Level 1 Inspection and Testing Report

|Geotechnical |Environmental | Residential |Pavements |Investigations & Design|

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Site: Merrifield Estate Stage 65, Mickleham

Project No: 1120 0148-1

Prepared for

BMD Urban

August 2019

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Revision Chart

Version	Description	Author	Reviewer	Release Approval	Release Date	Client Copy
0	*Level 1 Inspection and Testing Report*	FW	AT	AT	20/08/2019	Soft copy (email)

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Table of Contents

1. Introduction

This report presents the results of the Level 1 Inspection and Testing for the construction of the fill platforms located in Merrifield Estate Stage 65, Mickleham.

2. Project Summary

It is understood that BMD Urban requires the fill platforms within Merrifield Estate Stage 65, Mickleham 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 and Testing was undertaken by a Senior Geotechnician from A&Y Associates on the 28th May 2019.

This report is applicable for fill placed by BMD Urban for the following locations in Merrifield estate stage 65, Mickleham as shown in Appendix A - Site Plan.

3. Project Specifications

No specification has been provided for the construction works in Merrifield estate stage 65, Mickleham. The supervision and inspections were performed based on AS3798. A short summary of the requirements outlined in AS3798 is provided below:

- All filling in excess of 300mm depth within the building envelope of allotments shall be undertaken to specifications satisfying the requirements of AS3798.
- Material to be used for fill construction shall satisfy the requirements of AS23798-2007 "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 28th May 2019 as mentioned in report *1120-0148-1 (SSI1)*.

The exposed subgrade was rolled by a 20 tonne compactor. The exposed subgrade material comprised natural clayey silt and 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 average fill thickness placed is as follows:

Wetlands:

- Approximately 200mm-300mm

6. Fill Material

The fill material used for the platform consisted of stockpiled on-site boxed out material. The stockpiled material was predominantly comprising of Clay.

7. Testing

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

Test were performed using 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 test per day's production based on the minimum requirements of AS 3798-2007 and taken from each layer of fill placed.

A total of 4 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 4 field density tests are shown in Appendix B - Test Locations. A summary of the test results obtained from the filed 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. 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.

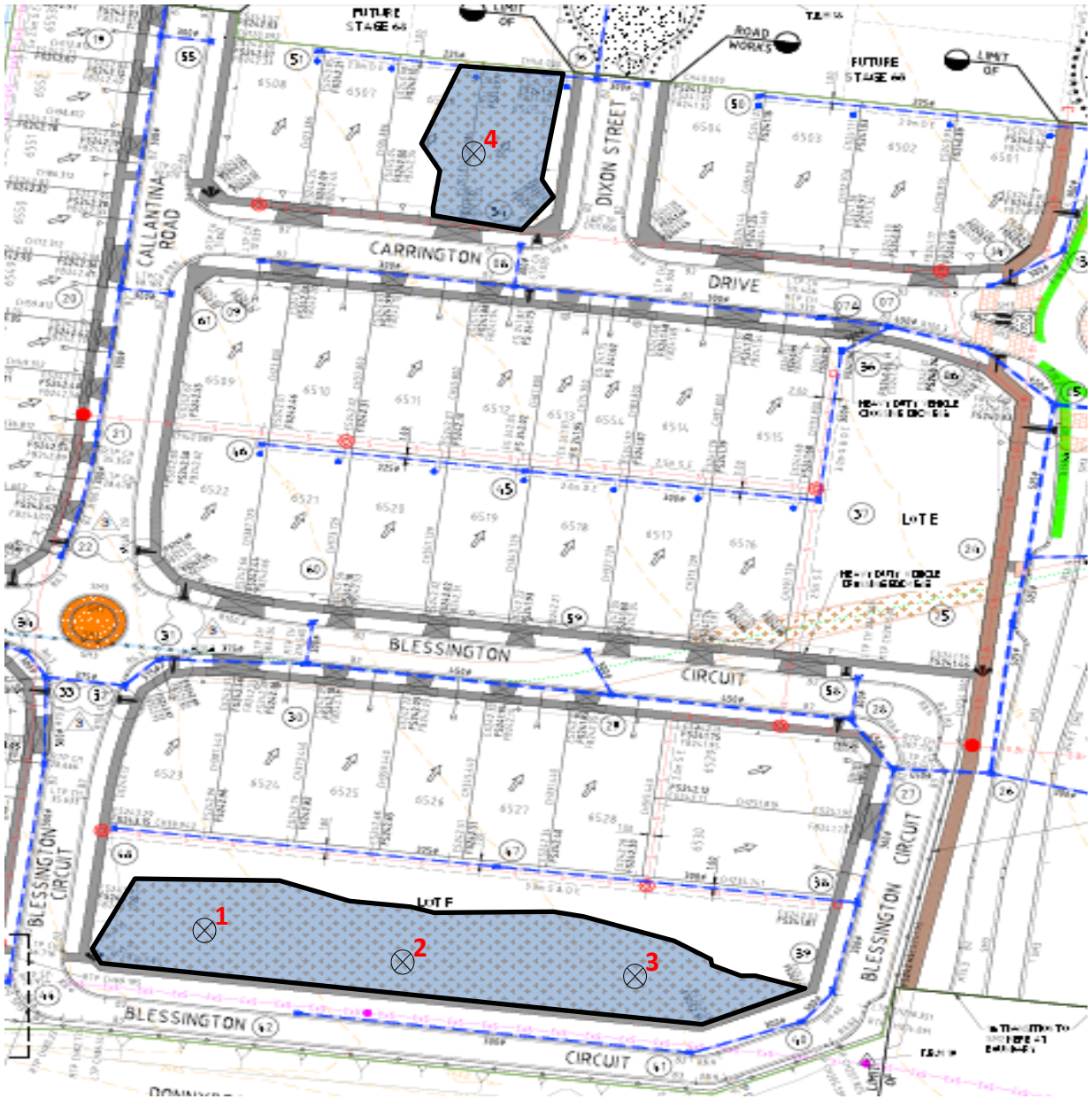
This report has been prepared for the benefit of our client with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement. No responsibility for this report will be taken by A & Y Associates if it is altered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

Appendix A – Site Plan

Area Inspected

PROJECT: Merrifield Estate Stage 65 (Lots)	**CLIENT:** BMD Urban	**DATE:** 25/05/2019	A&Y ASSOCIATES PTY LTD GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Mickleham	**PROJECT No:** 1120 0148-1	**SITE PLAN SKETCH—NOT TO SCALE**	

Appendix B – Test Locations



Area Inspected

Test Location

PROJECT: Merrifield Estate Stage 65 (Lots)	**CLIENT:** BMD Urban	**DATE:** 25/05/2019	A&Y ASSOCIATES PTY LTD Geotechnical Engineering Consultants
LOCATION: Mickleham	**PROJECT No:** 1120 0148-1	**SITE PLAN SKETCH—NOT TO SCALE**	

Appendix C – Test Results Summary

Project No	1120 0148-1	Client	BMD Urban
Project Name	Merrifield Estate Stage 65 (Lots)	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	-	28-05-19	Lot F	FSL	0.0	97.5	97	OMC	Pass	-
2	-	28-05-19	Lot F	FSL	0.0	96.5	97.5	-0.5 Drier	Pass	-
3	-	28-05-19	Lot F	FSL	0.0	98.0	97	OMC	Pass	-
4	-	28-05-19	Lot 6505 to 6506	FSL	0.0	98.5	97	OMC	Pass	-

Appendix D – NATA Test Results

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Field Density Test Results
AS1289.5.7.1

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Client:	BMD Urban				**Job No:**	BMD792
Project:	Merrifield Estate Stage 65 (Lots)				**Report:**	1
Location:	Lot F & Lots 6505 & 6506					

Sample No		1	2	3	4		
Date Tested		28-05-19	28-05-19	28-05-19	28-05-19		
Time Tested		PM	PM	PM	PM		
Test Location		Lot F	Lot F	Lot F	Lots 6506 to 6505		
Level/Layer		FSL	FSL	FSL	FSL		
Layer Thickness	mm	300	300	300	300		
Test Depth	mm	275	275	275	275		
Field Wet Density	t/m^3	1.926	1.95	1.935	1.987		
Field Moisture Content	%	14.6	15.0	14.2	15.3		
Material:		Site Derived Clay	Site Derived Clay	Site Derived Clay	Site Derived Clay		
Oversize Material	WET, %	0.0	0.0	0.0	0.0		
Sieve Size	mm	19	19	19	19		
Peak Converted Wet Density	t/m^3	1.99	2.00	2.00	2.05		
Optimum Moisture Content	%	15	15.5	14.5	15.5		
Moisture Ratio	%	97.5	96.5	98	98.5		
Moisture Variation from OMC	%	0.0 OMC	-0.5 Drier	0.0 OMC	0.0 OMC		
Density Ratio	%	97.0	97.5	97.0	97.0		

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref: 1120 0148-1 (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

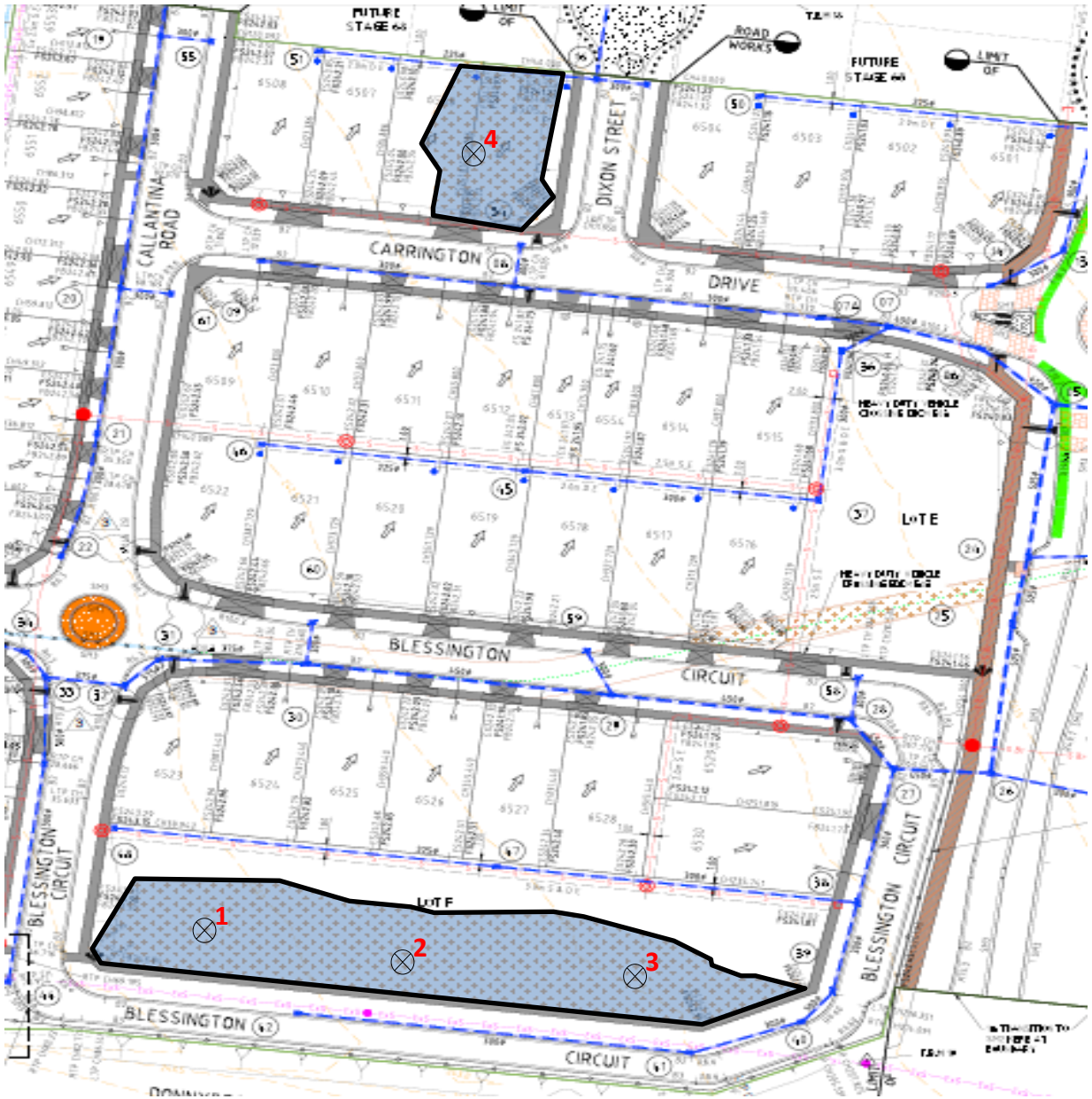
NATA Accredited Laboratory No. 20172

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: 19-08-19



Area Inspected

Test Location

PROJECT: Merrifield Estate Stage 65 (Lots)	**CLIENT:** BMD Urban	**DATE:** 25/05/2019	A&Y ASSOCIATES PTY LTD Geotechnical Engineering Consultants
LOCATION: Mickleham	**PROJECT No:** BMD792 - 1	**SITE PLAN SKETCH—NOT TO SCALE**	