

LEVEL ONE

Reference  
No.: 2172-214

SURVEILLANCE

AND INSPECTION REPORT

*Carried Out  
By*



PREPARED FOR: -

SYMON BROS. CONSTRUCTIONS PTY LTD



## Table of Contents

1)	Introduction & Scope.....	2
2)	Site Preparation.....	2
3)	Fill Material.....	2
4)	Fill Construction Procedure.....	3
5)	Compaction Control Testing.....	3
6)	Testing Frequency.....	3
7)	Statement of Compliance.....	4
8)	Limitations of this Report.....	4

## Appendices

Appendix A Construction Drawings

Appendix B Daily Field Compaction Summary Results



Client Name: Symon Bros. Constructions Pty Ltd

Project Name: Mambourin Estate Stage 16

Date: 19<sup>th</sup> of July 2022

Author: Mr. Sam Loza

Reference No.: 2172-214

Revision: 0

Project Manager: Mr. George Dimopoulos

### **1. Introduction & Scope**

At the request of Symon Bros. Constructions Pty Ltd, Geotechnical Laboratories has carried out inspection and testing of the above-mentioned site from the 6<sup>th</sup> of October 2021 to the 11<sup>th</sup> of July 2022 where a residential development is being constructed. Inspection and testing of stripping, material quality and compaction control tests were carried out to comply with the requirements of AS 3798 Appendix B, Level 1.

The following documentation was submitted to Geotechnical Laboratories by Symon Bros. Constructions Pty Ltd and was used to determine compliance of earthworks in conjunction with the requirements of AS 3798 – 2007.

(1). Standard Face Plan Layout Drawing No. 308976CR200 Rev. A

General site works involved the placement of fill, using on-site derived clay, to bring the fill region to the required finished levels as indicated on the faceplan drawings.

### **2. Site Preparation**

Initial site inspections were undertaken on the 6<sup>th</sup> of October 2021 confirming that selected areas to be filled were completely stripped of topsoil prior to filling. The brown silty topsoils had been stockpiled around the site for later removal off-site.

Proof roll inspections were performed throughout the project duration to ensure no significant soft areas were present prior to filling.

### **3. Fill Material**

It is understood that the fill material used was sourced from on-site excavations, mainly drainage trenches and road boxing. The material had been screened to remove any boulders.



The fill material is best described as a CLAY, brown, grey-brown, slightly moist to moist, slightly silty, medium to high plasticity with basalt gravels and cobbles.

The fill material is consistent with the naturally occurring soils for this region.

Source material was deemed a **Suitable Material** in accordance with guidelines set out in AS 3798 - 2007 Section 4.4.

#### **4. Fill Construction Procedure**

The following plant (but not always limited to) were engaged in the fill placement process:

- Highway trucks
- A watercart
- A sheepsfoot compactor (815)

The sheepsfoot compactor placed material in horizontal loose layers of approximately 250-300mm. The sheepsfoot compactor also performed compaction of the clay fill operating in a criss-cross pattern.

The moisture condition of the fill was closely monitored, and moisture conditioning procedures were applied to bring the material closer to its Standard Optimum Moisture Content (AS 1289 5.7.1).

#### **5. Compaction Control Testing**

Compaction control testing was performed on-site using a Nuclear Densometer in accordance with AS 1289 5.8.1. Laboratory reference densities were determined from material sampled at each test site location using the Hilf Rapid Compaction Method in accordance with AS 1289 5.7.1.

A total of twenty-five compaction tests were performed on the fill construction. Results are presented in Appendix B of this report.

#### **6. Testing Frequency**

Testing frequencies were in accordance with **AS 3798 - 2007 Table 8.1 for Large Scale Operations.**

Acceptance of fill layers for compaction was based on the requirements of **AS 3798 - 2007 Table 5.1 Item 1. Residential.**

As a result, the compliance criteria adopted by Geotechnical Laboratories was a hilf density ratio not less than 95 percent of the maximum hilf density value as determined by the Standard Hilf Rapid Compaction Method in accordance with AS 1289 5.7.1.



Test results indicate that the above-mentioned requirements have been successfully achieved.

No moisture criteria was specified.

### **7. Statement of Compliance**

So far as can be determined, Symon Bros. Constructions Pty Ltd has satisfactorily complied with the compaction and construction processes required for the structural filling of this site. As such, structural filling placed on this site by Symon Bros. Constructions Pty Ltd from the 6<sup>th</sup> of October 2021 to the 11<sup>th</sup> of July 2022 can be categorised as CONTROLLED FILL in accordance with AS 2870-2011.

### **8. Limitations and Liability of this Report**

This report has been produced for and remains the property of Symon Bros. Constructions Pty Ltd.

The release of this report to a third party will only occur if Geotechnical Laboratories Pty Ltd has received, in writing, the authority to do so by our client.

Geotechnical Laboratories Pty Ltd will not engage in any third-party communication regarding this report.

Where information has been supplied by the client or third party, the assumption is made that this is correct. Geotechnical Laboratories Pty Ltd will not be held responsible for any inaccuracies supplied.

Test results and controlled fill compliance relates only to fill placed by Symon Bros. Constructions Pty Ltd and for earthworks completed at the time of inspection and testing. Any previous or subsequent earthworks will require a separate evaluation.

For & on behalf of  
Geotechnical Laboratories Pty Ltd.

Sam Loza  
Laboratory Manager.



LEVEL ONE  
SURVEILLANCE  
AND INSPECTION REPORT  
  
APPENDIX A



**WARNING**  
 BEWARE OF UNDERGROUND/OVERHEAD SERVICES  
 EXACT POSITION SHOULD BE PROVEN ON SITE. NO GUARANTEE IS  
 GIVEN FOR THE ACCURACY OF THE INFORMATION PROVIDED.  
 OPERATIONS SHOULD BE CONDUCTED IN ACCORDANCE WITH THE  
 UNDERGROUND UTILITY TRANSMISSION LINES.



**MAMBOURIN ESTATE**  
**STAGE 16**  
 ROAD AND DRAINAGE  
 ROAD LAYOUT PLANS - SHEET 1  
 CIVIL ENGINEERING  
 FRASERS PROPERTY

**Mambourin**

Checked  
 Date  
 AUG-2021

Designed by  
**M. RAHMANIAN**  
 Authorised  
**M. READMAN**

**spire**  
 414 LA TROBE STREET PO BOX 46084 MELBOURNE  
 VICTORIA 3007 AUSTRALIA T 61 3 9993 7888  
 spire.com.au AIN 15 000 020 635

Scale  
 1:1000  
 SCALE @ A1  
 0 5 10 15 20 25

Rev	Amendments	Approved	Date
A	ISSUED FOR TENDER	M.R	13/08/21

© Spire Australia Pty Ltd All Rights Reserved.  
 This document is the property of Spire Australia Pty Ltd.  
 It is to be used only for the project and in accordance with the terms of the  
 agreement between the parties. It is not to be distributed, copied, or  
 reproduced in any form without the prior written consent of Spire Australia Pty Ltd.  
 Any use of this document by any other party is strictly prohibited.



TENDER 308976CR200



LEVEL ONE  
SURVEILLANCE  
AND INSPECTION REPORT

APPENDIX B





**GEOTECHNICAL LABORATORIES**  
 ACN 102 571 077  
 14 Ravenhall Way, Ravenhall, Vic 3023  
 Email: info@geolab.com.au PH: (03) 8361-9140

## DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 2182/232

LOCATION: SYMON BROS - Mambourin Stage 15 & 16

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m <sup>3</sup> )	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m <sup>3</sup> )	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)	
6/10/21	1	<i>Refer to #2182/233 for approx. test site locations.</i>	2.00	25.0	102.0	1.96	25.5	175	0.5 Drier	99.0	0	0	0	
6/10/21	2		1.95	21.5	99.5	✱ 1.96	24.0	175	2.5 Drier	89.0	3	0	0	
6/10/21	3		1.99	27.0	101.0	1.97	27.5	175	0.5 Drier	98.0	0	0	150	
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 12:30pm Finish Time: 2:25pm

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)

✱ Indicates APCWD

❖



*Accredited for compliance with ISO/IEC 17025 - Testing*

*NATA Accredited Laboratory Number 14561*

**MICK CROWE**  
(Approved Signatory)

Issue Date: 8/10/2021



**GEOTECHNICAL  
LABORATORIES**

**GEOTECHNICAL LABORATORIES**

**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

**CLIENT: SYMON BROS**

**LOCATION: Mambourin Estate Stage 15 & 16**

**Sketch indicating compaction test locations**

**DATE: 6/10/2021**

**OPERATOR: WS**

**SCALE: NTS**

**JOB No.: 2182/233**

**CHECKED: KK**

**FIGURE No: -**



**GEOTECHNICAL LABORATORIES**  
 ACN 102 571 077  
 14 Ravenhall Way, Ravenhall, Vic 3023  
 Email: info@geolab.com.au PH: (03) 8361-9140

## DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 2182/234

LOCATION: SYMON BROS - Mambourin Stage 16

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m <sup>3</sup> )	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m <sup>3</sup> )	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)	
7/10/21	1	<i>Refer to #2182/235 for approx. test site locations.</i>	1.90	24.0	98.0	1.94	24.5	175	0.5 Drier	98.0	0	0	0	
7/10/21	2		2.01	25.0	101.0	1.98	24.0	175	0.5 Wetter	103.0	0	0	0	
7/10/21	3		2.07	25.5	105.5	1.96	24.0	175	1.5 Wetter	105.0	0	0	0	
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 2:10pm Finish Time: 3:00pm

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)



*Accredited for compliance with ISO/IEC 17025 - Testing*

*NATA Accredited Laboratory Number 14561*

**MICK CROWE**  
(Approved Signatory)

Issue Date: 11/10/2021

❖  
❖



**MAMBOURIN ESTATE**  
**STAGE 16**  
 ROAD AND UTILITY PLAN  
 TENDER NO. 2019/000235

**Mambourin**

**spire**

**TENDER**

**ACN 102 571 077**

14 RAVENHALL WAY, RAVENHALL, VIC 3023  
 EMAIL: [info@geolab.com.au](mailto:info@geolab.com.au) PH: (03) 8361-9140



**GEOTECHNICAL  
 LABORATORIES**

**GEOTECHNICAL LABORATORIES**

**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023

Email: [info@geolab.com.au](mailto:info@geolab.com.au) PH: (03) 8361-9140

**CLIENT: SYMON BROS**

**LOCATION: Mambourin Estate Stage 16**

**Sketch indicating compaction test locations**

**DATE: 7/10/2021**

**JOB No.: 2182/235**

**OPERATOR: WS**

**CHECKED: KK**

**SCALE: NTS**

**FIGURE No: -**



**GEOTECHNICAL LABORATORIES**  
 ACN 102 571 077  
 14 Ravenhall Way, Ravenhall, Vic 3023  
 Email: info@geolab.com.au PH: (03) 8361-9140

## DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 2182/238

LOCATION: SYMON BROS - Mambourin Stage 16

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m <sup>3</sup> )	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m <sup>3</sup> )	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)	
8/10/21	1	<i>Refer to #2182/239 for approx. test site locations.</i>	1.90	26.0	105.0	1.81	29.5	175	3.5 Drier	89.0	0	0	0	
8/10/21	2		1.81	27.5	99.5	1.81	30.5	175	3.0 Drier	91.0	0	0	0	
8/10/21	3		1.87	30.0	100.5	1.85	30.0	175	0.0 Drier	100.0	0	0	0	
8/10/21	4		1.86	27.5	102.5	1.82	30.5	175	3.0 Drier	91.0	0	0	0	
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4

Compaction specimens sampled after compaction.

Start Time: 10:45am Finish Time: 1:00pm

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)



*Accredited for compliance with ISO/IEC 17025 - Testing*

*NATA Accredited Laboratory Number 14561*

**MICK CROWE**  
(Approved Signatory)

Issue Date: 14/10/2021



**GEOTECHNICAL  
LABORATORIES**

**GEOTECHNICAL LABORATORIES**

**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

**CLIENT: SYMON BROS**

**LOCATION: Mambourin Estate Stage 16**

**Sketch indicating compaction test locations**

**DATE: 8/10/2021**

**OPERATOR: WS**

**SCALE: NTS**

**JOB No.: 2182/239**

**CHECKED: KK**

**FIGURE No: -**



**GEOTECHNICAL LABORATORIES**  
 ACN 102 571 077  
 14 Ravenhall Way, Ravenhall, Vic 3023  
 Email: info@geolab.com.au PH: (03) 8361-9140

## DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 2182/240

LOCATION: SYMON BROS - Mambourin Stage 16

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m <sup>3</sup> )	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m <sup>3</sup> )	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)	
9/10/21	1	<i>Refer to #2182/241 for approx. test site locations.</i>	1.91	25.5	101.5	1.87	27.5	175	2.0 Drier	93.5	0	0	600	
9/10/21	2		1.91	24.5	101.0	1.89	26.5	175	2.0 Drier	92.5	0	0	600	
9/10/21	3		1.83	26.5	96.5	✱ 1.89	29.5	175	3.0 Drier	89.5	5	0	600	
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 9:15am Finish Time: 9:40am

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)

✱ Indicates APCWD

❖



*Accredited for compliance with ISO/IEC 17025 - Testing*

*NATA Accredited Laboratory Number 14561*

**MICK CROWE**  
(Approved Signatory)

Issue Date: 14/10/2021



MAMBOURIN ESTATE



**GEOTECHNICAL LABORATORIES**

**GEOTECHNICAL LABORATORIES**

**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

**CLIENT: SYMON BROS**

**LOCATION: Mambourin Estate Stage 16**

**Sketch indicating compaction test locations**

**DATE: 9/10/2021**

**JOB No.: 2182/241**

**OPERATOR: VN**

**CHECKED: KK**

**SCALE: NTS**

**FIGURE No: -**





**GEOTECHNICAL LABORATORIES**  
**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023  
 Email: info@geolab.com.au PH: (03) 8361-9140

## DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 2182/244

LOCATION: SYMON BROS - Mambourin Stage 15 & 16

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m <sup>3</sup> )	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m <sup>3</sup> )	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)	
13/10/21	1	<i>Refer to #2182/245 for approx. test site locations.</i>	1.97	24.0	97.5	2.03	22.0	175	1.5 Wetter	108.0	0	0	500	
13/10/21	2		1.90	22.0	96.0	1.97	21.0	175	1.0 Wetter	104.5	0	0	600	
13/10/21	3		2.05	20.0	99.0	2.07	18.5	175	1.0 Wetter	106.5	0	0	800	
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 2.55pm Finish Time: 3:30pm

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)



*Accredited for compliance with ISO/IEC  
 17025 - Testing*

*NATA Accredited Laboratory Number 14561*

**MICK CROWE**  
 (Approved Signatory)

Issue Date: 15/10/2021



MAMBOURIN ESTATE



**GEOTECHNICAL LABORATORIES**

**GEOTECHNICAL LABORATORIES**

**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

**CLIENT: SYMON BROS**  
**LOCATION: Mambourin Estate Stage 15 & 16**  
**Sketch indicating compaction test locations**

**DATE: 13/10/2021**  
**OPERATOR: WS**  
**SCALE: NTS**

**JOB No.: 2182/245**  
**CHECKED: KK**  
**FIGURE No: -**



GEOTECHNICAL LABORATORIES

ACN 102 571 077

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

## DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 2182/246

LOCATION: SYMON BROS - Mambourin, Stage 16

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m <sup>3</sup> )	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m <sup>3</sup> )	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)	
19/10/21	1	<i>Refer to #2182/247 for approx. test site locations.</i>	1.98	23.0	102.5	1.94	24.5	175	1.5 Drier	93.0	25	0	0	
19/10/21	2		2.04	24.0	100.5	✘ 2.02	23.5	175	0.0 Wetter	101.0	19	0	0	
19/10/21	3		1.98	24.5	99.0	✘ 2.00	25.5	175	0.5 Drier	97.0	12	0	0	
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 2:35pm Finish Time: 2:50pm

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)

✘ Indicates APCWD



*Accredited for compliance with ISO/IEC 17025 - Testing*

*NATA Accredited Laboratory Number 14561*

MICK CROWE  
(Approved Signatory)

Issue Date: 22/10/2021



**WARNING**  
 BEYOND OF INFORMATION ONLY  
 THE LOCATION OF UTILITY APPROXIMATE  
 THAT PROVIDED SHOULD BE VERIFIED BY THE  
 INFORMATION PROVIDED IN THIS DOCUMENT  
 UNDER CONTRACT DOCUMENTS

MAMBOURIN ESTATE



**GEOTECHNICAL  
 LABORATORIES**

**GEOTECHNICAL LABORATORIES**

**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

**CLIENT: SYMON BROS**  
**LOCATION: Mambourin Estate Stage 16**  
**Sketch indicating compaction test locations**

**DATE: 19/10/2021**  
**OPERATOR: DB**  
**SCALE: NTS**

**JOB No.: 2182/247**  
**CHECKED: KK**  
**FIGURE No: -**



**GEOTECHNICAL LABORATORIES**  
ACN 102 571 077

14 Ravenhall Way, Ravenhall, Vic 3023  
Email: info@geolab.com.au PH: (03) 8361-9140

## DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 2182/257

LOCATION: SYMON BROS - Mambourin Stage 16

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m <sup>3</sup> )	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m <sup>3</sup> )	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)	
21/10/21	1	<i>Refer to #2182/258 for approx. test site locations.</i>	1.89	25.0	100.5	1.88	26.0	175	1.0 Drier	96.0	0	0	0	
21/10/21	2		1.90	27.0	100.5	1.89	28.0	175	1.5 Drier	95.5	0	0	0	
21/10/21	3		1.90	26.5	96.5	✱ 1.97	26.5	175	0.5 Wetter	101.0	4	0	0	
21/10/21	4		1.97	25.5	99.0	2.00	25.0	175	1.0 Wetter	103.0	0	0	0	
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 12:15pm Finish Time: 1:30pm

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)

✱ Indicates APCWD

❖



Accredited for compliance with ISO/IEC 17025 - Testing

NATA Accredited Laboratory Number 14561

MICK CROWE  
(Approved Signatory)

Issue Date: 26/10/2021



MAMBOURIN ESTATE  
STAGE 16



**GEOTECHNICAL  
LABORATORIES**

**GEOTECHNICAL LABORATORIES**

**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

**CLIENT: SYMON BROS**

**LOCATION: Mambourin Estate Stage 16**

**Sketch indicating compaction test locations**

**DATE: 21/10/2021**

**OPERATOR: WS**

**SCALE: NTS**

**JOB No.: 2182/258**

**CHECKED: KK**

**FIGURE No: -**



**GEOTECHNICAL LABORATORIES**  
**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023  
 Email: info@geolab.com.au PH: (03) 8361-9140

## DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 2182/259

LOCATION: SYMON BROS - Mambourin Stage 16

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m <sup>3</sup> )	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m <sup>3</sup> )	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)	
25/10/21	1	<b><i>Refer to #2182/260 for approx. test site locations.</i></b>	2.01	25.0	103.5	1.94	26.0	175	1.0 Drier	96.0	0	0	0	
25/10/21	2		2.00	25.0	101.5	1.97	25.0	175	0.0 Drier	99.0	0	0	0	
25/10/21	3		2.02	26.0	102.5	1.97	26.0	175	0.0 Drier	100.0	0	0	0	
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 2:10pm Finish Time: 3:10pm

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)



Accredited for compliance with ISO/IEC 17025 - Testing

NATA Accredited Laboratory Number 14561

**MICK CROWE**  
 (Approved Signatory)

Issue Date: 27/10/2021



**GEOTECHNICAL  
LABORATORIES**

**GEOTECHNICAL LABORATORIES**

**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

**CLIENT: SYMON BROS**

**LOCATION: Mambourin Estate Stage 16**

**Sketch indicating compaction test locations**

**DATE: 25/10/2021**

**OPERATOR: WS**

**SCALE: NTS**

**JOB No.: 2182/260**

**CHECKED: KK**

**FIGURE No: -**

**MAMBOURIN ESTATE  
STAGE 16**





**GEOTECHNICAL LABORATORIES**

ACN 102 571 077

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

## DAILY SUMMARY - FIELD DENSITY TESTS

REPORT NO.: # 2182/478

LOCATION: SYMON BROS - Mambourin, Stage 16

DATE OF TESTS	TEST NUM.	TEST LOCATION	FIELD WET DENSITY (t/m <sup>3</sup> )	FIELD MOISTURE CONTENT (%)	HILF DENSITY RATIO STANDARD (%)	STANDARD PCWD OR APCWD (t/m <sup>3</sup> )	STANDARD OPTIMUM MOISTURE CONTENT (%)	PROBE DEPTH SETTING (mm)	VARIATION FROM OPTIMUM MOISTURE CONTENT (%)	MOISTURE RATIO (%)	WET +19mm (%)	WET +37.5mm (%)	APPROX. DEPTH BELOW FINISH LEVEL (mm)	
11/07/22	1	<i>Refer to #2182/479 for approx. test site locations.</i>	1.98	19.0	98.5	✘ 2.00	21.0	175	2.0 Drier	91.0	4	0	0	
11/07/22	2		1.98	20.5	99.5	✘ 1.99	21.5	175	0.5 Drier	96.5	5	0	0	
11/07/22	3		2.00	20.0	103.5	1.93	22.5	175	2.5 Drier	89.5	0	0	0	
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-
-	-		-	-	-	-	-	-	-	-	-	-	-	-

NOTES: Clayey Fill Ex. Onsite

Test sites located - Geolab Procedure 4, Part 4.4.

Compaction specimens sampled after compaction.

Start Time: 8:30am Finish Time: 9:00am

A Hilf Rapid Compaction test was carried out on a sample taken from each Field Density location to obtain the Compaction Parameters tabulated on this Report.

Moisture Content: AS 1289 2.1.1

Compaction Test: AS 1289 5.7.1

Soil Layer thickness: 200mm

Hilf Density Ratio and Hilf Moisture Variation ,Hilf Adjusted (APCWD) & Peak (PCWD) Converted Wet Density AS 1289 5.7.1

Field Density, Nuclear Gauge: AS 1289 5.8.1

Materials Sampled : AS 1289 1.2.1 Clause 6.4(b)

✘ Indicates APCWD



Accredited for compliance with ISO/IEC

17025 - Testing

NATA Accredited Laboratory Number 14561

**MICK CROWE**  
(Approved Signatory)

Issue Date: 18/7/2022



**GEOTECHNICAL  
LABORATORIES**

**GEOTECHNICAL LABORATORIES**

**ACN 102 571 077**

14 Ravenhall Way, Ravenhall, Vic 3023

Email: info@geolab.com.au PH: (03) 8361-9140

**CLIENT: SYMON BROS**  
**LOCATION: Mambourin - Stage 16**  
**Sketch indicating compaction test locations**

**DATE: 11/07/2022**  
**OPERATOR: PV**  
**SCALE: NTS**

**JOB No.: 2182/479**  
**CHECKED: KK**  
**FIGURE No: -**