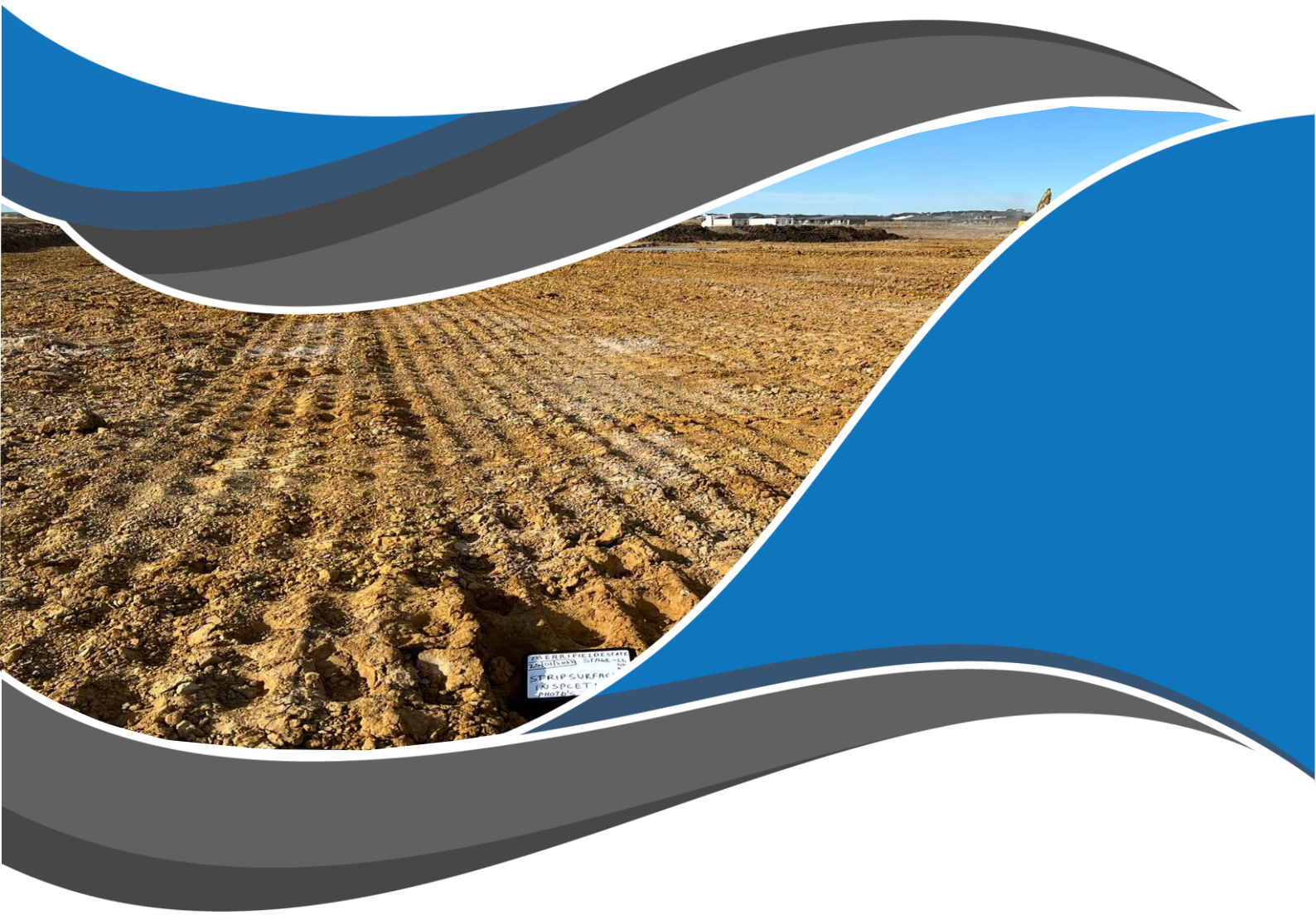
Merrifield Estate - Stage 45, Mickleham

Level 1 Inspection & Testing Report

Reference: 1120 0320-1



Prepared for:

BMD Urban

October 2022

A&Y ASSOCIATES

GEOTECHNICAL ENGINEERING CONSULTANTS

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AUSTRALIA
Professional Engineer
MEMBER

Disclaimer

The findings and conclusions contained in this report are made based on site conditions that existed at the time this work was conducted. The conclusions present in this report are relevant to the conditions of the site and the state of legislation currently enacted as at the date of this report.

Findings and conclusions are made assuming that the soil, groundwater, geological and chemical conditions detailed within this report are accurate and remain applicable to the site at the time of writing. No other warranties are made or intended.

A&Y Associates (A&Y) Pty Ltd has used a degree of skill and care ordinarily exercised by reputable members of our profession practicing in the same or similar locality.

A&Y does not make any representation or warranty that the conclusions in this report will be applicable in the future as there may be changes in the condition of the site, applicable legislation or other factors that would affect the conclusions contained in this report.

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Contents

1 Introduction

This report presents the results of the Level 1 Inspection and Testing for the construction of the fill platforms located in Stage 45 of Merrifield Estate, Mickleham.

2 Project Summary

It is understood that BMD Urban require the fill platforms within Stage 45 to be constructed under Level 1 Inspection and Testing undertaken by a Geotechnical Inspection and Testing Authority (GITA).

Level 1 Inspection and Testing, as defined in AS3798-2007 "Guidelines on Earthworks for Commercial and Residential Development," provides for full time inspection of the construction of controlled fill and field and laboratory testing in accordance with AS1289 "Methods of Testing Soils for Engineering Purposes".

The Level 1 inspection was undertaken by a Geotechnician from A&Y Associates over a period of 43 days from the 25th of January 2022 to 22nd of August 2022.

This report is applicable for fill placed by BMD Urban in Stage 45 of Merrifield Estate, as shown in Appendix A – Site Plan.

A heat map indicating the amount of cut and fill prepared by Verve dated 22nd October 2022 has been attached in Appendix A along with the site plan.

3 Project Specifications

The filling platforms were constructed according to the specification provided in the drawing (Ref: Project No: 17040-45, Drawing No: EW101-REVA, by Verve; Dated: 22/10/2021) and AS3798. A short summary of the requirements outlined are provided below:

- Material to be used for fill construction shall satisfy the requirements of AS3798-2007 "Guidelines on Earthworks for Commercial and Residential Developments". Material used shall be free of:
    - Organic soils, such as topsoils, severely root affected subsoil and peat;
    - Contaminated soils;
    - Materials which undergo volume change or loss of strength when disturbed and exposed to moisture;
    - Silts, or materials that have deleterious engineering properties of silt;
    - Fill that contains wood, metal, plastic, boulders, or other deleterious material, in sufficient proportions to affect the required performance of fill;
    - The maximum particle size of any rocks or other lump, within the layer, has not exceeded two-thirds (2/3) of the compacted layer thickness.
- Compaction to achieve a dry density ratio of at least 95% Standard, as the project was classified as **Residential**.

4 Subgrade Assessment

The subgrade was assessed by A&Y Associates following the topsoil removal and before any fill was placed. The subgrade assessment was undertaken on the 25th of January 2022 and 3rd to 15th of February 2022 as mentioned in report *1120 0320-1 (SSI1)*.

The exposed subgrade material comprised silty clay. No wet or soft patches were found during the inspection. No evidence of deleterious material was found during the inspection.

5 Earthworks

The earthworks for this project included stripping of topsoil, removing of tree roots, proof rolling the subgrade and placement and compaction of fill to construct engineered platforms.

Based on design plans and site inspection, it appears that the fill thickness placed is approximately 200mm-2750mm. The fill layers or thickness nominated in this report are provided as a guide on the amounts of fill placed and do not necessarily reflect an accurate survey of the fill levels.

6 Fill Material

The fill material used for the platform consisted of imported material. The imported material was predominantly comprising of Silty Clay with gravels.

7 Testing

Field density testing was undertaken on the compacted fill at a frequency of a minimum of 3 tests per lot (AS3798 Table 8.1).

Tests were performed using a Nuclear Density Gauge for field density determination as per AS 1289.5.8.1. Testing was completed at a minimum rate of 3 field density tests per day's production based on the minimum requirements of AS 3798-2007 and taken from each layer of fill placed.

A total of 120 field density tests were performed during the earthworks. All of the test results met the specified compaction requirement of 95% Standard Compaction.

The locations of the 120 field density tests are shown in Appendix B – Test Locations. A summary of the test results obtained from the field density testing is presented in Appendix C – Test Results Summary. The laboratory test reports of the field density tests are presented in Appendix D – NATA Test Results.

8 Finished Surface Levels

It should be noted that even though the final fill layer meets the specification requirements, over time, the material may be subject to adverse weather conditions resulting in either surface softening or drying and cracking. The top 150mm – 200mm of the fill will deteriorate with time and should be considered by the foundation engineer.

9 Exclusion

A&Y Associates was not involved in monitoring and testing the following works and as such are not included in the Level 1 report.

- Any trenches excavated and backfilled on site for the installation of underground services such as sewers, electrical conduits, water mains etc.
- Footpaths in front of the lots that may be excavated and filled after the Level 1 supervision conducted by A&Y Associates.
- Uncontrolled fill and topsoil that may have been placed as part of the landscaping of the site following the completion of the engineered fill construction.

10 Conclusion

On the completion of the earthworks and after analysing the materials used, it has been concluded that the filling procedure conducted by BMD Urban appears to be consistent with the requirements of AS 3798 in regards to the placement of fill materials on a project under Level 1 Supervision and in accordance with the project specification as provided to A&Y Associates.

Appendix A - Site Plan

PROJECT: Merrifield Estate - Stage 45	**CLIENT:** BMD Urban	**SITE PLAN SKETCH—NOT TO SCALE**	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham, VIC	**PROJECT No:** 1120 0320-1		

Appendix B – Test Locations

PROJECT: Merrifield Estate- Stage 45	**CLIENT:** BMD Urban	**SITE PLAN SKETCH—NOT TO SCALE**	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham, VIC	**PROJECT No:** 1120 0320-1		

Appendix C – Test Results Summary

Project No	1120 0320-1				Client	BMD Urban				
Project Name	Merrifield Estate - Stage 45				Specification			Density Ratio ≥ 95% of Peak Wet Density		
Location	Mickleham									
Test No	Retest of Test	Date	Location	Layer	Oversize	Density Ratio	Moisture Ratio	Moisture Variation	Pass / Fail	Retest
#	#		Lot #	#	%	%	%	%		Pass / Fail
1	-	31/01/2022	-	1	5.0	95.0	96.5	-1.0	Pass	-
2	-	31/01/2022	-	1	4.3	98.0	99.0	0.0	Pass	-
3	-	31/01/2022	-	1	4.5	100.0	95.0	-1.0	Pass	-
4	-	1/02/2022	-	1	4.3	100.5	92.0	-2.0	Pass	-
5	-	1/02/2022	-	1	4.8	100.0	109.5	2.0	Pass	-
6	-	1/02/2022	-	1	5.6	95.5	97.0	-0.5	Pass	-
7	-	2/02/2022	-	1	4.8	96.5	109.0	2.0	Pass	-
8	-	2/02/2022	-	1	4.5	98.5	103.5	1.0	Pass	-
9	-	2/02/2022	-	1	4.2	98.5	93.5	-1.5	Pass	-
10	-	4/02/2022	-	2	4.1	97.0	98.5	-0.5	Pass	-
11	-	4/02/2022	-	2	4.9	96.0	97.5	-0.5	Pass	-
12	-	4/02/2022	-	2	5.2	95.5	97.5	-0.5	Pass	-
13	-	11/02/2022	-	2	5.3	96.5	98.0	-0.5	Pass	-
14	-	11/02/2022	-	2	4.9	96.0	98.0	-0.5	Pass	-
15	-	11/02/2022	-	2	4.2	95.5	95.5	-1.0	Pass	-
16	-	12/02/2022	-	3	3.9	97.5	96.0	-1.0	Pass	-
17	-	12/02/2022	-	3	4.2	96.0	96.5	-0.5	Pass	-
18	-	12/02/2022	-	3	4.9	95.5	96.5	-0.5	Pass	-
19	-	14/02/2022	-	1	4.3	97.5	96.0	-1.0	Pass	-
20	-	14/02/2022	-	1	4.0	96.0	96.5	-0.5	Pass	-
21	-	14/02/2022	-	1	5.1	95.5	97.5	-0.5	Pass	-
22	-	16/02/2022	-	2	6.1	96.5	98.5	-0.5	Pass	-
23	-	16/02/2022	-	2	5.2	98.5	109.0	2.0	Pass	-
24	-	16/02/2022	-	2	5.0	98.5	97.0	-1.0	Pass	-

25	-	18/02/2022	-	1	4.4	98.5	109.0	1.5	Pass	-
26	-	18/02/2022	-	1	5.7	97.5	98.5	0.0	Pass	-
27	-	18/02/2022	-	1	5.9	99.0	95.5	-0.5	Pass	-
28	-	21/02/2022	-	3	4.3	98.5	99.5	0.0	Pass	-
29	-	21/02/2022	-	3	3.1	96.0	108.5	1.5	Pass	-
30	-	21/02/2022	-	3	2.8	98.0	93.5	-1.5	Pass	-
31	-	22/02/2022	-	4	3.5	95.0	110.5	2.0	Pass	-
32	-	22/02/2022	-	4	3.8	96.0	111.0	2.0	Pass	-
33	-	22/02/2022	-	4	4.0	95.5	97.0	-0.5	Pass	-
34	-	23/02/2022	-	3	4.5	100.0	93.0	-1.5	Pass	-
35	-	23/02/2022	-	3	3.5	96.0	97.0	-0.5	Pass	-
36	-	23/02/2022	-	3	3.8	95.5	99.0	-0.5	Pass	-
37	-	24/02/2022	-	3	5.1	98.5	96.0	-0.5	Pass	-
38	-	24/02/2022	-	3	4.6	96.0	97.0	-0.5	Pass	-
39	-	24/02/2022	-	3	5.8	95.5	99.0	-0.5	Pass	-
40	-	25/02/2022	-	5	4.3	96.5	97.0	-1.0	Pass	-
41	-	25/02/2022	-	5	4.5	99.0	96.5	-0.5	Pass	-
42	-	25/02/2022	-	5	4.0	96.0	97.5	-1.0	Pass	-
43	-	3/03/2022	-	1	4.8	96.5	97.0	-0.5	Pass	-
44	-	3/03/2022	-	1	4.3	96.0	97.5	-0.5	Pass	-
45	-	3/03/2022	-	1	5.3	98.0	96.5	-0.5	Pass	-
46	-	5/07/2022	-	1	3.1	98.0	107.0	2.0	Pass	-
47	-	5/07/2022	-	1	3.9	98.0	107.5	1.5	Pass	-
48	-	5/07/2022	-	1	3.5	96.5	106.5	1.5	Pass	-
49	-	6/07/2022	-	4	1.5	98.0	109.5	2.0	Pass	-
50	-	6/07/2022	-	4	2.8	97.5	109.5	2.0	Pass	-
51	-	6/07/2022	-	4	2.8	97.5	96.0	-0.5	Pass	-
52	-	7/07/2022	-	4	3.8	97.5	96.0	-1.0	Pass	-
53	-	7/07/2022	-	4	2.0	98.5	99.0	-0.5	Pass	-
54	-	7/07/2022	-	4	1.3	96.5	107.0	2.0	Pass	-

55	-	8/07/2022	-	4	1.5	98.0	106.5	1.5	Pass	-
56	-	8/07/2022	-	4	2.5	98.0	95.5	-1.0	Pass	-
57	-	8/07/2022	-	4	3.2	96.5	109.0	2.0	Pass	-
58	-	12/07/2022	-	6	2.7	98.0	110.0	2.0	Pass	-
59	-	12/07/2022	-	6	2.3	98.5	107.5	2.0	Pass	-
60	-	12/07/2022	-	6	1.9	97.5	96.0	-1.0	Pass	-
61	-	13/07/2022	-	5	1.5	98.5	108.0	2.0	Pass	-
62	-	13/07/2022	-	5	0.0	98.0	106.5	1.5	Pass	-
63	-	13/07/2022	-	5	0.0	98.5	99.0	-0.5	Pass	-
64	-	14/07/2022	-	5	3.5	98.0	96.0	-0.5	Pass	-
65	-	14/07/2022	-	5	4.2	97.5	107.0	1.5	Pass	-
66	-	14/07/2022	-	5	2.8	97.5	106.5	1.5	Pass	-
67	-	15/07/2022	-	3	1.5	98.0	107.0	1.5	Pass	-
68	-	15/07/2022	-	3	3.4	96.5	109.5	2.0	Pass	-
69	-	15/07/2022	-	3	3.1	98.5	98.0	-0.5	Pass	-
70	-	16/07/2022	-	2	3.1	98.0	97.5	-0.5	Pass	-
71	-	16/07/2022	-	2	2.8	96.5	97.0	-1.0	Pass	-
72	-	16/07/2022	-	2	2.5	96.5	109.0	1.5	Pass	-
73	-	18/07/2022	-	1	2.5	98.0	108.0	2.0	Pass	-
74	-	18/07/2022	-	1	2.9	97.0	98.0	-0.5	Pass	-
75	-	18/07/2022	-	1	3.8	97.0	96.5	-1.0	Pass	-
76	-	19/07/2022	-	5	2.1	98.0	107.5	2.0	Pass	-
77	-	19/07/2022	-	5	2.0	98.0	107.5	2.0	Pass	-
78	-	19/07/2022	-	5	2.8	98.0	98.0	-0.5	Pass	-
79	-	20/07/2022	-	4	2.5	97.0	107.5	2.0	Pass	-
80	-	20/07/2022	-	4	1.5	97.5	107.0	1.5	Pass	-
81	-	20/07/2022	-	4	3.1	99.5	97.5	-0.5	Pass	-
82	-	21/07/2022	-	5	3.0	96.5	95.5	-1.0	Pass	-
83	-	21/07/2022	-	5	0.0	98.0	108.5	2.0	Pass	-
84	-	21/07/2022	-	5	2.2	97.5	107.0	1.5	Pass	-

85	-	22/07/2022	-	6	2.0	97.0	107.5	2.0	Pass	-
86	-	22/07/2022	-	6	2.8	97.5	107.0	1.5	Pass	-
87	-	22/07/2022	-	6	3.3	97.5	99.0	-0.5	Pass	-
88	-	25/07/2022	-	6	3.8	97.0	108.5	2.0	Pass	-
89	-	25/07/2022	-	6	4.6	97.0	98.0	-0.5	Pass	-
90	-	25/07/2022	-	4	2.5	97.5	106.0	1.5	Pass	-
91	-	1/08/2022	-	7	0.0	100.5	87.0	-3.0	Pass	-
92	-	1/08/2022	-	7	0.0	98.0	87.5	-3.0	Pass	-
93	-	1/08/2022	-	7	0.0	98.5	87.0	-3.0	Pass	-
94	-	2/08/2022	-	7	0.0	95.5	96.5	-1.0	Pass	-
95	-	2/08/2022	-	7	0.0	95.5	98.0	-0.5	Pass	-
96	-	2/08/2022	-	7	0.0	95.5	106.0	2.0	Pass	-
97	-	5/08/2022	-	7	0.0	100.5	97.0	-0.5	Pass	-
98	-	5/08/2022	-	7	0.0	97.0	97.0	-0.5	Pass	-
99	-	5/08/2022	-	7	0.0	96.0	110.0	2.0	Pass	-
100	-	9/08/2022	-	7	0.0	95.5	96.0	-0.5	Pass	-
101	-	9/08/2022	-	7	0.0	95.5	98.5	-0.5	Pass	-
102	-	9/08/2022	-	7	0.0	96.0	112.5	2.5	Pass	-
103	-	10/08/2022	-	8	0.0	96.0	99.0	-0.5	Pass	-
104	-	10/08/2022	-	8	0.0	95.5	98.5	-0.5	Pass	-
105	-	10/08/2022	-	8	0.0	95.5	112.5	2.0	Pass	-
106	-	11/08/2022	-	8	0.0	96.0	99.0	-0.5	Pass	-
107	-	11/08/2022	-	8	0.0	95.5	97.0	-0.5	Pass	-
108	-	11/08/2022	-	8	0.0	95.5	98.0	-0.5	Pass	-
109	-	15/08/2022	-	8	0.0	96.0	98.5	-0.5	Pass	-
110	-	15/08/2022	-	8	0.0	95.5	98.5	-0.5	Pass	-
111	-	15/08/2022	-	8	0.0	98.0	96.5	-1.0	Pass	-
112	-	16/08/2022	-	8	0.0	96.0	97.0	-0.5	Pass	-
113	-	16/08/2022	-	8	0.0	97.5	99.0	-0.5	Pass	-
114	-	16/08/2022	-	8	0.0	98.0	99.0	-0.5	Pass	-

115	-	17/08/2022	-	9	0.0	98.5	106.0	1.5	Pass	-
116	-	17/08/2022	-	10	0.0	99.0	97.0	-1.0	Pass	-
117	-	17/08/2022	-	10	0.0	98.5	99.5	-0.5	Pass	-
118	-	22/08/2022	-	11	0.0	98.5	109.0	2.0	Pass	-
119	-	22/08/2022	-	12	0.0	99.0	97.0	-1.0	Pass	-
120	-	22/08/2022	-	12	0.0	98.5	99.0	-0.5	Pass	-
** Negative (-) value indicates that the field moisture content is drier than the optimum moisture content (OMC)										
** Positive (+) value indicates that the field moisture content is wetter than the optimum moisture content (OMC)										

A&Y ASSOCIATES
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Appendix D – NATA Test Results

A&Y ASSOCIATES
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Field Density Test Results
AS1289.5.7.1

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Truganina VIC 3029
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info@ayassociates.com.au

Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	1	
Location:	Mickleham					

Sample No		1	2	3			
Date Tested		31/01/2022	31/01/2022	31/01/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 1	Layer 1	Layer 1			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.91	1.97	1.97			
Field Moisture Content	%	20.3	21.3	19.9			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	5.0	4.3	4.5			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.99	2.00	1.96			
Optimum Moisture Content	%	21	21.5	21			
Moisture Ratio	%	96.5	99	95			
Moisture Variation from OMC	%	-1.0 Drier	0.0 OMC	-1.0 Drier			
Density Ratio	%	95.0	98.0	100.0			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI01)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

NATA
WORLD RECOGNISED ACCREDITATION

NATA Accredited Laboratory No. 20172

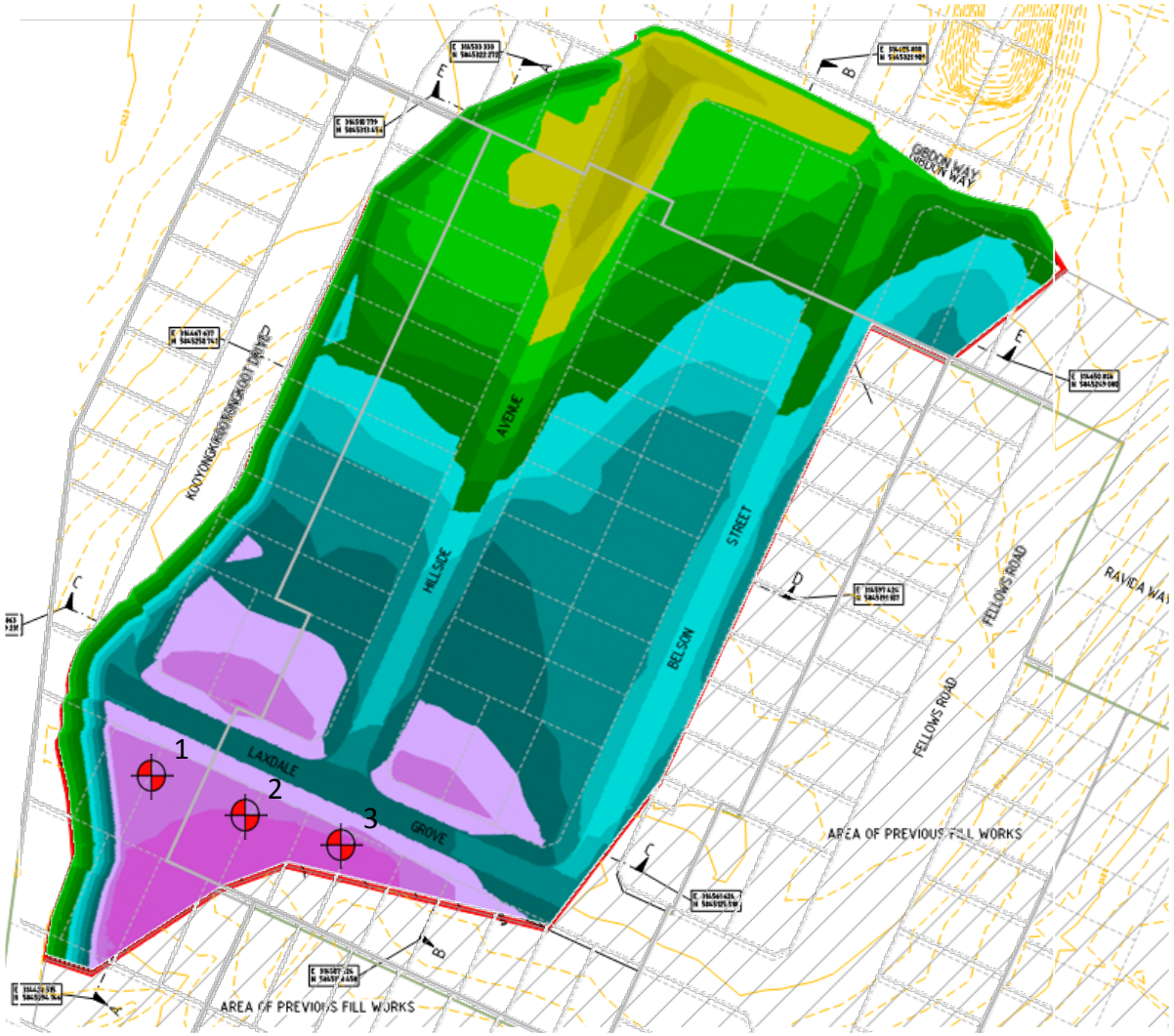
Accreditation for compliance with ISO/IEC 17025 - Testing

The results of tests, calibrations and/or measurements included in this document, are traceable to Australian / National Standards

Approved Signatory:

David Burns

Date: 20/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 31/01/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI01)	**SITE PLAN SKETCH—NOT TO SCALE**	

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Field Density Test Results
AS1289.5.7.1

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PH: 0400 413 531
info@ayassociates.com.au

Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	2	
Location:	Mickleham					

Sample No		4	5	6			
Date Tested		01/02/2022	01/02/2022	01/02/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 1	Layer 1	Layer 1			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.95	1.97	1.99			
Field Moisture Content	%	23.5	24.1	22.8			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	4.3	4.8	5.6			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.92	1.96	2.08			
Optimum Moisture Content	%	25.5	22	23.5			
Moisture Ratio	%	92	109.5	97			
Moisture Variation from OMC	%	-2.0 Drier	2.0 Wetter	-0.5 Drier			
Density Ratio	%	100.5	100.0	95.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI02)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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Approved Signatory:

David Burns

Date: 20/04/2022

PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 01/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI02)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
5/16 Network Drive
Truganina VIC 3029
PH: 0400 413 531
info@ayassociates.com.au

Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 3

Location: Mickleham

Sample No		7	8	9			
Date Tested		02/02/2022	02/02/2022	02/02/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 1	Layer 1	Layer 1			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.94	1.94	1.92			
Field Moisture Content	%	24.0	24.3	23.8			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	4.8	4.5	4.2			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.00	1.96	1.94			
Optimum Moisture Content	%	22	23.5	25.5			
Moisture Ratio	%	109	103.5	93.5			
Moisture Variation from OMC	%	2.0 Wetter	1.0 Wetter	-1.5 Drier			
Density Ratio	%	96.5	98.5	98.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI03)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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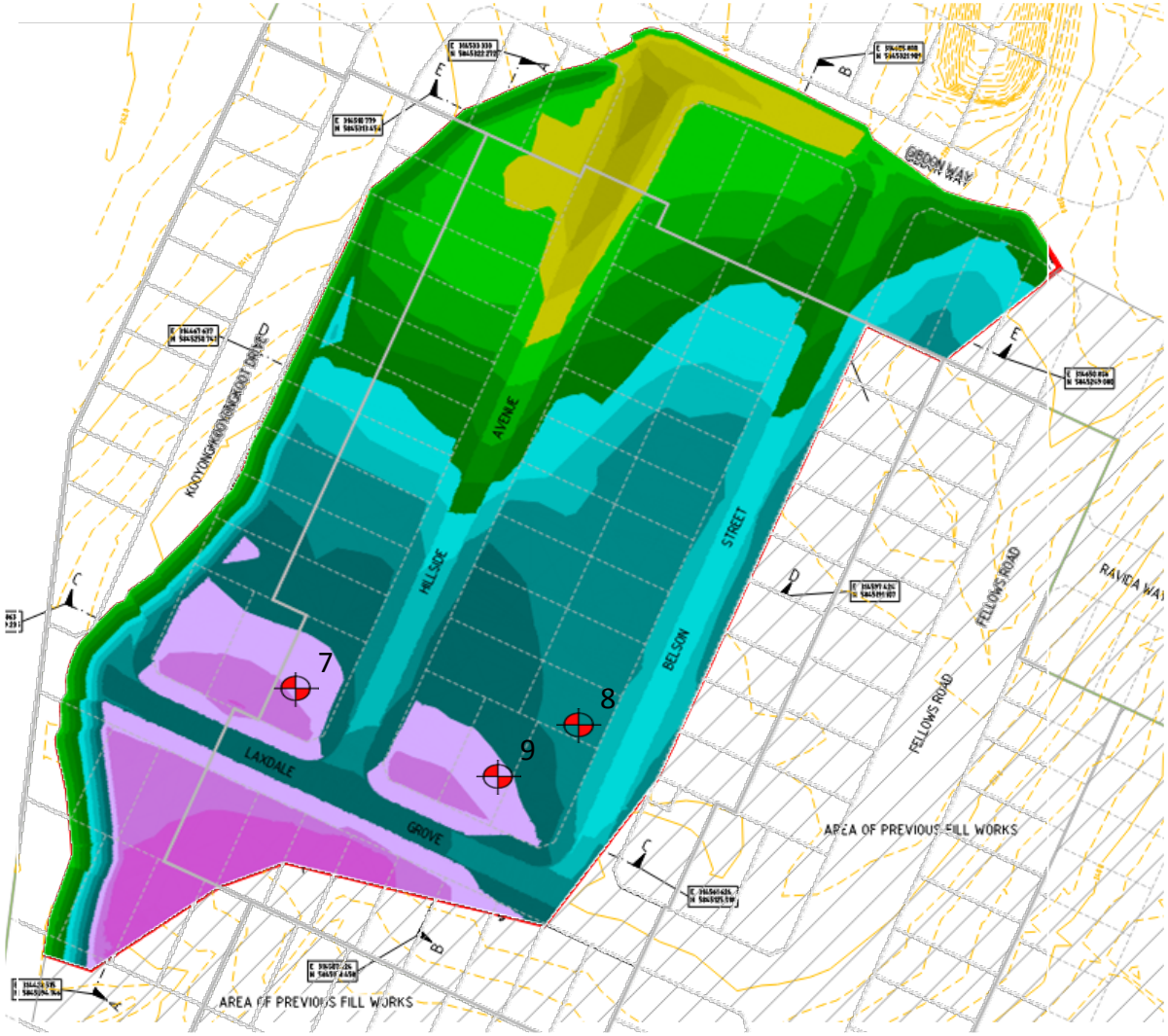
Approved Signatory:

David Burns

Date: 20/04/2022



PROJECT:	CLIENT:	DATE:	
Merrifield - Stage 45	BMD Urban	02/02/2022	
LOCATION:	PROJECT No:	SITE PLAN SKETCH—NOT TO SCALE	
Mickleham	1120 0320-1 (SI03)		

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Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
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PH: 0400 413 531
info@ayassociates.com.au

Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 4

Location: Mickleham

Sample No		10	11	12			
Date Tested		04/02/2022	04/02/2022	04/02/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 2	Layer 2	Layer 2			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.91	1.95	1.92			
Field Moisture Content	%	24.1	23.4	23.9			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	4.1	4.9	5.2			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.96	2.01	2.00			
Optimum Moisture Content	%	24.5	24	24.5			
Moisture Ratio	%	98.5	97.5	97.5			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	-0.5 Drier			
Density Ratio	%	97.0	96.0	95.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI04)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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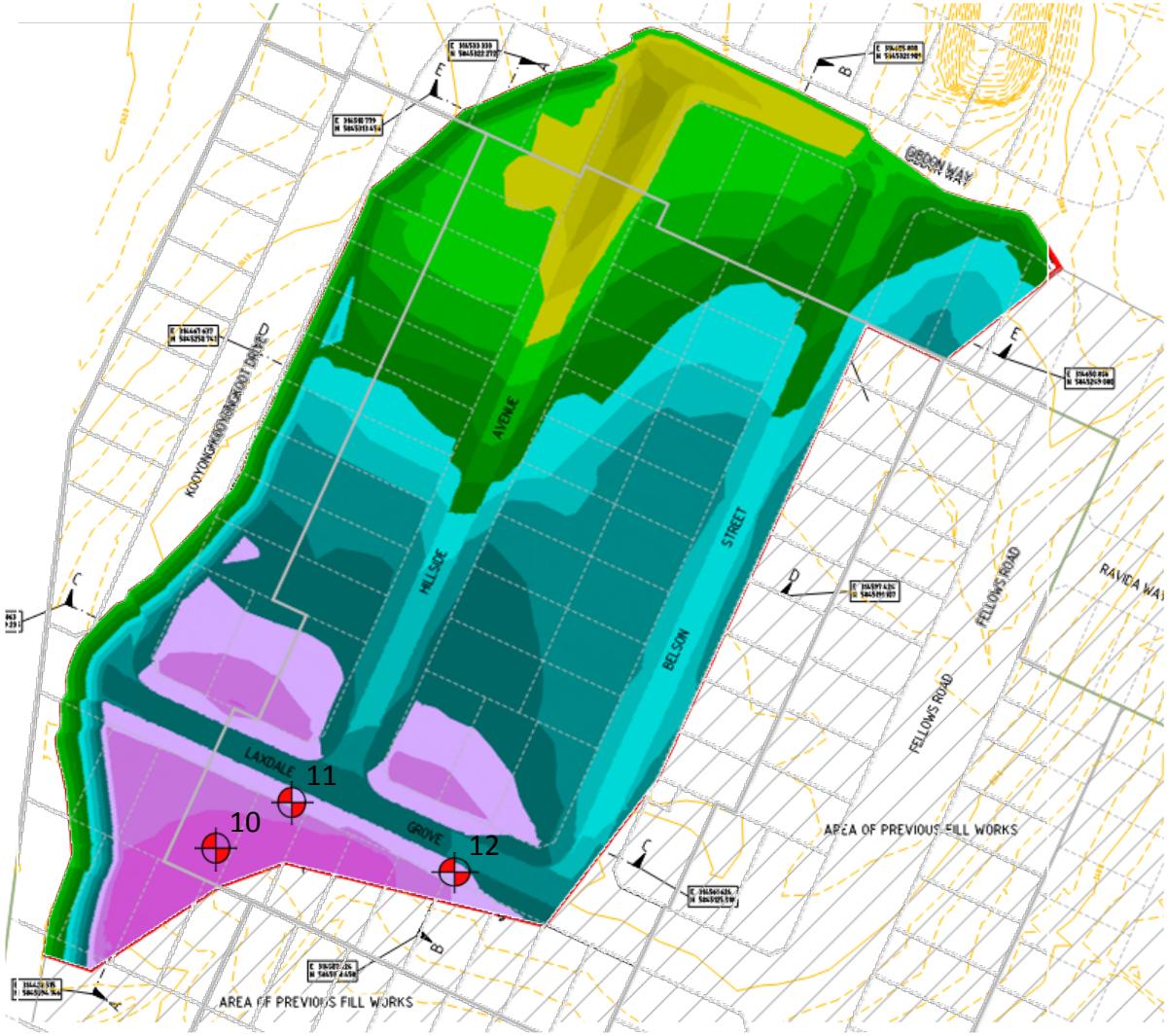
Date: 20/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 04/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI04)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 5

Location: Mickleham

Sample No		13	14	15			
Date Tested		11/02/2022	11/02/2022	11/02/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 2	Layer 2	Layer 2			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.98	1.92	1.91			
Field Moisture Content	%	21.5	23.5	23.9			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	5.3	4.9	4.2			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.03	1.99	1.99			
Optimum Moisture Content	%	22	24	25			
Moisture Ratio	%	98	98	95.5			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	-1.0 Drier			
Density Ratio	%	96.5	96.0	95.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI05)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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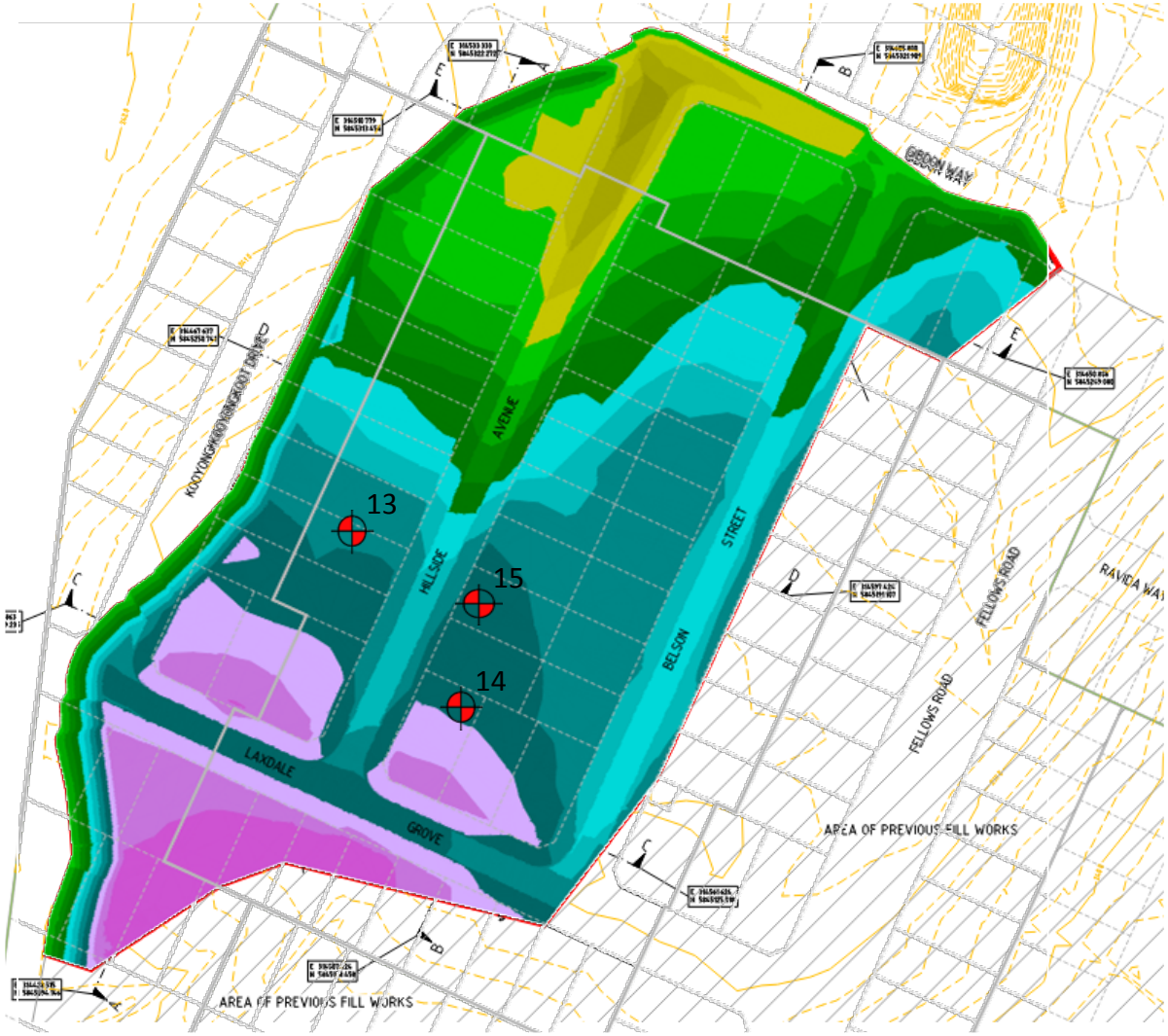
Date: 20/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 05/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI05)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
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info@ayassociates.com.au

Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	6	
Location:	Mickleham					

Sample No		16	17	18			
Date Tested		12/02/2022	12/02/2022	12/02/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 3	Layer 3	Layer 3			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.90	1.94	1.99			
Field Moisture Content	%	21.1	20.8	20.3			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	3.9	4.2	4.9			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.94	2.01	2.07			
Optimum Moisture Content	%	22	21.5	21			
Moisture Ratio	%	96	96.5	96.5			
Moisture Variation from OMC	%	-1.0 Drier	-0.5 Drier	-0.5 Drier			
Density Ratio	%	97.5	96.0	95.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI06)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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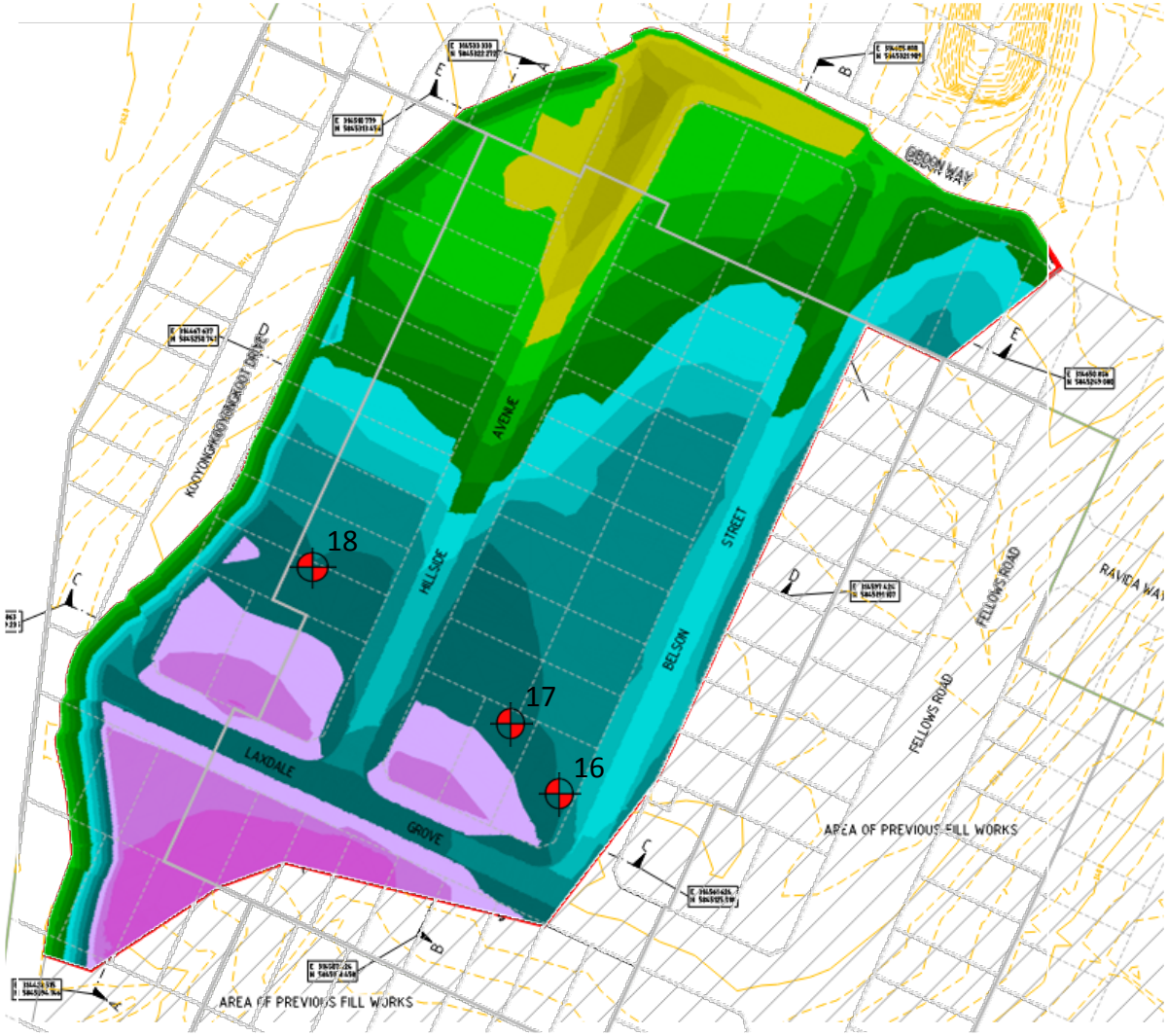
David Burns

Date: 20/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 12/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI06)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	7	
Location:	Mickleham					

Sample No		19	20	21			
Date Tested		14/02/2022	14/02/2022	14/02/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 1	Layer 1	Layer 1			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.94	1.93	1.96			
Field Moisture Content	%	22.1	23.2	21.9			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	4.3	4.0	5.1			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.98	2.00	2.04			
Optimum Moisture Content	%	23	24	22.5			
Moisture Ratio	%	96	96.5	97.5			
Moisture Variation from OMC	%	-1.0 Drier	-0.5 Drier	-0.5 Drier			
Density Ratio	%	97.5	96.0	95.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI07)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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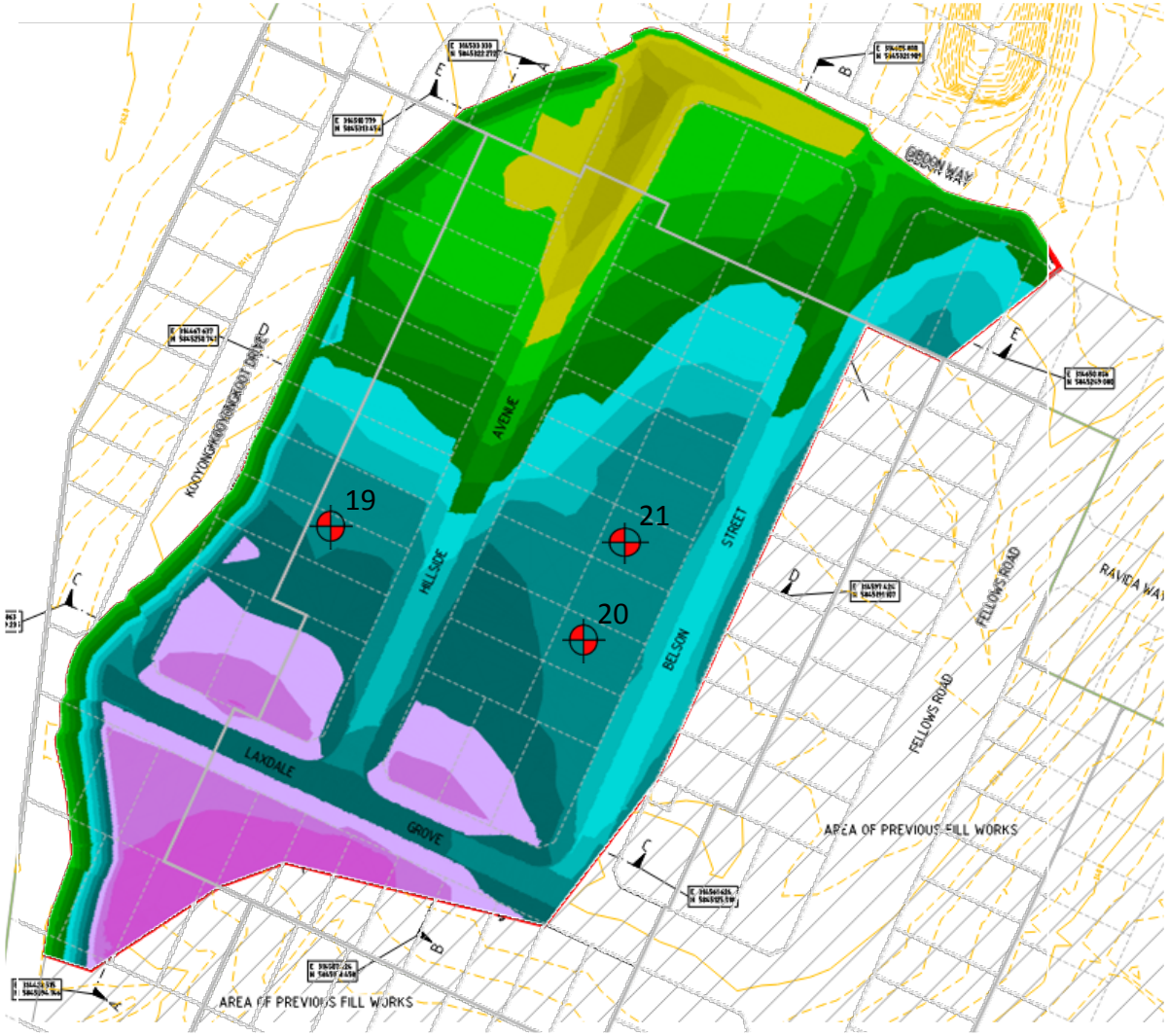
Approved Signatory:

David Burns

Date: 20/04/2022

N

Test Location



PROJECT:	CLIENT:	DATE:
Merrifield - Stage 45	BMD Urban	14/02/2022
LOCATION:	**PROJECT No:**	SITE PLAN SKETCH—NOT TO SCALE
Mickleham	1120 0320-1 (SI07)	

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Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	8	
Location:	Mickleham					

Sample No		22	23	24			
Date Tested		16/02/2022	16/02/2022	16/02/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 2	Layer 2	Layer 2			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.90	1.92	1.88			
Field Moisture Content	%	23.1	22.9	24.3			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	6.1	5.2	5.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.95	1.93	1.89			
Optimum Moisture Content	%	23.5	21	25			
Moisture Ratio	%	98.5	109	97			
Moisture Variation from OMC	%	-0.5 Drier	2.0 Wetter	-1.0 Drier			
Density Ratio	%	96.5	98.5	98.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI08)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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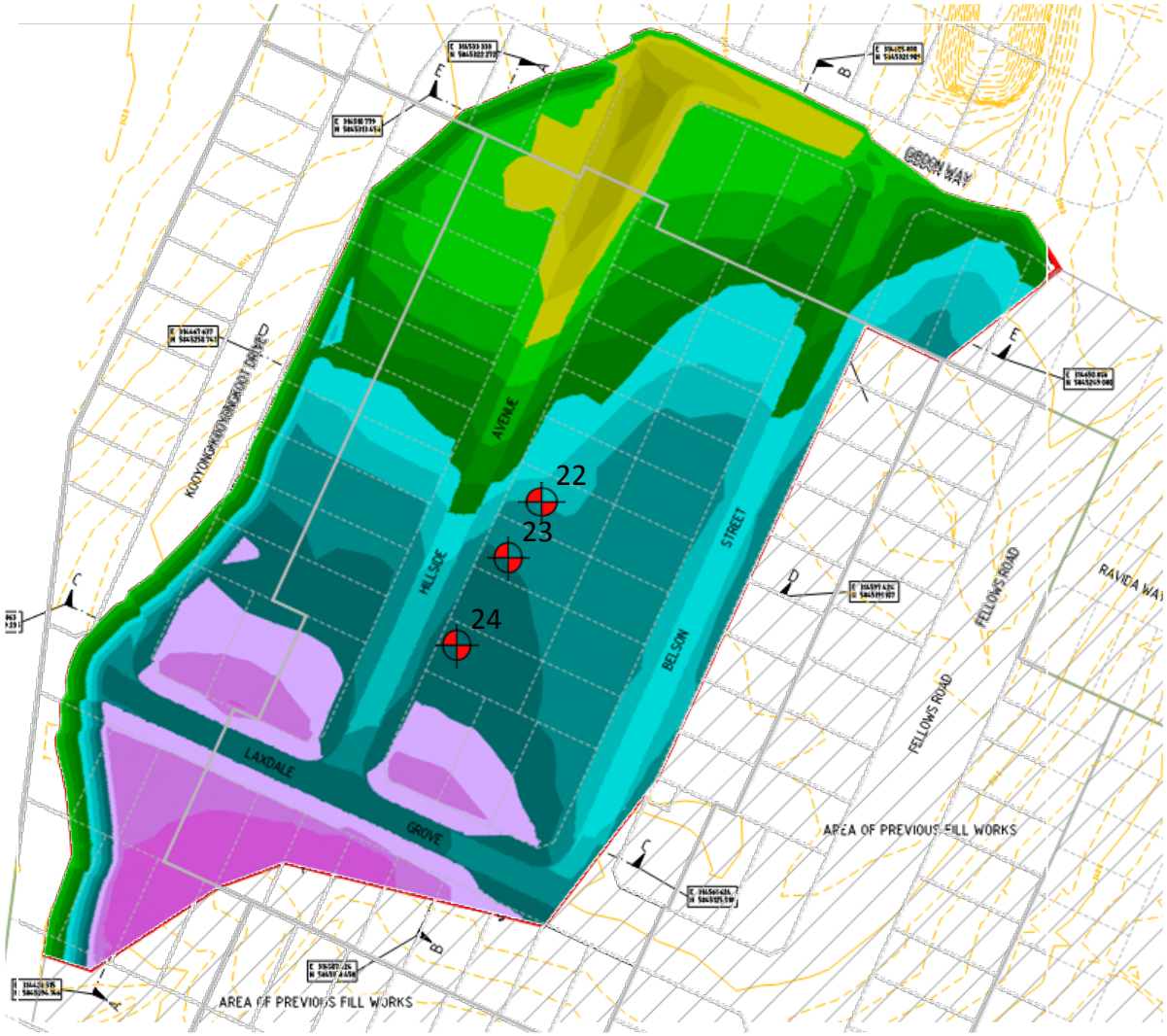
Approved Signatory:

David Burns

Date: 20/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 16/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI08)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	9	
Location:	Mickleham					

Sample No		25	26	27			
Date Tested		18/02/2022	18/02/2022	18/02/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 1	Layer 1	Layer 1			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.92	1.96	2.00			
Field Moisture Content	%	18.5	18.2	17.2			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	4.4	5.7	5.9			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.94	1.99	2.01			
Optimum Moisture Content	%	17	18.5	18			
Moisture Ratio	%	109	98.5	95.5			
Moisture Variation from OMC	%	1.5 Wetter	0.0 OMC	-0.5 Drier			
Density Ratio	%	98.5	97.5	99.0			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI09)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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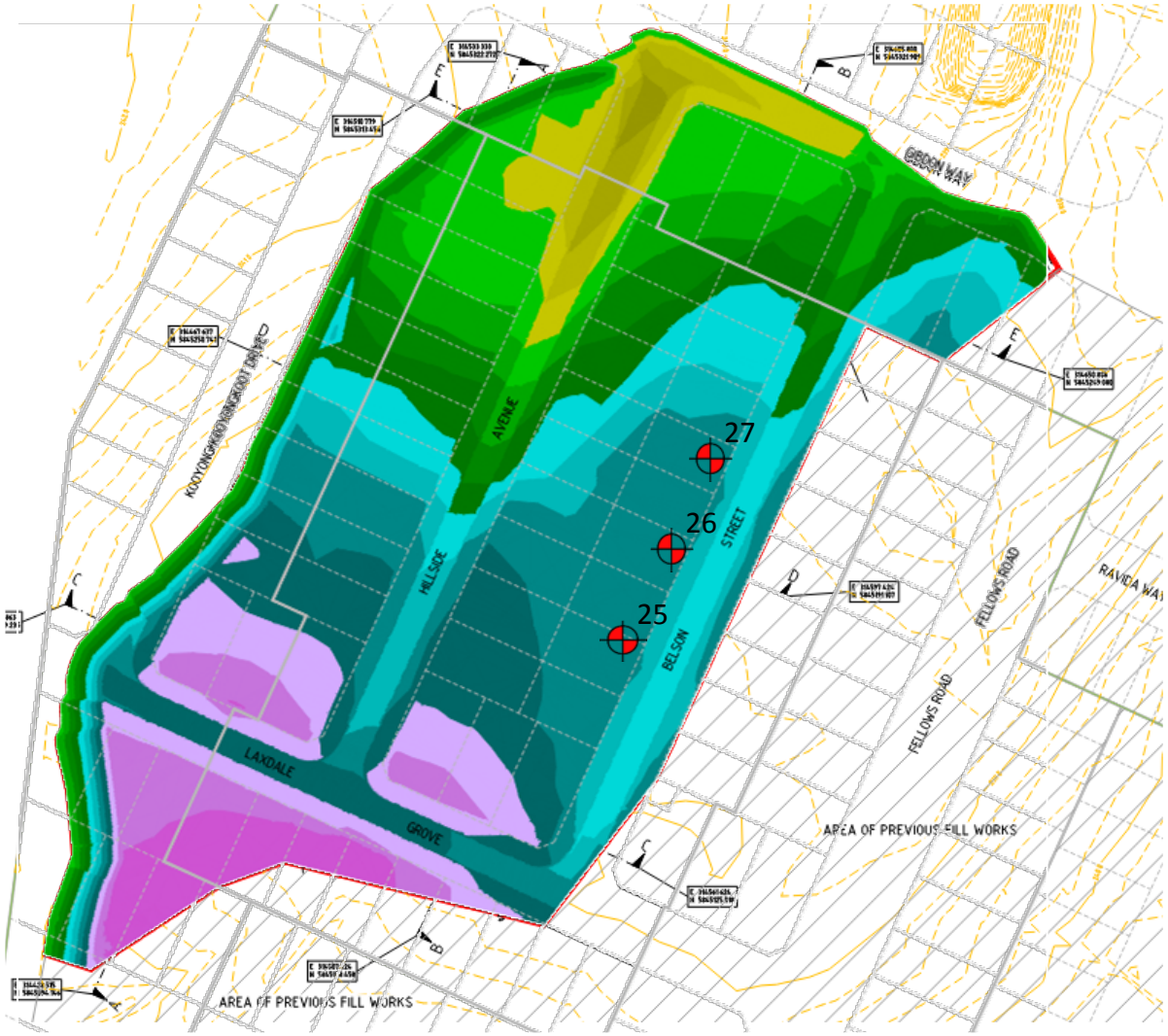
Approved Signatory:

David Burns

Date: 20/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 18/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI09)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 10

Location: Mickleham

Sample No		28	29	30			
Date Tested		21/02/2022	21/02/2022	21/02/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 3	Layer 3	Layer 3			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	2.00	1.83	1.85			
Field Moisture Content	%	19.4	21.7	21.0			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	4.3	3.1	2.8			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.02	1.90	1.87			
Optimum Moisture Content	%	19.5	20	22.5			
Moisture Ratio	%	99.5	108.5	93.5			
Moisture Variation from OMC	%	0.0 OMC	1.5 Wetter	-1.5 Drier			
Density Ratio	%	98.5	96.0	98.0			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI10)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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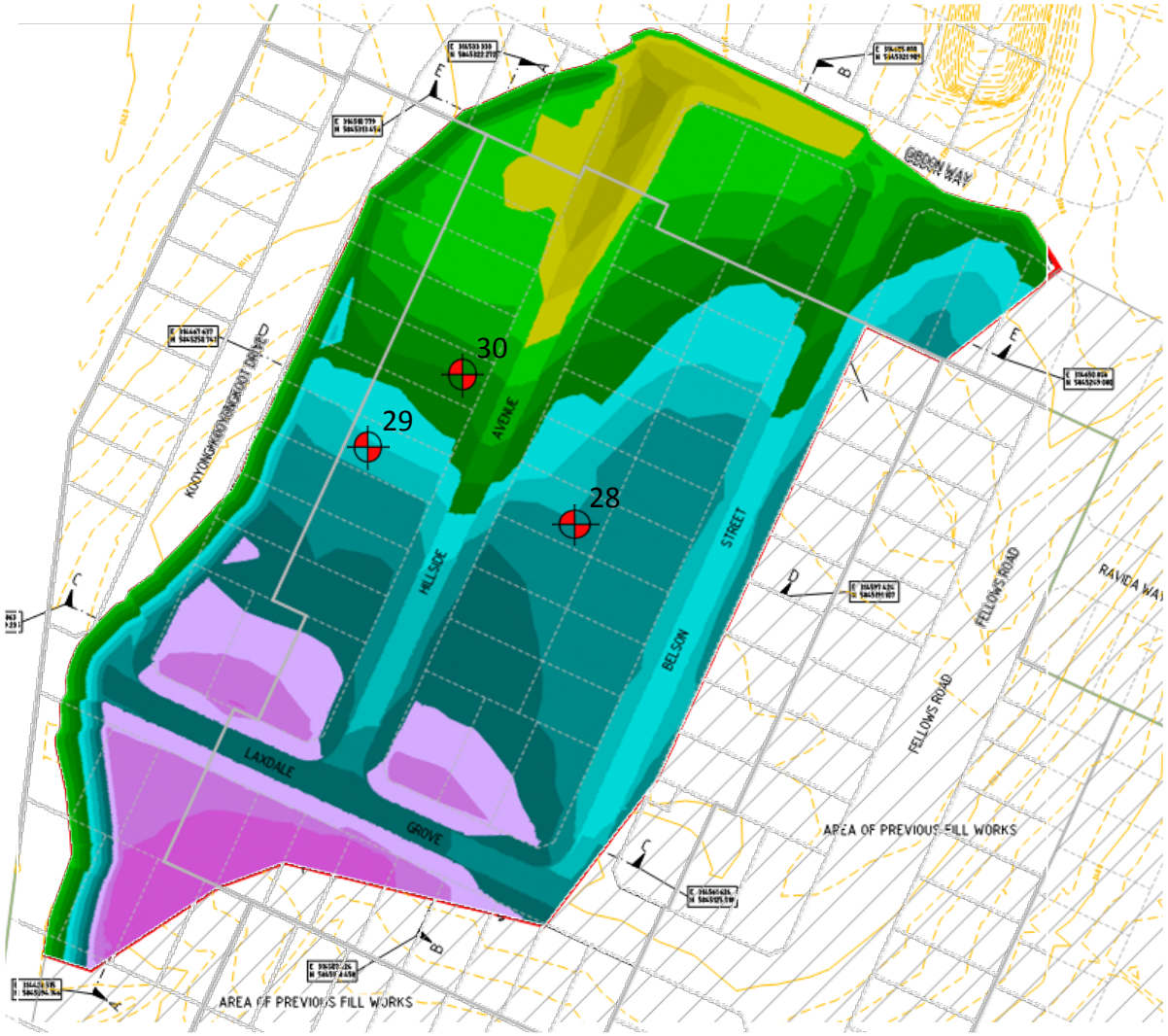
Date: 20/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 21/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI10)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	11	
Location:	Mickleham					

Sample No		31	32	33			
Date Tested		22/02/2022	22/02/2022	22/02/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 4	Layer 4	Layer 4			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.97	1.91	1.95			
Field Moisture Content	%	19.9	20.0	20.8			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	3.5	3.8	4.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.07	1.98	2.03			
Optimum Moisture Content	%	18	18	21.5			
Moisture Ratio	%	110.5	111	97			
Moisture Variation from OMC	%	2.0 Wetter	2.0 Wetter	-0.5 Drier			
Density Ratio	%	95.0	96.0	95.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI11)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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Approved Signatory:

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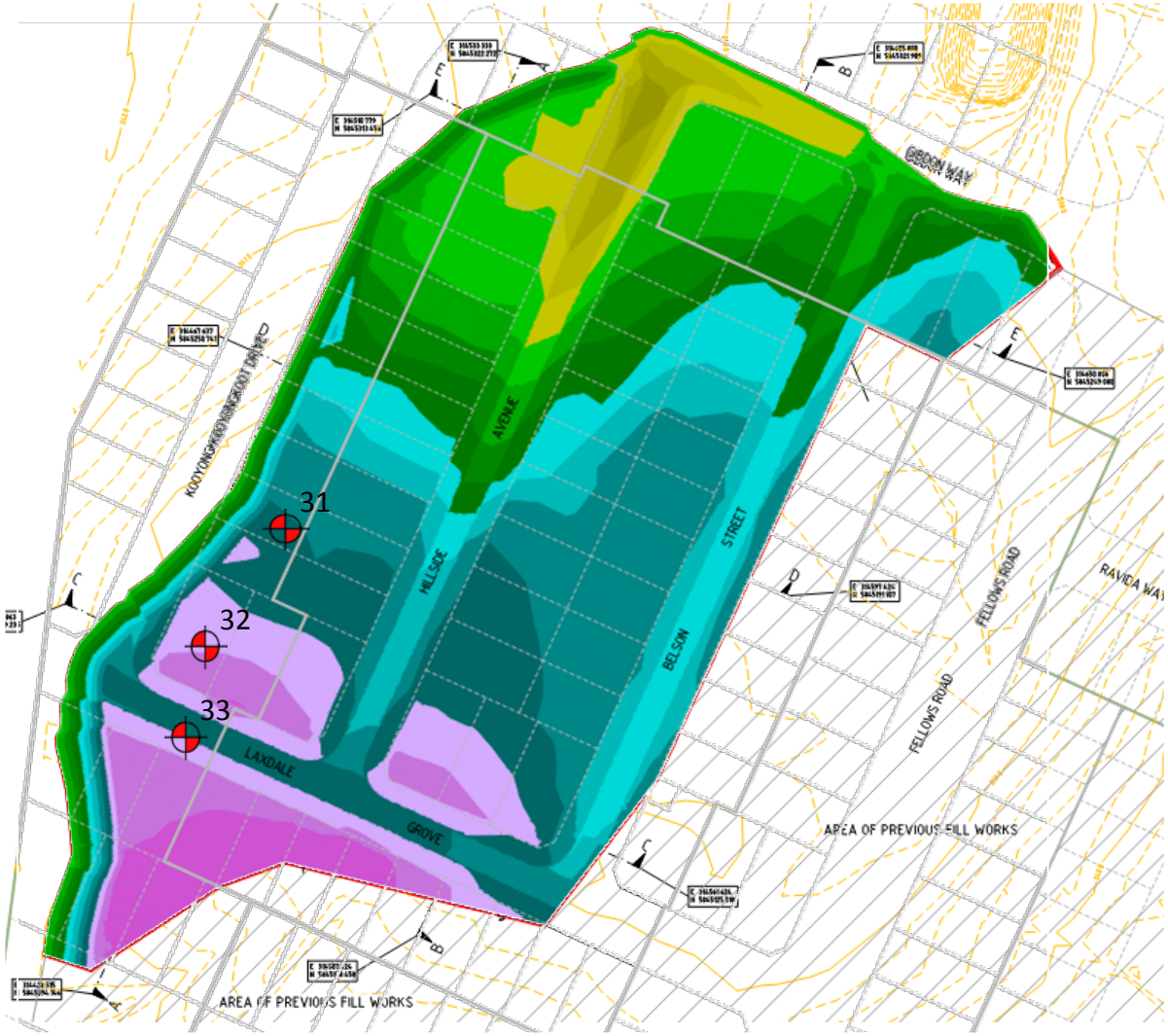
Date: 20/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 22/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI11)	**SITE PLAN SKETCH—NOT TO SCALE**	

A&Y ASSOCIATES
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Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
5/16 Network Drive
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PH: 0400 413 531
info@ayassociates.com.au

Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	12	
Location:	Mickleham					

Sample No		34	35	36			
Date Tested		23/02/2022	23/02/2022	23/02/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 3	Layer 3	Layer 3			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.95	1.87	1.89			
Field Moisture Content	%	20.0	21.8	21.3			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	4.5	3.5	3.8			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.94	1.94	1.96			
Optimum Moisture Content	%	21.5	22.5	21.5			
Moisture Ratio	%	93	97	99			
Moisture Variation from OMC	%	-1.5 Drier	-0.5 Drier	-0.5 Drier			
Density Ratio	%	100.0	96.0	95.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI12)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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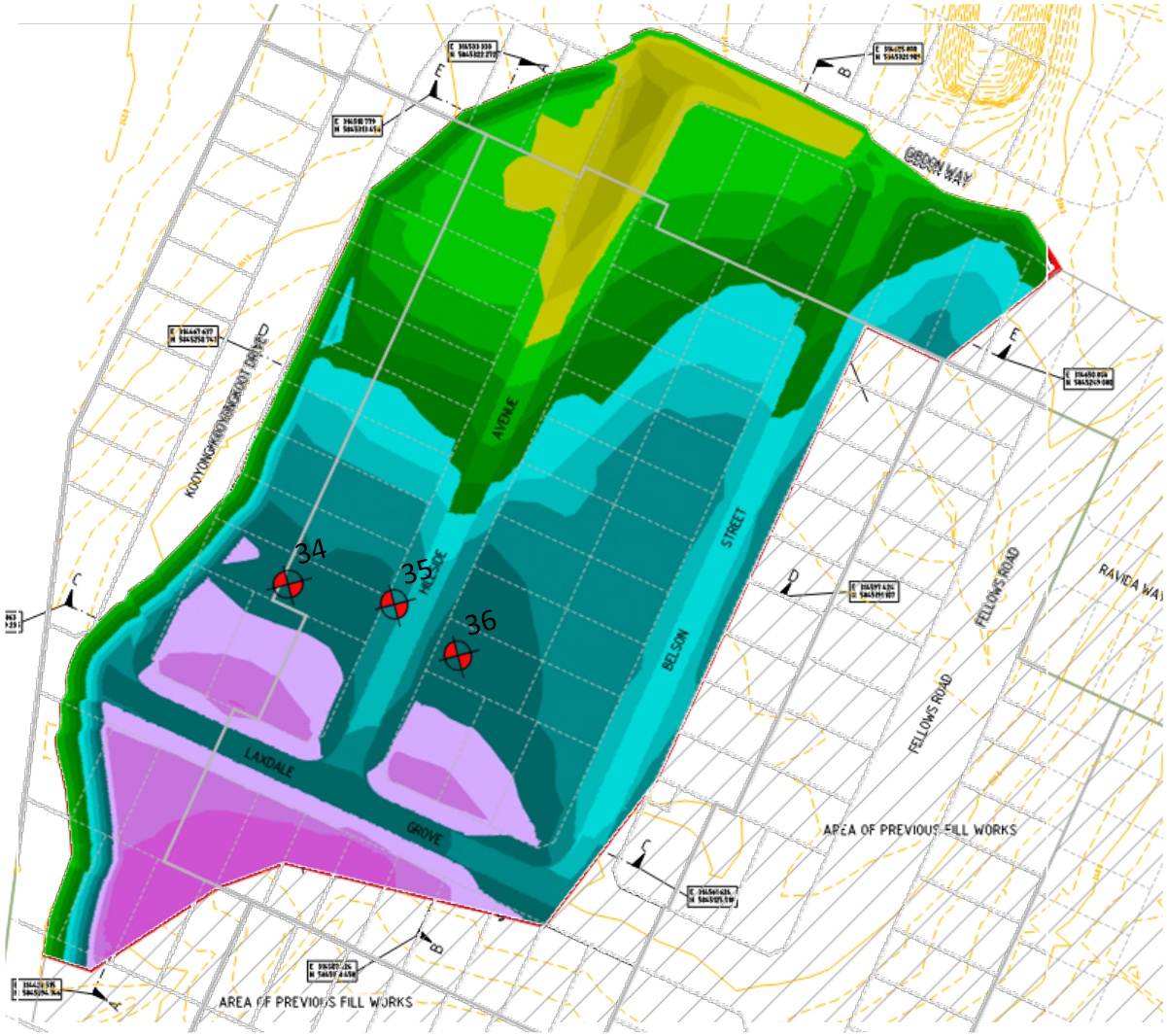
Approved Signatory:

David Burns

Date: 20/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 23/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI12)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 13

Location: Mickleham

Sample No		37	38	39			
Date Tested		24/02/2022	24/02/2022	24/02/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 3	Layer 3	Layer 3			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.95	1.89	1.97			
Field Moisture Content	%	23.0	24.3	22.8			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	5.1	4.6	5.8			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.96	1.96	2.05			
Optimum Moisture Content	%	24	25	23			
Moisture Ratio	%	96	97	99			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	-0.5 Drier			
Density Ratio	%	98.5	96.0	95.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI13)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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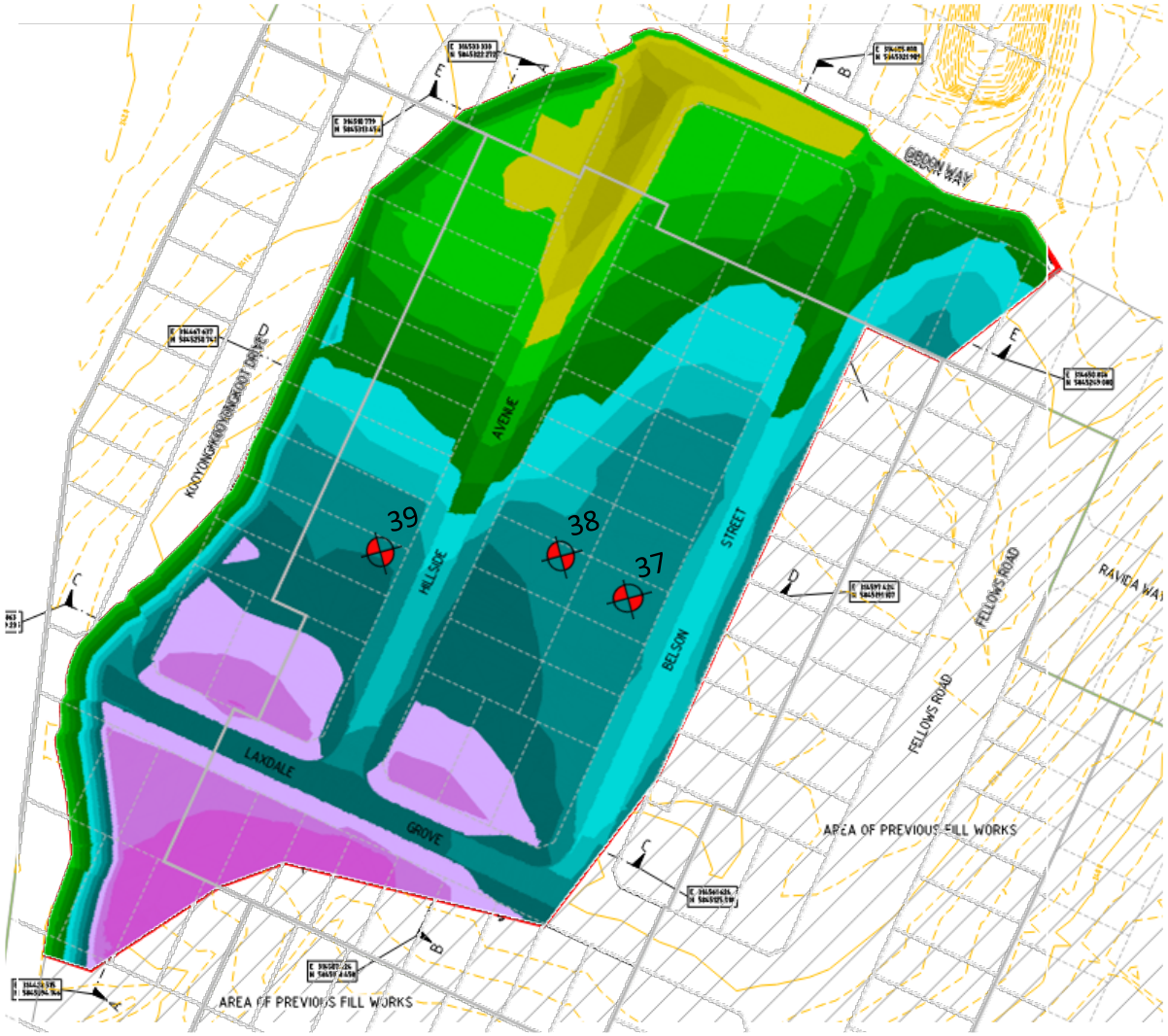
Approved Signatory:

David Burns

Date: 21/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 24/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI13)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban				**Job No:**	BMD2180
Project:	Merrifield Estate - Stage 45 (Level 1)				**Report:**	14
Location:	Mickleham					

Sample No		40	41	42			
Date Tested		25/02/2022	25/02/2022	25/02/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 5	Layer 5	Layer 5			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.87	1.85	1.83			
Field Moisture Content	%	24.3	26.1	24.8			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	4.3	4.5	4.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.93	1.85	1.89			
Optimum Moisture Content	%	25	27	25.5			
Moisture Ratio	%	97	96.5	97.5			
Moisture Variation from OMC	%	-1.0 Drier	-0.5 Drier	-1.0 Drier			
Density Ratio	%	96.5	99.0	96.0			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI14)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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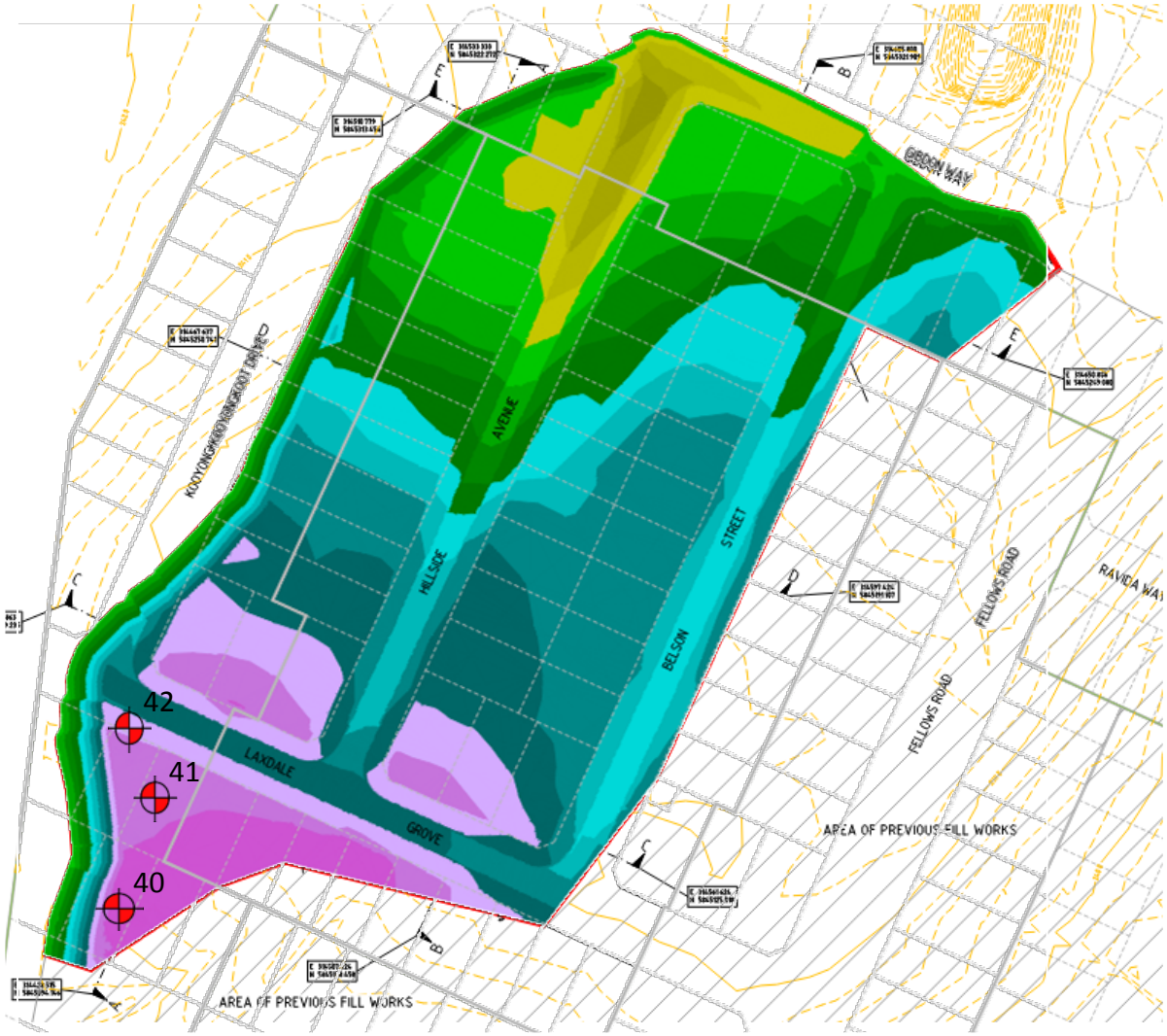
Approved Signatory:

David Burns

Date: 21/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 25/02/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI14)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	15	
Location:	Mickleham					

Sample No		43	44	45			
Date Tested		03/03/2022	03/03/2022	03/03/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 1	Layer 1	Layer 1			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.99	1.98	1.98			
Field Moisture Content	%	20.8	21.0	20.3			
Material:		Imported and Site Derived Clay Fill	Imported and Site Derived Clay Fill	Imported and Site Derived Clay Fill			
Oversize Material	WET, %	4.8	4.3	5.3			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.05	2.05	2.00			
Optimum Moisture Content	%	21.5	21.5	21			
Moisture Ratio	%	97	97.5	96.5			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	-0.5 Drier			
Density Ratio	%	96.5	96.0	98.0			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI15)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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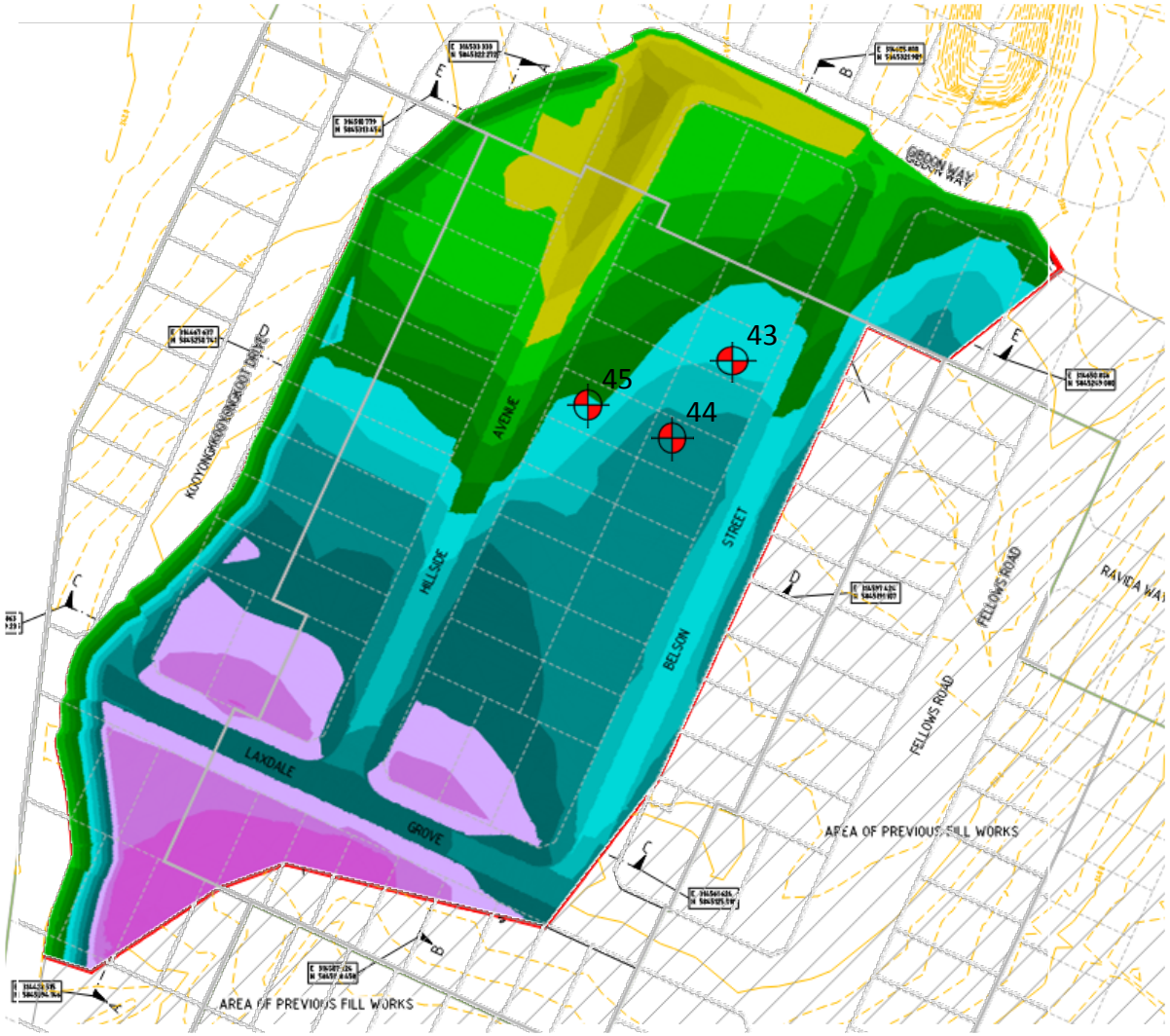
Approved Signatory:

David Burns

Date: 21/04/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 03/03/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI15)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	16	
Location:	Mickleham					

Sample No		46	47	48			
Date Tested		05/07/2022	05/07/2022	05/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 1	Layer 1	Layer 1			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.85	1.81	1.87			
Field Moisture Content	%	24.1	26.3	24.0			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	3.1	3.9	3.5			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.88	1.83	1.93			
Optimum Moisture Content	%	22.5	24.5	22.5			
Moisture Ratio	%	107	107.5	106.5			
Moisture Variation from OMC	%	2.0 Wetter	1.5 Wetter	1.5 Wetter			
Density Ratio	%	98.0	98.0	96.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI16)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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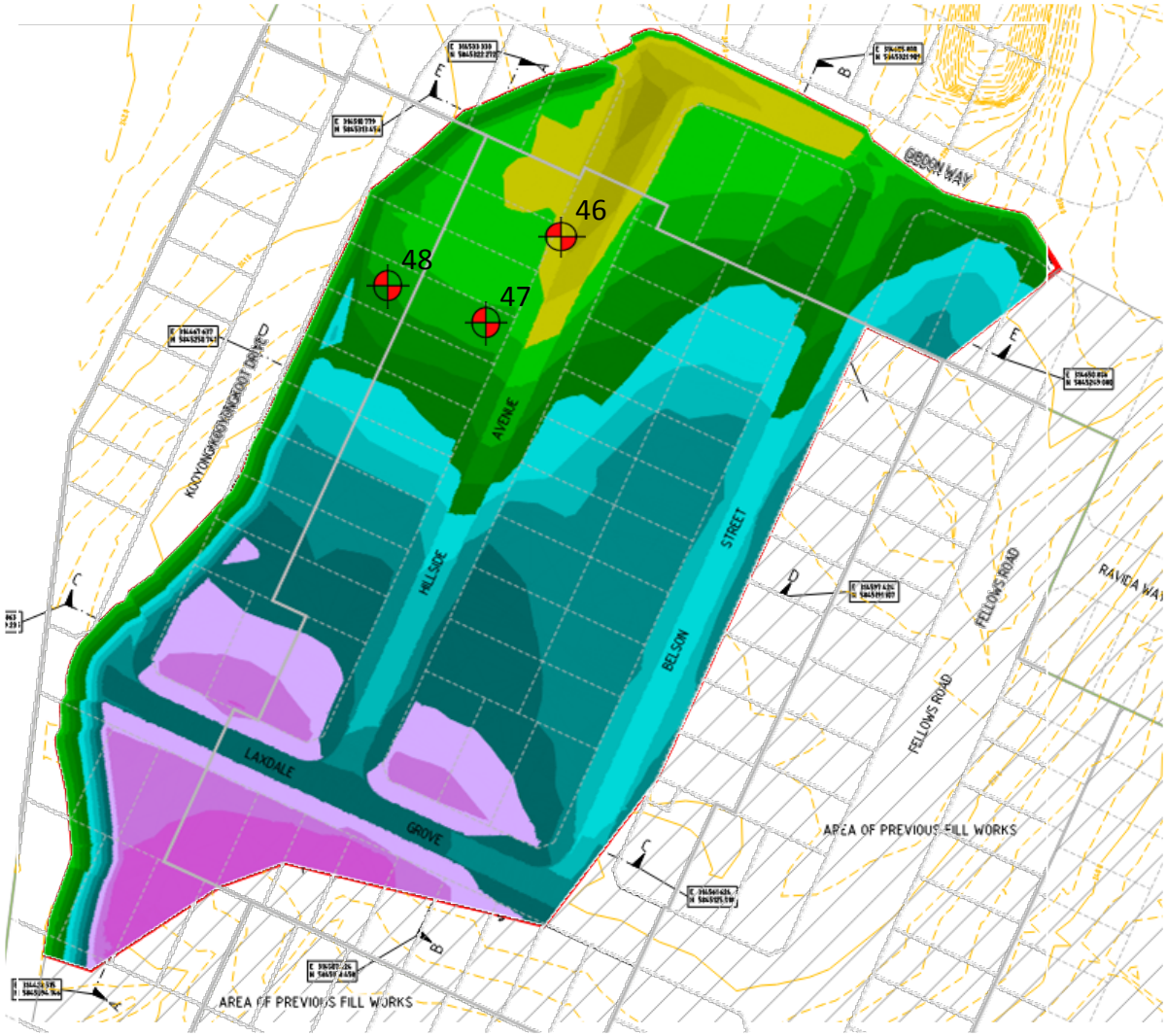
Approved Signatory:

David Burns

Date: 29/07/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 05/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI16)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 17

Location: Mickleham

Sample No		49	50	51			
Date Tested		06/07/2022	06/07/2022	06/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 4	Layer 4	Layer 4			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.85	1.83	1.82			
Field Moisture Content	%	23.5	24.1	24.5			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	1.5	2.8	2.8			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.88	1.87	1.86			
Optimum Moisture Content	%	21.5	22	25.5			
Moisture Ratio	%	109.5	109.5	96			
Moisture Variation from OMC	%	2.0 Wetter	2.0 Wetter	-0.5 Drier			
Density Ratio	%	98.0	97.5	97.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI17)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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Approved Signatory: David Burns

Date: 29/07/2022

PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 06/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI17)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 18

Location: Mickleham

Sample No		52	53	54			
Date Tested		07/07/2022	07/07/2022	07/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 4	Layer 4	Layer 4			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.91	1.85	1.83			
Field Moisture Content	%	23.5	24.8	25.2			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	3.8	2.0	1.3			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.94	1.87	1.89			
Optimum Moisture Content	%	24.5	25	23.5			
Moisture Ratio	%	96	99	107			
Moisture Variation from OMC	%	-1.0 Drier	-0.5 Drier	2.0 Wetter			
Density Ratio	%	97.5	98.5	96.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI18)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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Date: 29/07/2022

PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 07/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI18)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	19	
Location:	Mickleham					

Sample No		55	56	57			
Date Tested		08/07/2022	08/07/2022	08/07/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 4	Layer 4	Layer 4			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.81	1.82	1.87			
Field Moisture Content	%	26.6	24.4	25.6			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	1.5	2.5	3.2			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.84	1.85	1.92			
Optimum Moisture Content	%	25	25.5	23.5			
Moisture Ratio	%	106.5	95.5	109			
Moisture Variation from OMC	%	1.5 Wetter	-1.0 Drier	2.0 Wetter			
Density Ratio	%	98.0	98.0	96.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI19)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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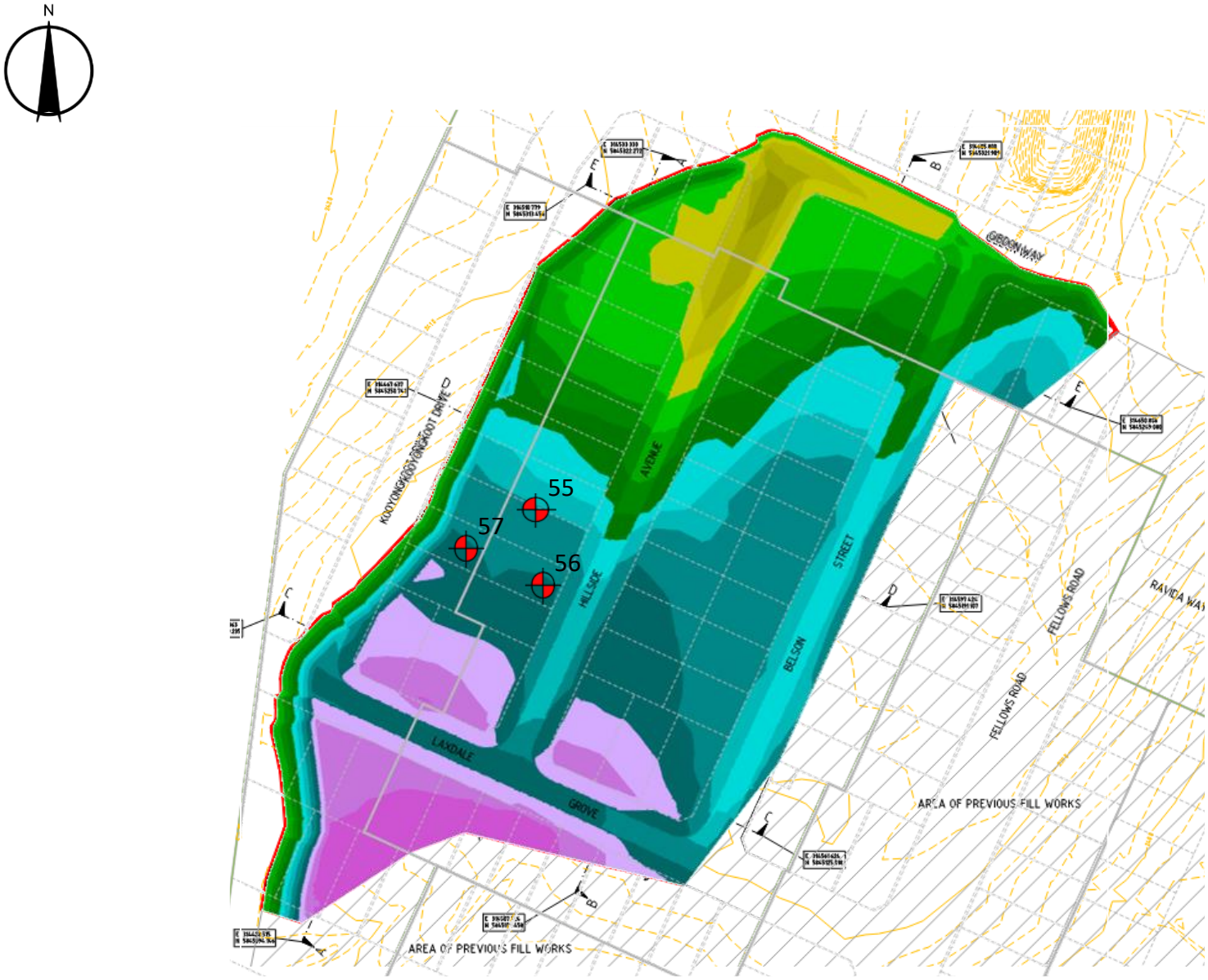
David Burns

Date: 29/07/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 8/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI19)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	20	
Location:	Mickleham					

Sample No		58	59	60			
Date Tested		12/07/2022	12/07/2022	12/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 6	Layer 6	Layer 6			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.88	1.81	1.84			
Field Moisture Content	%	24.2	25.3	24.0			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	2.7	2.3	1.9			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.91	1.84	1.88			
Optimum Moisture Content	%	22	23.5	25			
Moisture Ratio	%	110	107.5	96			
Moisture Variation from OMC	%	2.0 Wetter	2.0 Wetter	-1.0 Drier			
Density Ratio	%	98.0	98.5	97.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI20)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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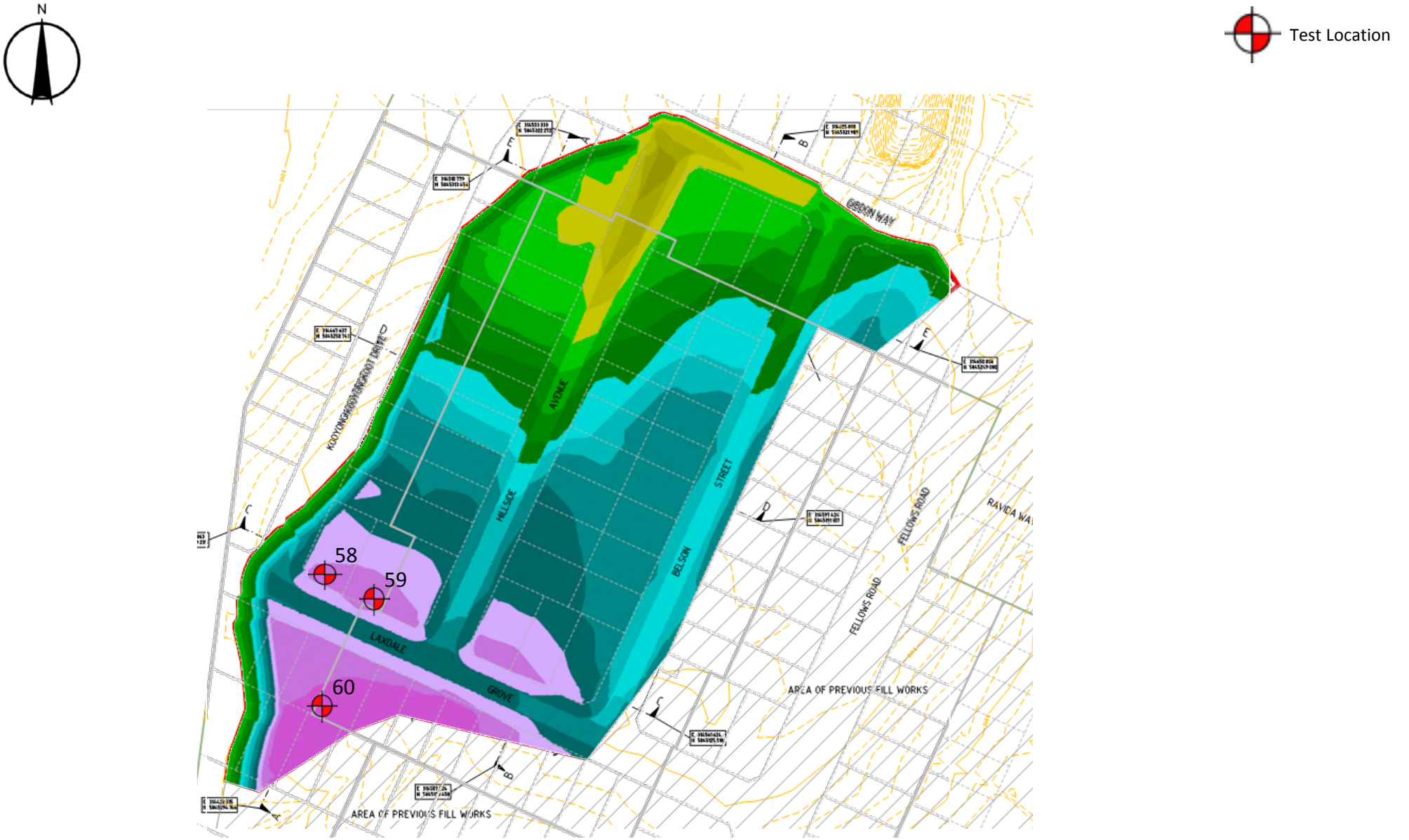
Approved Signatory:

David Burns

Date: 29/07/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 12/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI20)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
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info@ayassociates.com.au

Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 21

Location: Mickleham

Sample No		61	62	63			
Date Tested		13/07/2022	13/07/2022	13/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 5	Layer 5	Layer 5			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.89	1.85	1.87			
Field Moisture Content	%	24.9	26.1	25.3			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	1.5	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.92	1.88	1.90			
Optimum Moisture Content	%	23	24.5	25.5			
Moisture Ratio	%	108	106.5	99			
Moisture Variation from OMC	%	2.0 Wetter	1.5 Wetter	-0.5 Drier			
Density Ratio	%	98.5	98.0	98.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI21)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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NATA Accredited Laboratory No. 20172

Accreditation for compliance with ISO/IEC 17025 - Testing

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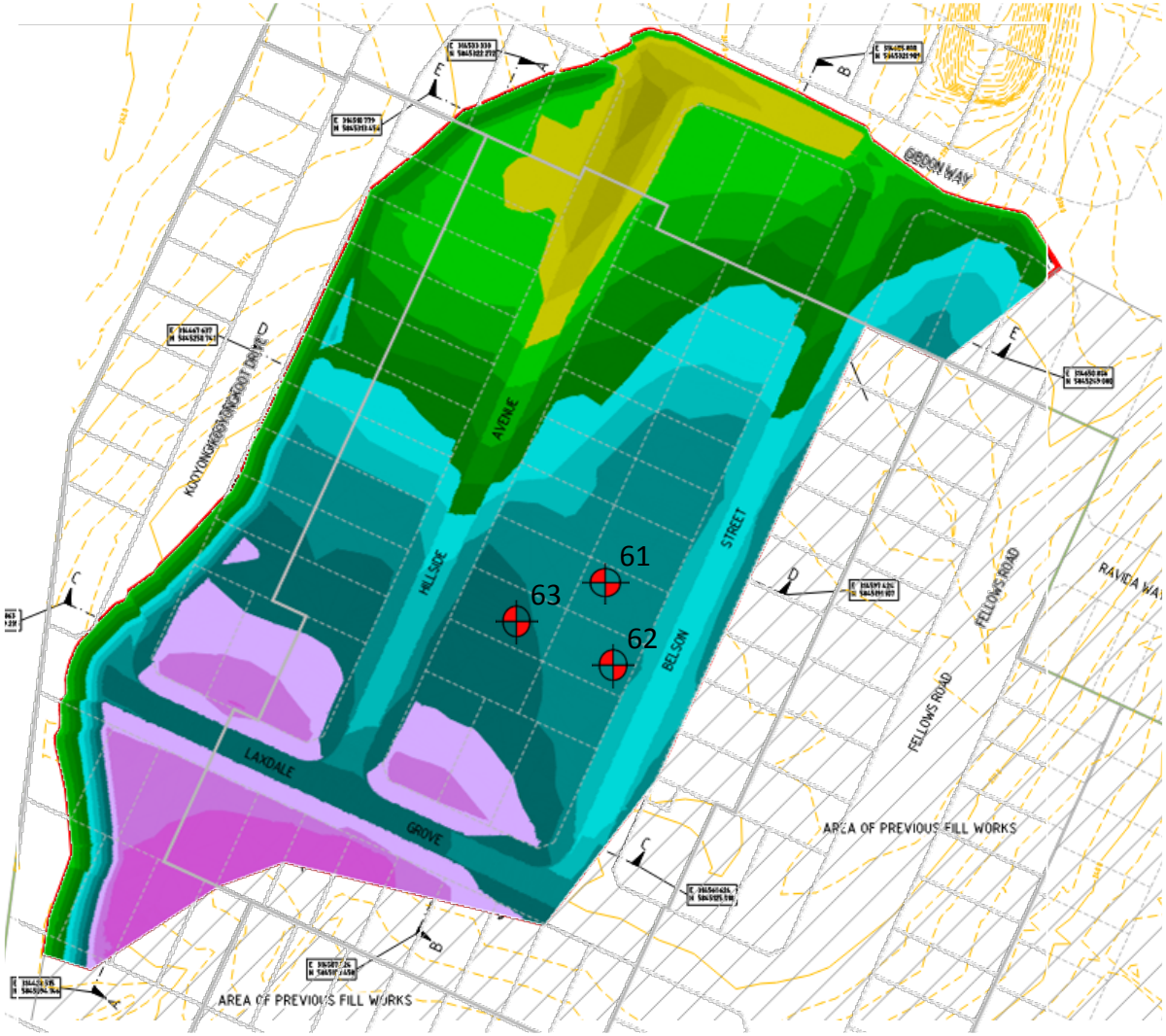
Approved Signatory:

David Burns

Date: 29/07/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 13/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI21)	SITE PLAN SKETCH—NOT TO SCALE	

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
5/16 Network Drive
Truganina VIC 3029
PH: 0400 413 531
info@ayassociates.com.au

Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 22

Location: Mickleham

Sample No		64	65	66			
Date Tested		14/07/2022	14/07/2022	14/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 5	Layer 5	Layer 5			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.91	1.91	1.85			
Field Moisture Content	%	23.5	24.1	24.5			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	3.5	4.2	2.8			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.94	1.95	1.88			
Optimum Moisture Content	%	24.5	22.5	23			
Moisture Ratio	%	96	107	106.5			
Moisture Variation from OMC	%	-0.5 Drier	1.5 Wetter	1.5 Wetter			
Density Ratio	%	98.0	97.5	97.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI22)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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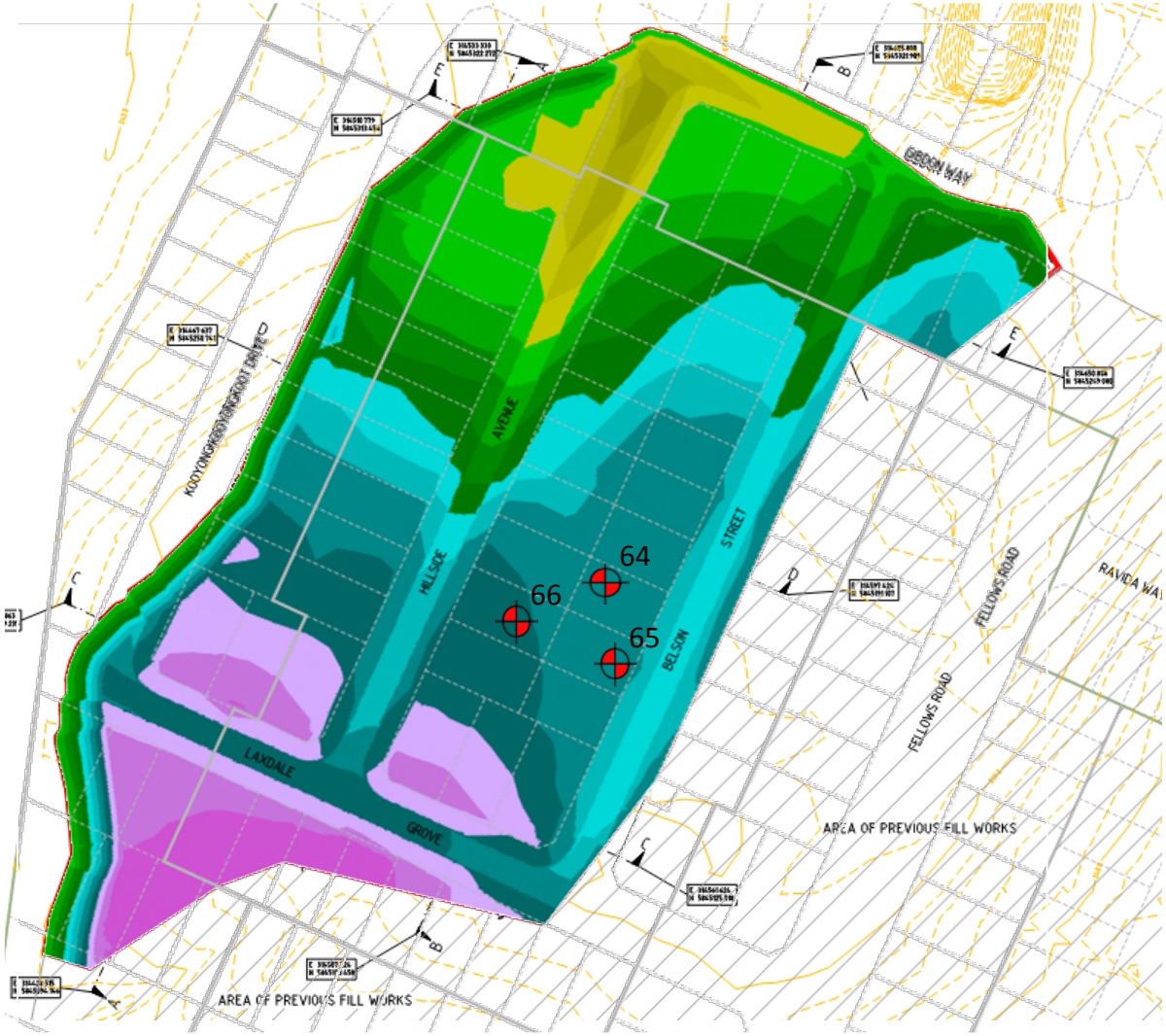
Approved Signatory:

David Burns

Date: 29/07/2022

N

Test Location



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 14/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI22)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
5/16 Network Drive
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PH: 0400 413 531
info@ayassociates.com.au

Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	23	
Location:	Mickleham					

Sample No		67	68	69			
Date Tested		15/07/2022	15/07/2022	15/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 3	Layer 3	Layer 3			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.83	1.94	1.92			
Field Moisture Content	%	23.5	24.1	24.5			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	1.5	3.4	3.1			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.86	2.00	1.94			
Optimum Moisture Content	%	22	22	25			
Moisture Ratio	%	107	109.5	98			
Moisture Variation from OMC	%	1.5 Wetter	2.0 Wetter	-0.5 Drier			
Density Ratio	%	98.0	96.5	98.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI23)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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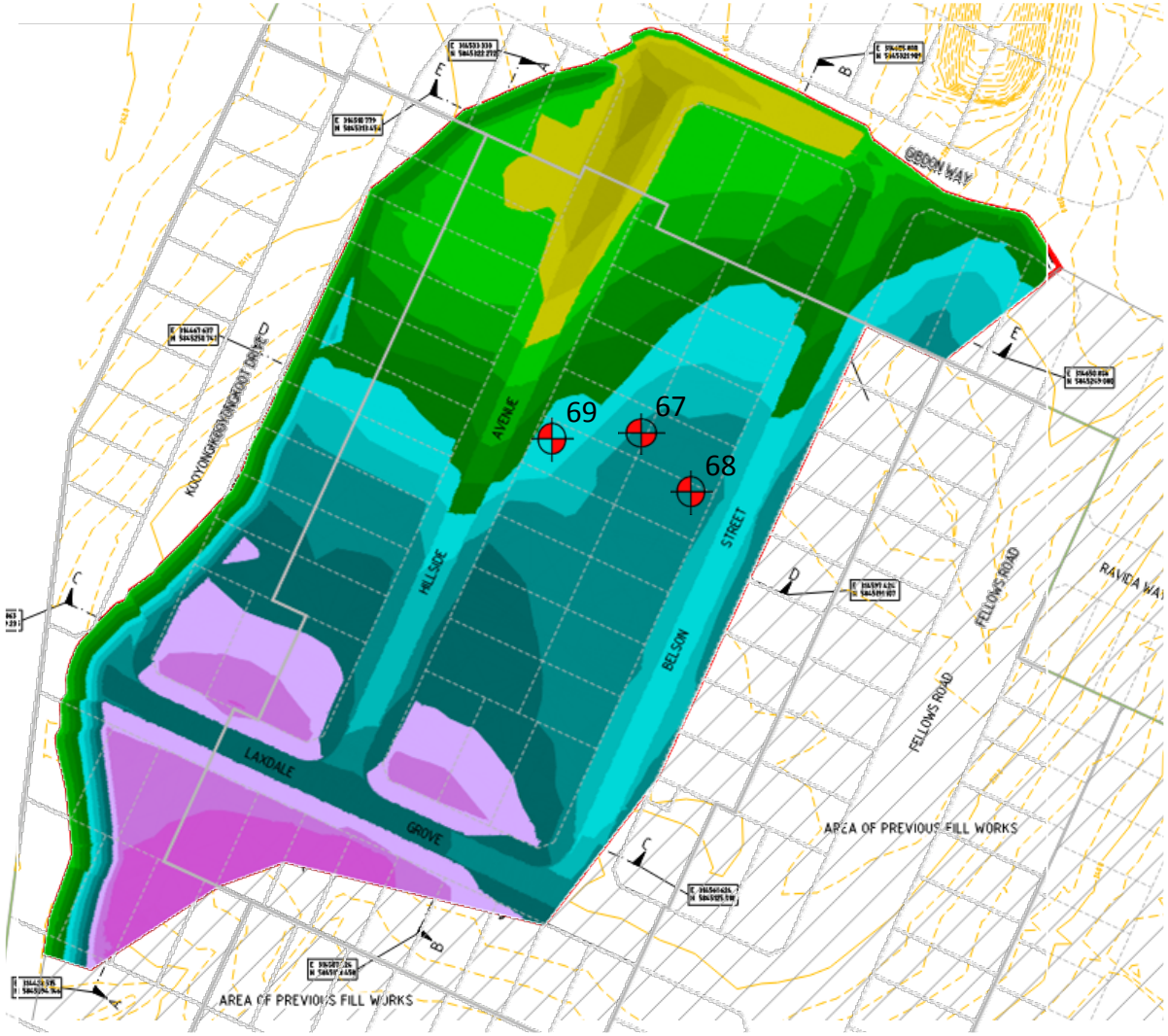
David Burns

Date: 29/07/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 15/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI23)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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info@ayassociates.com.au

Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 24

Location: Mickleham

Sample No		70	71	72			
Date Tested		16/07/2022	16/07/2022	16/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 2	Layer 2	Layer 2			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.91	1.91	1.83			
Field Moisture Content	%	21.4	22.8	23.4			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	3.1	2.8	2.5			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.94	1.97	1.89			
Optimum Moisture Content	%	22	23.5	21.5			
Moisture Ratio	%	97.5	97	109			
Moisture Variation from OMC	%	-0.5 Drier	-1.0 Drier	1.5 Wetter			
Density Ratio	%	98.0	96.5	96.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI24)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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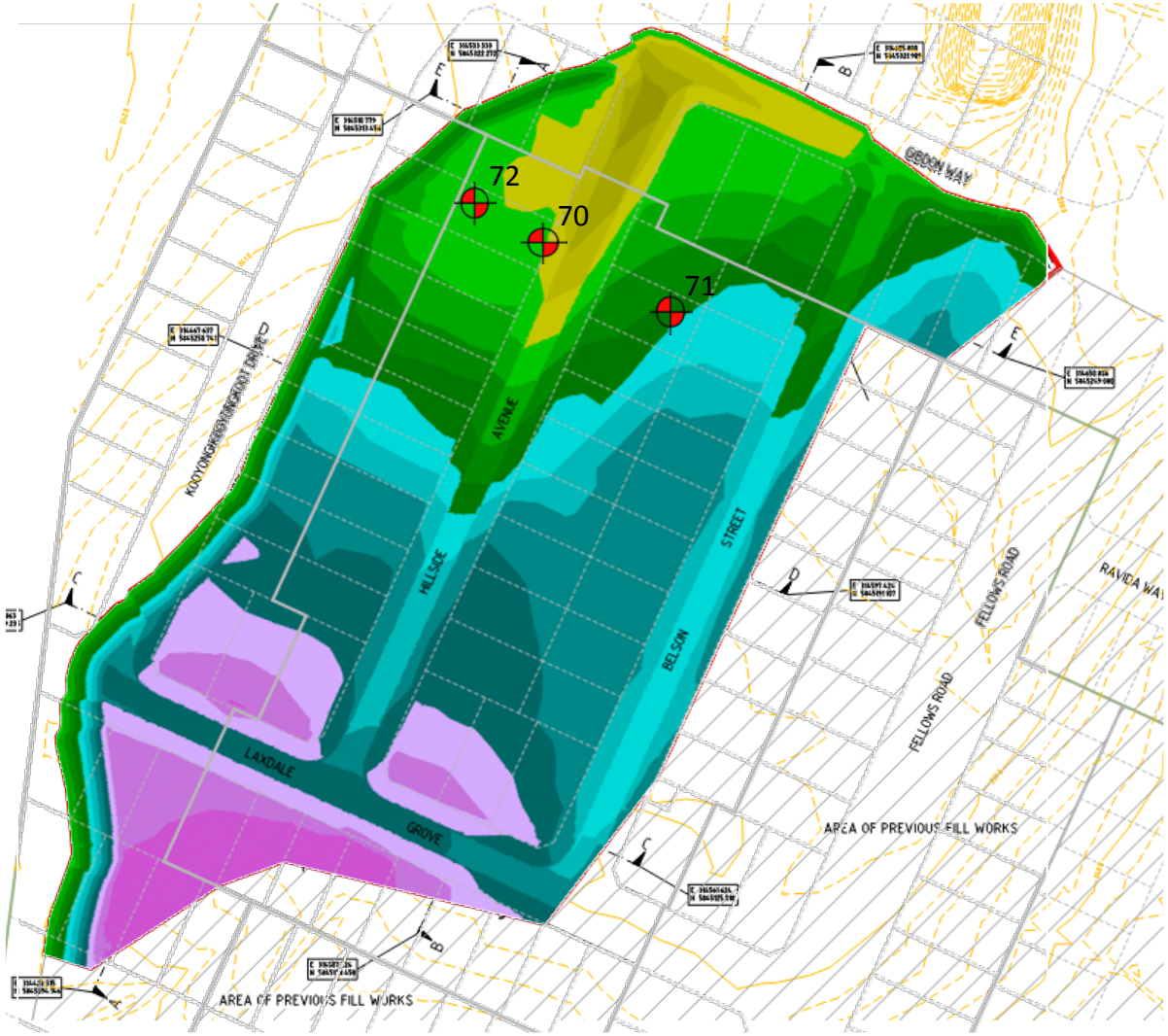
Approved Signatory: David Burns

Date: 29/07/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 16/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI24)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	25	
Location:	Mickleham					

Sample No		73	74	75			
Date Tested		18/07/2022	18/07/2022	18/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 1	Layer 1	Layer 1			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.81	1.91	1.82			
Field Moisture Content	%	24.3	23.5	25.1			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	2.5	2.9	3.8			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.84	1.96	1.87			
Optimum Moisture Content	%	22.5	24	26			
Moisture Ratio	%	108	98	96.5			
Moisture Variation from OMC	%	2.0 Wetter	-0.5 Drier	-1.0 Drier			
Density Ratio	%	98.0	97.0	97.0			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI25)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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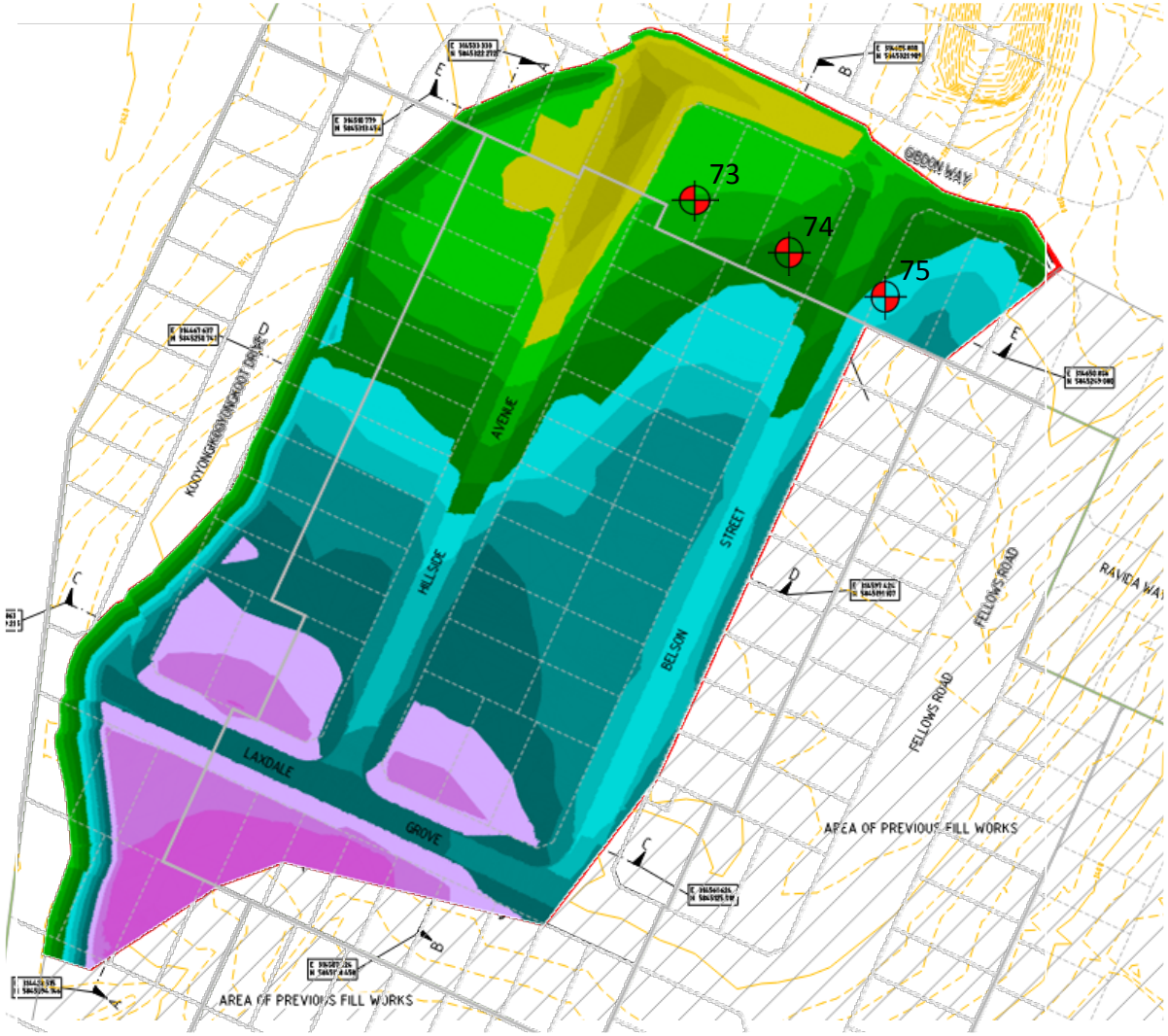
Approved Signatory:

David Burns

Date: 29/07/2022

N

Test Location



PROJECT:	CLIENT:	DATE:	
Merrifield - Stage 45	BMD Urban	18/07/2022	
LOCATION:	PROJECT No:	SITE PLAN SKETCH—NOT TO SCALE	
Mickleham	1120 0320-1 (SI25)		

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Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	26	
Location:	Mickleham					

Sample No		76	77	78			
Date Tested		19/07/2022	19/07/2022	19/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 5	Layer 5	Layer 5			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.84	1.84	1.88			
Field Moisture Content	%	26.3	27.4	25.9			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	2.1	2.0	2.8			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.87	1.87	1.92			
Optimum Moisture Content	%	24.5	25.5	26.5			
Moisture Ratio	%	107.5	107.5	98			
Moisture Variation from OMC	%	2.0 Wetter	2.0 Wetter	-0.5 Drier			
Density Ratio	%	98.0	98.0	98.0			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI26)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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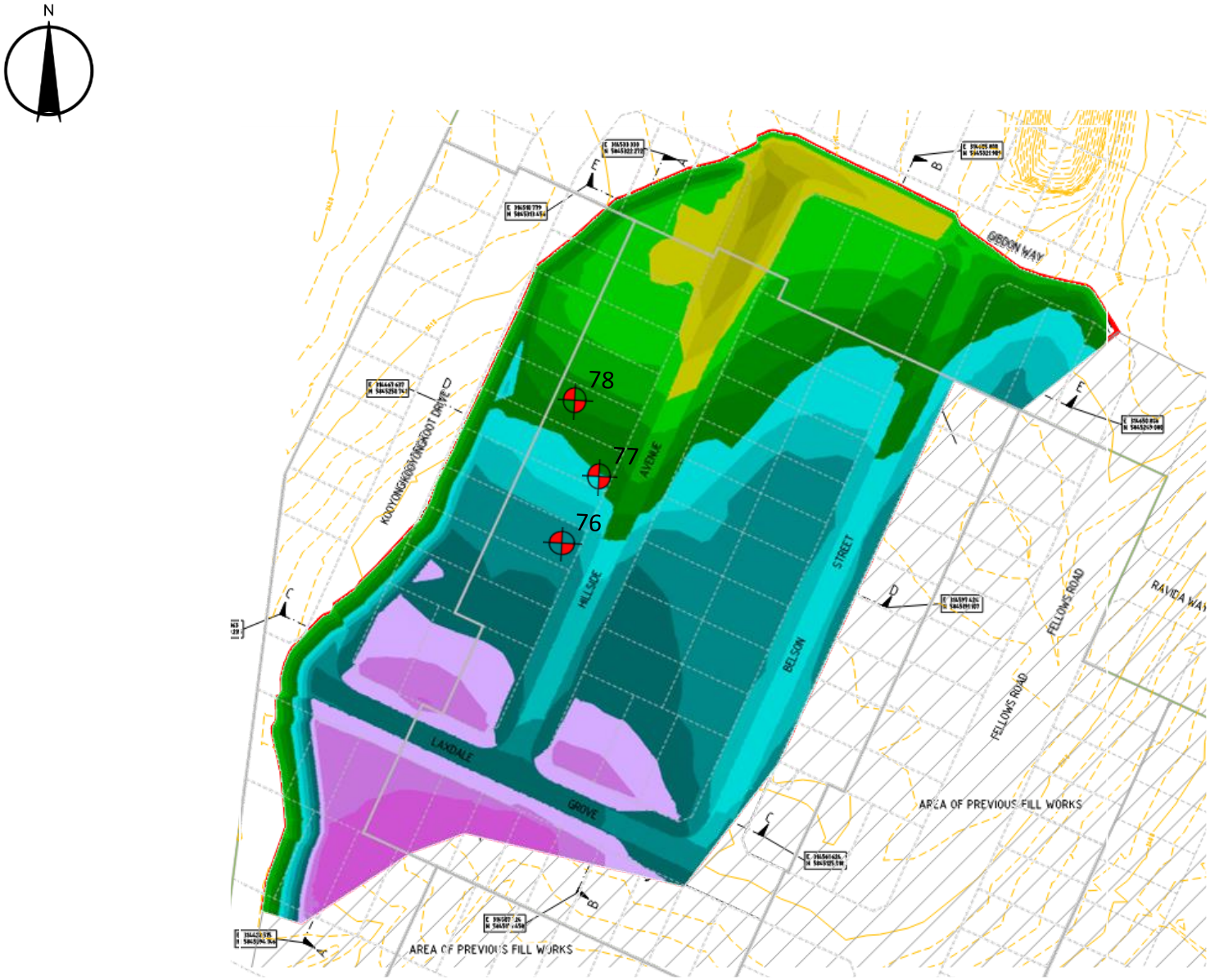
Approved Signatory:

David Burns

Date: 29/07/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 19/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI26)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
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PH: 0400 413 531
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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 27

Location: Mickleham

Sample No		79	80	81			
Date Tested		20/07/2022	20/07/2022	20/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 4	Layer 4	Layer 4			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.83	1.81	1.86			
Field Moisture Content	%	26.3	26.8	25.9			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	2.5	1.5	3.1			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.88	1.85	1.86			
Optimum Moisture Content	%	24.5	25	26.5			
Moisture Ratio	%	107.5	107	97.5			
Moisture Variation from OMC	%	2.0 Wetter	1.5 Wetter	-0.5 Drier			
Density Ratio	%	97.0	97.5	99.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI27)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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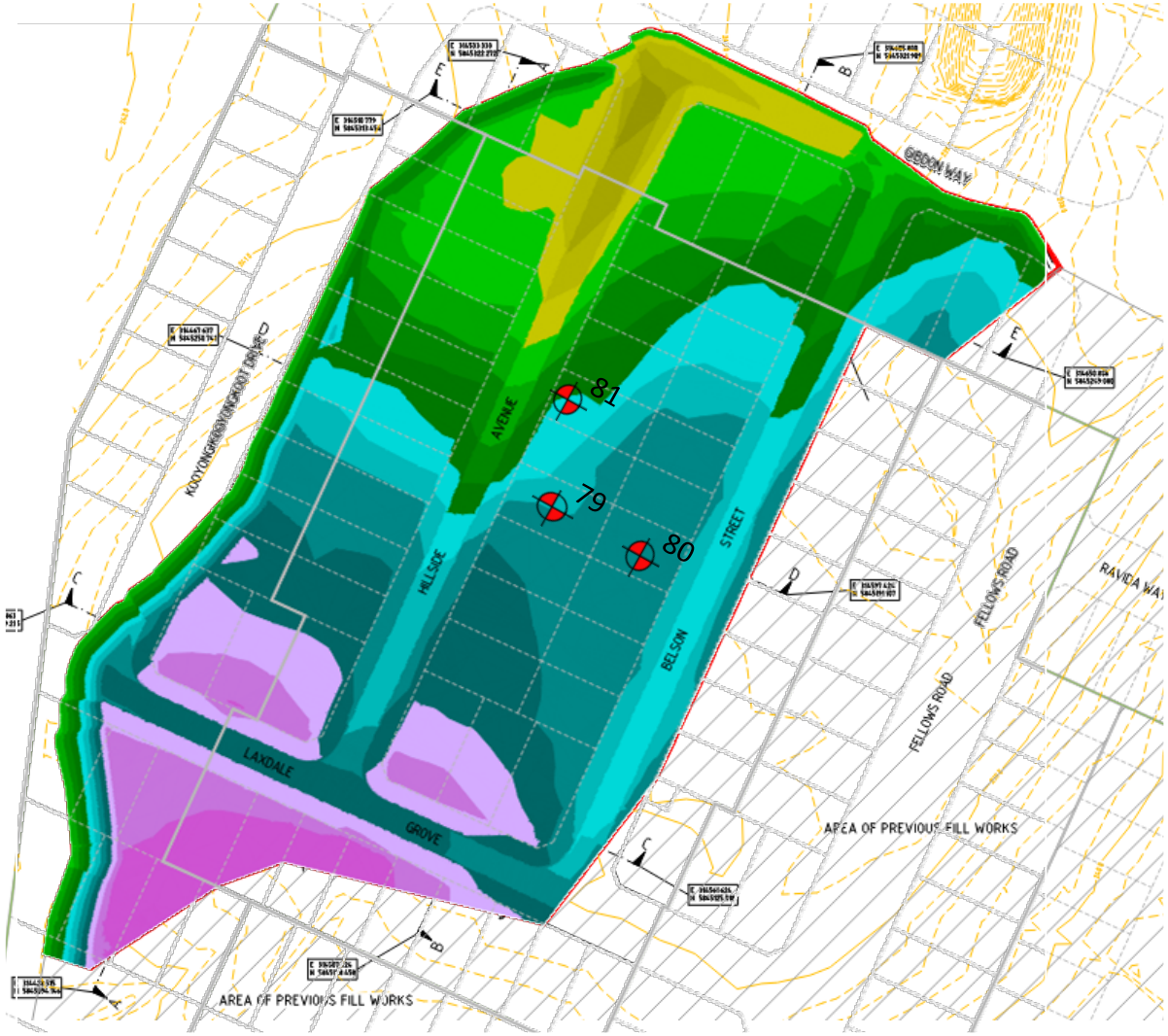
Date: 29/07/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 20/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI27)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 28

Location: Mickleham

Sample No		82	83	84			
Date Tested		21/07/2022	21/07/2022	21/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 5	Layer 5	Layer 5			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.83	1.87	1.89			
Field Moisture Content	%	22.0	25.0	24.6			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	3.0	0.0	2.2			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.88	1.91	1.93			
Optimum Moisture Content	%	23	23	23			
Moisture Ratio	%	95.5	108.5	107			
Moisture Variation from OMC	%	-1.0 Drier	2.0 Wetter	1.5 Wetter			
Density Ratio	%	96.5	98.0	97.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI28)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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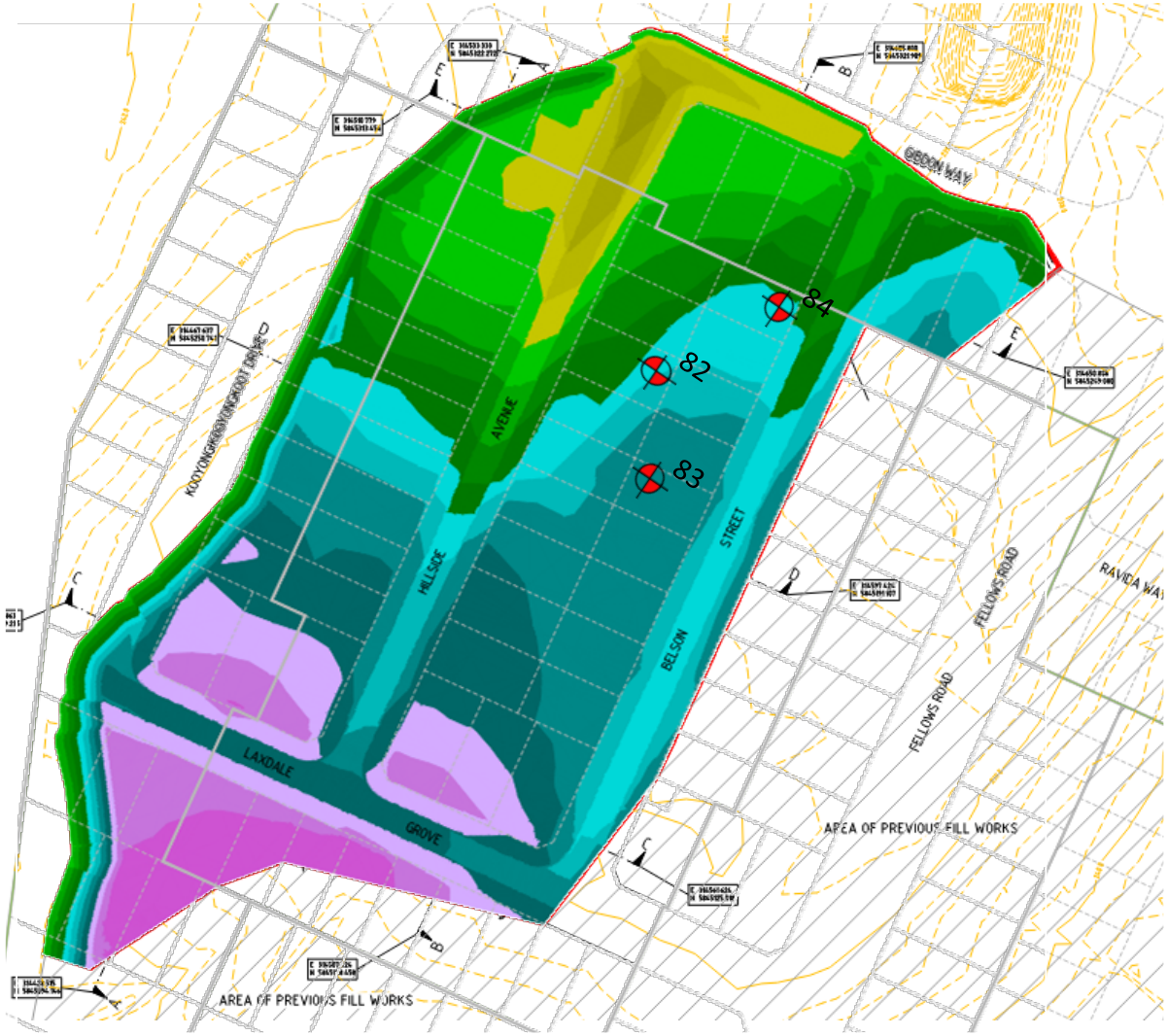
Approved Signatory: David Burns

Date: 29/07/2022

N

Test Location



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 21/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI28)	SITE PLAN SKETCH—NOT TO SCALE	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 29

Location: Mickleham

Sample No		85	86	87			
Date Tested		22/07/2022	22/07/2022	22/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 6	Layer 6	Layer 6			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.85	1.86	1.90			
Field Moisture Content	%	25.3	24.1	22.8			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	2.0	2.8	3.3			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.89	1.90	1.94			
Optimum Moisture Content	%	23.5	22.5	23			
Moisture Ratio	%	107.5	107	99			
Moisture Variation from OMC	%	2.0 Wetter	1.5 Wetter	-0.5 Drier			
Density Ratio	%	97.0	97.5	97.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI29)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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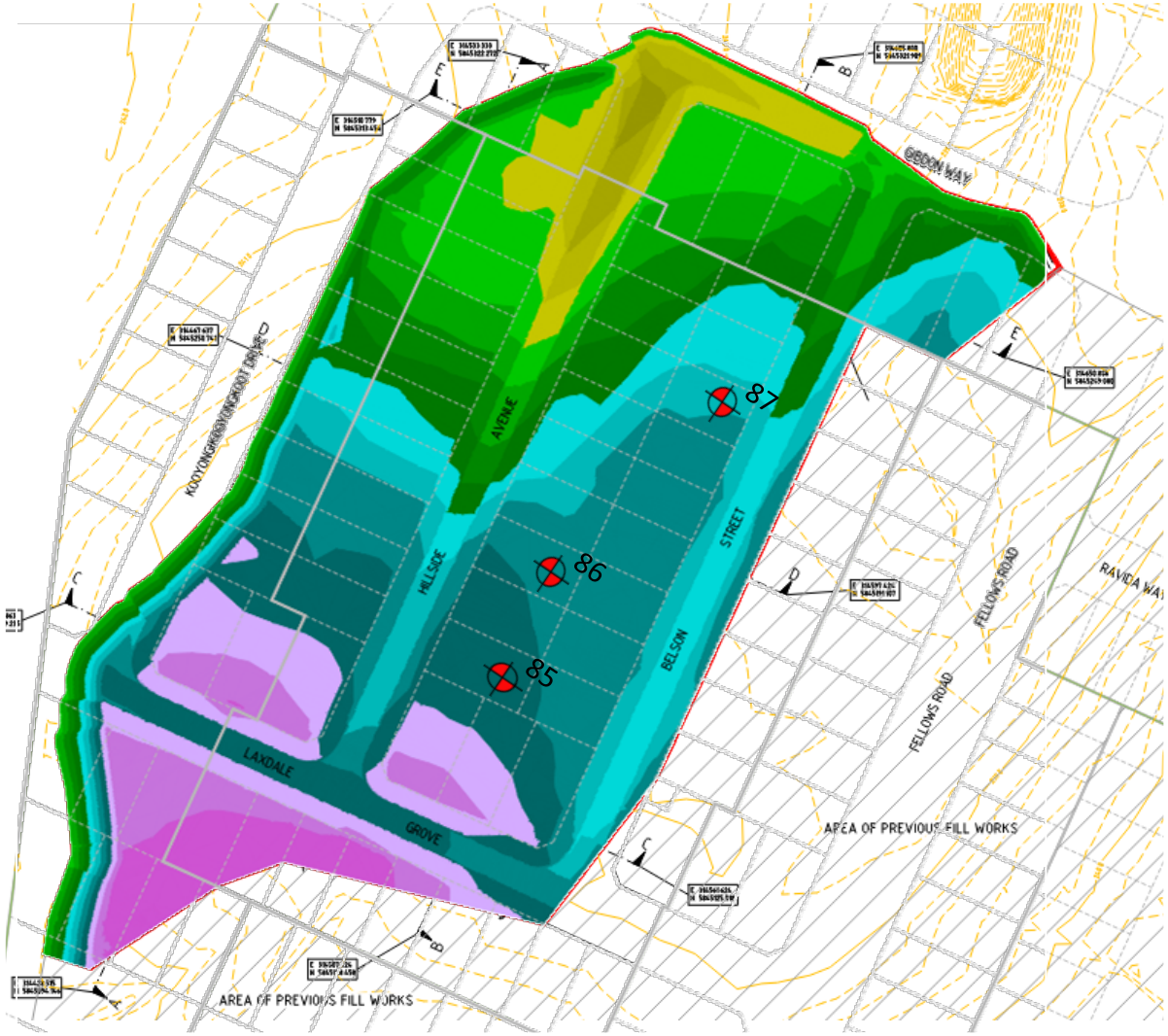
Date: 29/07/2022

N

Test Location



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 22/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI29)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 30

Location: Mickleham

Sample No		88	89	90			
Date Tested		25/07/2022	25/07/2022	25/07/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 6	Layer 6	Layer 4			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.90	1.94	1.85			
Field Moisture Content	%	22.8	21.6	24.4			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	3.8	4.6	2.5			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.95	1.99	1.88			
Optimum Moisture Content	%	21	22	23			
Moisture Ratio	%	108.5	98	106			
Moisture Variation from OMC	%	2.0 Wetter	-0.5 Drier	1.5 Wetter			
Density Ratio	%	97.0	97.0	97.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI30)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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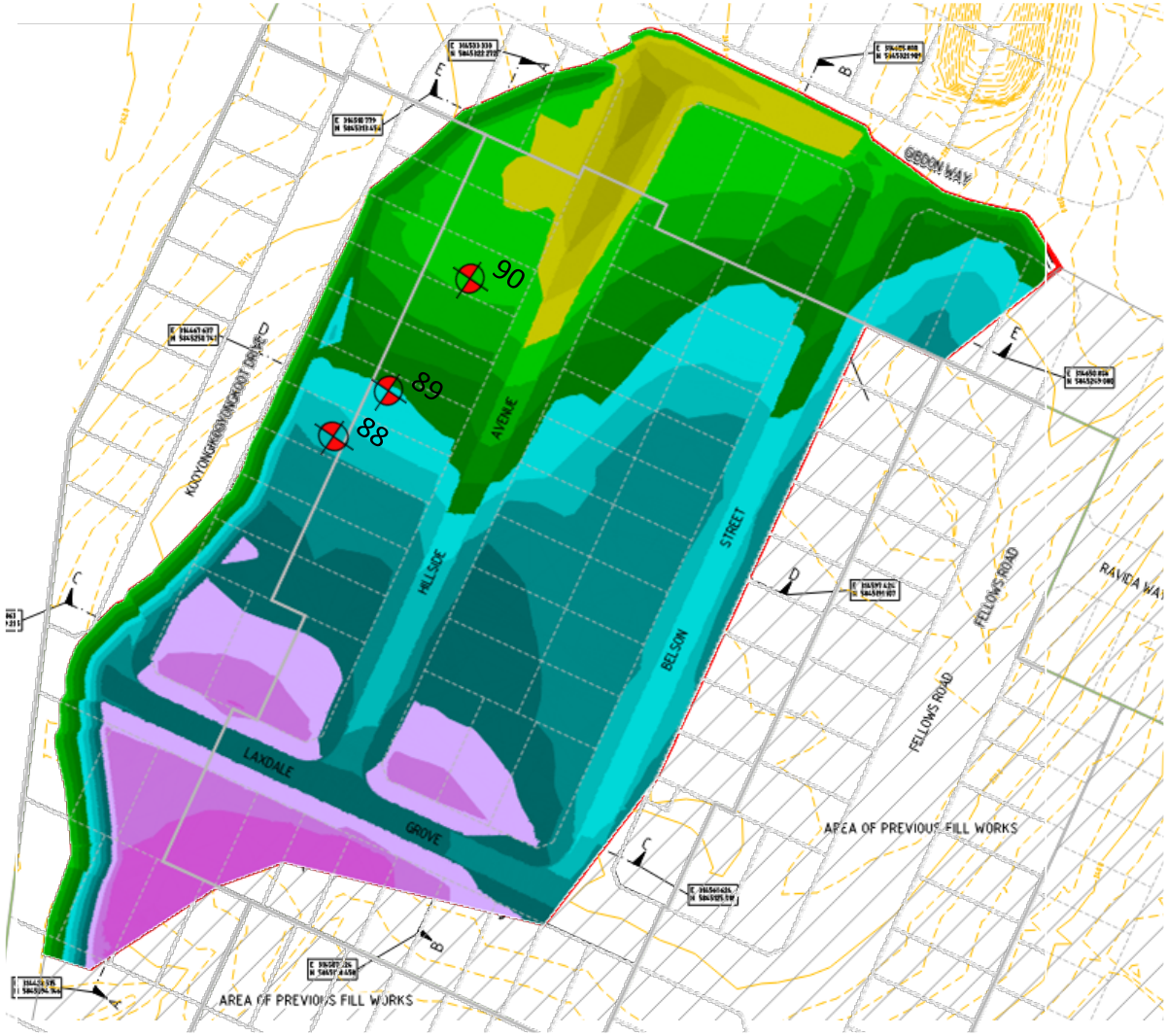
Approved Signatory: David Burns

Date: 29/07/2022



PROJECT: Merrifield - Stage 45	**CLIENT:** BMD Urban	**DATE:** 25/07/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI30)	**SITE PLAN SKETCH—NOT TO SCALE**	

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Field Density Test Results
AS1289.5.7.1

A & Y Associates Pty Ltd
5/16 Network Drive
Truganina VIC 3029
PH: 0400 413 531
info@ayassociates.com.au

Client:	BMD Urban	**Job No:**	BMD2180
Project:	Merrifield Estate - Stage 45 (Level 1)	**Report:**	31
Location:	Mickleham		

Sample No		91	92	93			
Date Tested		1/08/2022	1/08/2022	1/08/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 7	Layer 7	Layer 7			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.92	1.90	1.89			
Field Moisture Content	%	20.9	21.8	20.5			
Material:		Site Derived Clay	Site Derived Clay	Site Derived Clay			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.91	1.94	1.92			
Optimum Moisture Content	%	24	25	23.5			
Moisture Ratio	%	87	87.5	87			
Moisture Variation from OMC	%	-3.0 Drier	-3.0 Drier	-3.0 Drier			
Density Ratio	%	100.5	98.0	98.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI31)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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Approved Signatory: David Burns

Date: 5/08/2022

PROJECT: Merrifield - Stage 45 (Level 1)	**CLIENT:** BMD Urban	**DATE:** 01/08/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI31)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 32

Location: Mickleham

Sample No		94	95	96			
Date Tested		02/08/2022	02/08/2022	02/08/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 7	Layer 7	Layer 7			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.83	1.88	1.86			
Field Moisture Content	%	28.0	29.4	30.2			
Material:		Site Derived Clay	Site Derived Clay	Site Derived Clay			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.91	1.96	1.95			
Optimum Moisture Content	%	29	30	28.5			
Moisture Ratio	%	96.5	98	106			
Moisture Variation from OMC	%	-1.0 Drier	-0.5 Drier	2.0 Wetter			
Density Ratio	%	95.5	95.5	95.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI32)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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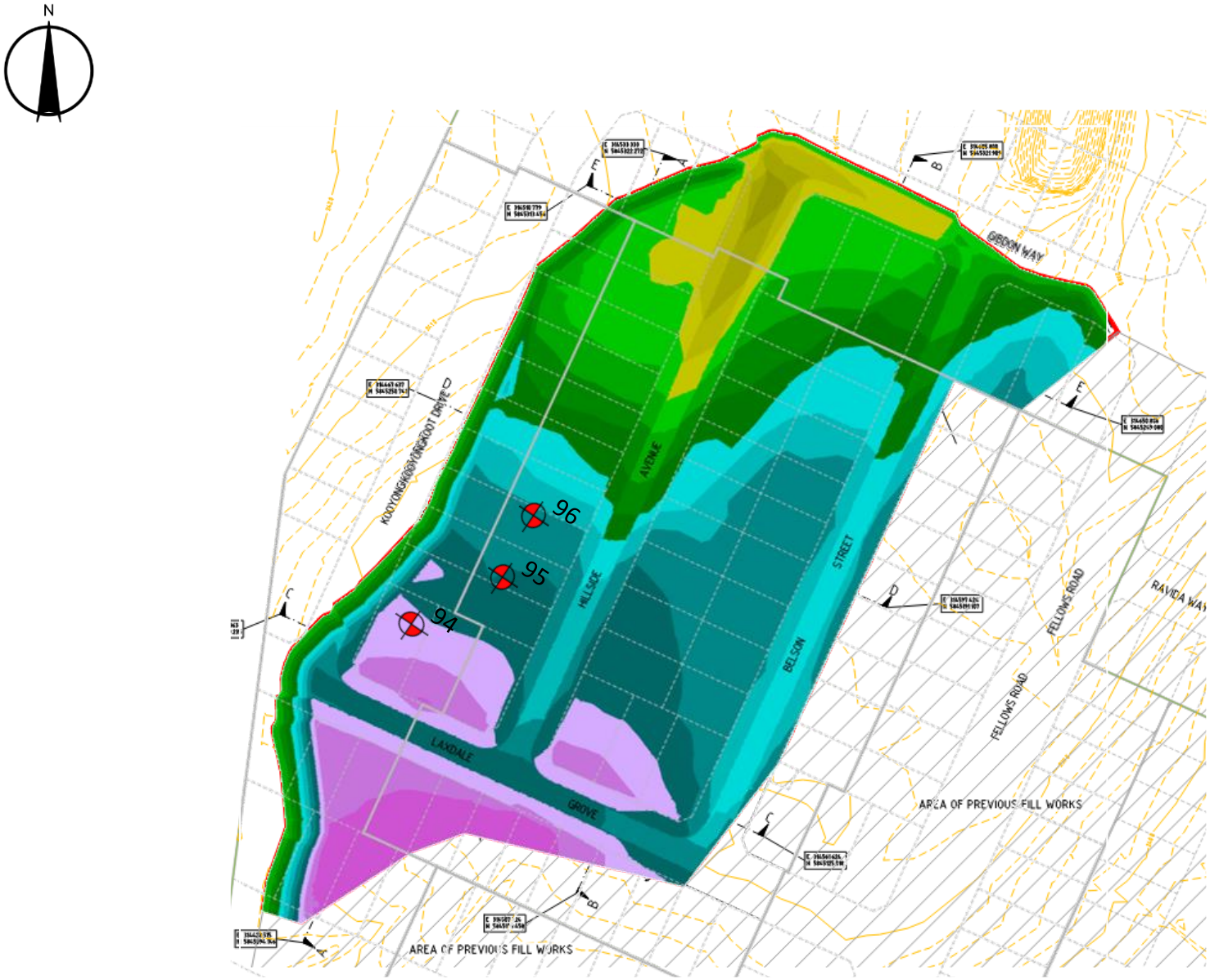
Approved Signatory: David Burns

Date: 05/08/2022



PROJECT: Merrifield - Stage 45 (Level 1)	**CLIENT:** BMD Urban	**DATE:** 02/08/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI32)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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PH: 0400 413 531
info@ayassociates.com.au

Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 33

Location: Mickleham

Sample No		97	98	99			
Date Tested		05/08/2022	05/08/2022	05/08/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		Layer 7	Layer 7	Layer 7			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.92	2.00	1.91			
Field Moisture Content	%	23.3	22.8	24.2			
Material:		Imported Clay	Imported Clay	Imported Clay			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.92	2.06	1.99			
Optimum Moisture Content	%	24	23.5	22			
Moisture Ratio	%	97	97	110			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	2.0 Wetter			
Density Ratio	%	100.5	97.0	96.0			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI33)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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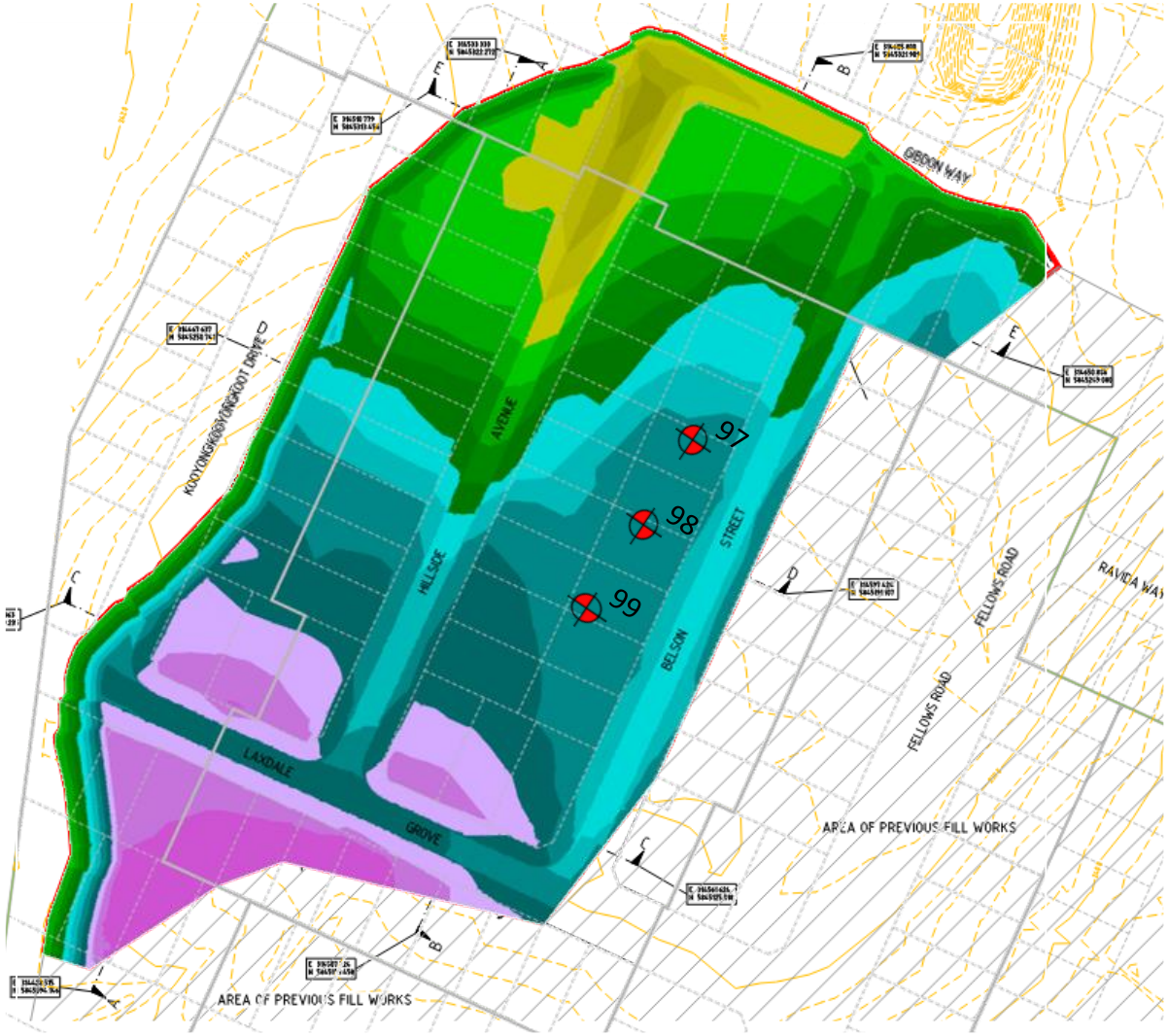
Approved Signatory: David Burns

Date: 10/08/2022

N

Test Location



PROJECT:	CLIENT:	DATE:
Merrifield - Stage 45 (Level 1)	BMD Urban	05/08/2022
LOCATION:	PROJECT No:	SITE PLAN SKETCH—NOT TO SCALE
Mickleham	1120 0320-1 (SI33)	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	34	
Location:	Mickleham					

Sample No		100	101	102			
Date Tested		9/08/2022	9/08/2022	9/08/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		7	7	7			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.98	1.92	2.03			
Field Moisture Content	%	22.1	21.7	20.8			
Material:		Imported Clay Fill	Imported Clay Fill	Imported Clay Fill			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.08	2.01	2.12			
Optimum Moisture Content	%	23	22	18.5			
Moisture Ratio	%	96	98.5	112.5			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	2.5 Wetter			
Density Ratio	%	95.5	95.5	96.0			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI34)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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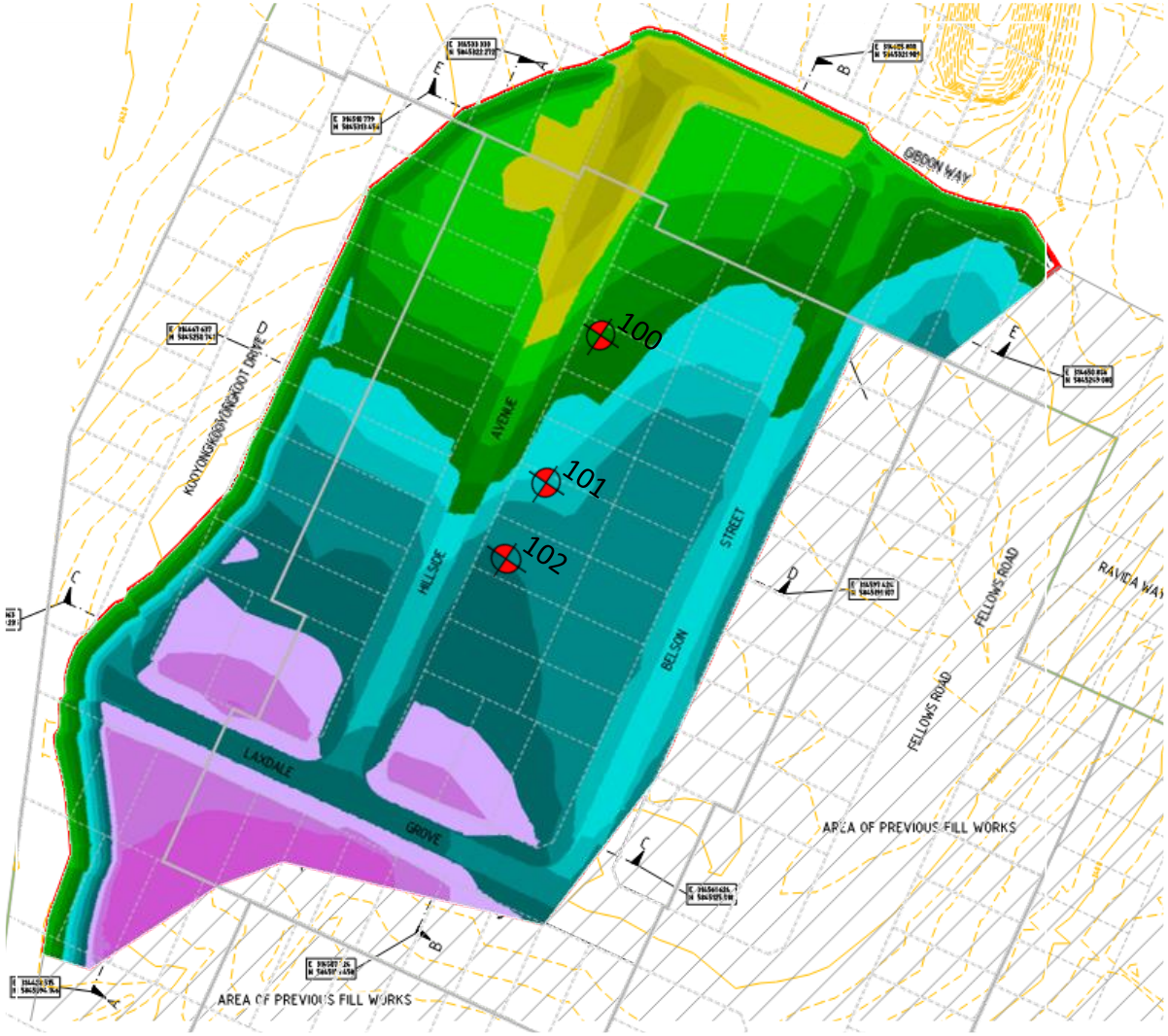
Approved Signatory:

David Burns

Date: 15/08/2022

N

Test Location



PROJECT: Merrifield - Stage 45 (Level 1)	**CLIENT:** BMD Urban	**DATE:** 09/08/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI34)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	35	
Location:	Mickleham					

Sample No		103	104	105			
Date Tested		10/08/2022	10/08/2022	10/08/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		8	8	8			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.96	1.92	1.95			
Field Moisture Content	%	21.3	21.7	20.8			
Material:		Imported Clay	Imported Clay	Imported Clay			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.04	2.01	2.04			
Optimum Moisture Content	%	21.5	22	18.5			
Moisture Ratio	%	99	98.5	112.5			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	2.0 Wetter			
Density Ratio	%	96.0	95.5	95.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI35)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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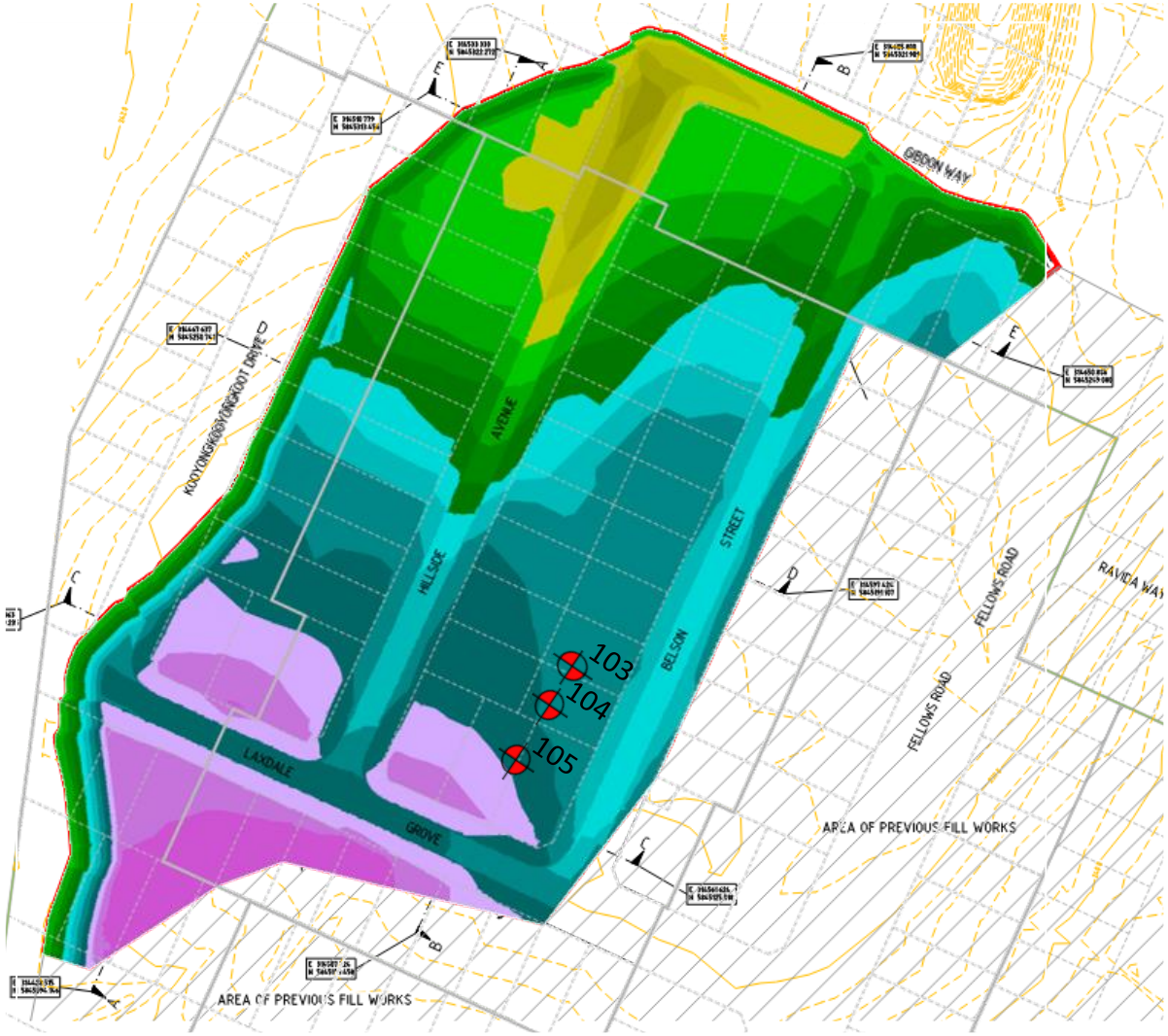
Approved Signatory:

David Burns

Date: 15/08/2022

N

Test Location



PROJECT: Merrifield - Stage 45 (Level 1)	**CLIENT:** BMD Urban	**DATE:** 10/08/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI35)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	36	
Location:	Mickleham					

Sample No		106	107	108			
Date Tested		11/08/2022	11/08/2022	11/08/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		8	8	8			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	2.01	2.01	2.00			
Field Moisture Content	%	19.3	19.4	20.1			
Material:		Imported Clay	Imported Clay	Imported Clay			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.10	2.11	2.10			
Optimum Moisture Content	%	19.5	20	20.5			
Moisture Ratio	%	99	97	98			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	-0.5 Drier			
Density Ratio	%	96.0	95.5	95.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI36)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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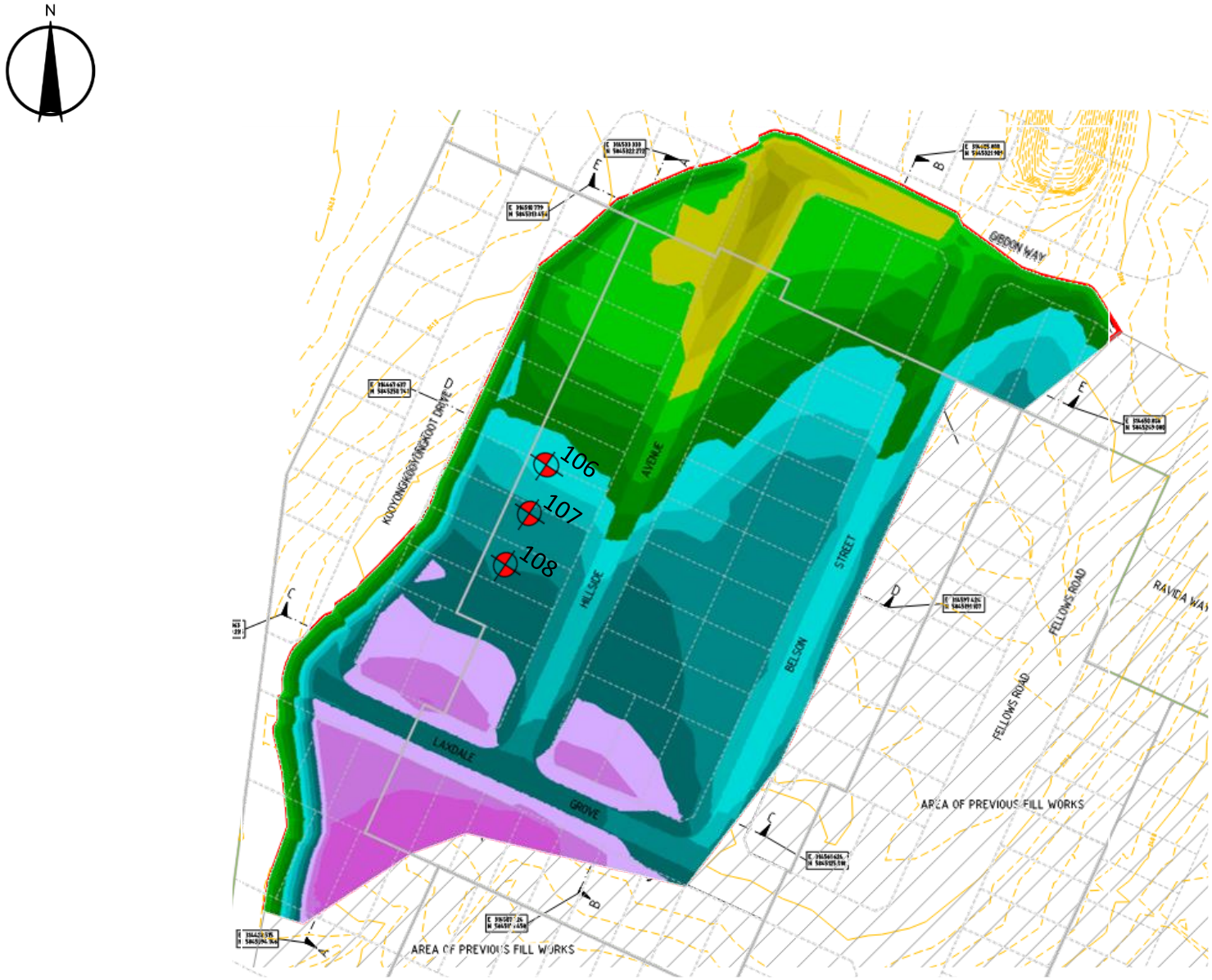
Approved Signatory: David Burns

Date: 15/08/2022



PROJECT: Merrifield - Stage 45 (Level 1)	**CLIENT:** BMD Urban	**DATE:** 11/08/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI36)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	37	
Location:	Mickleham					

Sample No		109	110	111			
Date Tested		15/08/2022	15/08/2022	15/08/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		8	8	8			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	2.00	1.97	1.95			
Field Moisture Content	%	24.1	25.1	25.6			
Material:		Imported Clay	Imported Clay	Imported Clay			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.08	2.06	1.99			
Optimum Moisture Content	%	24.5	25.5	26.5			
Moisture Ratio	%	98.5	98.5	96.5			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	-1.0 Drier			
Density Ratio	%	96.0	95.5	98.0			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI37)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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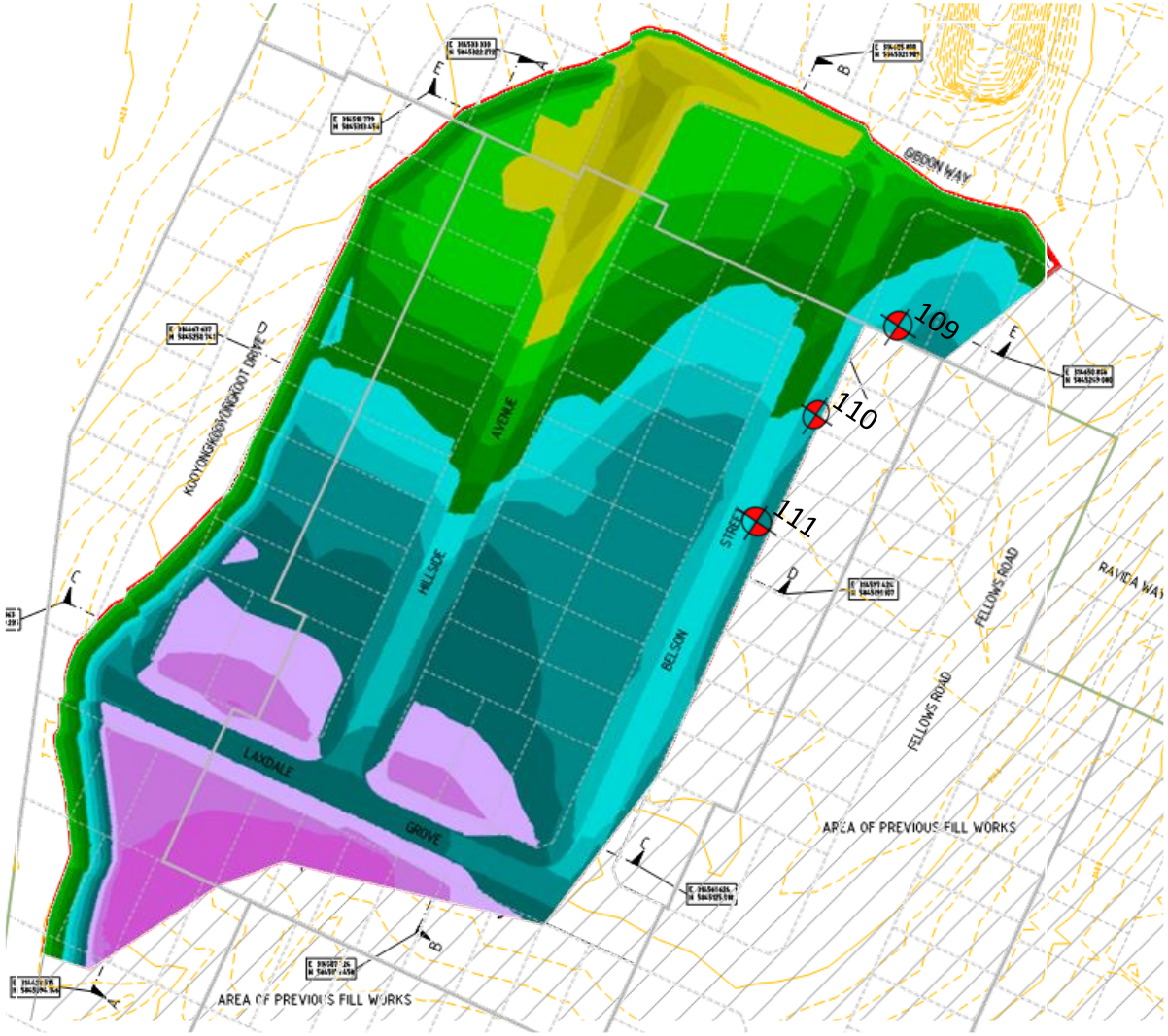
Approved Signatory:

David Burns

Date: 17/08/2022

N

Test Location



PROJECT:	CLIENT:	DATE:	
Merrifield - Stage 45 (Level 1)	BMD Urban	15/08/2022	
LOCATION:	PROJECT No:	SITE PLAN SKETCH—NOT TO SCALE	
Mickleham	1120 0320-1 (SI37)		

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 38

Location: Mickleham

Sample No		112	113	114			
Date Tested		16/08/2022	16/08/2022	16/08/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		8	8	8			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.95	1.96	1.96			
Field Moisture Content	%	25.2	25.8	26.2			
Material:		Imported Clay	Imported Clay	Imported Clay			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	2.03	2.01	1.99			
Optimum Moisture Content	%	26	26	26.5			
Moisture Ratio	%	97	99	99			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	-0.5 Drier			
Density Ratio	%	96.0	97.5	98.0			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI38)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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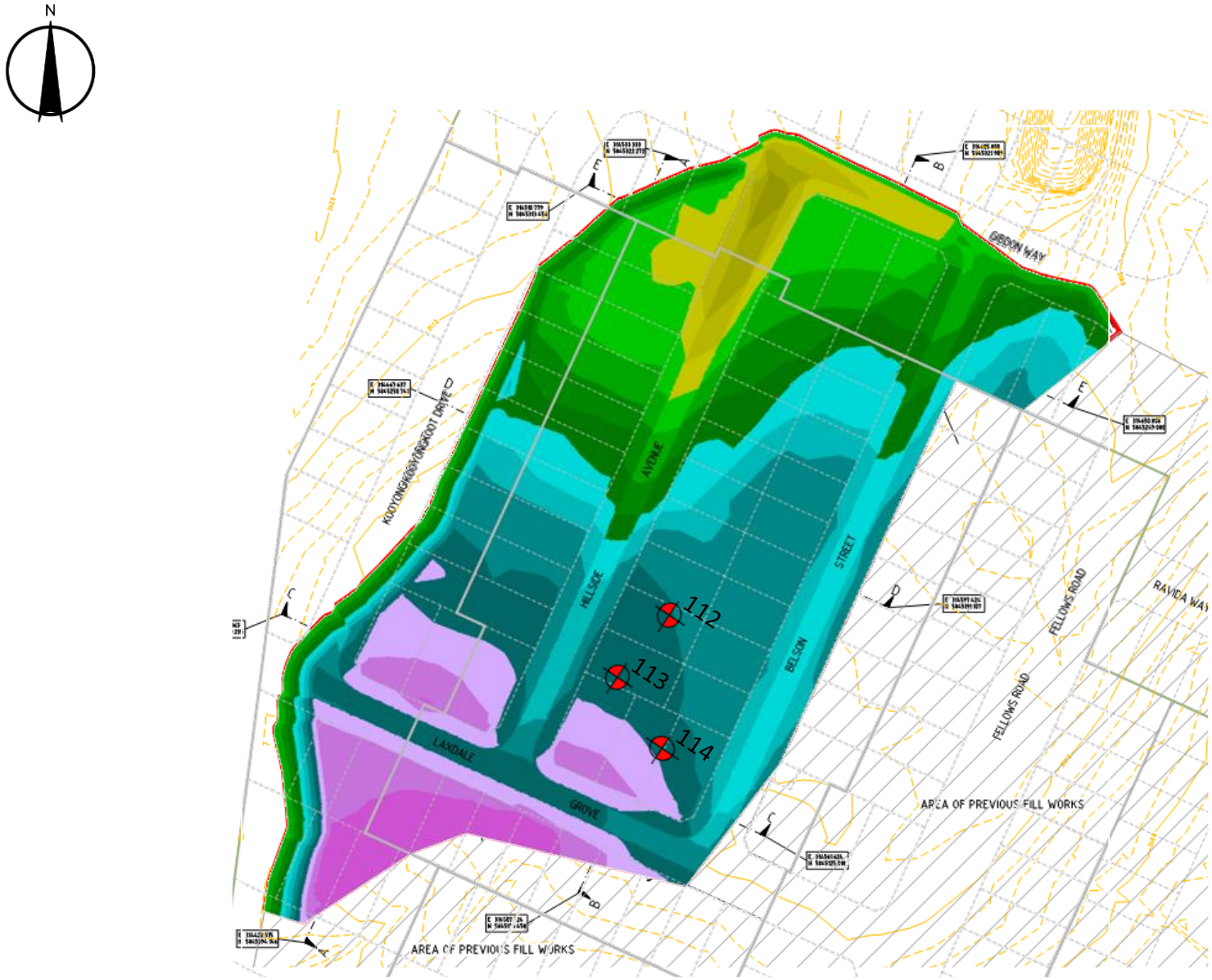
Approved Signatory: David Burns

Date: 17/08/2022



PROJECT: Merrifield - Stage 45 (Level 1)	**CLIENT:** BMD Urban	**DATE:** 16/08/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI38)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client: BMD Urban **Job No:** BMD2180

Project: Merrifield Estate - Stage 45 (Level 1) **Report:** 39

Location: Mickleham

Sample No		115	116	117			
Date Tested		17/08/2022	17/08/2022	17/08/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		9	10	10			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.83	1.90	1.97			
Field Moisture Content	%	26.0	24.3	23.9			
Material:		Imported Clay	Imported Clay	Imported Clay			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.85	1.92	2.00			
Optimum Moisture Content	%	24.5	25	24			
Moisture Ratio	%	106	97	99.5			
Moisture Variation from OMC	%	1.5 Wetter	-1.0 Drier	-0.5 Drier			
Density Ratio	%	98.5	99.0	98.5			

Specification: 95% STD **Test Selection:** N/A

Notes: Ref : 1120 0320-1 (SI39)

Test Method AS1289 5.8.1, 5.7.1, 2.1.1, 1.1 **Sampling Method:** AS 1289 1.2.1 6.4(b)

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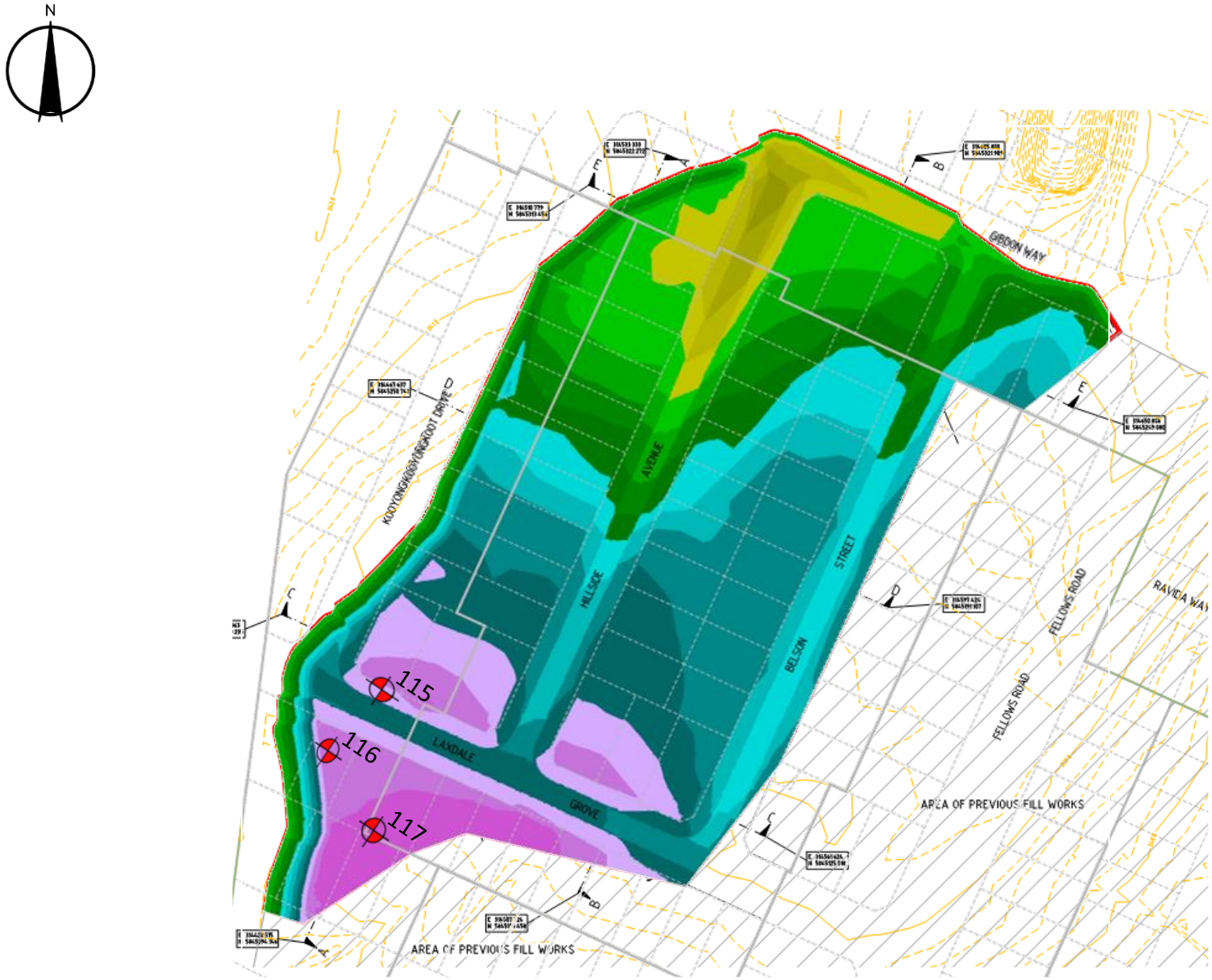
Approved Signatory:

David Burns

Date: 11/10/2022



PROJECT: Merrifield - Stage 45 (Level 1)	**CLIENT:** BMD Urban	**DATE:** 17/08/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI39)	**SITE PLAN SKETCH—NOT TO SCALE**	

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Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban			**Job No:**	BMD2180	
Project:	Merrifield Estate - Stage 45 (Level 1)			**Report:**	40	
Location:	Mickleham					

Sample No		118	119	120			
Date Tested		22/08/2022	22/08/2022	22/08/2022			
Time Tested		AM	AM	AM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		11	12	12			
Layer Thickness	mm	200	200	200			
Test Depth	mm	175	175	175			
Field Wet Density	t/m^3	1.94	1.82	1.91			
Field Moisture Content	%	23.5	25.2	24.3			
Material:		Imported Clay	Imported Clay	Imported Clay			
Oversize Material	WET, %	0.0	0.0	0.0			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.96	1.84	1.94			
Optimum Moisture Content	%	21.5	26	24.5			
Moisture Ratio	%	109	97	99			
Moisture Variation from OMC	%	2.0 Wetter	-1.0 Drier	-0.5 Drier			
Density Ratio	%	98.5	99.0	98.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0320-1 (SI40)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

NATA
WORLD RECOGNISED ACCREDITATION

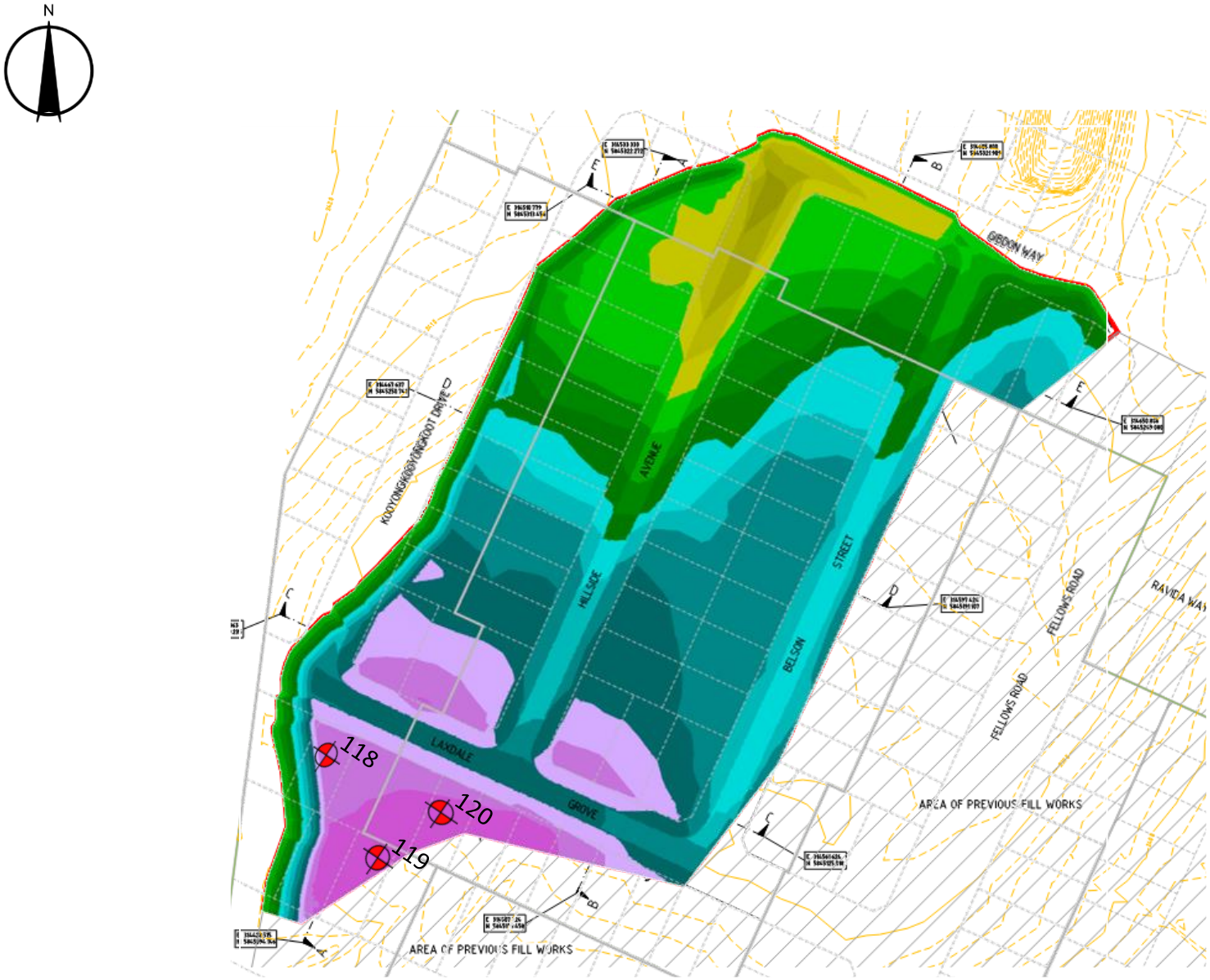
NATA Accredited Laboratory No. 20172

Accreditation 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: David Burns

Date: 11/10/2022



PROJECT: Merrifield - Stage 45 (Level 1)	**CLIENT:** BMD Urban	**DATE:** 22/08/2022	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0320-1 (SI40)	**SITE PLAN SKETCH—NOT TO SCALE**	