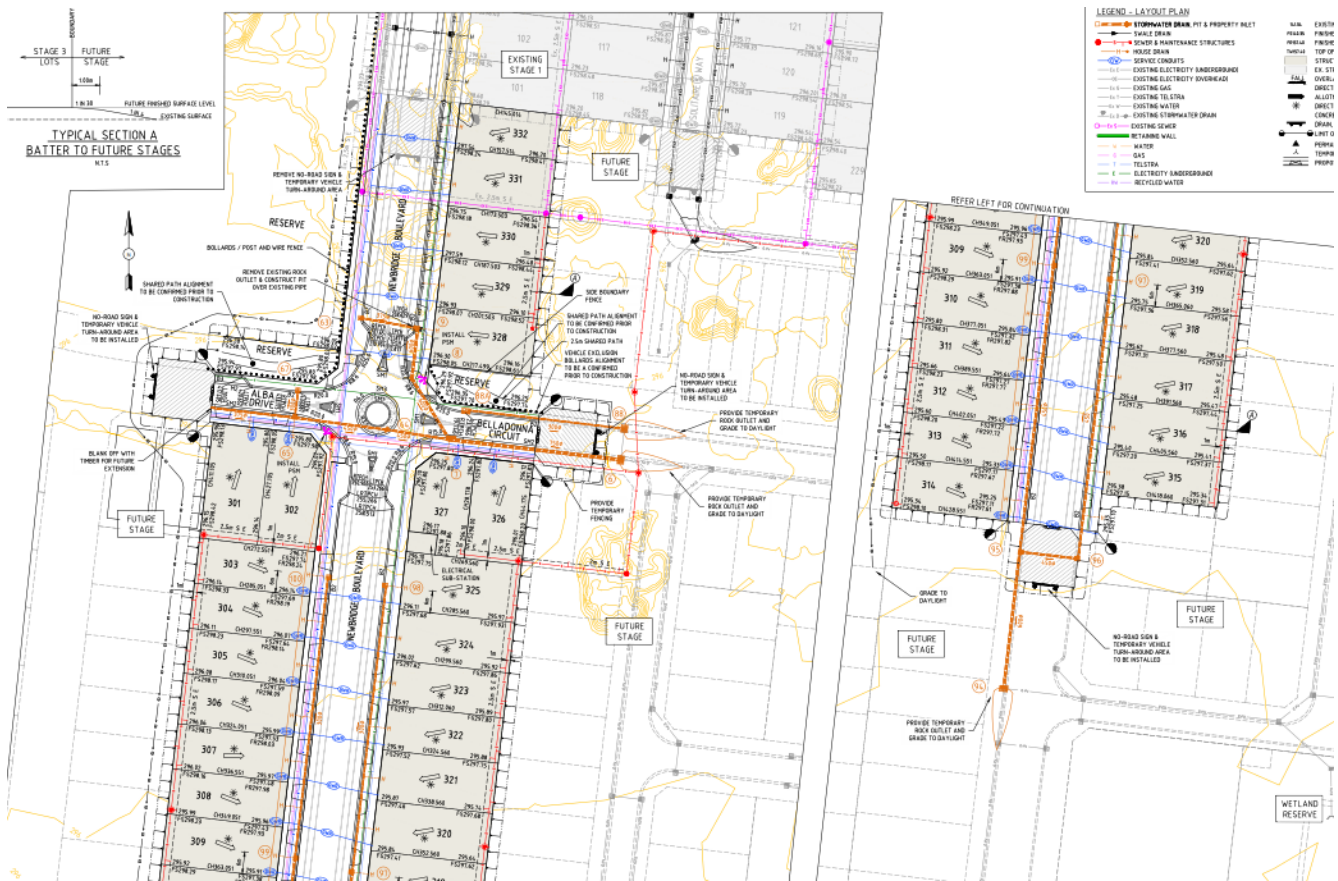




# CONTINENT GEOTECH SERVICES

Geotechnical | Environmental | Residential | Pavements

## Level 1 Supervision Report Newbridge South Stage 3 - Wallan



Universal Corporation  
March 2021

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## TABLE OF CONTENTS

<b>1. INTRODUCTION</b>	<b>1</b>
<b>2. PROJECT SUMMARY</b>	<b>1</b>
<b>3. INSPECTION AND SUPERVISION</b>	<b>2</b>
3.1 FILL PLACEMENT AND TESTING SPECIFICATIONS	2
3.2 STRIP SURFACE INSPECTION	2
<b>4. EARTHWORKS AND TESTING</b>	<b>3</b>
4.2 FILL MATERIAL	3
4.3 FILL CONSTRUCTION	3
4.4 TESTING AND RESULTS	3
<b>5. CONCLUSION</b>	<b>4</b>
<b>6. LIMITATION OF THIS REPORT</b>	<b>4</b>
<b>7. UNDERSTANDING LEVEL 1 INSPECTION AND TESTING</b>	<b>4</b>
<b>APPENDIX 1 – SITE PLAN</b>	<b>6</b>
<b>APPENDIX 2 – TESTING SUMMARY</b>	<b>7</b>
<b>APPENDIX 3 – NATA LAB RESULTS</b>	<b>8</b>
	<b>9</b>

### Document Details

<b>Project Number</b>	6387.03	Rev 0
<b>Project Name</b>	Newbridge South Stage 3	
<b>Project Location</b>	Wallan - VIC	
<b>Client</b>	Universal Corporation 57 Yale Drive Epping VIC 3076	

## 1. INTRODUCTION

Continent Geotech Services (CGS) has been engaged by Universal Corporation to provide Level 1 Geotechnical Supervision of fill activity at Newbridge South Stage 3 at Wallan - VIC. The purpose of this report is to summarise the site inspection, compaction control and laboratory testing services performed by CGS for Newbridge South Stage 3 project.

Level 1 Inspection and Testing, as defined in AS3798 – 2007 *'Guideline on Earthworks for Commercial and Residential Development'*, provides for full time inspection of the construction of controlled full and field laboratory testing accordance with AS1289 *'Methods of Testing Soils for Engineering Purposes'*. The compaction control testing was undertaken by our experienced Geotechnician/engineer from CGS.

## 2. PROJECT SUMMARY

CGS provided the Level 1 Inspection and Testing of the controlled fill placed as part of construction and development process of Newbridge South stage 3 residential subdivision development process.

The earthworks were carried out by Universal corporation with their own/hired equipment. CGS undertook the compaction control testing of the fill material as part of Level 1 Inspection and Testing process. General Fill material used for construction was locally sourced from site and imported from nearby construction activities consists mainly silty clay, which makes material used to be able to test with AS1289 methods for compaction compliance as per AS3798 – 2007.

The areas of controlled fill were placed is shown on site plan attached the Appendix 1 which is based on drawings (18040-03-01, Rev B) prepared by Urban Design and Management. The Level 1 Inspection and testing commenced on April 2021 and was completed on December 2021.

### **3. INSPECTION AND SUPERVISION**

#### **3.1 Fill Placement and Testing Specifications**

The fill placement and testing were carried out in accordance with AS3798 – 2007 '*Guideline on Earthworks for Commercial and Residential Development*', the following specifications based generally on the requirements of AS3798:

- The fill area shall be stripped of topsoil, subsoil, soft material and vegetation to firm based approved by superintendent.
- Suitable fill material shall be placed in loose horizontal layers not exceeding 400mm in thickness.
- The fill shall be compacted to Dry Density Ratio of at least 95% Standard (AS1289 5.1.1, 5.4.1 or 5.7.1),
- The fill material shall not contain greater than 20% by volume, of particles size greater than 37.5mm and no particle size over 200mm in any dimension,
- The frequency of field density testing shall be accordance with AS3798 for large scale developments (Type 1), which nominates a frequency of not less than
  - 1 test per layer of 200mm per 2500mm<sup>2</sup>
  - 1 test per 500m<sup>3</sup> distributed reasonably evenly throughout the full depth and area: or
  - 3 tests per site visit, which requires the most tests

The technical specification of the structural fill was not provided, so the above guidelines were assumed for earthworks.

#### **3.2 Strip Surface Inspection**

The subgrade for the fill area was prepared by removing the topsoil, silt layer and vegetation layer using a grader and excavator. The inspection was carried out to confirm all the vegetation and topsoils are removed from the stripped surface.

Subgrade assessment was carried out by CGS following the topsoil removal and before any fill was placed. The soils exposed at the subgrade comprised natural clays silts and silty clays. No soft spots were observing during the subgrade assessment.



## **4. EARTHWORKS AND TESTING**

### **4.2 Fill Material**

Fill material was mainly externally sourced from other nearby construction projects excavations at Donnybrook, Springridge and Wollert. Some fill was sourced onsite from excavation works including road construction, drainage constructions activities.

The cleaned fill material was visually assessed by Geotechnician to confirm is clean from debris/ vegetative matter and oversize rocks. It should be noted that no environmental analysis was performed by CGS on the fill material as it was sourced from naturally occurring soils.

### **4.3 Fill Construction**

The fill material was moisture conditioned during the placement and prior to placement while it was stockpiled.

The fill material generally placed in approximately 200mm to 300mm loose layers, compacted layers achieved approximately 150mm to 250mm in thickness. The material was spread using dump truck, using and compactor with dozer blade. The Cat 12 tonne sheepsfoot roller was also used to compact the material after placement. There was no onsite surveyor was to provide the reduced levels while fill placement, however the layers were checked with site personnel with electronic laser level.

CGS's level 1 Geotechnician was on site on a full-time basis during placement, compaction and testing of the fill within the allotments.

### **4.4 Testing and Results**

Field density testing was undertaken progressively on the compacted fill at the frequency of minimum tests as required for Type 1 Earthworks (large scale operations) as defined in table 8.1 of the AS3798-2007.

The field testing was undertaken by CGS, and all laboratory testing was performed in our NATA accredited laboratory in Thomastown.

The total 217 field density and laboratory Hif compaction tests were performed in all fill areas. The reports verify the achievement of the minimum density requirement of 95% Standard Compaction throughout the full depth area, with each layer tested accordingly. All the tests' results were provided to client for inclusion within their internal quality system (refer to Appendix 2).

The location for all the tests performed is shown in Appendix 1 - Site Plan.

## **5. CONCLUSION**

Following the completion of the earthworks and material assessment, the filling procedures conducted by Universal Civil Construction satisfied the requirements of AS3798, regarding the placement of fill material on a project under Level 1 Supervision, and in accordance with specification as provided to CGS. Based on observations made by our on site Geotechnician (Level 1 Inspector) and the results of field and laboratory tests, CGS consider that the engineered fill placed with stage 3 by client, to the layers indicated in Appendix 2, as far as we have able to determine, has been placed in general accordance with intent of the specification.

This report has been prepared for benefit of our client with respect to the particular brief given to us and it may not be relied upon in other purpose without our prior review and agreement. No responsibility for this report will be taken by CGS if it is altered in any way, or not reproduced in full.

## **6. LIMITATION OF THIS REPORT**

This report is valid for the following completion of level 1 supervision. CGS does not accept responsibility for any distortion or deviation of measurements as reported at the time given. It should be noted that even though the fill layer was moisture conditioned while compacting and meets the requirement but over the dry and wet weather it is subject to drying and cracking. The top 200-300mm of fill will deteriorate with time and should be taken into account by foundation engineer prior to construction of dwelling. The levels nominated in this report are guiding to amounts of fill placed and do not necessarily reflect accurate survey of fill levels.

It should be noted that any fill placed as part of drainage, sewer works, pavement works is not part of this level 1 supervision report

This report will be considered invalid if:

- Any works were carried/conducted on the site without supervision of CGS technician
- Any other unforeseeable event any event outside of the time described above.

## **7. UNDERSTANDING LEVEL 1 INSPECTION AND TESTING**

The purpose of performing level 1 inspection and testing is to ensure compliance of fill construction with the nominated specifications. The engagement of Geotechnical Inspection Testing Authority (GITA) allows the contractor to perform his role in the construction of the filling operation while the GITA monitors quality control of process of the fill placement. The visual observations of construction process and methodologies used by contractor allows the

GITA to approve the subsequent placement of fill without having to wait to completion of testing and the extended time it takes to complete the laboratory results. The GITA will carry out random spots checks of the filling operations and complete the compaction control test for day's work. Level 1 inspection and testing requires full time inspection and testing of the fill placement undertaken on site. CGS are notified daily by project foreman where subsequent days of fill placement under level 1 to occur. Generally, projects rely on importation of a fill source, there can be delays in receipt of sufficient material to start placing which may result the periods where GITA representative not required on site. It is contractor's responsibility to notify the GITA prior to start any fill placement. A GITA relies on the contractor to advise when the site attendance required and makes all reasonable visual attempts to assess if the works were the same as pervious day of attendance.

Prepared By

P Sinwer – Geotechnical Engineer

Reviewed By

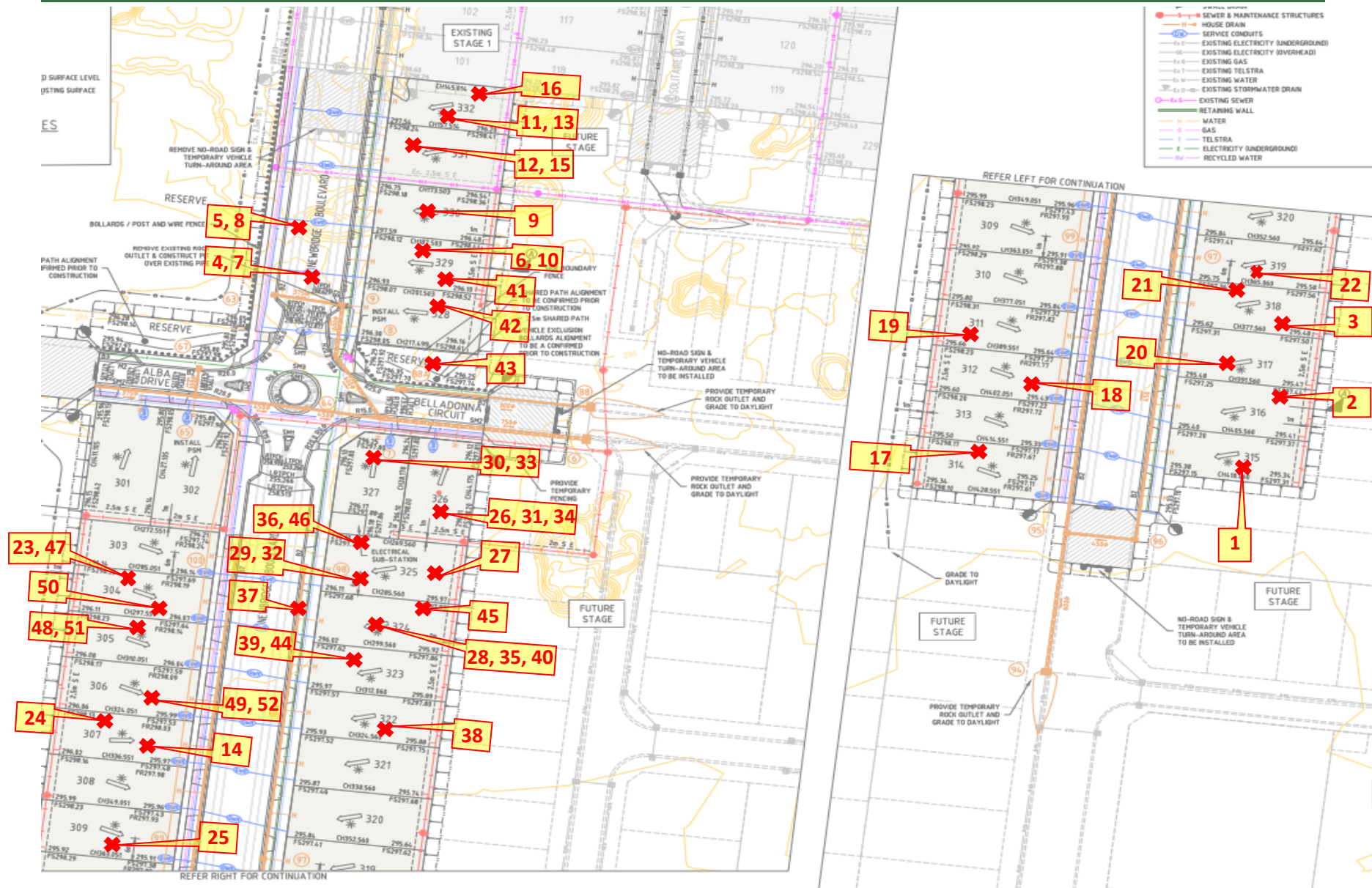
S Kang – Project Manager

## **APPENDIX 1 – SITE PLAN**



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Report No. 6387.03-R0  
Level 1 Supervision Report  
Newbridge South Stage 3  
March 2021



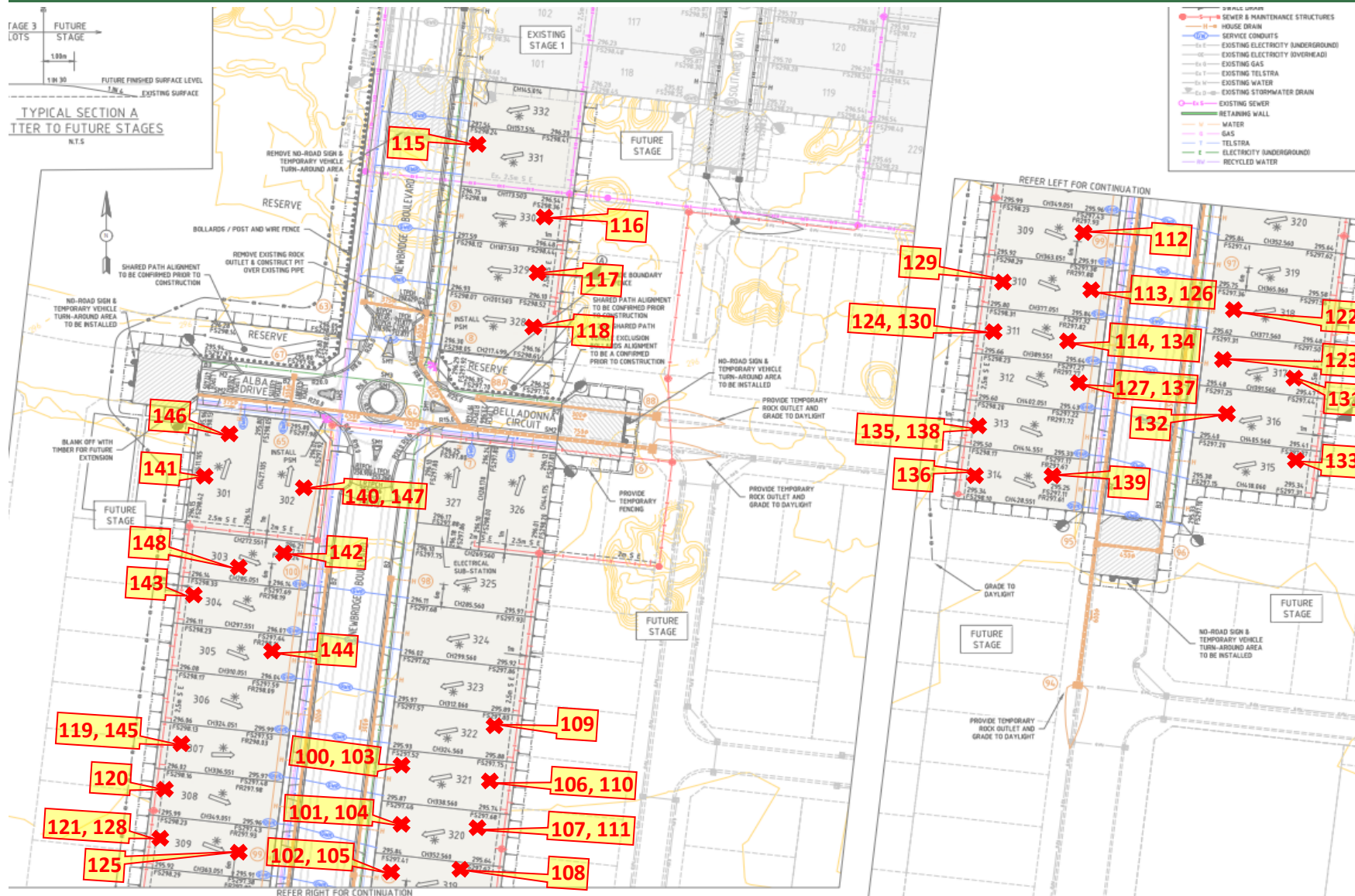






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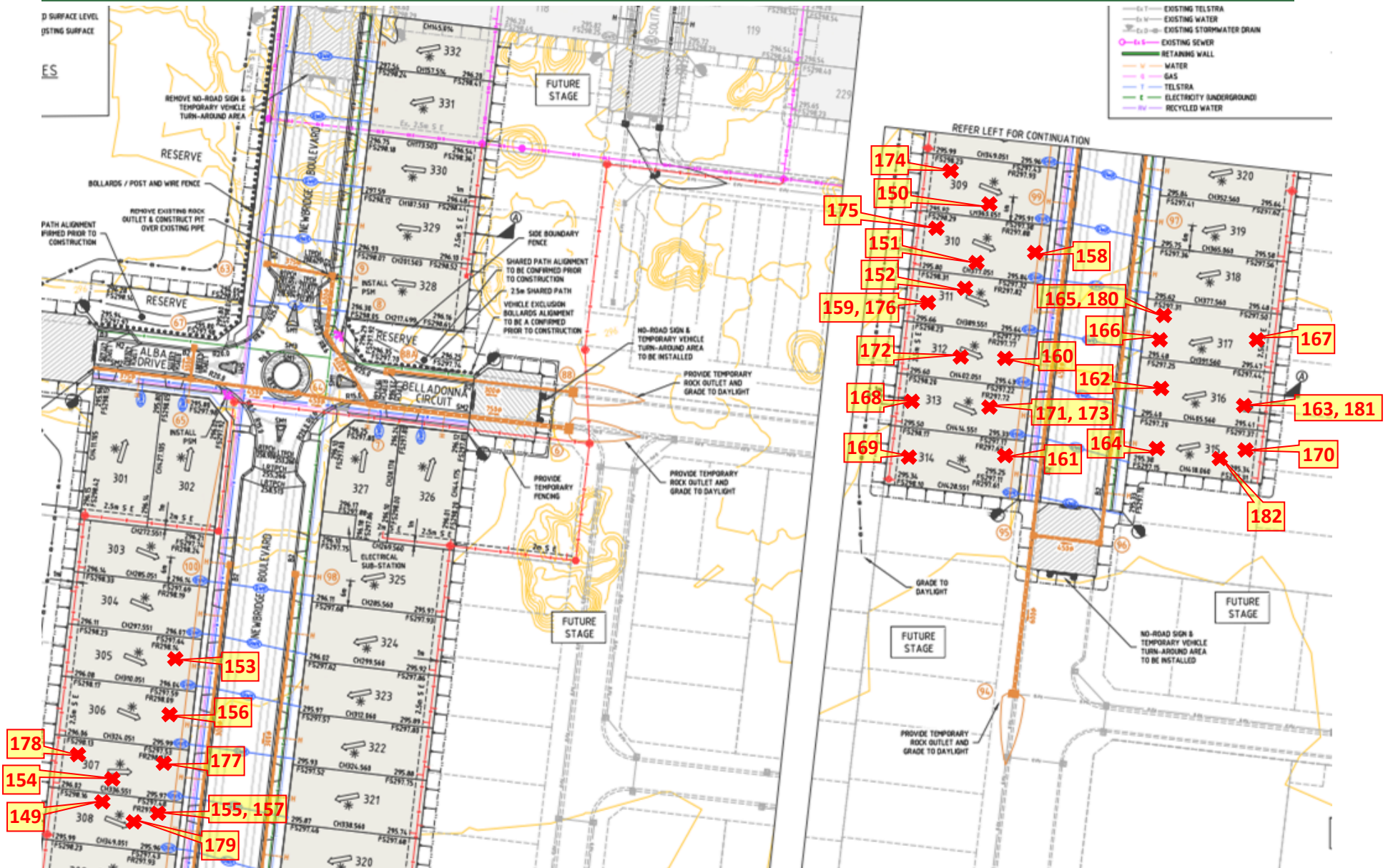


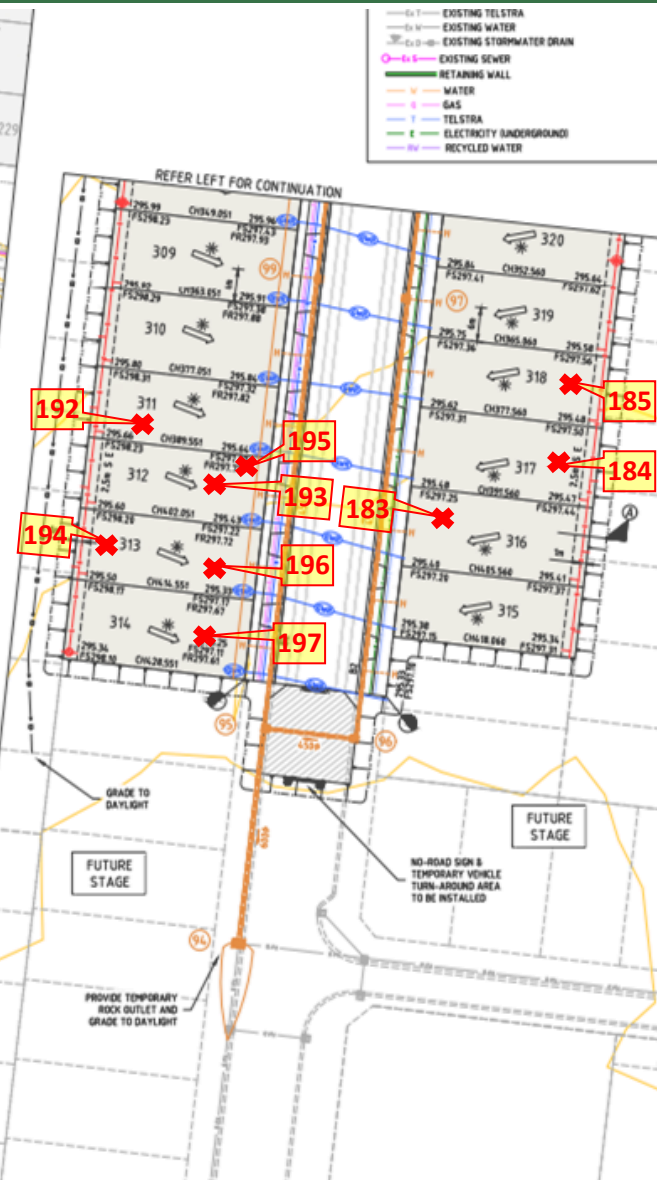




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Report No. 6387.03-R0  
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## **APPENDIX 2 – TESTING SUMMARY**



Sample No.	Test No.	Lot No.	Layer	Material Type	Date Tested	Density Ratio (%)	Moisture Variation of OMC (%)	Pass/Fail
31550	1	Lot 315	Layer 1 - Stage 3	FILL - Silty Clay	17-Apr-20	95.5	0.5% Dry	Pass
31551	2	Lot 316	Layer 1 - Stage 3	FILL - Silty Clay	17-Apr-20	96.0	Omc	Pass
31552	3	Lot 318	Layer 1 - Stage 3	FILL - Silty Clay	17-Apr-20	95.5	Omc	Pass
31597	4	Newbridge Blvd	Layer 1 - Stage 3	FILL - Silty Clay	21-Apr-20	99.0	Omc	Pass
31598	5	Newbridge Blvd	Layer 1 - Stage 3	FILL - Silty Clay	21-Apr-20	99.0	0.5% Dry	Pass
31599	6	Lot 329	Layer 1 - Stage 3	FILL - Silty Clay	21-Apr-20	96.0	0.5% Dry	Pass
31600	7	Newbridge Blvd	Layer 1 - Stage 3	FILL - Silty Clay	21-Apr-20	95.0	Omc	Pass
31601	8	Newbridge Blvd	Layer 1 - Stage 3	FILL - Silty Clay	21-Apr-20	99.0	1.5% Dry	Pass
31645	9	Lot 330	Layer 1 - Stage 3	FILL - Silty Clay	22-Apr-20	98.0	Omc	Pass
31646	10	Lot 329	Layer 1 - Stage 3	FILL - Silty Clay	22-Apr-20	95.5	0.5% Dry	Pass
31647	11	Lot 332	Layer 2 - Stage 3	FILL - Silty Clay	22-Apr-20	97.0	Omc	Pass
31648	12	Lot 331	Layer 2 - Stage 3	FILL - Silty Clay	22-Apr-20	100.0	Omc	Pass
31649	13	Lot 332	Layer 3 - Stage 3	FILL - Silty Clay	22-Apr-20	100.0	1.5% Dry	Pass
31741	14	Lot 307	Layer 1 - Stage 3	FILL - Silty Clay	24-Apr-20	100.5	0.5% Dry	Pass
31742	15	Lot 331	Layer 3 - Stage 3	FILL - Silty Clay	24-Apr-20	99.0	0.5% Dry	Pass
31743	16	Lot 332	Layer 3 - Stage 3	FILL - Silty Clay	24-Apr-20	97.0	Omc	Pass
31765	17	Lot 314	Layer 1 - Stage 3	FILL - Silty Clay	29-Apr-20	100.0	Omc	Pass

31766	18	Lot 312	Layer 1 - Stage 3	FILL - Silty Clay	29-Apr-20	100.0	0.5% Dry	Pass
31767	19	Lot 311	Layer 1 - Stage 3	FILL - Silty Clay	29-Apr-20	98.5	Omc	Pass
31591	20	Lot 317	Layer 2 - Stage 3	FILL - Silty Clay	20-Apr-20	99.5	Omc	Pass
31592	21	Lot 318	Layer 2 - Stage 3	FILL - Silty Clay	20-Apr-20	99.5	0.5% Wet	Pass
31593	22	Lot 319	Layer 2 - Stage 3	FILL - Silty Clay	20-Apr-20	97.0	1.5% Wet	Pass
31674	23	Lot 304	Layer 2 - Stage 3	FILL - Silty Clay	23-Apr-20	97.0	Omc	Pass
31675	24	Lot 307	Layer 2 - Stage 3	FILL - Silty Clay	23-Apr-20	97.0	Omc	Pass
31676	25	Lot 309	Layer 2 - Stage 3	FILL - Silty Clay	23-Apr-20	98.0	Omc	Pass
31762	26	Lot 326	Layer 1 - Stage 3	FILL - Silty Clay	27-Apr-20	98.0	0.5% Dry	Pass
31763	27	Lot 325	Layer 1 - Stage 3	FILL - Silty Clay	27-Apr-20	96.5	Omc	Pass
31764	28	Lot 324	Layer 1 - Stage 3	FILL - Silty Clay	27-Apr-20	96.5	0.5% Wet	Pass
31932	29	Lot 325	Layer 3 - Stage 3	FILL - Silty Clay	27-Apr-20	96.5	Omc	Pass
31933	30	Lot 327	Layer 3 - Stage 3	FILL - Silty Clay	27-Apr-20	95.5	Omc	Pass
31934	31	Lot 326	Layer 3 - Stage 3	FILL - Silty Clay	27-Apr-20	97.0	Omc	Pass
31949	32	Lot 325	Layer 4 - Stage 3	FILL - Silty Clay	06-May-20	97.5	Omc	Pass
31950	33	Lot 327	Layer 4 - Stage 3	FILL - Silty Clay	06-May-20	95.0	0.5% Dry	Pass
31951	34	Lot 326	Layer 4 - Stage 3	FILL - Silty Clay	06-May-20	95.5	0.5% Dry	Pass
31958	35	Lot 324	Layer 5 - Stage 3	FILL - Silty Clay	07-May-20	99.5	0.5% Dry	Pass
31959	36	Lot 325	Layer 5 - Stage 3	FILL - Silty Clay	07-May-20	97.0	Omc	Pass

31960	37	Newbridge Blvd	Layer 5 - Stage 3	FILL - Silty Clay	07-May-20	98.0	Omc	Pass
32033	38	Lot 322	Layer 4 - Stage 3	FILL - Silty Clay	12-May-20	96.5	0.5% Dry	Pass
32034	39	Lot 323	Layer 4 - Stage 3	FILL - Silty Clay	12-May-20	96.5	Omc	Pass
32035	40	Lot 324	Layer 5 - Stage 3	FILL - Silty Clay	12-May-20	95.5	Omc	Pass
31988	41	Lot 329	Layer 5 - Stage 3	FILL - Silty Clay	08-May-20	96.5	Omc	Pass
31989	42	Lot 328	Layer 5 - Stage 3	FILL - Silty Clay	08-May-20	97.0	0.5% Dry	Pass
31990	43	Reserve	Layer 5 - Stage 3	FILL - Silty Clay	08-May-20	96.5	0.5% Dry	Pass
32081	44	Lot 323	Layer 5 - Stage 3	FILL - Silty Clay	15-May-20	98.0	Omc	Pass
32082	45	Lot 324	Layer 6 - Stage 3	FILL - Silty Clay	15-May-20	99.0	1% Wet	Pass
32083	46	Lot 325	Layer 5 - Stage 3	FILL - Silty Clay	15-May-20	96.0	Omc	Pass
32162	47	Lot 304	Layer 4 - Stage 3	FILL - Silty Clay	18-May-20	97.0	0.5% Dry	Pass
32163	48	Lot 305	Layer 4 - Stage 3	FILL - Silty Clay	18-May-20	98.5	1% Wet	Pass
32164	49	Lot 306	Layer 4 - Stage 3	FILL - Silty Clay	18-May-20	95.5	0.5% Dry	Pass
32186	50	Lot 304	Layer 5 - Stage 3	FILL - Silty Clay	19-May-20	96.5	Omc	Pass
32187	51	Lot 305	Layer 5 - Stage 3	FILL - Silty Clay	19-May-20	97.5	0.5% Wet	Pass
32188	52	Lot 306	Layer 5 - Stage 3	FILL - Silty Clay	19-May-20	97.5	Omc	Pass
33470	53	Lot 323	Layer 4 - Stage 3	FILL - Silty Clay	16-Jul-20	98.0	Omc	Pass
33471	54	Lot 324	Layer 4 - Stage 3	FILL - Silty Clay	16-Jul-20	97.5	0.5% Dry	Pass
33472	55	Lot 325	Layer 4 - Stage 3	FILL - Silty Clay	16-Jul-20	97.5	0.5% Dry	Pass

33520	56	Lot 319	Layer 1 - Stage 3	FILL - Silty Clay	17-Jul-20	95.0	0.5% Wet	Pass
33521	57	Lot 320	Layer 1 - Stage 3	FILL - Silty Clay	17-Jul-20	98.5	Omc	Pass
33522	58	Lot 321	Layer 1 - Stage 3	FILL - Silty Clay	17-Jul-20	95.5	0.5% Dry	Pass
33523	59	Lot 319	Layer 1 - Stage 3	FILL - Silty Clay	20-Jul-20	96.5	0.5% Wet	Pass
33524	60	Lot 319	Layer 1 - Stage 3	FILL - Silty Clay	20-Jul-20	97.5	Omc	Pass
33525	61	Lot 318	Layer 1 - Stage 3	FILL - Silty Clay	20-Jul-20	97.0	2% Dry	Pass
33526	62	Lot 318	Layer 1 - Stage 3	FILL - Silty Clay	20-Jul-20	96.0	Omc	Pass
33527	63	Lot 323	Layer 4 - Stage 3	FILL - Silty Clay	21-Jul-20	98.0	0.5% Wet	Pass
33528	64	Lot 322	Layer 4 - Stage 3	FILL - Silty Clay	21-Jul-20	96.5	0.5% Dry	Pass
33529	65	Lot 321	Layer 4 - Stage 3	FILL - Silty Clay	21-Jul-20	96.0	Omc	Pass
33530	66	Lot 320	Layer 4 - Stage 3	FILL - Silty Clay	21-Jul-20	98.0	Omc	Pass
33599	67	Lot 327	Layer 3 - Stage 3	FILL - Silty Clay	22-Jul-20	97.0	0.5% Wet	Pass
33600	68	Lot 326	Layer 3 - Stage 3	FILL - Silty Clay	22-Jul-20	97.5	Omc	Pass
33601	69	Lot 325	Layer 3 - Stage 3	FILL - Silty Clay	22-Jul-20	98.0	2% Dry	Pass
33602	70	Lot 324	Layer 3 - Stage 3	FILL - Silty Clay	22-Jul-20	96.5	2% Dry	Pass
33603	71	Lot 323	Layer 4 - Stage 3	FILL - Silty Clay	23-Jul-20	98.0	Omc	Pass
33604	72	Lot 322	Layer 4 - Stage 3	FILL - Silty Clay	23-Jul-20	98.5	Omc	Pass
33605	73	Lot 321	Layer 4 - Stage 3	FILL - Silty Clay	23-Jul-20	95.5	Omc	Pass
33606	74	Lot 323	Layer 5 - Stage 3	FILL - Silty Clay	24-Jul-20	96.5	1.5% Wet	Pass
33607	75	Lot 322	Layer 5 - Stage 3	FILL - Silty Clay	24-Jul-20	97.5	Omc	Pass



33608	76	Lot 321	Layer 5 - Stage 3	FILL - Silty Clay	24-Jul-20	97.5	0.5% Dry	Pass
33745	77	Lot 330	Layer 6 - Stage 3	FILL - Silty Clay	31-Jul-20	97.5	1.5% Dry	Pass
33746	78	Lot 329	Layer 6 - Stage 3	FILL - Silty Clay	31-Jul-20	96.5	Omc	Pass
33747	79	Lot 328	Layer 6 - Stage 3	FILL - Silty Clay	31-Jul-20	97.5	1.5% Dry	Pass
34001	80	Lot 332	Layer 6 - Stage 3	FILL - Silty Clay	02-Sep-20	97.0	0.5% Wet	Pass
34002	81	Lot 331	Layer 6 - Stage 3	FILL - Silty Clay	02-Sep-20	97.0	Omc	Pass
34003	82	Lot 330	Layer 6 - Stage 3	FILL - Silty Clay	02-Sep-20	95.0	0.5% Wet	Pass
34004	83	Lot 329	Layer 6 - Stage 3	FILL - Silty Clay	02-Sep-20	97.0	0.5% Wet	Pass
34005	84	Lot 329	Layer 6 - Stage 3	FILL - Silty Clay	03-Sep-20	96.5	1% Wet	Pass
34006	85	Lot 330	Layer 6 - Stage 3	FILL - Silty Clay	03-Sep-20	97.0	0.5% Wet	Pass
34007	86	Lot 321	Layer 6 - Stage 3	FILL - Silty Clay	03-Sep-20	96.0	0.5% Wet	Pass
34008	87	Lot 322	Layer 6 - Stage 3	FILL - Silty Clay	03-Sep-20	96.5	0.5% Wet	Pass
34087	88	Lot 304	Layer 6 - Stage 3	FILL - Silty Clay	08-Sep-20	98.0	0.5% Wet	Pass
34088	89	Lot 305	Layer 6 - Stage 3	FILL - Silty Clay	08-Sep-20	99.0	Omc	Pass
34089	90	Lot 306	Layer 6 - Stage 3	FILL - Silty Clay	08-Sep-20	100.5	0.5% Wet	Pass
34090	91	Lot 301	Layer 6 - Stage 3	FILL - Silty Clay	10-Sep-20	101.0	Omc	Pass
34091	92	Lot 302	Layer 6 - Stage 3	FILL - Silty Clay	10-Sep-20	98.5	Omc	Pass
34092	93	Lot 303	Layer 6 - Stage 3	FILL - Silty Clay	10-Sep-20	100.0	0.5% Dry	Pass
34093	94	Lot 306	Layer 7 - Stage 3	FILL - Silty Clay	10-Sep-20	101.5	0.5% Wet	Pass
34094	95	Lot 307	Layer 7 - Stage 3	FILL - Silty Clay	10-Sep-20	98.0	Omc	Pass

34095	96	Lot 308	Layer 7 - Stage 3	FILL - Silty Clay	10-Sep-20	98.5	2% Dry	Pass
34224	97	Lot 306	Layer 7 - Stage 3	FILL - Silty Clay	11-Sep-20	97.0	Omc	Pass
34225	98	Lot 307	Layer 7 - Stage 3	FILL - Silty Clay	11-Sep-20	100.0	Omc	Pass
34226	99	Lot 308	Layer 7 - Stage 3	FILL - Silty Clay	11-Sep-20	99.0	Omc	Pass
34227	100	Lot 321	Layer 7 - Stage 3	FILL - Silty Clay	15-Sep-20	101.5	0.5% Wet	Pass
34228	101	Lot 320	Layer 7 - Stage 3	FILL - Silty Clay	15-Sep-20	99.0	Omc	Pass
34229	102	Lot 319	Layer 7 - Stage 3	FILL - Silty Clay	15-Sep-20	99.0	Omc	Pass
34315	103	Lot 321	Layer 8 - Stage 3	FILL - Silty Clay	15-Sep-20	98.0	0.5% Wet	Pass
34316	104	Lot 320	Layer 8 - Stage 3	FILL - Silty Clay	15-Sep-20	97.0	0.5% Wet	Pass
34317	105	Lot 319	Layer 8 - Stage 3	FILL - Silty Clay	15-Sep-20	101.5	0.5% Dry	Pass
34318	106	Lot 321	Layer 9 - Stage 3	FILL - Silty Clay	17-Sep-20	96.5	0.5% Wet	Pass
34319	107	Lot 320	Layer 9 - Stage 3	FILL - Silty Clay	17-Sep-20	98.5	Omc	Pass
34320	108	Lot 319	Layer 9 - Stage 3	FILL - Silty Clay	17-Sep-20	99.5	Omc	Pass
34321	109	Lot 322	Layer 9 - Stage 3	FILL - Silty Clay	18-Sep-20	101.0	Omc	Pass
34322	110	Lot 321	Layer 9 - Stage 3	FILL - Silty Clay	18-Sep-20	99.5	0.5% Dry	Pass
34323	111	Lot 320	Layer 9 - Stage 3	FILL - Silty Clay	18-Sep-20	99.5	Omc	Pass
34423	112	Lot 309	Layer 6 - Stage 3	FILL - Silty Clay	24-Sep-20	100.0	0.5% Wet	Pass
34424	113	Lot 310	Layer 6 - Stage 3	FILL - Silty Clay	24-Sep-20	98.5	Omc	Pass
34425	114	Lot 311	Layer 6 - Stage 3	FILL - Silty Clay	24-Sep-20	98.0	Omc	Pass
34009	115	Lot 331	Layer 6 - Stage 3	FILL - Silty Clay	04-Sep-20	97.0	Omc	Pass

34010	116	Lot 330	Layer 6 - Stage 3	FILL - Silty Clay	04-Sep-20	97.5	0.5% Dry	Pass
34011	117	Lot 329	Layer 6 - Stage 3	FILL - Silty Clay	04-Sep-20	95.5	Omc	Pass
34012	118	Lot 328	Layer 6 - Stage 3	FILL - Silty Clay	04-Sep-20	95.0	Omc	Pass
34645	119	Lot 307	Layer 8 - Stage 3	FILL - Silty Clay	15-Oct-20	98.0	0.5% Wet	Pass
34646	120	Lot 308	Layer 8 - Stage 3	FILL - Silty Clay	15-Oct-20	98.0	0.5% Dry	Pass
34647	121	Lot 309	Layer 8 - Stage 3	FILL - Silty Clay	15-Oct-20	98.0	Omc	Pass
34651	122	Lot 318	Layer 1 - Stage 3	FILL - Silty Clay	16-Oct-20	97.5	Omc	Pass
34652	123	Lot 317	Layer 1 - Stage 3	FILL - Silty Clay	16-Oct-20	95.5	0.5% Wet	Pass
34653	124	Lot 311	Layer 1 - Stage 3	FILL - Silty Clay	16-Oct-20	96.5	0.5% Wet	Pass
34769	125	Lot 309	Layer 8 - Stage 3	FILL - Silty Clay	20-Oct-20	96.5	1.5% Dry	Pass
34770	126	Lot 310	Layer 8 - Stage 3	FILL - Silty Clay	20-Oct-20	98.5	1.5% Dry	Pass
34771	127	Lot 312	Layer 8 - Stage 3	FILL - Silty Clay	20-Oct-20	99.0	0.5% Wet	Pass
34772	128	Lot 309	Layer 9 - Stage 3	FILL - Silty Clay	21-Oct-20	99.5	Omc	Pass
34773	129	Lot 310	Layer 9 - Stage 3	FILL - Silty Clay	21-Oct-20	100.5	1.5% Dry	Pass
34774	130	Lot 311	Layer 9 - Stage 3	FILL - Silty Clay	21-Oct-20	98.5	1.5% Dry	Pass
34912	131	Lot 317	Layer 2 - Stage 3	FILL - Silty Clay	29-Oct-20	100.0	1.5% Dry	Pass
34913	132	Lot 316	Layer 2 - Stage 3	FILL - Silty Clay	29-Oct-20	97.0	1.5% Wet	Pass
34914	133	Lot 315	Layer 2 - Stage 3	FILL - Silty Clay	29-Oct-20	97.0	0.5% Wet	Pass
34915	134	Lot 311	Layer 2 - Stage 3	FILL - Silty Clay	30-Oct-20	97.5	1.5% Dry	Pass

34916	135	Lot 313	Layer 2 - Stage 3	FILL - Silty Clay	30-Oct-20	97.5	2% Dry	Pass
34917	136	Lot 314	Layer 2 - Stage 3	FILL - Silty Clay	30-Oct-20	100.0	0.5% Dry	Pass
34918	137	Lot 312	Layer 3 - Stage 3	FILL - Silty Clay	04-Nov-20	96.5	2% Dry	Pass
34919	138	Lot 313	Layer 3 - Stage 3	FILL - Silty Clay	04-Nov-20	99.5	2% Dry	Pass
34920	139	Lot 314	Layer 3 - Stage 3	FILL - Silty Clay	04-Nov-20	98.5	0.5% Dry	Pass
34921	140	Lot 302	Layer 7 - Stage 3	FILL - Silty Clay	05-Nov-20	97.0	1.5% Wet	Pass
34922	141	Lot 301	Layer 7 - Stage 3	FILL - Silty Clay	05-Nov-20	102.0	2% Dry	Pass
34923	142	Lot 303	Layer 7 - Stage 3	FILL - Silty Clay	05-Nov-20	97.5	Omc	Pass
34924	143	Lot 304	Layer 8 - Stage 3	FILL - Silty Clay	06-Nov-20	98.5	0.5% Dry	Pass
34925	144	Lot 305	Layer 8 - Stage 3	FILL - Silty Clay	06-Nov-20	97.5	2% Dry	Pass
34926	145	Lot 307	Layer 8 - Stage 3	FILL - Silty Clay	06-Nov-20	97.0	0.5% Dry	Pass
35042	146	Lot 301	Layer 8 - Stage 3	FILL - Silty Clay	09-Nov-20	96.0	Omc	Pass
35043	147	Lot 302	Layer 8 - Stage 3	FILL - Silty Clay	09-Nov-20	100.0	2% Dry	Pass
35044	148	Lot 303	Layer 8 - Stage 3	FILL - Silty Clay	09-Nov-20	98.5	2% Dry	Pass
35045	149	Lot 308	Layer 7 - Stage 3	FILL - Silty Clay	10-Nov-20	96.0	Omc	Pass
35046	150	Lot 309	Layer 7 - Stage 3	FILL - Silty Clay	10-Nov-20	95.5	Omc	Pass
35047	151	Lot 310	Layer 7 - Stage 3	FILL - Silty Clay	10-Nov-20	96.0	0.5% Dry	Pass
35048	152	Lot 311	Layer 7 - Stage 3	FILL - Silty Clay	10-Nov-20	99.5	2% Dry	Pass
35049	153	Lot 305	Layer 7 - Stage 3	FILL - Silty Clay	11-Nov-20	95.5	2% Dry	Pass

35050	154	Lot 307	Layer 7 - Stage 3	FILL - Silty Clay	11-Nov-20	95.5	Omc	Pass
35051	155	Lot 308	Layer 7 - Stage 3	FILL - Silty Clay	11-Nov-20	95.0	Omc	Pass
35111	156	Lot 306	Layer 8 - Stage 3	FILL - Silty Clay	12-Nov-20	98.0	2% Dry	Pass
35112	157	Lot 308	Layer 8 - Stage 3	FILL - Silty Clay	12-Nov-20	95.5	Omc	Pass
35113	158	Lot 310	Layer 8 - Stage 3	FILL - Silty Clay	12-Nov-20	96.0	Omc	Pass
35114	159	Lot 311	Layer 8 - Stage 3	FILL - Silty Clay	13-Nov-20	98.5	Omc	Pass
35115	160	Lot 312	Layer 8 - Stage 3	FILL - Silty Clay	13-Nov-20	99.5	2% Dry	Pass
35116	161	Lot 314	Layer 8 - Stage 3	FILL - Silty Clay	13-Nov-20	95.0	0.5% Dry	Pass
35488	162	Lot 316	Layer 8 - Stage 3	FILL - Silty Clay	16-Nov-20	97.0	0.5% Dry	Pass
35489	163	Lot 316	Layer 8 - Stage 3	FILL - Silty Clay	16-Nov-20	100.5	2% Dry	Pass
35490	164	Lot 315	Layer 8 - Stage 3	FILL - Silty Clay	16-Nov-20	97.5	Omc	Pass
35491	165	Lot 317	Layer 8 - Stage 3	FILL - Silty Clay	17-Nov-20	97.0	0.5% Dry	Pass
35492	166	Lot 317	Layer 8 - Stage 3	FILL - Silty Clay	17-Nov-20	96.0	2% Dry	Pass
35493	167	Lot 317	Layer 8 - Stage 3	FILL - Silty Clay	17-Nov-20	97.0	Omc	Pass
35494	168	Lot 313	Layer 9 - Stage 3	FILL - Silty Clay	18-Nov-20	95.5	Omc	Pass
35495	169	Lot 314	Layer 9 - Stage 3	FILL - Silty Clay	18-Nov-20	99.5	2% Dry	Pass
35496	170	Lot 315	Layer 9 - Stage 3	FILL - Silty Clay	18-Nov-20	97.5	Omc	Pass
35497	171	Lot 313	Layer 9 - Stage 3	FILL - Silty Clay	19-Nov-20	99.5	Omc	Pass
35498	172	Lot 312	Layer 9 - Stage 3	FILL - Silty Clay	19-Nov-20	100.5	2% Dry	Pass

35499	173	Lot 313	Layer 9 - Stage 3	FILL - Silty Clay	19-Nov-20	99.5	0.5% Dry	Pass
35500	174	Lot 309	Layer 9 - Stage 3	FILL - Silty Clay	20-Nov-20	99.0	Omc	Pass
35501	175	Lot 310	Layer 9 - Stage 3	FILL - Silty Clay	20-Nov-20	99.0	2% Dry	Pass
35502	176	Lot 311	Layer 9 - Stage 3	FILL - Silty Clay	20-Nov-20	99.5	0.5% Dry	Pass
35503	177	Lot 307	Layer 9 - Stage 3	FILL - Silty Clay	26-Nov-20	96.0	0.5% Dry	Pass
35504	178	Lot 307	Layer 9 - Stage 3	FILL - Silty Clay	26-Nov-20	97.0	2% Dry	Pass
35505	179	Lot 308	Layer 9 - Stage 3	FILL - Silty Clay	26-Nov-20	99.5	0.5% Dry	Pass
35506	180	Lot 317	Layer 8 - Stage 3	FILL - Silty Clay	27-Nov-20	98.5	Omc	Pass
35507	181	Lot 316	Layer 8 - Stage 3	FILL - Silty Clay	27-Nov-20	98.0	2% Dry	Pass
35508	182	Lot 315	Layer 8 - Stage 3	FILL - Silty Clay	27-Nov-20	100.0	0.5% Dry	Pass
35648	183	Lot 316	Layer 9 - Stage 3	FILL - Silty Clay	03-Dec-20	96.0	Omc	Pass
35649	184	Lot 317	Layer 9 - Stage 3	FILL - Silty Clay	03-Dec-20	99.5	2% Dry	Pass
35650	185	Lot 318	Layer 9 - Stage 3	FILL - Silty Clay	03-Dec-20	100.5	0.5% Dry	Pass
35651	186	Lot 323	Layer 7 - Stage 3	FILL - Silty Clay	07-Dec-20	98.5	Omc	Pass
35652	187	Lot 322	Layer 7 - Stage 3	FILL - Silty Clay	07-Dec-20	100.5	2% Dry	Pass
35653	188	Lot 320	Layer 7 - Stage 3	FILL - Silty Clay	07-Dec-20	98.5	0.5% Wet	Pass
35654	189	Lot 327	Layer 4 - Stage 3	FILL - Silty Clay	08-Dec-20	102.0	Omc	Pass
35655	190	Lot 326	Layer 4 - Stage 3	FILL - Silty Clay	08-Dec-20	101.0	0.5% Wet	Pass
35656	191	Lot 325	Layer 4 - Stage 3	FILL - Silty Clay	08-Dec-20	96.5	Omc	Pass

35657	192	Lot 311	Layer 9 - Stage 3	FILL - Silty Clay	09-Dec-20	95.0	Omc	Pass
35658	193	Lot 312	Layer 9 - Stage 3	FILL - Silty Clay	09-Dec-20	96.5	Omc	Pass
35659	194	Lot 313	Layer 9 - Stage 3	FILL - Silty Clay	09-Dec-20	96.0	Omc	Pass
35660	195	Lot 312	Layer 9 - Stage 3	FILL - Silty Clay	10-Dec-20	95.0	0.5% Dry	Pass
35661	196	Lot 313	Layer 9 - Stage 3	FILL - Silty Clay	10-Dec-20	95.5	Omc	Pass
35662	197	Lot 314	Layer 9 - Stage 3	FILL - Silty Clay	10-Dec-20	98.5	Omc	Pass
40047	198	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	97.5	0.5% Dry	Pass
40048	199	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	97.0	2% Dry	Pass
40049	200	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	100.0	2% Dry	Pass
40050	201	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	97.5	0.5% Wet	Pass
40051	202	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	99.0	Omc	Pass
40052	203	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	100.0	2% Dry	Pass
40053	204	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	95.5	Omc	Pass
40054	205	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	98.5	Omc	Pass
40055	206	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	97.0	Omc	Pass
40056	207	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	95.0	Omc	Pass
40057	208	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	96.0	2% Dry	Pass
40058	209	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	98.5	2% Dry	Pass
40059	210	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	97.5	2% Dry	Pass



40060	211	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	96.0	Omc	Pass
40061	212	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	97.5	Omc	Pass
40062	213	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	97.5	Omc	Pass
40063	214	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	102.0	0.5% Wet	Pass
40064	215	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	96.5	0.5% Wet	Pass
40065	216	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	99.5	2% Dry	Pass
40066	217	Reserve	Stage 3	FILL - Silty Clay	03-Dec-20	99.0	Omc	Pass

## **APPENDIX 3 – NATA LAB RESULTS**

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 -1  
**Report Date:** 29/04/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31550	31551	31552							
ID No.	1	2	3							
Date Sampled	17/04/2020	17/04/2020	17/04/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	17/04/2020	17/04/2020	17/04/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 315 Layer 1 South of Lot	Lot 316 Layer 1 North of Lot	Lot 318 Layer 1 South of Lot							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	5	4	6							
Field Wet Density t/m <sup>3</sup>	1.90	1.91	1.93							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	1.99	2.00	2.03							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (dry)	omc	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	95.5	96.0	95.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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Approved Signatory



S Kang  
NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 - 2  
**Report Date:** 29/04/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31597	31598	31599	31600	31601					
ID No.	1	2	3	4	5					
Date Sampled	21/04/2020	21/04/2020	21/04/2020	21/04/2020	21/04/2020					
Time Sampled	am/pm	am/pm	am/pm	am/pm	am/pm					
Date Tested	22/04/2020	22/04/2020	22/04/2020	22/04/2020	22/04/2020					
Material Source	Site Derived	Site Derived	Site Derived	Site Derived	Site Derived					
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay					
To Be Used As	Backfill	Backfill	Backfill	Backfill	Backfill					
	Newbridge Blvd Layer 1 Centre of Lot	Newbridge Blvd Layer 1 Centre of Lot	Lot 329 Layer 1 North of Lot	Newbridge Blvd Layer 1 Centre of Lot	Newbridge Blvd Layer 1 Centre of Lot					
Layer Depth	mm	300	300	300	300					
Test Depth	mm	275	275	275	275					

Max Size	mm	19	19	19	19	19				
Oversize Wet	%	5	3	8	5	4				
Field Wet Density	t/m <sup>3</sup>	2.00	2.09	1.94	1.89	1.87				
Field Moisture Content	%	-	-	-	-	-				
PCWD or APCWD*	t/m <sup>3</sup>	2.03	2.10	2.02	2.00	1.89				

\*PCWD - Peak Converted Wet Density , APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	0.5% (dry)	0.5% (dry)	omc	1.5% (dry)				
Compactive Effort		Standard	Standard	Standard	Standard	Standard				
Hilf Density Ratio	%	99.0	99.0	96.0	95.0	99.0				
Min Hilf Density Ratio	%	95	95	95	95	95				

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 - 3  
**Report Date:** 29/04/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31645	31646	31647	31648	31649					
ID No.	1	2	3	4	5					
Date Sampled	22/04/2020	22/04/2020	22/04/2020	22/04/2020	22/04/2020					
Time Sampled	am/pm	am/pm	am/pm	am/pm	am/pm					
Date Tested	23/04/2020	23/04/2020	23/04/2020	23/04/2020	23/04/2020					
Material Source	Site Derived	Site Derived	Site Derived	Site Derived	Site Derived					
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay					
To Be Used As	Backfill	Backfill	Backfill	Backfill	Backfill					
	Lot 330 Layer 1 Centre of Lot	Lot 329 Layer 1 Centre of Lot	Lot 332 Layer 2 South of Lot	Lot 331 Layer 2 North of Lot	Lot 332 Layer 3 East of Lot					
Layer Depth	mm	300	300	300	300					
Test Depth	mm	275	275	275	275					

Max Size	mm	19	19	19	19	19				
Oversize Wet	%	6	4	5	7	5				
Field Wet Density	t/m <sup>3</sup>	1.97	2.00	1.96	2.01	2.02				
Field Moisture Content	%	-	-	-	-	-				
PCWD or APCWD*	t/m <sup>3</sup>	2.01	2.10	2.02	2.01	2.02				

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	0.5% (dry)	omc	omc	1.5% (dry)				
Compactive Effort		Standard	Standard	Standard	Standard	Standard				
Hilf Density Ratio	%	98.0	95.5	97.0	100.0	100.0				
Min Hilf Density Ratio	%	95	95	95	95	95				

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 - 4  
**Report Date:** 29/04/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31741	31742	31743							
ID No.	1	2	3							
Date Sampled	24/04/2020	24/04/2020	24/04/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	24/04/2020	24/04/2020	24/04/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 307 Layer 1 South of Lot	Lot 331 Layer 3 North of Lot	Lot 332 Layer 3 North of Lot							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	6	6	4							
Field Wet Density t/m <sup>3</sup>	2.01	1.98	1.96							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.00	2.00	2.02							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (dry)	0.5% (dry)	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	100.5	99.0	97.0							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 - 5  
**Report Date:** 4/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31765	31766	31767							
ID No.	1	2	3							
Date Sampled	29/04/2020	29/04/2020	29/04/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	29/04/2020	29/04/2020	29/04/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 314 Layer 1 North of Lot	Lot 312 Layer 1 South of Lot	Lot 311 Layer 1 West of Lot							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	4	5	3							
Field Wet Density t/m <sup>3</sup>	2.14	2.10	2.08							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.14	2.10	2.11							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	0.5% (dry)	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	100.0	100.0	98.5							
Min Hilf Density Ratio %	95	95	95							

Note:

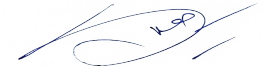
**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 - 6  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31591	31592	31593							
ID No.	1	2	3							
Date Sampled	20/04/2020	20/04/2020	20/04/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	7/05/2020	7/05/2020	7/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 317 South of Lot Layer 2	Lot 318 North of Lot Layer 2	Lot 319 South of Lot Layer 2							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	14	0	0							
Field Wet Density t/m <sup>3</sup>	2.01	1.93	1.98							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.02	1.94	2.04							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	0.5% (wet)	1.5% (wet)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	99.5	99.5	97.0							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 - 7  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31674	31675	31676							
ID No.	1	2	3							
Date Sampled	23/04/2020	23/04/2020	23/04/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	15/05/2020	15/05/2020	15/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 304 C/L of Lot Layer 2	Lot 307 North of Lot Layer 2	Lot 309 South of Lot Layer 2							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	2.06	2.01	1.91							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.12	2.07	1.95							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	omc	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	97.0	97.0	98.0							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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Approved Signatory



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 - 8  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31672	31673	31674							
ID No.	1	2	3							
Date Sampled	27/04/2020	27/04/2020	27/04/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	15/05/2020	15/05/2020	15/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 326 South of Lot Layer 1	Lot 325 Centre of Lot Layer 1	Lot 324 Centre of Lot Layer 1							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	8	0	0							
Field Wet Density t/m <sup>3</sup>	1.97	2.01	2.01							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.01	2.08	2.08							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (dry)	omc	0.5% (wet)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	98.0	96.5	96.5							
Min Hilf Density Ratio %	95	95	95							

Note:


**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 - 9  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31932	31933	31934							
ID No.	1	2	3							
Date Sampled	27/04/2020	27/04/2020	27/04/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	15/05/2020	15/05/2020	15/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 325 South of Lot Layer 3	Lot 327 North of Lot Layer 3	Lot 326 South of Lot Layer 3							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	2.02	2.01	1.98							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.09	2.10	2.05							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	omc	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	96.5	95.5	97.0							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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S Kang  
NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 -10  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31949	31950	31951							
ID No.	1	2	3							
Date Sampled	6/05/2020	6/05/2020	6/05/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	15/05/2020	15/05/2020	15/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 325 South of Lot Layer 4	Lot 327 North of Lot Layer 4	Lot 326 South of Lot Layer 4							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	15	0	0							
Field Wet Density t/m <sup>3</sup>	2.09	1.97	1.98							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.14	2.07	2.08							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	0.5% (dry)	0.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	97.5	95.0	95.5							
Min Hilf Density Ratio %	95	95	95							

Note:

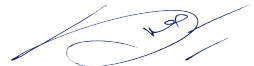
**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03 -11  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31958	31959	31960							
ID No.	1	2	3							
Date Sampled	7/05/2020	7/05/2020	7/05/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	15/05/2020	15/05/2020	15/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 324 South of Lot Layer 5	Lot 325 North of Lot Layer 5	Newbridge Blvd Next to Lot 324 Layer 5							
Layer Depth	mm	300	300							
Test Depth	mm	275	275							

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	1.98	2.04	1.99						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	1.99	2.10	2.03						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	0.5% (dry)	omc	omc						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	99.5	97.0	98.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03-12  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	32033	32034	32035							
ID No.	1	2	3							
Date Sampled	12/05/2020	12/05/2020	12/05/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	13/05/2020	13/05/2020	13/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 322 South of Lot Layer 4	Lot 323 North of Lot Layer 4	Lot 324 South of Lot Layer 5							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	1.96	2.00	1.97							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.03	2.08	2.06							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (dry)	omc	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	96.5	96.5	95.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03-13  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	31988	31989	31990							
ID No.	1	2	3							
Date Sampled	8/05/2020	8/05/2020	8/05/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	13/05/2020	13/05/2020	13/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 329 South of Lot Layer 5	Lot 328 North of Lot Layer 5	Reserve Near lot 328 Layer 5							
Layer Depth mm	200	200	200							
Test Depth mm	175	175	175							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	2.03	1.99	2.07							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.10	2.05	2.15							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	0.5% (dry)	0.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	96.5	97.0	96.5							
Min Hilf Density Ratio %	95	95	95							

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945



## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03-14  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	32081	32082	32083							
ID No.	1	2	3							
Date Sampled	15/05/2020	15/05/2020	15/05/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	18/05/2020	18/05/2020	18/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 323 North of Lot Layer 5	Lot 324 North of Lot Layer 6	Lot 325 North of Lot Layer 5							
Layer Depth mm	200	200	200							
Test Depth mm	175	175	175							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	1.93	1.96	1.96							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	1.97	1.98	2.04							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	1% (wet)	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	98.0	99.0	96.0							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03-15  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	32162	32163	32164							
ID No.	1	2	3							
Date Sampled	18/05/2020	18/05/2020	18/05/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	19/05/2020	19/05/2020	19/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 304 Centre of Lot Layer 4	Lot 305 North of Lot Layer 4	Lot 306 South of Lot Layer 4							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	1.93	2.00	2.01							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	1.99	2.03	2.10							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (dry)	1% (wet)	0.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	97.0	98.5	95.5							
Min Hilf Density Ratio %	95	95	95							

Note:

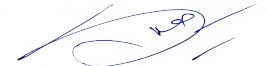
**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan Vic

**Report Number:** 6387.03-16  
**Report Date:** 20/05/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	32186	32187	32188							
ID No.	1	2	3							
Date Sampled	19/05/2020	19/05/2020	19/05/2020							
Time Sampled	am/pm	am/pm	am/pm							
Date Tested	20/05/2020	20/05/2020	20/05/2020							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 304 South of Lot Layer 5	Lot 305 North of Lot Layer 5	Lot 306 South of Lot Layer 5							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	12	0	0							
Field Wet Density t/m <sup>3</sup>	1.93	1.98	2.02							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.00	2.03	2.07							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	0.5% (wet)	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	96.5	97.5	97.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945



## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-17  
**Report Date:** 26/07/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	33470	33471	33472							
ID No.	1	2	3							
Test Date	16/07/2020	16/07/2020	16/07/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 323 South of Lot Layer 4	Lot 324 South of Lot Layer 4	Lot 325 East of Lot Layer 4							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	9	11	10							
Field Wet Density <i>t/m³</i>	2.10	2.08	2.14							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m³</i>	2.15	2.13	2.19							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m³</i>	omc	0.5% (dry)	0.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	98.0	97.5	97.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Main Laboratory**  
 16 Prime Street  
 Thomastown VIC 3074  
 Ph: 03 9465 9813  
 Fax: 03 9465 7690  
 e: info@continentgeotech.com.au

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-18  
**Report Date:** 26/07/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	33520	33521	33522							
ID No.	1	2	3							
Test Date	17/07/2020	17/07/2020	17/07/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 319 West of Lot Layer 1	Lot 320 South of Lot Layer 1	Lot 321 West of Lot Layer 1							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	11	10	11							
Field Wet Density <i>t/m³</i>	2.03	2.08	2.05							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m³</i>	2.13	2.11	2.15							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m³</i>	0.5% (wet)	omc	0.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	95.0	98.5	95.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-19  
**Report Date:** 26/07/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	33523	33524	33525	33526						
ID No.	1	2	3	4						
Test Date	20/07/2020	20/07/2020	20/07/2020	20/07/2020						
Test Time	am-pm	am-pm	am-pm	am-pm						
Material Source	Imported	Imported	Imported	Imported						
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay						
To Be Used As	Backfill	Backfill	Backfill	Backfill						
Sample Location	Lot 319 East of Lot Layer 1	Lot 319 South of Lot Layer 1	Lot 318 East of Lot Layer 1	Lot 318 South of Lot Layer 1						
Layer Depth mm	300	300	300	300						
Test Depth mm	275	275	275	275						

Max Size mm	19	19	19	19						
Oversize Wet %	10	12	11	9						
Field Wet Density t/m <sup>3</sup>	2.04	2.04	2.04	2.07						
Field Moisture Content %	-	-	-	-						
PCWD or APCWD* t/m <sup>3</sup>	2.11	2.09	2.10	2.15						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (wet)	omc	2% (dry)	omc						
Compactive Effort	Standard	Standard	Standard	Standard						
Hilf Density Ratio %	96.5	97.5	97.0	96.0						
Min Hilf Density Ratio %	95	95	95	95						

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



Accredited for compliance with ISO/IEC 17025-Testing.

The results of tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Approved Signatory



S Kang  
NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Main Laboratory**  
16 Prime Street  
Thomastown VIC 3074  
Ph: 03 9465 9813  
Fax: 03 9465 7690  
e: info@continentgeotech.com.au

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-20  
**Report Date:** 27/07/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	33527	33528	33529	33530						
ID No.	1	2	3	4						
Test Date	21/07/2020	21/07/2020	21/07/2020	21/07/2020						
Test Time	am-pm	am-pm	am-pm	am-pm						
Material Source	Imported	Imported	Imported	Imported						
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay						
To Be Used As	Backfill	Backfill	Backfill	Backfill						
Sample Location	Lot 323 North-West of Lot Layer 4	Lot 322 North-West of Lot Layer 4	Lot 321 North-West of Lot Layer 4	Lot 320 North-West of Lot Layer 4						
Layer Depth mm	300	300	300	300						
Test Depth mm	275	275	275	275						

Max Size mm	19	19	19	19						
Oversize Wet %	7	12	14	0						
Field Wet Density t/m <sup>3</sup>	2.06	2.04	2.00	2.05						
Field Moisture Content %	-	-	-	-						
PCWD or APCWD* t/m <sup>3</sup>	2.09	2.11	2.08	2.09						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (wet)	0.5% (dry)	omc	omc						
Compactive Effort	Standard	Standard	Standard	Standard						
Hilf Density Ratio %	98.0	96.5	96.0	98.0						
Min Hilf Density Ratio %	95	95	95	95						

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-21  
**Report Date:** 27/07/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	33599	33600	33601	33602						
ID No.	1	2	3	4						
Test Date	22/07/2020	22/07/2020	22/07/2020	22/07/2020						
Test Time	am-pm	am-pm	am-pm	am-pm						
Material Source	Imported	Imported	Imported	Imported						
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay						
To Be Used As	Backfill	Backfill	Backfill	Backfill						
Sample Location	Lot 327 South-East of Lot Layer 3	Lot 326 South-East of Lot Layer 3	Lot 325 South of Lot Layer 3	Lot 324 North of Lot Layer 3						
Layer Depth mm	300	300	300	300						
Test Depth mm	275	275	275	275						

Max Size mm	19	19	19	19						
Oversize Wet %	10	15	9	11						
Field Wet Density t/m <sup>3</sup>	2.01	2.06	2.06	2.02						
Field Moisture Content %	-	-	-	-						
PCWD or APCWD* t/m <sup>3</sup>	2.07	2.12	2.10	2.10						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (wet)	omc	2% (dry)	2% (dry)						
Compactive Effort	Standard	Standard	Standard	Standard						
Hilf Density Ratio %	97.0	97.5	98.0	96.5						
Min Hilf Density Ratio %	95	95	95	95						

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-22  
**Report Date:** 27/07/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	33603	33604	33605							
ID No.	1	2	3							
Test Date	23/07/2020	23/07/2020	23/07/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 323 West of Lot Layer 4	Lot 322 West of Lot Layer 4	Lot 321 East of Lot Layer 4							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	12	0	8							
Field Wet Density <i>t/m<sup>3</sup></i>	2.01	2.08	1.98							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.05	2.11	2.08							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	omc	omc	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	98.0	98.5	95.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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S Kang  
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## HILF DENSITY RATIO REPORT

**Main Laboratory**  
 16 Prime Street  
 Thomastown VIC 3074  
 Ph: 03 9465 9813  
 Fax: 03 9465 7690  
 e: info@continentgeotech.com.au

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-23  
**Report Date:** 27/07/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	33606	33607	33608							
ID No.	1	2	3							
Test Date	24/07/2020	24/07/2020	24/07/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 323 West of Lot Layer 5	Lot 322 West of Lot Layer 5	Lot 321 East of Lot Layer 5							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	9	10	8							
Field Wet Density <i>t/m<sup>3</sup></i>	2.04	2.09	2.03							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.11	2.14	2.08							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	1.5% (wet)	omc	0.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	96.5	97.5	97.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-24  
**Report Date:** 5/08/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	33745	33746	33747							
ID No.	1	2	3							
Test Date	31/07/2020	31/07/2020	31/07/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 330 West of Lot Layer 6	Lot 329 West of Lot Layer 6	Lot 328 West of Lot Layer 6							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	11	9	11							
Field Wet Density <i>t/m<sup>3</sup></i>	2.02	2.06	2.05							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.08	2.14	2.10							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	1.5% (dry)	omc	1.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	97.5	96.5	97.5							
Min Hilf Density Ratio %	95	95	95							

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-26  
**Report Date:** 9/09/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34001	34002	34003	34004						
ID No.	1	2	3	4						
Test Date	2/09/2020	2/09/2020	2/09/2020	2/09/2020						
Test Time	am-pm	am-pm	am-pm	am-pm						
Material Source	Imported	Imported	Imported	Imported						
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay						
To Be Used As	Backfill	Backfill	Backfill	Backfill						
Sample Location	Lot 332 Centre of Lot Layer 6	Lot 331 West of Lot Layer 6	Lot 330 West of Lot Layer 6	Lot 329 West of Lot Layer 6						
Layer Depth <i>mm</i>	300	300	300	300						
Test Depth <i>mm</i>	275	275	275	275						

Max Size <i>mm</i>	19	19	19	19						
Oversize Wet %	10	0	0	0						
Field Wet Density <i>t/m<sup>3</sup></i>	2.02	2.07	2.03	2.08						
Field Moisture Content %	-	-	-	-						
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.08	2.13	2.13	2.15						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	0.5% (wet)	omc	0.5% (wet)	0.5% (wet)						
Compactive Effort	Standard	Standard	Standard	Standard						
Hilf Density Ratio %	97.0	97.0	95.0	97.0						
Min Hilf Density Ratio %	95	95	95	95						

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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**S Kang**  
NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-27  
**Report Date:** 9/09/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34005	34006	34007	34008						
ID No.	1	2	3	4						
Test Date	3/09/2020	3/09/2020	3/09/2020	3/09/2020						
Test Time	am-pm	am-pm	am-pm	am-pm						
Material Source	Imported	Imported	Imported	Imported						
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay						
To Be Used As	Backfill	Backfill	Backfill	Backfill						
Sample Location	Lot 329 East of Lot Layer 6	Lot 330 East of Lot Layer 6	Lot 321 East of Lot Layer 6	Lot 322 East of Lot Layer 6						
Layer Depth <i>mm</i>	300	300	300	300						
Test Depth <i>mm</i>	275	275	275	275						

Max Size <i>mm</i>	19	19	19	19						
Oversize Wet %	0	0	0	0						
Field Wet Density <i>t/m<sup>3</sup></i>	2.07	2.05	2.05	2.06						
Field Moisture Content %	-	-	-	-						
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.14	2.11	2.13	2.13						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	1% (wet)	0.5% (wet)	0.5% (wet)	0.5% (wet)						
Compactive Effort	Standard	Standard	Standard	Standard						
Hilf Density Ratio %	96.5	97.0	96.0	96.5						
Min Hilf Density Ratio %	95	95	95	95						

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-29  
**Report Date:** 18/09/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34087	34088	34089							
ID No.	1	2	3							
Test Date	8/09/2020	8/09/2020	8/09/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 304 South West of Lot Layer 6	Lot 305 South West of Lot Layer 6	Lot 306 South West of Lot Layer 6							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	1.94	2.05	2.03							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	1.98	2.07	2.01							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (wet)	omc	0.5% (wet)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	98.0	99.0	100.5							
Min Hilf Density Ratio %	95	95	95							

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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**S Kang**  
NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Main Laboratory**  
 16 Prime Street  
 Thomastown VIC 3074  
 Ph: 03 9465 9813  
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 e: info@continentgeotech.com.au

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-30  
**Report Date:** 18/09/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34090	34091	34092							
ID No.	1	2	3							
Test Date	10/09/2020	10/09/2020	10/09/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 301 South West of Lot Layer 6	Lot 302 South West of Lot Layer 6	Lot 303 South West of Lot Layer 6							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	0	0	4							
Field Wet Density t/m <sup>3</sup>	2.05	1.94	2.03							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.03	1.97	2.04							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	omc	0.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	101.0	98.5	100.0							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-31  
**Report Date:** 18/09/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34093	34094	34095							
ID No.	1	2	3							
Test Date	10/09/2020	10/09/2020	10/09/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 306 North West of Lot Layer 7	Lot 307 North West of Lot Layer 7	Lot 308 North West of Lot Layer 7							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	2.10	2.04	2.01							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.07	2.09	2.04							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (wet)	omc	2% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	101.5	98.0	98.5							
Min Hilf Density Ratio %	95	95	95							

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-32  
**Report Date:** 18/09/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34224	34225	34226							
ID No.	1	2	3							
Test Date	11/09/2020	11/09/2020	11/09/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 306 Eastern Edge of Lot Layer 7	Lot 307 Eastern Edge of Lot Layer 7	Lot 308 Eastern Edge of Lot Layer 7							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	7	7						
Field Wet Density	t/m <sup>3</sup>	2.00	2.08	2.06						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.06	2.08	2.08						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	omc	omc						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	97.0	100.0	99.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-33  
**Report Date:** 18/09/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34227	34228	34229							
ID No.	1	2	3							
Test Date	15/09/2020	15/09/2020	15/09/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 321 East of Lot Layer 7	Lot 320 East of Lot Layer 7	Lot 319 East of Lot Layer 7							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	10	0	0							
Field Wet Density <i>t/m<sup>3</sup></i>	2.10	2.01	2.05							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.07	2.03	2.07							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	0.5% (wet)	omc	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	101.5	99.0	99.0							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-34  
**Report Date:** 18/09/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34315	34316	34317							
ID No.	1	2	3							
Test Date	15/09/2020	15/09/2020	15/09/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 321 East of Lot Layer 8	Lot 320 East of Lot Layer 8	Lot 319 East of Lot Layer 8							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	6	11	7							
Field Wet Density t/m <sup>3</sup>	1.93	1.91	2.01							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	1.98	1.97	1.97							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (wet)	0.5% (wet)	0.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	98.0	97.0	101.5							
Min Hilf Density Ratio %	95	95	95							

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-35  
**Report Date:** 26/10/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34318	34319	34320							
ID No.	1	2	3							
Test Date	17/09/2020	17/09/2020	17/09/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 321 West of Lot Layer 9	Lot 320 West of Lot Layer 9	Lot 319 West of Lot Layer 9							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	2.01	2.02	2.00							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.07	2.04	2.01							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	0.5% (wet)	omc	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	96.5	98.5	99.5							
Min Hilf Density Ratio %	95	95	95							

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-36  
**Report Date:** 26/10/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34321	34322	34323							
ID No.	1	2	3							
Test Date	18/09/2020	18/09/2020	18/09/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 322 West of Lot Layer 9	Lot 321 West of Lot Layer 9	Lot 320 West of Lot Layer 9							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	6	5	0							
Field Wet Density t/m <sup>3</sup>	1.98	2.07	2.00							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	1.95	2.07	2.01							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	0.5% (dry)	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	101.0	99.5	99.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-37  
**Report Date:** 26/10/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34423	34424	34425							
ID No.	1	2	3							
Test Date	24/09/2020	24/09/2020	24/09/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 309	Lot 310	Lot 311							
	West of Lot Layer 6	West of Lot Layer 6	West of Lot Layer 6							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	4	10	2						
Field Wet Density	t/m <sup>3</sup>	2.05	2.02	2.01						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.04	2.05	2.05						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	0.5% (wet)	omc	omc						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	100.0	98.5	98.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-38  
**Report Date:** 26/10/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34009	34010	34011	34012						
ID No.	1	2	3	4						
Test Date	4/09/2020	4/09/2020	4/09/2020	4/09/2020						
Test Time	am-pm	am-pm	am-pm	am-pm						
Material Source	Onsite Stockpile	Onsite Stockpile	Onsite Stockpile	Onsite Stockpile						
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay						
To Be Used As	Backfill	Backfill	Backfill	Backfill						
Sample Location	Lot 331	Lot 330	Lot 329	Lot 328						
	East of Lot Layer 6	West of Lot Layer 6	West of Lot Layer 6	West of Lot Layer 6						
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19	19					
Oversize Wet	%	6	5	7	8					
Field Wet Density	t/m <sup>3</sup>	1.99	2.05	1.95	1.99					
Field Moisture Content	%	-	-	-	-					
PCWD or APCWD*	t/m <sup>3</sup>	2.06	2.10	2.04	2.10					

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	0.5% (dry)	omc	omc					
Compactive Effort		Standard	Standard	Standard	Standard					
Hilf Density Ratio	%	97.0	97.5	95.5	95.0					
Min Hilf Density Ratio	%	95	95	95	95					

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-39  
**Report Date:** 26/10/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34645	34646	34647							
ID No.	1	2	3							
Test Date	15/10/2020	15/10/2020	15/10/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 307 East of Lot Layer 8	Lot 308 East of Lot Layer 8	Lot 309 East of Lot Layer 8							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	0	6	0							
Field Wet Density <i>t/m<sup>3</sup></i>	2.07	2.05	2.09							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.11	2.09	2.14							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	0.5% (wet)	0.5% (dry)	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	98.0	98.0	98.0							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-41  
**Report Date:** 21/10/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34651	34652	34653							
ID No.	1	2	3							
Test Date	16/10/2020	16/10/2020	16/10/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 318	Lot 317	Lot 311							
	West of Lot	West of Lot	East of Lot							
	Layer 1	Layer 1	Layer 1							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	6	8	0							
Field Wet Density <i>t/m<sup>3</sup></i>	1.99	1.95	1.93							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.04	2.05	2.00							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	omc	0.5% (wet)	0.5% (wet)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	97.5	95.5	96.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-42  
**Report Date:** 21/10/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34769	34770	34771							
ID No.	1	2	3							
Test Date	20/10/2020	20/10/2020	20/10/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 309	Lot 310	Lot 312							
	West of Lot Layer 8	West of Lot Layer 8	West of Lot Layer 8							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	9	9	8						
Field Wet Density	t/m <sup>3</sup>	1.97	2.01	2.00						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.03	2.04	2.01						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	1.5% (dry)	1.5% (dry)	0.5% (wet)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	96.5	98.5	99.0						
Min Hilf Density Ratio	%	95	95	95						

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-43  
**Report Date:** 24/10/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34772	34773	34774							
ID No.	1	2	3							
Test Date	21/10/2020	21/10/2020	21/10/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 309	Lot 310	Lot 311							
	East of Lot Layer 9	East of Lot Layer 9	East of Lot Layer 9							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	7	8	8						
Field Wet Density	t/m <sup>3</sup>	2.07	2.06	2.03						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.08	2.05	2.06						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	1.5% (dry)	1.5% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	99.5	100.5	98.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-44  
**Report Date:** 2/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34912	34913	34914							
ID No.	1	2	3							
Test Date	29/10/2020	29/10/2020	29/10/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 317	Lot 316	Lot 315							
	West of Lot Layer 2	East of Lot Layer 2	West of Lot Layer 2							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	8	10	9						
Field Wet Density	t/m <sup>3</sup>	2.09	1.98	2.00						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.09	2.03	2.06						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	1.5% (dry)	1.5% (wet)	0.5% (wet)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	100.0	97.0	97.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-45  
**Report Date:** 2/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34915	34916	34917							
ID No.	1	2	3							
Test Date	30/10/2020	30/10/2020	30/10/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 311	Lot 313	Lot 314							
	West of Lot	East of Lot	East of Lot							
	Layer 2	Layer 2	Layer 2							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.03	1.99	2.07						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.08	2.04	2.08						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	1.5% (dry)	2% (dry)	0.5% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	97.5	97.5	100.0						
Min Hilf Density Ratio	%	95	95	95						

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-46  
**Report Date:** 10/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34918	34919	34920							
ID No.	1	2	3							
Test Date	4/11/2020	4/11/2020	4/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 312	Lot 313	Lot 314							
	West of Lot Layer 3	East of Lot Layer 3	West of Lot Layer 3							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	8	6	0						
Field Wet Density	t/m <sup>3</sup>	2.05	2.03	2.11						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.12	2.03	2.15						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	2% (dry)	2% (dry)	0.5% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	96.5	99.5	98.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-47  
**Report Date:** 10/11/2020  
**Request No:** -

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Page: 1 of 1

Sample No.	34921	34922	34923							
ID No.	1	2	3							
Test Date	5/11/2020	5/11/2020	5/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 302 West of Lot Layer 7	Lot 301 East of Lot Layer 7	Lot 303 West of Lot Layer 7							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	1.98	2.17	2.12						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.04	2.13	2.17						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	1.5% (wet)	2% (dry)	omc						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	97.0	102.0	97.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-48  
**Report Date:** 10/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	34924	34925	34926							
ID No.	1	2	3							
Test Date	6/11/2020	6/11/2020	6/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 304	Lot 305	Lot 307							
	West of Lot Layer 8	East of Lot Layer 8	West of Lot Layer 8							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.10	2.07	2.03						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.12	2.12	2.09						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	0.5% (dry)	2% (dry)	0.5% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	98.5	97.5	97.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-49  
**Report Date:** 16/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35042	35043	35044							
ID No.	1	2	3							
Test Date	9/11/2020	9/11/2020	9/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 301	Lot 302	Lot 303							
	North of Lot Layer 8	West of Lot Layer 8	South of Lot Layer 8							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.01	2.08	2.09						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.09	2.09	2.12						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	2% (dry)	2% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	96.0	100.0	98.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-50  
**Report Date:** 16/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35045	35046	35047	35048						
ID No.	1	2	3	4						
Test Date	10/11/2020	10/11/2020	10/11/2020	10/11/2020						
Test Time	am-pm	am-pm	am-pm	am-pm						
Material Source	Imported	Imported	Imported	Imported						
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay						
To Be Used As	Backfill	Backfill	Backfill	Backfill						
Sample Location	Lot 308	Lot 309	Lot 310	Lot 311						
	North of Lot Layer 7	South of Lot Layer 7	South of Lot Layer 7	North of Lot Layer 7						
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19	19					
Oversize Wet	%	0	0	0	0					
Field Wet Density	t/m <sup>3</sup>	2.06	2.11	2.03	2.01					
Field Moisture Content	%	-	-	-	-					
PCWD or APCWD*	t/m <sup>3</sup>	2.14	2.21	2.11	2.02					

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	omc	0.5% (dry)	2% (dry)					
Compactive Effort		Standard	Standard	Standard	Standard					
Hilf Density Ratio	%	96.0	95.5	96.0	99.5					
Min Hilf Density Ratio	%	95	95	95	95					

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-51  
**Report Date:** 16/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35049	35050	35051							
ID No.	1	2	3							
Test Date	11/11/2020	11/11/2020	11/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 305 East of Lot Layer 7	Lot 307 South of Lot Layer 7	Lot 308 West of Lot Layer 7							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.02	1.97	1.96						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.11	2.07	2.06						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	2% (dry)	omc	omc						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	95.5	95.5	95.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-52  
**Report Date:** 16/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35111	35112	35113							
ID No.	1	2	3							
Test Date	12/11/2020	12/11/2020	12/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 306	Lot 308	Lot 310							
	East of Lot Layer 8	West of Lot Layer 8	East of Lot Layer 8							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.04	1.95	1.98						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.08	2.04	2.07						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	2% (dry)	omc	omc						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	98.0	95.5	96.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-53  
**Report Date:** 25/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35114	35115	35116							
ID No.	1	2	3							
Test Date	13/11/2020	13/11/2020	13/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 311	Lot 312	Lot 314							
	West of Lot	East of Lot	East of Lot							
	Layer 8	Layer 8	Layer 8							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.05	2.00	1.98						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.08	2.01	2.09						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	2% (dry)	0.5% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	98.5	99.5	95.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-54  
**Report Date:** 25/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35488	35489	35490							
ID No.	1	2	3							
Test Date	16/11/2020	16/11/2020	16/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 316	Lot 316	Lot 315							
	West of Lot Layer 8	East of Lot Layer 8	West of Lot Layer 8							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	1.98	1.94	2.03						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.04	1.93	2.08						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	0.5% (dry)	2% (dry)	omc						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	97.0	100.5	97.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-55  
**Report Date:** 25/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35491	35492	35493							
ID No.	1	2	3							
Test Date	17/11/2020	17/11/2020	17/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 317 North West of Lot Layer 8	Lot 317 South West of Lot Layer 8	Lot 317 East of Lot Layer 8							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.00	1.95	1.93						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.06	2.03	1.99						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	0.5% (dry)	2% (dry)	omc						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	97.0	96.0	97.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-56  
**Report Date:** 25/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35494	35495	35496							
ID No.	1	2	3							
Test Date	18/11/2020	18/11/2020	18/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 313 East of Lot Layer 9	Lot 314 East of Lot Layer 9	Lot 315 West of Lot Layer 9							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density <i>t/m<sup>3</sup></i>	1.95	2.06	2.03							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.04	2.07	2.09							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	omc	2% (dry)	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	95.5	99.5	97.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-57  
**Report Date:** 25/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35497	35498	35499							
ID No.	1	2	3							
Test Date	19/11/2020	19/11/2020	19/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 313	Lot 312	Lot 313							
	East of Lot Layer 9	Centre of Lot Layer 9	East of Lot Layer 9							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.12	2.07	2.08						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.13	2.06	2.09						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	2% (dry)	0.5% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	99.5	100.5	99.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-58  
**Report Date:** 25/11/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35500	35501	35502							
ID No.	1	2	3							
Test Date	20/11/2020	20/11/2020	20/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 309	Lot 310	Lot 311							
	West of Lot Layer 9	East of Lot Layer 9	West of Lot Layer 9							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.17	2.16	2.10						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.19	2.18	2.10						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	2% (dry)	0.5% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	99.0	99.0	99.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-59  
**Report Date:** 7/12/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35503	35504	35505							
ID No.	1	2	3							
Test Date	26/11/2020	26/11/2020	26/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 307	Lot 307	Lot 308							
	West of Lot	East of Lot	East of Lot							
	Layer 9	Layer 9	Layer 9							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density <i>t/m<sup>3</sup></i>	2.11	2.09	2.05							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.19	2.15	2.07							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	0.5% (dry)	2% (dry)	0.5% (dry)							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	96.0	97.0	99.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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The results of tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Approved Signatory



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NATA Accreditation No. 19945

## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-60  
**Report Date:** 7/12/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35506	35507	35508							
ID No.	1	2	3							
Test Date	27/11/2020	27/11/2020	27/11/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 317 West of Lot Layer 8	Lot 316 East of Lot Layer 8	Lot 315 West of Lot Layer 8							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.08	2.09	2.07						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.11	2.14	2.07						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	2% (dry)	0.5% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	98.5	98.0	100.0						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-61  
**Report Date:** 14/12/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35648	35649	35650							
ID No.	1	2	3							
Test Date	3/12/2020	3/12/2020	3/12/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 316	Lot 317	Lot 318							
	West of Lot	East of Lot	East of Lot							
	Layer 9	Layer 9	Layer 9							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.00	2.04	2.09						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.09	2.05	2.08						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	2% (dry)	0.5% (dry)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	96.0	99.5	100.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-62  
**Report Date:** 21/12/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35651	35652	35653							
ID No.	1	2	3							
Test Date	7/12/2020	7/12/2020	7/12/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 323	Lot 322	Lot 320							
	West of Lot Layer 7	East of Lot Layer 7	West of Lot Layer 7							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.12	2.16	2.10						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.15	2.15	2.13						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	2% (dry)	0.5% (wet)						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	98.5	100.5	98.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-63  
**Report Date:** 21/12/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35654	35655	35656							
ID No.	1	2	3							
Test Date	8/12/2020	8/12/2020	8/12/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 327	Lot 326	Lot 325							
	North of Lot Layer 4	South of Lot Layer 4	East of Lot Layer 4							
Layer Depth	mm	300	300	300						
Test Depth	mm	275	275	275						

Max Size	mm	19	19	19						
Oversize Wet	%	0	0	0						
Field Wet Density	t/m <sup>3</sup>	2.15	2.12	2.18						
Field Moisture Content	%	-	-	-						
PCWD or APCWD*	t/m <sup>3</sup>	2.11	2.11	2.25						

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC)	t/m <sup>3</sup>	omc	0.5% (wet)	omc						
Compactive Effort		Standard	Standard	Standard						
Hilf Density Ratio	%	102.0	101.0	96.5						
Min Hilf Density Ratio	%	95	95	95						

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-64  
**Report Date:** 21/12/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35657	35658	35659							
ID No.	1	2	3							
Test Date	9/12/2020	9/12/2020	9/12/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 311 West of Lot Layer 9	Lot 312 East of Lot Layer 9	Lot 313 West of Lot Layer 9							
Layer Depth mm	300	300	300							
Test Depth mm	275	275	275							

Max Size mm	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density t/m <sup>3</sup>	1.99	1.99	2.00							
Field Moisture Content %	-	-	-							
PCWD or APCWD* t/m <sup>3</sup>	2.09	2.06	2.08							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) t/m <sup>3</sup>	omc	omc	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	95.0	96.5	96.0							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3  
**Location:** Wallan, Vic

**Report Number:** 6387.03-65  
**Report Date:** 21/12/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 1

Sample No.	35660	35661	35662							
ID No.	1	2	3							
Test Date	10/12/2020	10/12/2020	10/12/2020							
Test Time	am-pm	am-pm	am-pm							
Material Source	Imported	Imported	Imported							
Material Description	Silty Clay	Silty Clay	Silty Clay							
To Be Used As	Backfill	Backfill	Backfill							
Sample Location	Lot 312	Lot 313	Lot 314							
	East of Lot	East of Lot	East of Lot							
	Layer 9	Layer 9	Layer 9							
Layer Depth <i>mm</i>	300	300	300							
Test Depth <i>mm</i>	275	275	275							

Max Size <i>mm</i>	19	19	19							
Oversize Wet %	0	0	0							
Field Wet Density <i>t/m<sup>3</sup></i>	1.95	1.99	1.96							
Field Moisture Content %	-	-	-							
PCWD or APCWD* <i>t/m<sup>3</sup></i>	2.05	2.09	1.98							

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	0.5% (dry)	omc	omc							
Compactive Effort	Standard	Standard	Standard							
Hilf Density Ratio %	95.0	95.5	98.5							
Min Hilf Density Ratio %	95	95	95							

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3 (Reserve)  
**Location:** Wallan, Vic

**Report Number:** 6387.03-66  
**Report Date:** 28/12/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 1 of 2

Sample No.	40047	40048	40049	40050	40051	40052	40053	40054	40055	40056
ID No.	1	2	3	4	5	6	7	8	9	10
Test Date	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020
Test Time	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm
Material Source	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay
To Be Used As	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill
Sample Location	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve
	North of Reserve	South of Reserve	East of Reserve	East of Reserve	East of Reserve	North of Reserve	North of Reserve	West of Reserve	West of Reserve	West of Reserve
	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
Layer Depth <i>mm</i>	300	300	300	300	300	300	300	300	300	300
Test Depth <i>mm</i>	275	275	275	275	275	275	275	275	275	275

Max Size <i>mm</i>	19	19	19	19	19	19	19	19	19	19
Oversize Wet %	0	0	0	0	0	0	0	0	0	0
Field Wet Density <i>t/m<sup>3</sup></i>	1.93	1.95	1.94	1.98	1.97	2.02	1.96	1.94	1.95	1.97
Field Moisture Content %	-	-	-	-	-	-	-	-	-	-
PCWD or APCWD* <i>t/m<sup>3</sup></i>	1.98	2.01	1.94	2.03	1.99	2.03	2.00	2.03	2.01	2.07

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	0.5% (dry)	2% (dry)	2% (dry)	0.5% (wet)	omc	2% (dry)	omc	omc	omc	omc
Compactive Effort	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Hilf Density Ratio %	97.5	97.0	100.0	97.5	99.0	100.0	95.5	98.5	97.0	95.0
Min Hilf Density Ratio %	95	95	95	95	95	95	95	95	95	95

**Note:**

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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## HILF DENSITY RATIO REPORT

**Customer:** Universal Corporation Pty Ltd  
**Project:** Newbridge South Stage 3 (Reserve)  
**Location:** Wallan, Vic

**Report Number:** 6387.03-66  
**Report Date:** 28/12/2020  
**Request No:** -

Testing performed and reported at our Main Laboratory

Page: 2 of 2

Sample No.	40057	40058	40059	40060	40061	40062	40063	40064	40065	40066
ID No.	11	12	13	14	15	16	17	18	19	20
Test Date	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020	3/12/2020
Test Time	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm	am-pm
Material Source	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu	Insitu
Material Description	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay	Silty Clay
To Be Used As	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill
Sample Location	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve
	South of Reserve	South of Reserve	North of Reserve	East of Reserve	West of Reserve	North of Reserve	South of Reserve	West of Reserve	East of Reserve	East of Reserve
	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3	Stage 3
Layer Depth <i>mm</i>	300	300	300	300	300	300	300	300	300	300
Test Depth <i>mm</i>	275	275	275	275	275	275	275	275	275	275

Max Size <i>mm</i>	19	19	19	19	19	19	19	19	19	19
Oversize Wet %	0	0	0	0	0	0	0	0	0	0
Field Wet Density <i>t/m<sup>3</sup></i>	1.91	1.94	1.91	1.96	1.98	2.00	2.01	2.00	2.00	2.03
Field Moisture Content %	-	-	-	-	-	-	-	-	-	-
PCWD or APCWD* <i>t/m<sup>3</sup></i>	1.99	1.97	1.96	2.03	2.03	2.04	1.98	2.07	2.01	2.05

\*PCWD - Peak Converted Wet Density, APCWD - Adjusted Peak Converted Wet Density, If Oversize material present PCWD and Moisture Variation is Adjusted

Moisture Variation or Adjusted* (of OMC) <i>t/m<sup>3</sup></i>	2% (dry)	2% (dry)	2% (dry)	omc	omc	omc	0.5% (wet)	0.5% (wet)	2% (dry)	omc
Compactive Effort	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard	Standard
Hilf Density Ratio %	96.0	98.5	97.5	96.0	97.5	97.5	102.0	96.5	99.5	99.0
Min Hilf Density Ratio %	95	95	95	95	95	95	95	95	95	95

Note:

**Test Methods:** AS1289 5.8.1, 5.7.1, 2.1.1  
**Sampling Test Method:** AS1289 1.2.1 6.4(b)



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