory: Matt Allen  
 Gtss-Matt

NATA Accredited Laboratory Number: 19506

## Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	D20-1846A	D20-1846B	D20-1846C
Date Tested	01/07/2020	01/07/2020	01/07/2020
Time Tested	09:08	09:11	09:12
Test Request #/Location	Layer 2 House Lot No. 4	Layer 1 House Lot No. 4	Layer 2 House Lot No. 4
Easting	54H 747630	54H 747635	54H 747369
Northing	5835288	5835285	5835285
Elevation (m)	1m BFSL	1.3m BFSL	1m BFSL
Layer / Reduced Level	Filling	Filling	Filling
Thickness of Layer (mm)	200	200	200
Soil Description	Orange brown silty clay	Orange brown silty clay	Orange brown silty clay
Test Depth (mm)	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	**	**
Field Wet Density (FWD) t/m <sup>3</sup>	1.91	1.90	1.90
Field Dry Density (FDD) t/m <sup>3</sup>	**	**	**
Peak Converted Wet Density t/m <sup>3</sup>	1.91	1.91	1.91
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	-3.5	-1.5	-3.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	99.5	99.5	99.0
Compaction Method	Standard	Standard	Standard

### Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC



# Material Test Report

**Report Number:** P20302-2  
**Issue Number:** 1  
**Date Issued:** 03/07/2020  
**Client:** Madica Pty Ltd  
PO Box 173, Buninyong Victoria 3357  
**Contact:** Wayne Sheridan  
**Project Number:** P20302  
**Project Name:** DTC-EDGE STAGE 3  
**Project Location:** Delacombe  
**Work Request:** 1849  
**Date Sampled:** 02/07/2020  
**Dates Tested:** 02/07/2020 - 03/07/2020  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard  
**Site Selection:** Selected by Client  
**Material Source:** Test Location



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Approved Signatory: Matt Allen  
Gtss-Matt

NATA Accredited Laboratory Number: 19506

## Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	D20-1849A		
Date Tested	02/07/2020		
Time Tested	15:07		
Test Request #/Location	Layer 3 House Lot No. 4		
Easting	54H 747631		
Northing	5835284		
Elevation (m)	700mm BFSL		
Layer / Reduced Level	Filling		
Thickness of Layer (mm)	200		
Soil Description	Orange brown silty clay		
Test Depth (mm)	175		
Sieve used to determine oversize (mm)	19.0		
Percentage of Wet Oversize (%)	0.0		
Field Wet Density (FWD) t/m <sup>3</sup>	1.94		
Field Dry Density (FDD) t/m <sup>3</sup>	**		
Peak Converted Wet Density t/m <sup>3</sup>	1.92		
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**		
Moisture Variation (Wv) %	-2.0		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	101.0		
Compaction Method	Standard		

### Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Material Test Report

**Report Number:** P20302-3  
**Issue Number:** 1  
**Date Issued:** 03/07/2020  
**Client:** Madica Pty Ltd  
 PO Box 173, Buninyong Victoria 3357  
**Contact:** Wayne Sheridan  
**Project Number:** P20302  
**Project Name:** DTC-EDGE STAGE 3  
**Project Location:** Delacombe  
**Work Request:** 1850  
**Date Sampled:** 03/07/2020  
**Dates Tested:** 03/07/2020 - 03/07/2020  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard  
**Site Selection:** Selected by Client  
**Material Source:** Test Location



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Approved Signatory: Matt Allen  
 Gtss-Matt

NATA Accredited Laboratory Number: 19506

## Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	D20-1850A		
Date Tested	03/07/2020		
Time Tested	09:30		
Test Request #/Location	Layer 4 House Lot No. 4		
Easting	54H 747636		
Northing	5835284		
Elevation (m)	400mm BFSL		
Layer / Reduced Level	Filling		
Thickness of Layer (mm)	200		
Soil Description	Orange brown silty clay		
Test Depth (mm)	175		
Sieve used to determine oversize (mm)	19.0		
Percentage of Wet Oversize (%)	**		
Field Wet Density (FWD) t/m <sup>3</sup>	1.93		
Field Dry Density (FDD) t/m <sup>3</sup>	**		
Peak Converted Wet Density t/m <sup>3</sup>	1.98		
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**		
Moisture Variation (Wv) %	-3.5		
Adjusted Moisture Variation %	**		
Hilf Density Ratio (%)	97.5		
Compaction Method	Standard		

### Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Material Test Report

**Report Number:** P20302-4  
**Issue Number:** 1  
**Date Issued:** 13/07/2020  
**Client:** Madica Pty Ltd  
 PO Box 173, Buninyong Victoria 3357  
**Contact:** Wayne Sheridan  
**Project Number:** P20302  
**Project Name:** DTC-EDGE Stage 3  
**Project Location:** Delacombe  
**Work Request:** 1852  
**Date Sampled:** 10/07/2020  
**Dates Tested:** 10/07/2020 - 13/07/2020  
**Sampling Method:** AS 1289.1.2.1 6.4 - Sampling from layers in earthworks or pavement - uncompacted/compacted  
**Specification:** 95% Standard  
**Site Selection:** Selected By Tester  
**Material Source:** Test Location



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*MS Allen*

Approved Signatory: Matt Allen  
 NATA Accredited Laboratory Number: 19506

Compaction Control AS 1289 5.7.1 & 5.8.1			
Sample Number	D20-1852A	D20-1852B	D20-1852C
Date Tested	10/07/2020	10/07/2020	10/07/2020
Time Tested	14:42	14:46	14:51
Test Request #/Location	Layer 6 House Lot No. 4	Layer 5 House Lot No. 4	Layer 5 House Lot No. 4
Easting	54H 747633	54H 747639	54H 747631
Northing	5835292	5835291	5835284
Elevation (m)	FSL	200mm BFSL	200mm BFSL
Layer / Reduced Level	Filling	Filling	Filling
Thickness of Layer (mm)	200	200	200
Soil Description	Orange brown silty clay	Orange brown silty clay	Orange brown silty clay
Test Depth (mm)	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	0.0	0.0	0.0
Field Wet Density (FWD) t/m <sup>3</sup>	2.08	2.04	1.96
Field Dry Density (FDD) t/m <sup>3</sup>	**	**	**
Peak Converted Wet Density t/m <sup>3</sup>	1.97	1.95	1.92
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	-2.5	-1.5	-2.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	105.5	104.5	102.0
Compaction Method	Standard	Standard	Standard

## Moisture Variation Note:

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report

**Report Number:** P20302-8  
**Issue Number:** 1  
**Date Issued:** 14/08/2020  
**Client:** Madica Pty Ltd  
PO Box 173, Buninyong Victoria 3357  
**Contact:** Wayne Sheridan  
**Project Number:** P20302  
**Project Name:** DTC-EDGE Stage 3  
**Project Location:** Delacombe  
**Work Request:** 1876  
**Date Sampled:** 12/08/2020  
**Dates Tested:** 12/08/2020 - 13/08/2020  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Specification:** 95% Standard  
**Site Selection:** Selected By Tester  
**Material Source:** Test Location



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NATA Accredited Laboratory Number: 19506

## Compaction Control AS 1289 5.7.1 & 5.8.1

Sample Number	D20-1876A	D20-1876B	D20-1876C
Date Tested	12/08/2020	12/08/2020	12/08/2020
Time Tested	08:39	08:50	09:01
Test Request #/Location	House Lot Nos 5	House Lot Nos 4	House Lot Nos 3
Easting	54H 747640	54H 747637	54H 747632
Northing	5835293	5835284	5835267
Elevation (m)	FSL	FSL	FSL
Layer / Reduced Level	Filling	Filling	Filling
Thickness of Layer (mm)	200	200	200
Soil Description	Yellow Brown Sandy clay	Yellow Brown Sandy clay	Yellow Brown Sandy clay
Test Depth (mm)	175	175	175
Sieve used to determine oversize (mm)	19.0	19.0	19.0
Percentage of Wet Oversize (%)	**	**	**
Field Wet Density (FWD) t/m <sup>3</sup>	2.00	2.01	2.00
Field Dry Density (FDD) t/m <sup>3</sup>	**	**	**
Peak Converted Wet Density t/m <sup>3</sup>	1.96	1.95	1.97
Adjusted Peak Converted Wet Density t/m <sup>3</sup>	**	**	**
Moisture Variation (Wv) %	-0.5	0.0	-0.5
Adjusted Moisture Variation %	**	**	**
Hilf Density Ratio (%)	102.0	103.0	101.5
Compaction Method	Standard	Standard	Standard

### Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC