# Merrifield Estate - Stage 50, Mickleham

Level 1 Inspection & Testing Report

Reference: 1120 0343-1

## Prepared for:

BMD Urban

May 2023

A&Y ASSOCIATES

GEOTECHNICAL ENGINEERING CONSULTANTS

# Document Control Record

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## Document control

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## 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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## Applicability

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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 Merrifield Estate - Stage 50, Mickleham.

# 2 Project Summary

It is understood that BMD Urban require the fill platforms within Stage 50 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 **37 working days** from the **12th May 2022 to 10th March 2023.**

This report is applicable for fill placed by BMD Urban in Merrifield Estate - Stage 50, Mickleham, as shown in Appendix A – Site Plan.

# 3 Project Specifications

The supervision and inspections were performed based on AS3798, the specifications provided in the geotechnical report (ref: "Geotechnical Site Investigation, Merrifield Living – Section E&G Donnybrook Road, Mickleham"; Report No. G4719.1 REVAB, by Ground Science Pty Ltd, Dated 19/05/2022) and the drawing (ref: Merrifield Living – Section E Bulk Earthworks – Stage 49-53, Project No. 17040-49, Drawing No. EW101 - REV0 by Verve Projects Pty Ltd, Dated 02/03/2022) for the construction works in Merrifield Estate – Stage 49, Mickleham. A short summary of the requirements is 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 **24th of March 2022** as mentioned in report ***1120 0343-1 (SSI1)***.

The exposed subgrade material was found 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 – 2000mm. 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 gravel.

# 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 111 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 111 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

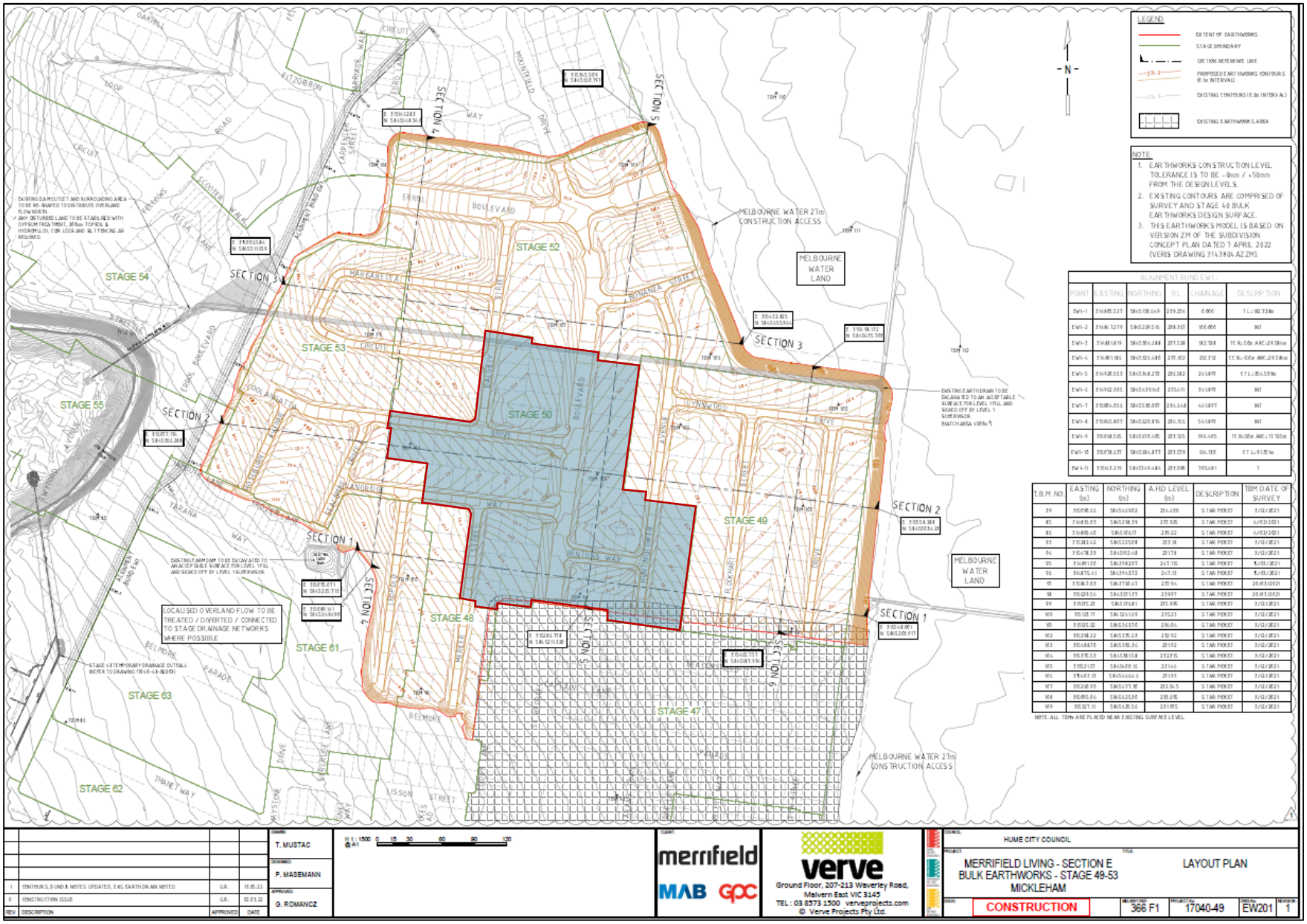
A&Y Associates was not involved in monitoring and testing the following works and as such are not included in the Level 1 report.

- 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




Area Inspected and Tested

| | |
|---|---|
| **PROJECT:** Merrifield Estate – Stage 50 (Level 1) | **CLIENT:** BMD Urban |
| **LOCATION:** Mickleham | **PROJECT No:** 1120 0343-1 |

**SITE PLAN SKETCH—NOT TO SCALE**

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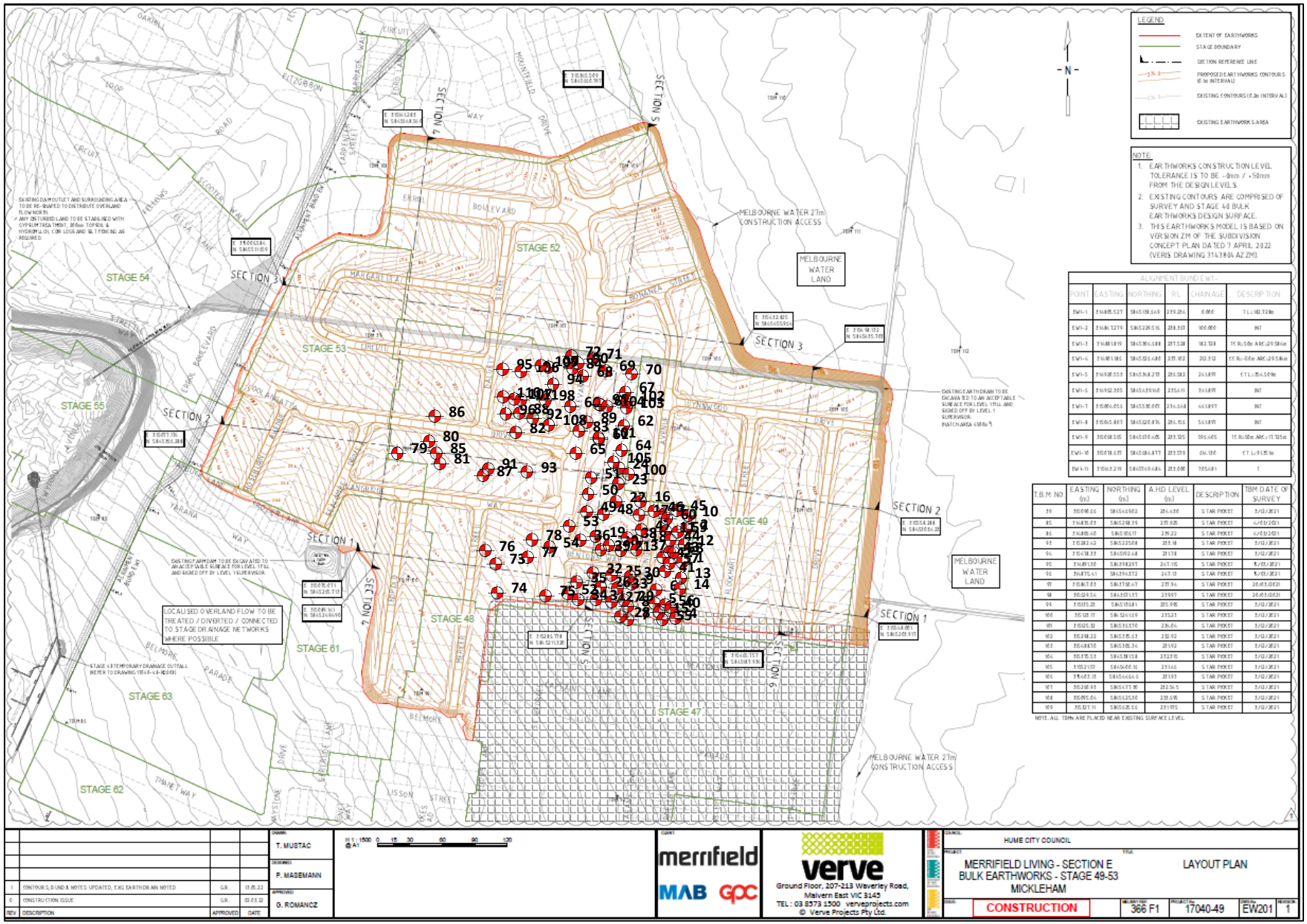
# Appendix B – Test Locations




| | |
|---|---|
| **PROJECT:**<br>**Project : Merrifield Estate - Stage 50 (Level1)** | **CLIENT:**<br>**Client : BMD Urban** |
| **LOCATION:**<br>**Location : Mickleham** | **PROJECT No:**<br>**Project No : 1120 0343-1** |

**SITE PLAN SKETCH—NOT TO SCALE**

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# Appendix C – Test Results Summary

| Project No | 1120 0343-1 | | | | Client | BMD Urban | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Project Name | Merrifield - Stage 50 (Level 1) | | | | Specification | | | Density Ratio ≥ 95% of Peak Wet Density | | |
| Location | Mickleham, VIC | | | | | | | | | |
| Test No | Retest of Test | Date | Location | Layer | Oversize | Density Ratio | Moisture Ratio | Moisture Variation | Pass / Fail | Retest |
| # | # | | Lot # | # | % | % | % | % | | Pass / Fail |
| 1 | - | 12/5/2022 | - | 1 | 3.5 | 99.0 | 108.5 | 1.5 | Pass | - |
| 2 | - | 12/5/2022 | - | 1 | 4.2 | 98.5 | 99.0 | -0.5 | Pass | - |
| 3 | - | 12/5/2022 | - | 1 | 5.1 | 97.5 | 95.0 | -0.5 | Pass | - |
| 4 | - | 13/05/2022 | - | 1 | 4.8 | 98.5 | 94.5 | -1.0 | Pass | - |
| 5 | - | 13/05/2022 | - | 1 | 5.5 | 96.0 | 111.5 | 1.5 | Pass | - |
| 6 | - | 13/05/2022 | - | 1 | 5.5 | 101.0 | 107.5 | 1.5 | Pass | - |
| 7 | - | 16/05/2022 | - | 1 | 5.9 | 99.0 | 109.5 | 1.5 | Pass | - |
| 8 | - | 16/05/2022 | - | 1 | 5.2 | 96.0 | 109.0 | 1.5 | Pass | - |
| 9 | - | 16/05/2022 | - | 1 | 3.2 | 97.0 | 95.5 | -1.0 | Pass | - |
| 10 | - | 17/05/2022 | - | 2 | 5.5 | 99.0 | 107.5 | 1.5 | Pass | - |
| 11 | - | 17/05/2022 | - | 2 | 5.8 | 101.5 | 96.5 | -0.5 | Pass | - |
| 12 | - | 17/05/2022 | - | 2 | 3.5 | 96.0 | 108.0 | 2.0 | Pass | - |
| 13 | - | 18/05/2022 | - | 2 | 4.9 | 95.5 | 99.0 | -0.5 | Pass | - |
| 14 | - | 18/05/2022 | - | 2 | 3.2 | 95.0 | 99.0 | -0.5 | Pass | - |
| 15 | - | 18/05/2022 | - | 2 | 4.6 | 95.5 | 107.5 | 1.5 | Pass | - |
| 16 | - | 19/05/2022 | - | 1 | 3.0 | 97.5 | 108.5 | 2.0 | Pass | - |
| 17 | - | 19/05/2022 | - | 1 | 4.5 | 98.0 | 109.0 | 1.5 | Pass | - |
| 18 | - | 19/05/2022 | - | 1 | 5.3 | 98.0 | 98.5 | -0.5 | Pass | - |
| 19 | - | 20/05/2022 | - | 1 | 3.1 | 97.0 | 108.0 | 1.5 | Pass | - |
| 20 | - | 20/05/2022 | - | 1 | 3.3 | 98.0 | 99.0 | -0.5 | Pass | - |
| 21 | - | 20/05/2022 | - | 1 | 4.1 | 96.0 | 106.5 | 1.5 | Pass | - |
| 22 | - | 23/05/2022 | - | 2 | 3.0 | 97.0 | 96.0 | -1.0 | Pass | - |
| 23 | - | 23/05/2022 | - | 2 | 5.1 | 98.0 | 99.0 | -0.5 | Pass | - |
| 24 | - | 23/05/2022 | - | 2 | 4.6 | 98.0 | 108.0 | 1.5 | Pass | - |
| 25 | - | 24/05/2022 | - | 1 | 5.3 | 97.0 | 108.5 | 2.0 | 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)

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| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | - | 24/05/2022 | - | 1 | 5.3 | 98.0 | 99.0 | -0.5 | Pass | - |
| 27 | - | 24/05/2022 | - | 1 | 4.7 | 97.0 | 109.5 | 1.5 | Pass | - |
| 28 | - | 25/05/2022 | - | 2 | 5.5 | 97.0 | 108.0 | 1.5 | Pass | - |
| 29 | - | 25/05/2022 | - | 2 | 3.9 | 98.0 | 96.5 | -0.5 | Pass | - |
| 30 | - | 25/05/2022 | - | 2 | 3.2 | 95.5 | 109.0 | 1.5 | Pass | - |
| 31 | - | 26/05/2022 | - | 2 | 4.3 | 97.0 | 110.5 | 2.0 | Pass | - |
| 32 | - | 26/05/2022 | - | 2 | 5.7 | 98.0 | 97.0 | -0.5 | Pass | - |
| 33 | - | 26/05/2022 | - | 2 | 5.9 | 95.5 | 109.0 | 1.5 | Pass | - |
| 34 | - | 27/05/2022 | - | 2 | 3.5 | 100.5 | 109.5 | 1.5 | Pass | - |
| 35 | - | 27/05/2022 | - | 2 | 3.0 | 98.0 | 109.5 | 2.0 | Pass | - |
| 36 | - | 27/05/2022 | - | 2 | 4.1 | 97.5 | 106.5 | 1.5 | Pass | - |
| 37 | - | 28/05/2022 | - | 2 | 3.5 | 97.0 | 108.0 | 1.5 | Pass | - |
| 38 | - | 28/05/2022 | - | 2 | 3.0 | 96.0 | 109.0 | 2.0 | Pass | - |
| 39 | - | 28/05/2022 | - | 2 | 4.1 | 100.0 | 108.0 | 1.5 | Pass | - |
| 40 | - | 9/6/2022 | - | 3 | 2.0 | 97.5 | 109.5 | 2.0 | Pass | - |
| 41 | - | 9/6/2022 | - | 3 | 2.5 | 95.0 | 99.5 | -0.5 | Pass | - |
| 42 | - | 9/6/2022 | - | 3 | 2.1 | 97.0 | 107.5 | 1.5 | Pass | - |
| 43 | - | 10/6/2022 | - | 3 | 3.5 | 98.0 | 107.0 | 2.0 | Pass | - |
| 44 | - | 10/6/2022 | - | 3 | 3.8 | 96.5 | 107.5 | 1.5 | Pass | - |
| 45 | - | 10/6/2022 | - | 3 | 4.1 | 100.5 | 98.5 | -0.5 | Pass | - |
| 46 | - | 15/06/2022 | - | 3 | 3.8 | 98.5 | 95.5 | -1.0 | Pass | - |
| 47 | - | 15/06/2022 | - | 3 | 3.1 | 96.5 | 107.0 | 1.5 | Pass | - |
| 48 | - | 15/06/2022 | - | 3 | 3.0 | 97.5 | 108.5 | 2.0 | Pass | - |
| 49 | - | 20/06/2022 | - | 3 | 2.5 | 98.0 | 110.5 | 1.5 | Pass | - |
| 50 | - | 20/06/2022 | - | 3 | 2.9 | 98.0 | 96.5 | -0.5 | Pass | - |
| 51 | - | 20/06/2022 | - | 3 | 3.8 | 98.0 | 108.5 | 1.5 | Pass | - |
| 52 | - | 23/06/2022 | - | 1 | 3.8 | 98.0 | 98.0 | -0.5 | Pass | - |
| 53 | - | 23/06/2022 | - | 1 | 3.5 | 96.5 | 110.5 | 1.5 | Pass | - |
| 54 | - | 23/06/2022 | - | 1 | 4.8 | 98.0 | 97.5 | -0.5 | Pass | - |
| 55 | - | 27/06/2022 | - | 4 | 3.8 | 98.0 | 113.5 | 2.0 | Pass | - |
| 56 | - | 27/06/2022 | - | 4 | 2.0 | 98.5 | 96.0 | -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)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 57 | - | 27/06/2022 | - | 4 | 4.3 | 96.5 | 109.5 | 1.5 | Pass | - |
| 58 | - | 28/06/2022 | - | 4 | 4.8 | 98.5 | 96.5 | -0.5 | Pass | - |
| 59 | - | 28/06/2022 | - | 4 | 3.6 | 98.5 | 109.5 | 1.5 | Pass | - |
| 60 | - | 28/06/2022 | - | 4 | 4.1 | 99.0 | 109.5 | 1.5 | Pass | - |
| 61 | - | 29/06/2022 | - | 1 | 4.5 | 97.0 | 99.0 | -0.5 | Pass | - |
| 62 | - | 29/06/2022 | - | 1 | 3.0 | 97.0 | 108.0 | 1.5 | Pass | - |
| 63 | - | 29/06/2022 | - | 1 | 3.8 | 97.5 | 107.5 | 1.5 | Pass | - |
| 64 | - | 30/06/2022 | - | 2 | 1.8 | 97.0 | 106.0 | 1.5 | Pass | - |
| 65 | - | 30/06/2022 | - | 2 | 2.1 | 97.0 | 109.5 | 2.0 | Pass | - |
| 66 | - | 30/06/2022 | - | 2 | 4.2 | 97.5 | 96.5 | -0.5 | Pass | - |
| 67 | - | 1/7/2022 | - | 1 | 4.0 | 97.0 | 97.5 | -0.5 | Pass | - |
| 68 | - | 1/7/2022 | - | 1 | 2.8 | 96.5 | 108.0 | 1.5 | Pass | - |
| 69 | - | 1/7/2022 | - | 1 | 3.1 | 97.5 | 108.5 | 2.0 | Pass | - |
| 70 | - | 4/7/2022 | - | 2 | 2.9 | 97.0 | 107.0 | 1.5 | Pass | - |
| 71 | - | 4/7/2022 | - | 2 | 3.4 | 96.5 | 96.0 | -0.5 | Pass | - |
| 72 | - | 4/7/2022 | - | 2 | 4.6 | 97.5 | 96.5 | -0.5 | Pass | - |
| 73 | - | 6/9/2022 | - | 1 | 0.0 | 98.0 | 97.0 | -0.5 | Pass | - |
| 74 | - | 6/9/2022 | - | 1 | 0.0 | 95.5 | 107.5 | 2.0 | Pass | - |
| 75 | - | 6/9/2022 | - | 1 | 0.0 | 96.0 | 108.5 | 2.0 | Pass | - |
| 76 | - | 7/9/2022 | - | 1 | 0.0 | 96.5 | 97.5 | -0.5 | Pass | - |
| 77 | - | 7/9/2022 | - | 1 | 0.0 | 98.5 | 97.5 | -0.5 | Pass | - |
| 78 | - | 7/9/2022 | - | 1 | 0.0 | 100.0 | 109.0 | 2.0 | Pass | - |
| 79 | - | 5/10/2022 | - | 1 | 0.0 | 98.5 | 107.0 | 1.5 | Pass | - |
| 80 | - | 5/10/2022 | - | 1 | 0.0 | 98.5 | 99.0 | -0.5 | Pass | - |
| 81 | - | 5/10/2022 | - | 1 | 0.0 | 98.5 | 96.0 | -1.0 | Pass | - |
| 82 | - | 11/1/2023 | - | 5 | 3.0 | 97.0 | 110.0 | 2.0 | Pass | - |
| 83 | - | 11/1/2023 | - | 5 | 0.0 | 97.0 | 107.0 | 1.5 | Pass | - |
| 84 | - | 11/1/2023 | - | 5 | 0.0 | 98.0 | 96.5 | -0.5 | Pass | - |
| 85 | - | 12/1/2023 | - | 4 | 4.6 | 97.0 | 110.5 | 2.0 | Pass | - |
| 86 | - | 12/1/2023 | - | 4 | 2.0 | 97.0 | 98.0 | -0.5 | Pass | - |
| 87 | - | 12/1/2023 | - | 4 | 3.8 | 95.5 | 106.5 | 1.5 | 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)

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 88 | - | 13/01/2023 | - | 6 | 5.0 | 98.5 | 98.5 | -0.5 | Pass | - |
| 89 | - | 13/01/2023 | - | 6 | 2.0 | 97.5 | 96.5 | -0.5 | Pass | - |
| 90 | - | 13/01/2023 | - | 6 | 3.5 | 99.5 | 96.0 | -0.5 | Pass | - |
| 91 | - | 31/01/2023 | - | 5 | 4.2 | 97.5 | 96.5 | -0.5 | Pass | - |
| 92 | - | 31/01/2023 | - | 7 | 6.1 | 96.0 | 95.0 | -0.5 | Pass | - |
| 93 | - | 31/01/2023 | - | 7 | 3.1 | 97.5 | 109.0 | 1.5 | Pass | - |
| 94 | - | 1/2/2023 | - | 7 | 0.0 | 96.5 | 109.5 | 2.0 | Pass | - |
| 95 | - | 1/2/2023 | - | 7 | 0.0 | 96.0 | 108.5 | 2.0 | Pass | - |
| 96 | - | 1/2/2023 | - | 7 | 0.0 | 96.0 | 107.0 | 1.5 | Pass | - |
| 97 | - | 2/2/2023 | - | 8 | 0.0 | 98.0 | 107.0 | 1.5 | Pass | - |
| 98 | - | 2/2/2023 | - | 8 | 3.8 | 95.5 | 97.0 | -0.5 | Pass | - |
| 99 | - | 2/2/2023 | - | 9 | 4.5 | 96.0 | 96.5 | -0.5 | Pass | - |
| 100 | - | 24/02/2023 | - | FSL | 2.9 | 96.0 | 98.5 | -0.5 | Pass | - |
| 101 | - | 24/02/2023 | - | FSL | 0.0 | 97.0 | 107.5 | 2.0 | Pass | - |
| 102 | - | 24/02/2023 | - | FSL | 4.1 | 97.5 | 97.0 | -0.5 | Pass | - |
| 103 | - | 27/02/2023 | - | FSL | 0.0 | 97.0 | 98.5 | -0.5 | Pass | - |
| 104 | - | 27/02/2023 | - | FSL | 0.0 | 98.5 | 108.5 | 2.0 | Pass | - |
| 105 | - | 27/02/2023 | - | FSL | 0.0 | 96.0 | 108.0 | 2.0 | Pass | - |
| 106 | - | 7/3/2023 | - | 6 | 0.0 | 97.0 | 108.5 | 2.0 | Pass | - |
| 107 | - | 7/3/2023 | - | 6 | 4.6 | 96.0 | 99.0 | -0.5 | Pass | - |
| 108 | - | 7/3/2023 | - | 6 | 5.2 | 97.5 | 98.5 | -0.5 | Pass | - |
| 109 | - | 10/3/2023 | - | 7 | 3.2 | 96.5 | 111.0 | 2.0 | Pass | - |
| 110 | - | 10/3/2023 | - | 7 | 2.9 | 96.0 | 109.5 | 1.5 | Pass | - |
| 111 | - | 10/3/2023 | - | 7 | 4.9 | 97.5 | 97.0 | -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)

# Appendix D – NATA Test Results

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 1

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 1 | 2 | 3 | | | |
| Date Tested | | 12/05/2022 | 12/05/2022 | 12/05/2022 | | | |
| Time Tested | | AM | AM | PM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 1 | 1 | 1 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | t/m$^3$ | 1.89 | 1.98 | 1.99 | | | |
| Field Moisture Content | % | 23.3 | 20.8 | 19.5 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.5 | 4.2 | 5.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.90 | 2.00 | 2.04 | | | |
| Optimum Moisture Content | % | 21.5 | 21 | 20.5 | | | |
| **Moisture Ratio** | % | 108.5 | 99 | 95 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | -0.5 Drier | -0.5 Drier | | | |
| **Density Ratio** | % | 99.0 | 98.5 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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

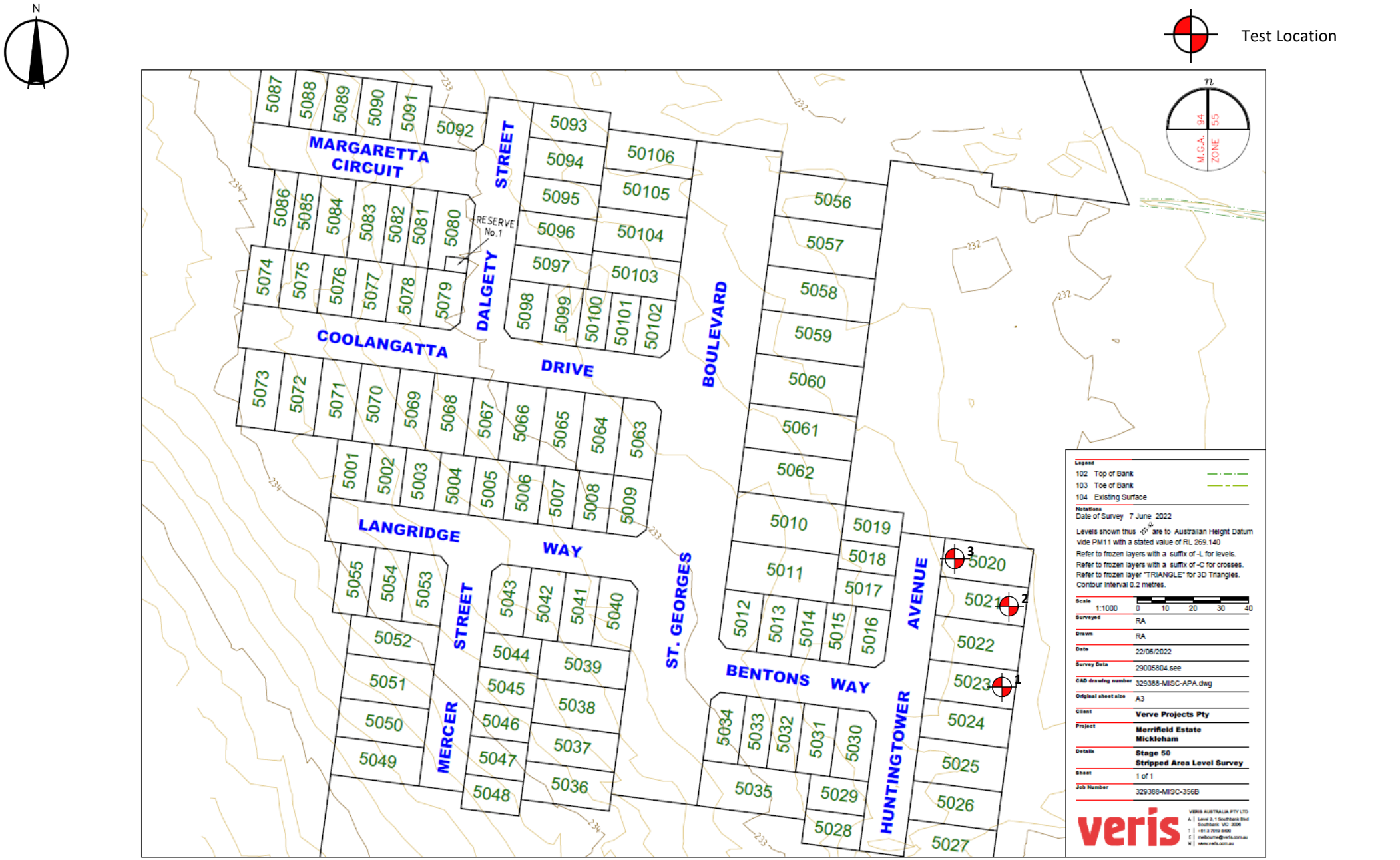
**NATA Accredited Laboratory No. 20172**

**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:** 05/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 12/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI01) | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 2

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 4 | 5 | 6 | | | |
| Date Tested | | 13/05/2022 | 13/05/2022 | 13/05/2022 | | | |
| Time Tested | | AM | AM | PM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 1 | 1 | 1 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | t/m$^3$ | 1.88 | 1.92 | 2.00 | | | |
| Field Moisture Content | % | 18.4 | 17.3 | 19.4 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 4.8 | 5.5 | 5.5 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.89 | 1.99 | 2.08 | | | |
| Optimum Moisture Content | % | 19.5 | 15.5 | 18 | | | |
| **Moisture Ratio** | % | 94.5 | 111.5 | 107.5 | | | |
| **Moisture Variation from OMC** | % | -1.0 Drier | 1.5 Wetter | 1.5 Wetter | | | |
| **Density Ratio** | % | 98.5 | 96.0 | 101.0 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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**NATA Accredited Laboratory No. 20172**

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

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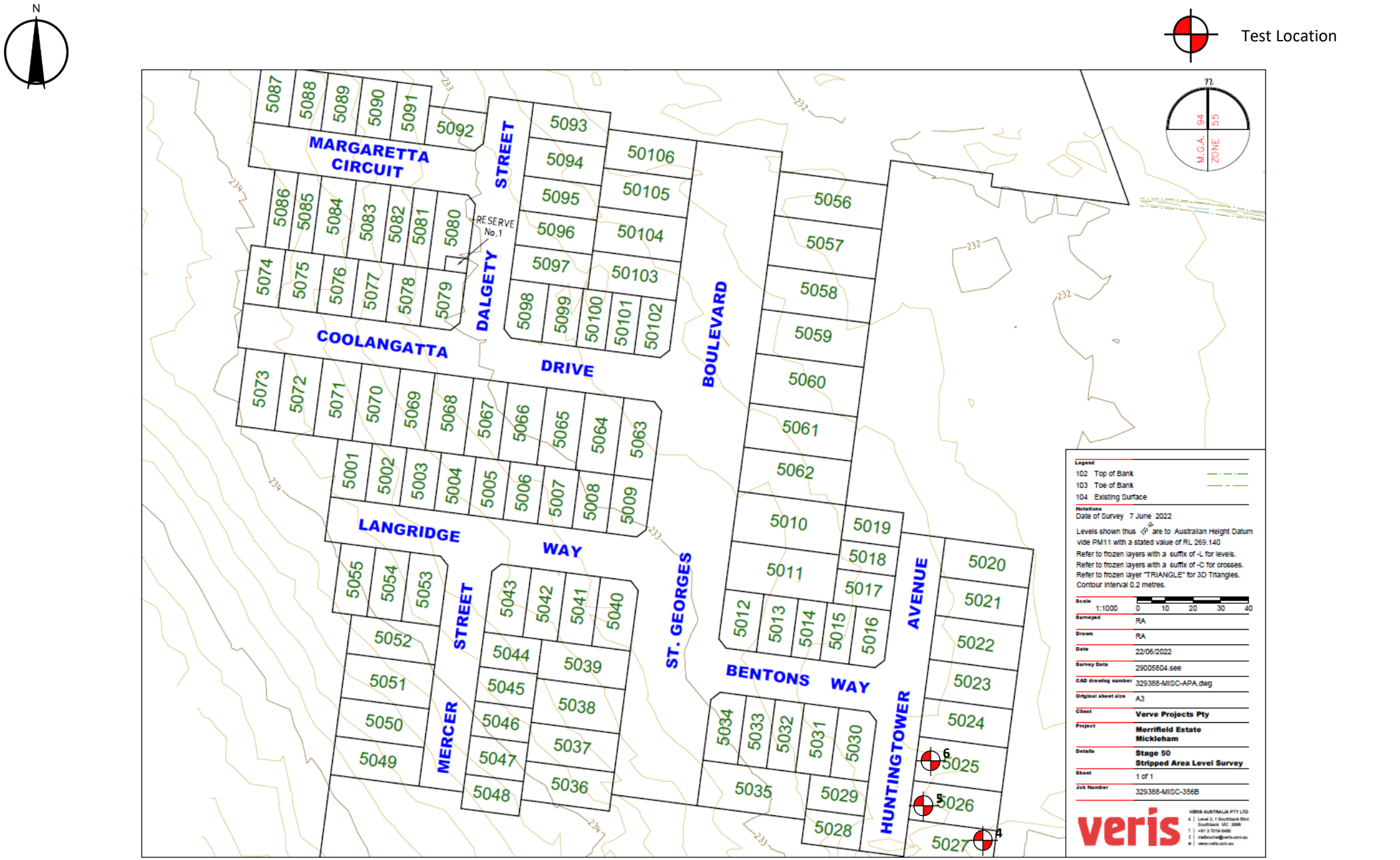
**Approved Signatory:** David Burns

**Date:** 05/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 13/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI02) | |

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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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 3 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 7 | 8 | 9 | | | |
| Date Tested | | 16/05/2022 | 16/05/2022 | 16/05/2022 | | | |
| Time Tested | | AM | AM | AM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 1 | 1 | 1 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | $t/m^3$ | 1.94 | 1.90 | 1.82 | | | |
| Field Moisture Content | % | 19.2 | 21.3 | 24.4 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 5.9 | 5.2 | 3.2 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.95 | 1.96 | 1.86 | | | |
| Optimum Moisture Content | % | 17.5 | 19.5 | 25.5 | | | |
| **Moisture Ratio** | % | 109.5 | 109 | 95.5 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | 1.5 Wetter | -1.0 Drier | | | |
| **Density Ratio** | % | 99.0 | 96.0 | 97.0 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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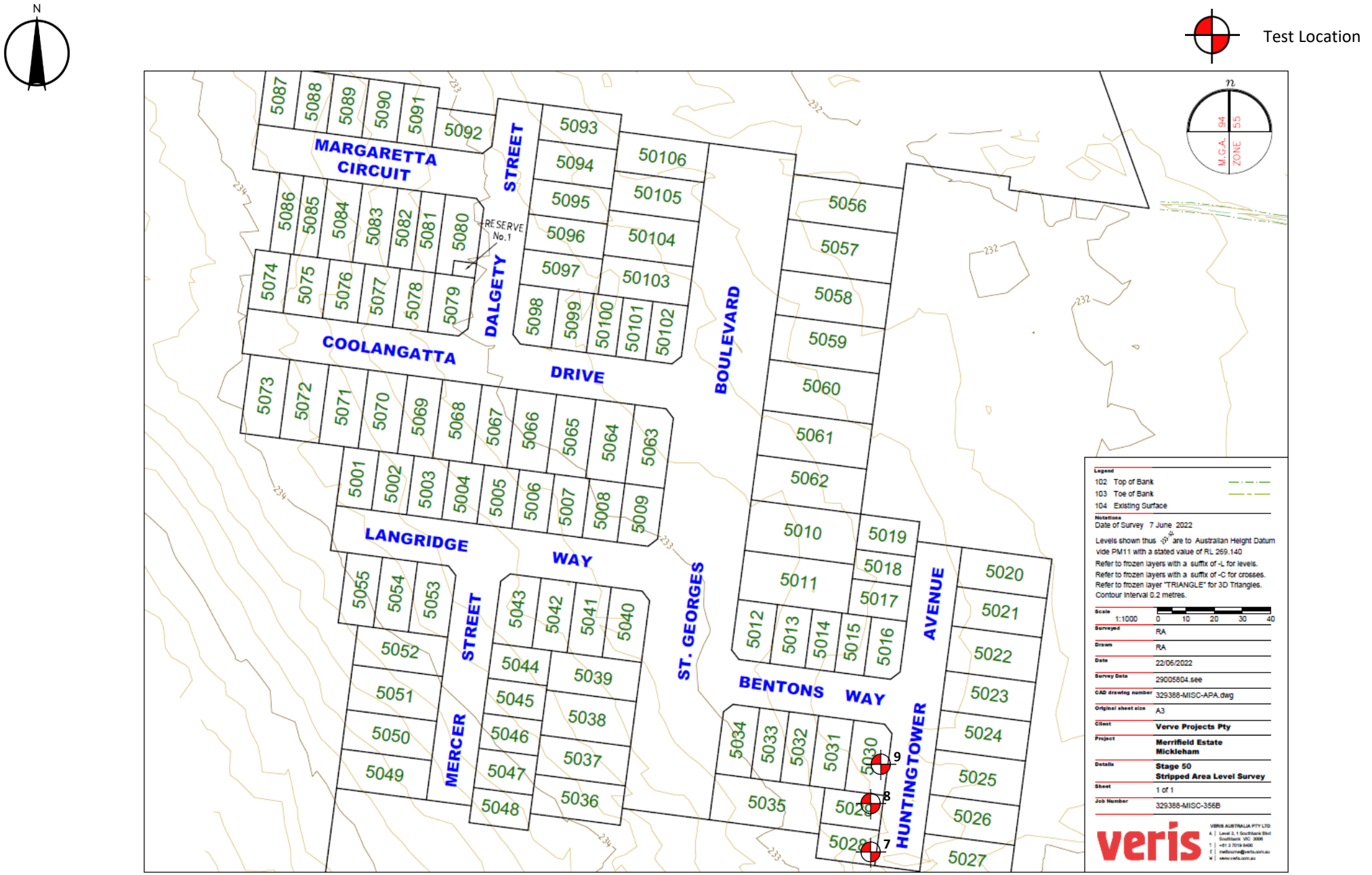
**Approved Signatory:** David Burns

**Date:** 05/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 16/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI03) | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 4

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 10 | 11 | 12 | | | |
| Date Tested | | 17/05/2022 | 17/05/2022 | 17/05/2022 | | | |
| 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$^3$ | 1.94 | 1.97 | 1.83 | | | |
| Field Moisture Content | % | 22.1 | 20.7 | 24.3 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 5.5 | 5.8 | 3.5 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.94 | 1.93 | 1.90 | | | |
| Optimum Moisture Content | % | 20.5 | 21.5 | 22.5 | | | |
| **Moisture Ratio** | % | 107.5 | 96.5 | 108 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | -0.5 Drier | 2.0 Wetter | | | |
| **Density Ratio** | % | 99.0 | 101.5 | 96.0 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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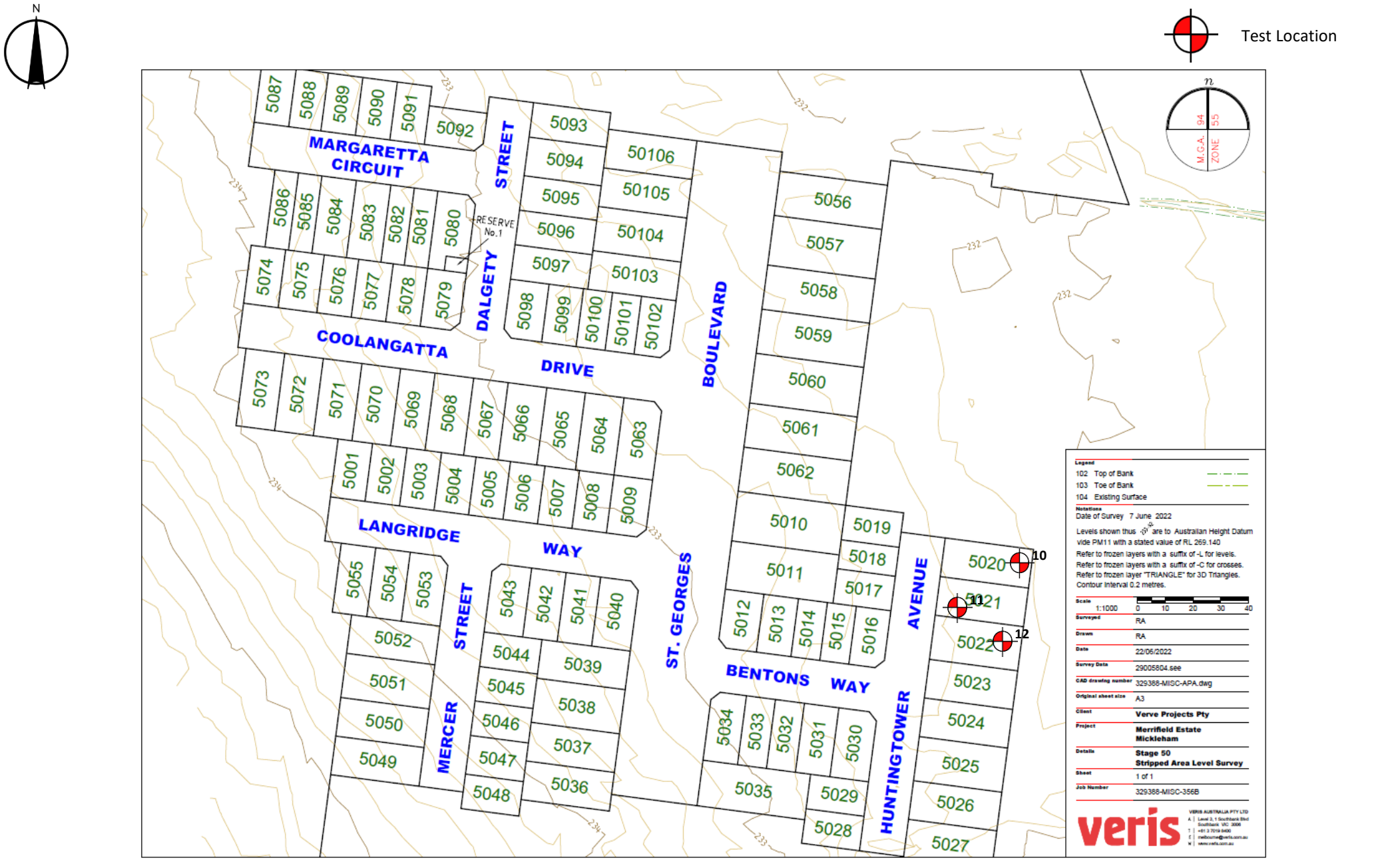
**Approved Signatory:** David Burns

**Date:** 06/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 16/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI04) | |

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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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 5 | |
| **Location:** | Mickleham | | | | | |
| Sample No | 13 | 14 | 15 | | | |
| Date Tested | 18/05/2022 | 18/05/2022 | 18/05/2022 | | | |
| 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 $t/m^3$ | 1.92 | 1.84 | 1.88 | | | |
| Field Moisture Content % | 19.3 | 24.8 | 23.1 | | | |
| Material: | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material WET, % | 4.9 | 3.2 | 4.6 | | | |
| Sieve Size mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density $t/m^3$ | 2.00 | 1.92 | 1.96 | | | |
| Optimum Moisture Content % | 19.5 | 25 | 21.5 | | | |
| **Moisture Ratio** % | 99 | 99 | 107.5 | | | |
| **Moisture Variation from OMC** % | -0.5 Drier | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** % | 95.5 | 95.0 | 95.5 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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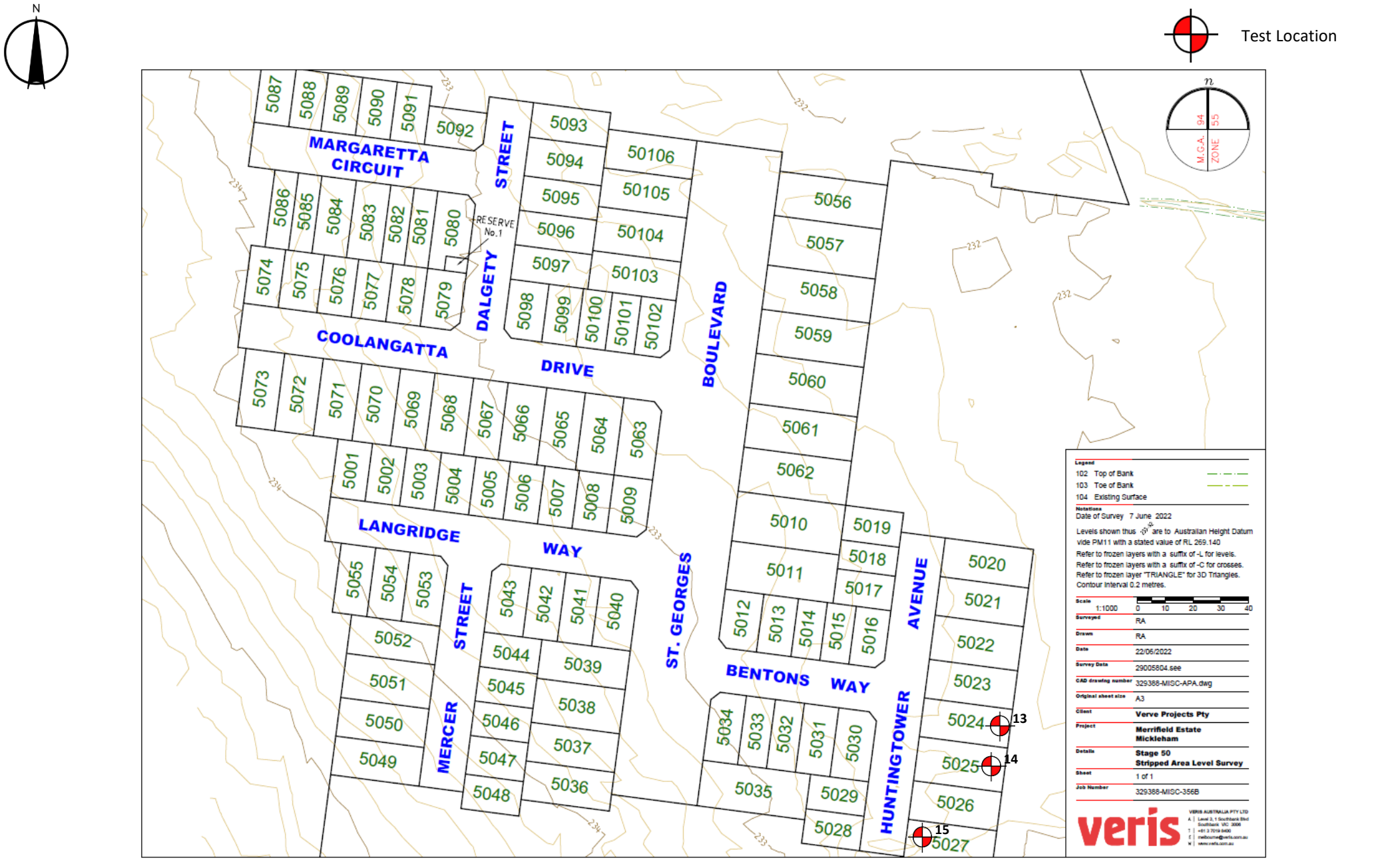
**Approved Signatory:**

David Burns

**Date:** 06/07/2022




| PROJECT: | CLIENT: | DATE: | |
|---|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 18/05/2022 | |
| LOCATION: | PROJECT No: | SITE PLAN SKETCH—NOT TO SCALE | |
| Mickleham | 1120 0343-1 (SI05) | | |

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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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 6 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 16 | 17 | 18 | | | |
| Date Tested | | 19/05/2022 | 19/05/2022 | 19/05/2022 | | | |
| 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 | 1.92 | 1.94 | | | |
| Field Moisture Content | % | 24.4 | 22.4 | 20.7 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.0 | 4.5 | 5.3 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.89 | 1.94 | 1.96 | | | |
| Optimum Moisture Content | % | 22.5 | 20.5 | 21 | | | |
| **Moisture Ratio** | % | 108.5 | 109 | 98.5 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | 1.5 Wetter | -0.5 Drier | | | |
| **Density Ratio** | % | 97.5 | 98.0 | 98.0 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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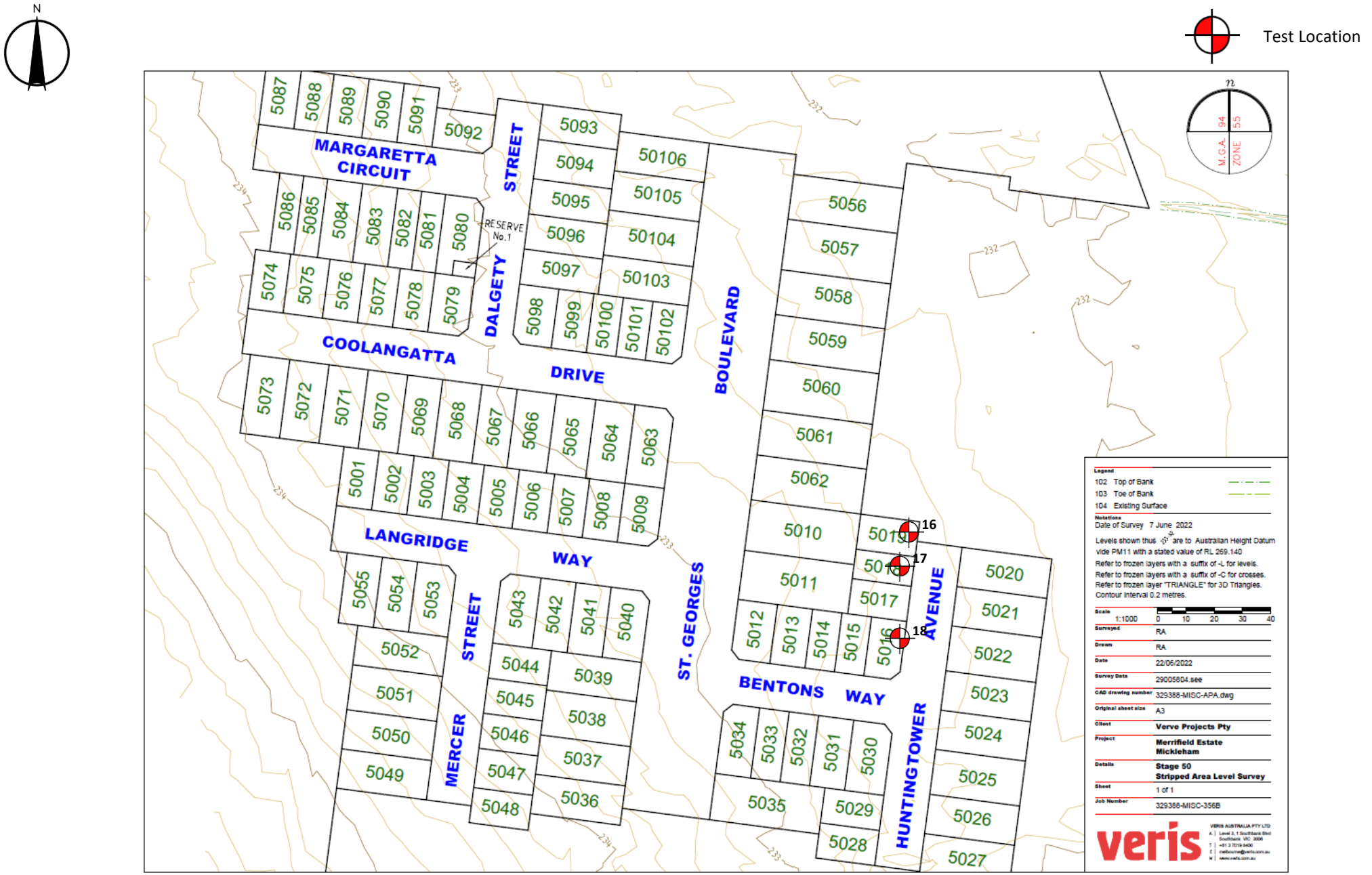
**Approved Signatory:**

David Burns

**Date:** 06/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 19/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI06) | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 7

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 19 | 20 | 21 | | | |
| Date Tested | | 20/05/2022 | 20/05/2022 | 20/05/2022 | | | |
| 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 | 1.84 | 1.92 | | | |
| Field Moisture Content | % | 23.8 | 24.3 | 22.4 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.1 | 3.3 | 4.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.89 | 1.86 | 1.99 | | | |
| Optimum Moisture Content | % | 22 | 24.5 | 21 | | | |
| **Moisture Ratio** | % | 108 | 99 | 106.5 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.0 | 98.0 | 96.0 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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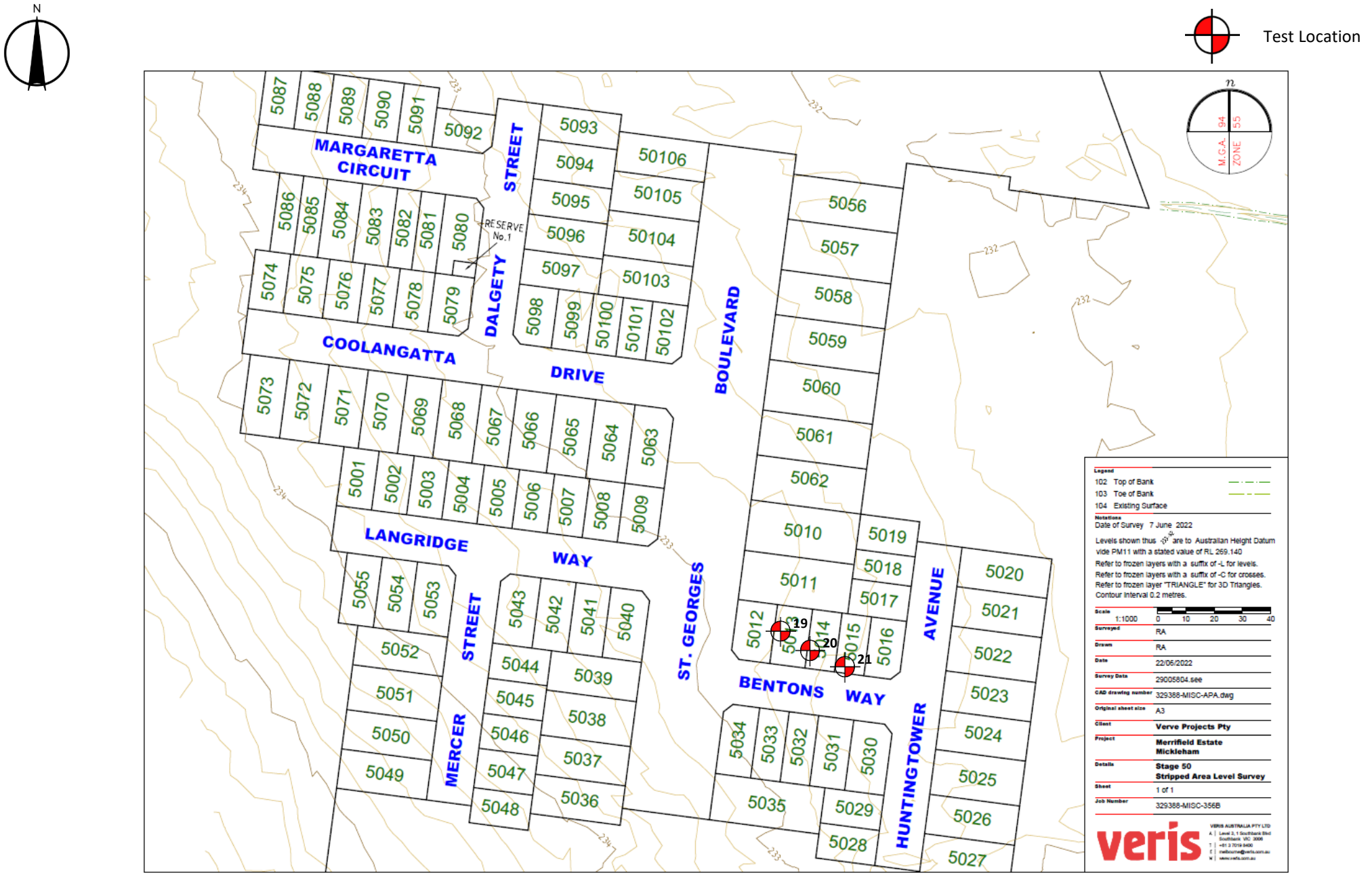
**Approved Signatory:** David Burns

**Date:** 06/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 20/05/2022 |
| **LOCATION:** | **PROJECT No:** | **SITE PLAN SKETCH—NOT TO SCALE** |
| Mickleham | 1120 0343-1 (SI07) | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 8

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 22 | 23 | 24 | | | |
| Date Tested | | 23/05/2022 | 23/05/2022 | 23/05/2022 | | | |
| 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$^3$ | 1.89 | 1.94 | 1.91 | | | |
| Field Moisture Content | % | 23.5 | 21.8 | 20.0 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.0 | 5.1 | 4.6 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.94 | 1.96 | 1.94 | | | |
| Optimum Moisture Content | % | 24.5 | 22 | 18.5 | | | |
| **Moisture Ratio** | % | 96 | 99 | 108 | | | |
| **Moisture Variation from OMC** | % | -1.0 Drier | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.0 | 98.0 | 98.0 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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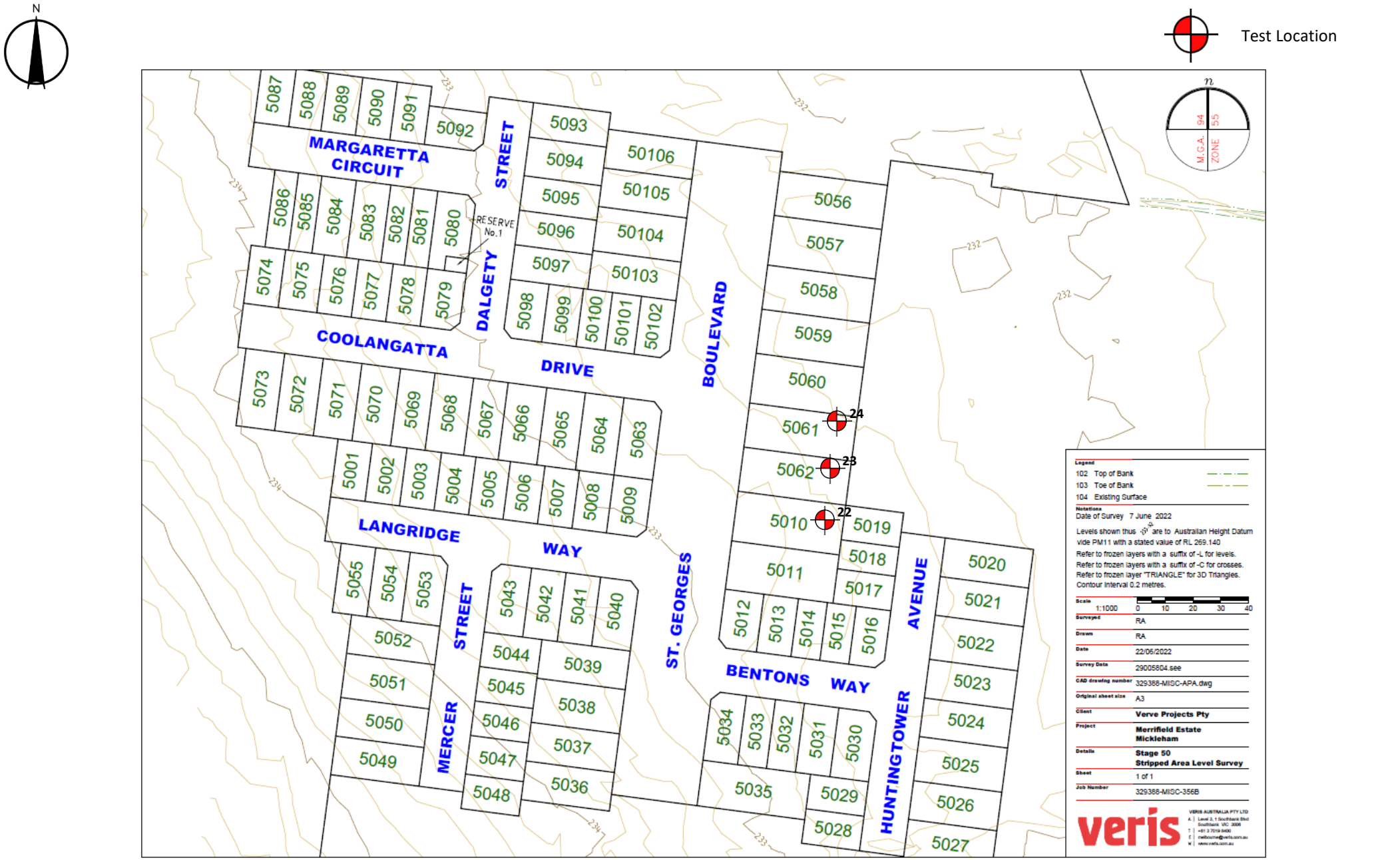
**Approved Signatory:** David Burns

**Date:** 06/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 23/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI08) | |

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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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 9 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 25 | 26 | 27 | | | |
| Date Tested | | 24/05/2022 | 24/05/2022 | 24/05/2022 | | | |
| 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 | 1.97 | 1.89 | | | |
| Field Moisture Content | % | 23.9 | 22.8 | 21.3 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 5.3 | 5.3 | 4.7 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.98 | 1.99 | 1.93 | | | |
| Optimum Moisture Content | % | 22 | 23 | 19.5 | | | |
| **Moisture Ratio** | % | 108.5 | 99 | 109.5 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.0 | 98.0 | 97.0 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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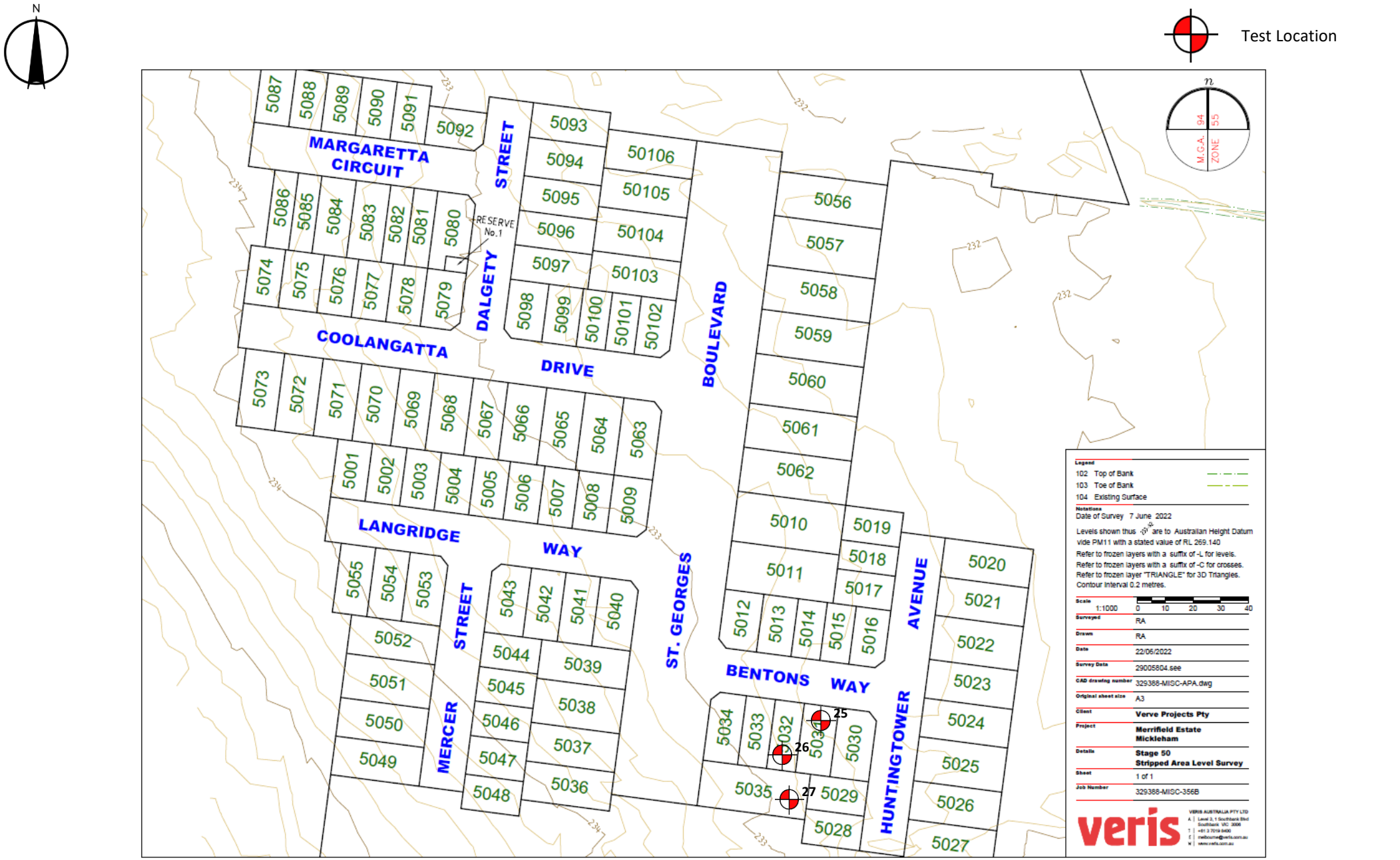
**Approved Signatory:**

David Burns

**Date:** 22/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 24/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI09) | |

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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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 10 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 28 | 29 | 30 | | | |
| Date Tested | | 25/05/2022 | 25/05/2022 | 25/05/2022 | | | |
| 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 | 1.88 | 1.93 | | | |
| Field Moisture Content | % | 22.1 | 23.1 | 21.8 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 5.5 | 3.9 | 3.2 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.95 | 1.91 | 2.01 | | | |
| Optimum Moisture Content | % | 20.5 | 24 | 20 | | | |
| **Moisture Ratio** | % | 108 | 96.5 | 109 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.0 | 98.0 | 95.5 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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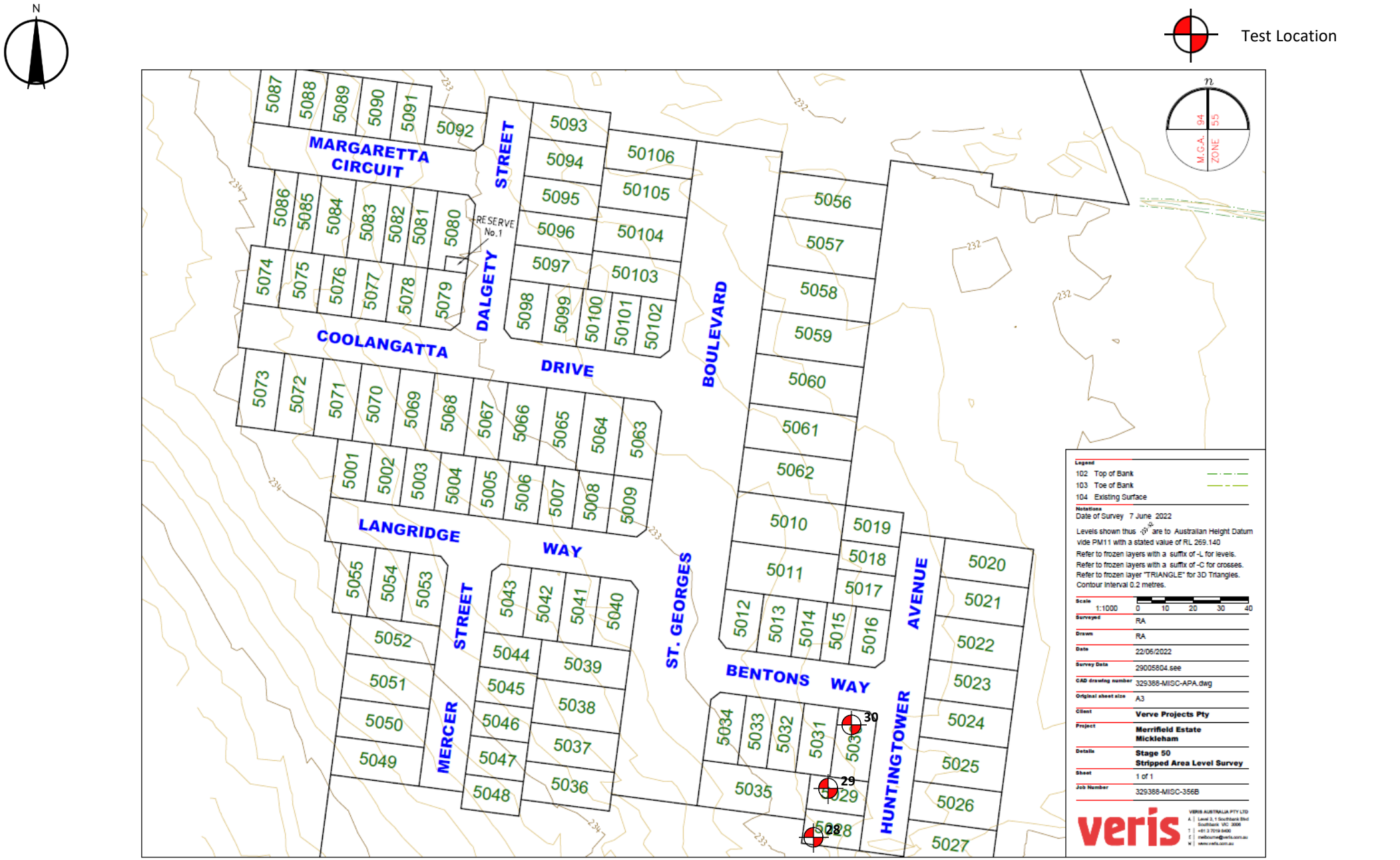
David Burns

**Date:** 22/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 25/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI10) | |

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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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 11 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 31 | 32 | 33 | | | |
| Date Tested | | 26/05/2022 | 26/05/2022 | 26/05/2022 | | | |
| 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 | 1.93 | 1.97 | | | |
| Field Moisture Content | % | 19.9 | 18.9 | 18.0 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 4.3 | 5.7 | 5.9 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.95 | 1.96 | 2.06 | | | |
| Optimum Moisture Content | % | 18 | 19.5 | 16.5 | | | |
| **Moisture Ratio** | % | 110.5 | 97 | 109 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.0 | 98.0 | 95.5 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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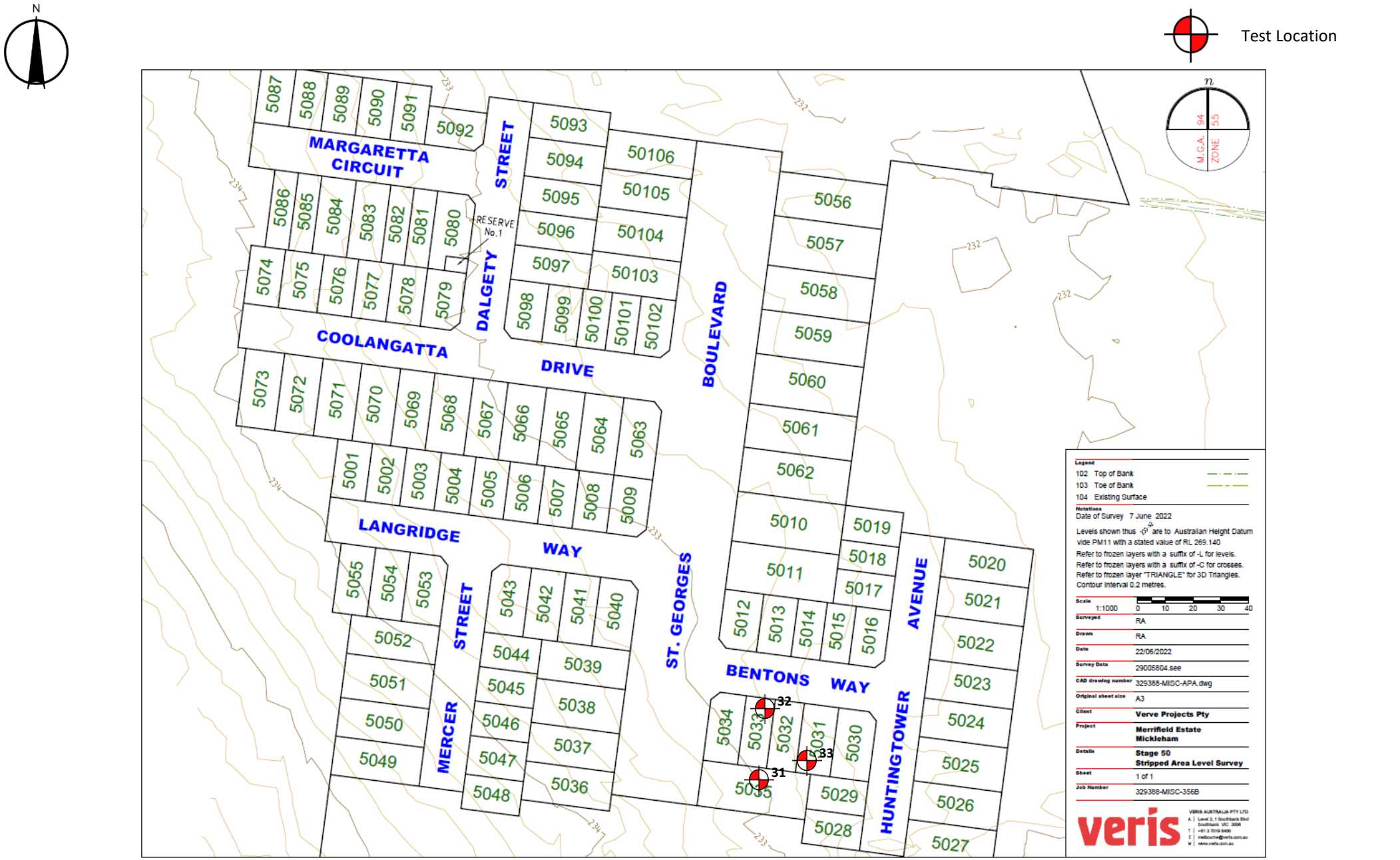
**Approved Signatory:**

David Burns

**Date:** 22/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 26/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI11) | |

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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:** | | BMD2324 |
| **Project:** | | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | | 12 |
| **Location:** | | Mickleham | | | | | |
| Sample No | | 34 | 35 | 36 | | | |
| Date Tested | | 27/05/2022 | 27/05/2022 | 27/05/2022 | | | |
| 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 | $t/m^3$ | 1.97 | 1.96 | 1.90 | | | |
| Field Moisture Content | % | 22.5 | 24.1 | 23.4 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.5 | 3.0 | 4.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.95 | 1.99 | 1.94 | | | |
| Optimum Moisture Content | % | 20.5 | 22 | 22 | | | |
| **Moisture Ratio** | % | 109.5 | 109.5 | 106.5 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | 2.0 Wetter | 1.5 Wetter | | | |
| **Density Ratio** | % | 100.5 | 98.0 | 97.5 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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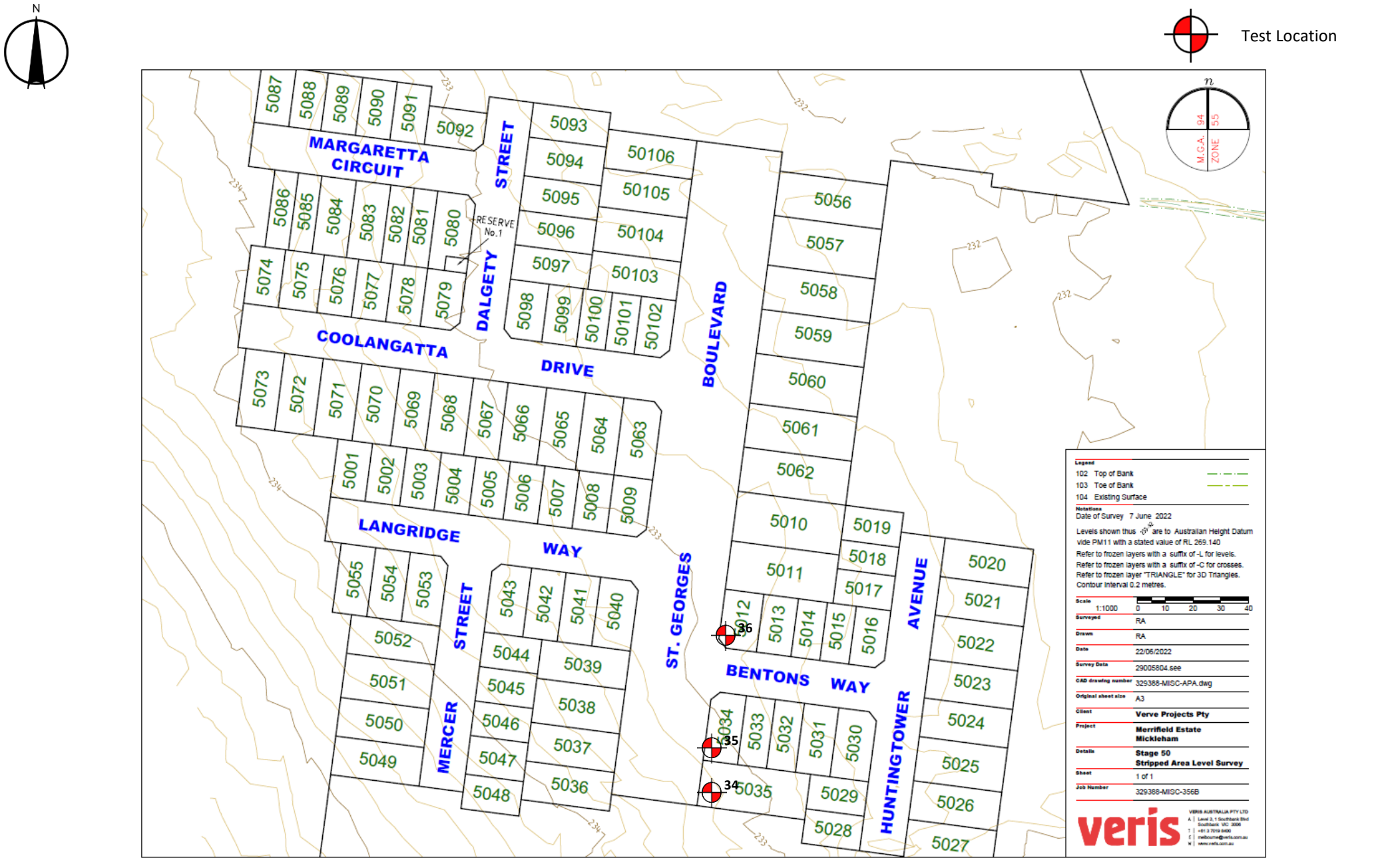
**Approved Signatory:**

David Burns

**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 27/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI12) | |

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# Field Density Test Results
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PH: 0400 413 531
info@ayassociates.com.au

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Client:** | | BMD Urban | | | **Job No:** | | BMD2324 |
| **Project:** | | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | | 13 |
| **Location:** | | Mickleham | | | | | |
| Sample No | | 37 | 38 | 39 | | | |
| Date Tested | | 28/05/2022 | 28/05/2022 | 28/05/2022 | | | |
| 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 | 1.95 | | | |
| Field Moisture Content | % | 21.6 | 22.3 | 20.5 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.5 | 3.0 | 4.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.95 | 1.99 | 1.94 | | | |
| Optimum Moisture Content | % | 20 | 20.5 | 19 | | | |
| **Moisture Ratio** | % | 108 | 109 | 108 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | 2.0 Wetter | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.0 | 96.0 | 100.0 | | | |

**Specification:** 95% STD
**Test Selection:** N/A
**Notes:** Ref : 1120 0343-1 (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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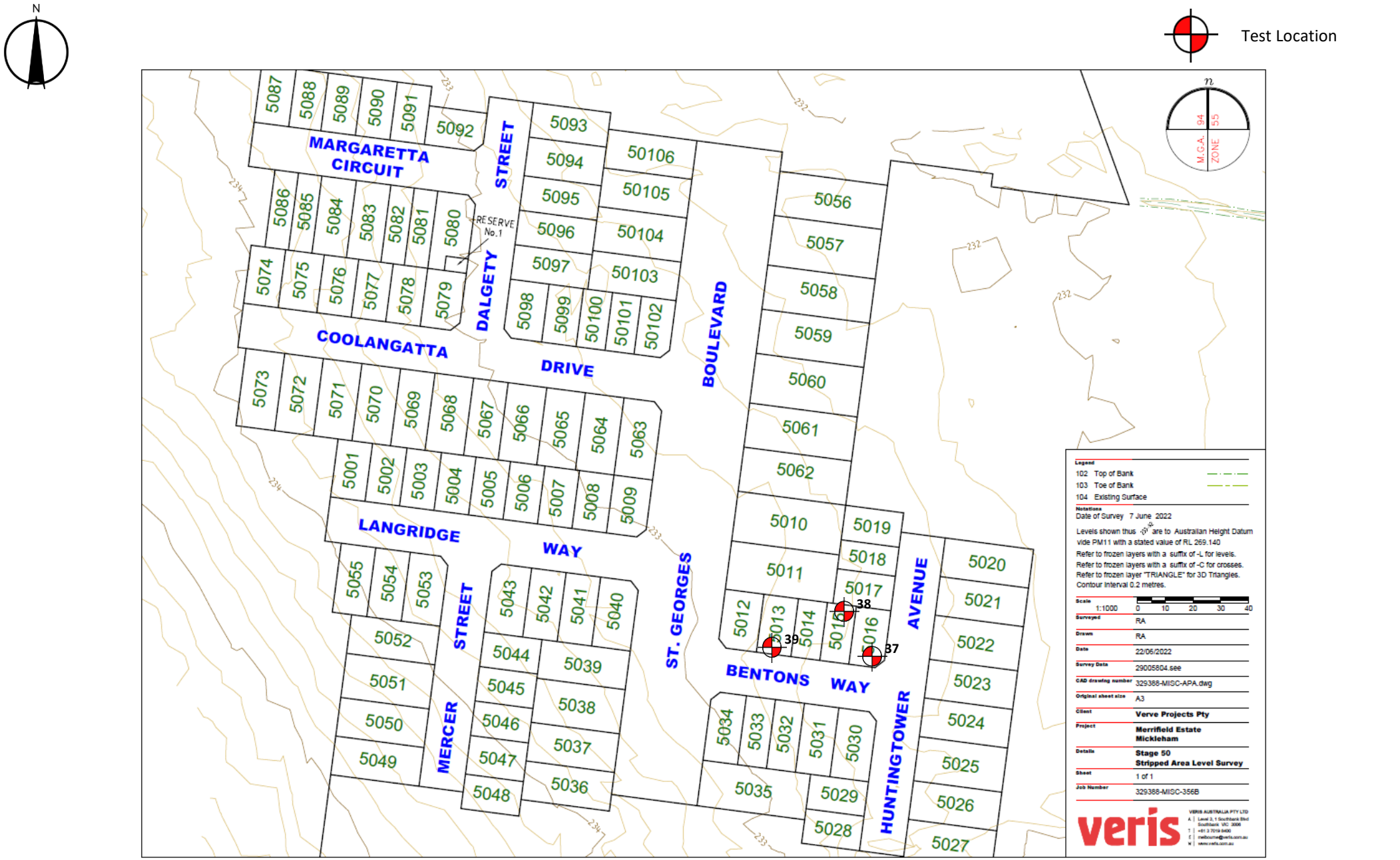
**Approved Signatory:**

David Burns

**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 28/05/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI13) | |

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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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 14 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 40 | 41 | 42 | | | |
| Date Tested | | 09/06/2022 | 09/06/2022 | 09/06/2022 | | | |
| 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$^3$ | 1.81 | 1.84 | 1.82 | | | |
| Field Moisture Content | % | 23.5 | 23.9 | 24.2 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 2.0 | 2.5 | 2.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.85 | 1.92 | 1.86 | | | |
| Optimum Moisture Content | % | 21.5 | 24 | 22.5 | | | |
| **Moisture Ratio** | % | 109.5 | 99.5 | 107.5 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.5 | 95.0 | 97.0 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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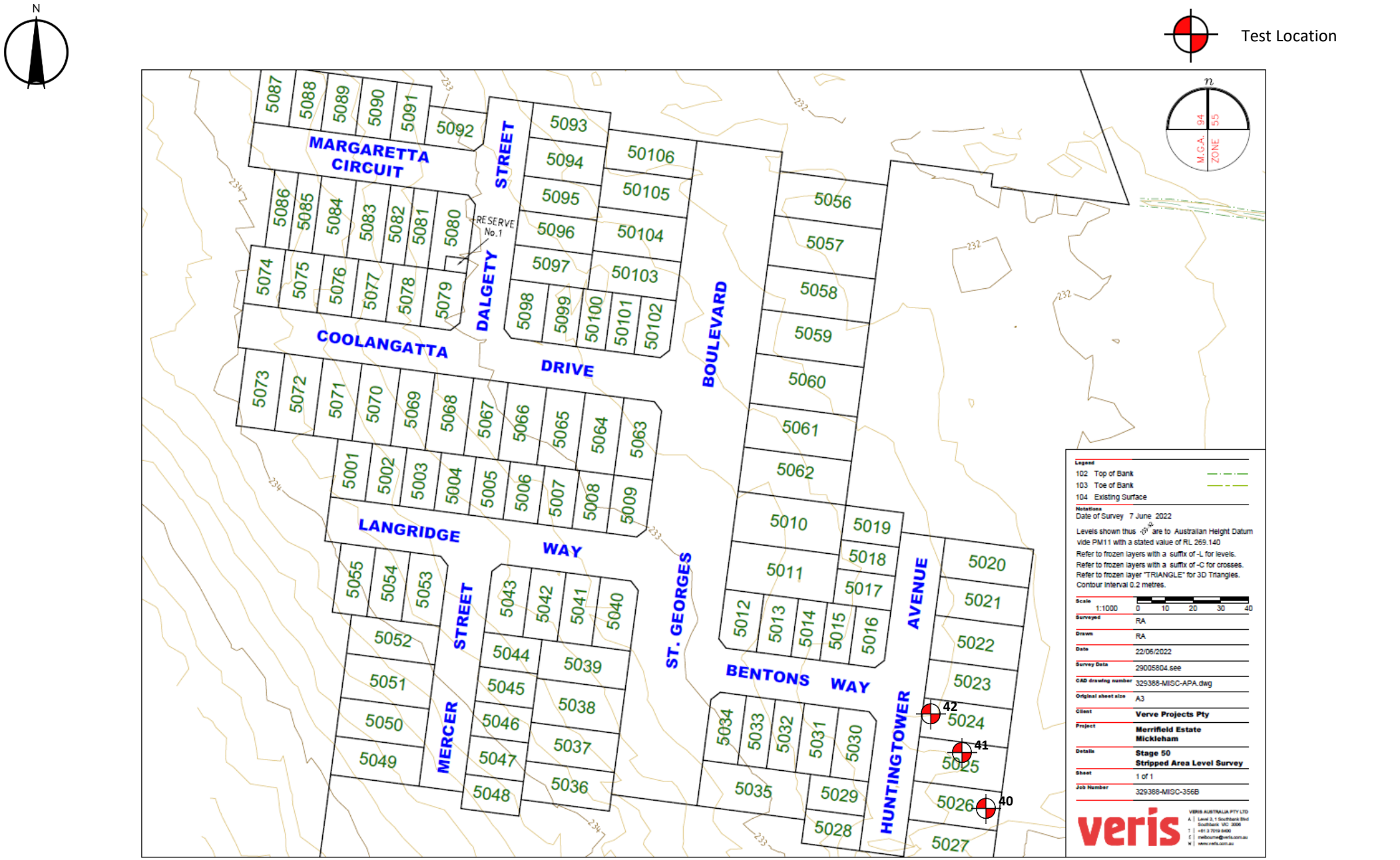
**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 09/06/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI14) | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 15

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 43 | 44 | 45 | | | |
| Date Tested | | 10/06/2022 | 10/06/2022 | 10/06/2022 | | | |
| 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$^3$ | 1.91 | 1.92 | 1.95 | | | |
| Field Moisture Content | % | 28.4 | 27.4 | 23.6 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.5 | 3.8 | 4.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.93 | 1.98 | 1.93 | | | |
| Optimum Moisture Content | % | 26.5 | 25.5 | 24 | | | |
| **Moisture Ratio** | % | 107 | 107.5 | 98.5 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | 1.5 Wetter | -0.5 Drier | | | |
| **Density Ratio** | % | 98.0 | 96.5 | 100.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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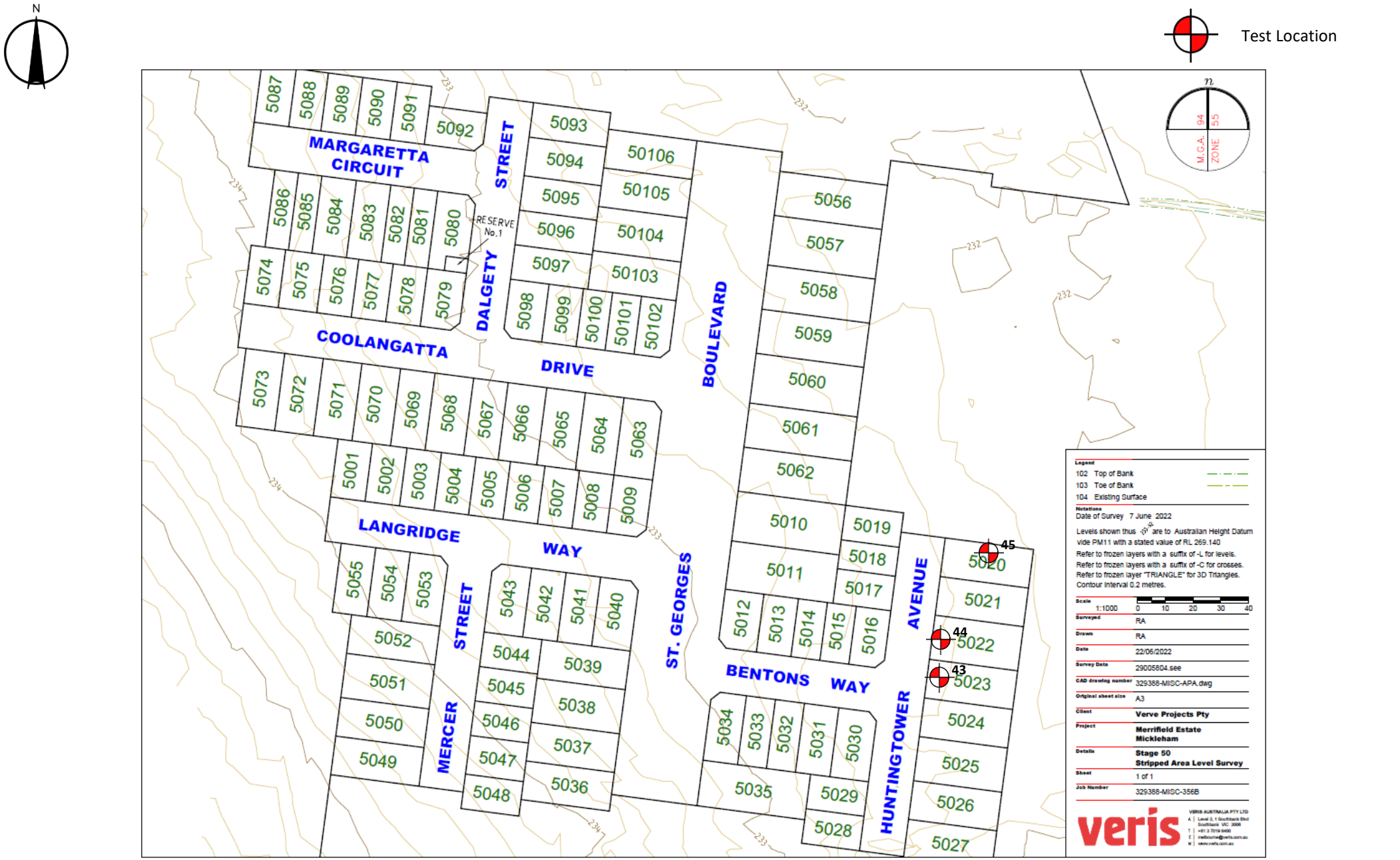
**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 10/06/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI15) | |

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# AS1289.5.7.1

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

**Client:** BMD Urban **Job No:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 16

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 46 | 47 | 48 | | | |
| Date Tested | | 15/06/2022 | 15/06/2022 | 15/06/2022 | | | |
| 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$^3$ | 1.94 | 1.84 | 1.82 | | | |
| Field Moisture Content | % | 22.5 | 24.6 | 23.9 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.8 | 3.1 | 3.0 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.96 | 1.89 | 1.86 | | | |
| Optimum Moisture Content | % | 23.5 | 23 | 22 | | | |
| **Moisture Ratio** | % | 95.5 | 107 | 108.5 | | | |
| **Moisture Variation from OMC** | % | -1.0 Drier | 1.5 Wetter | 2.0 Wetter | | | |
| **Density Ratio** | % | 98.5 | 96.5 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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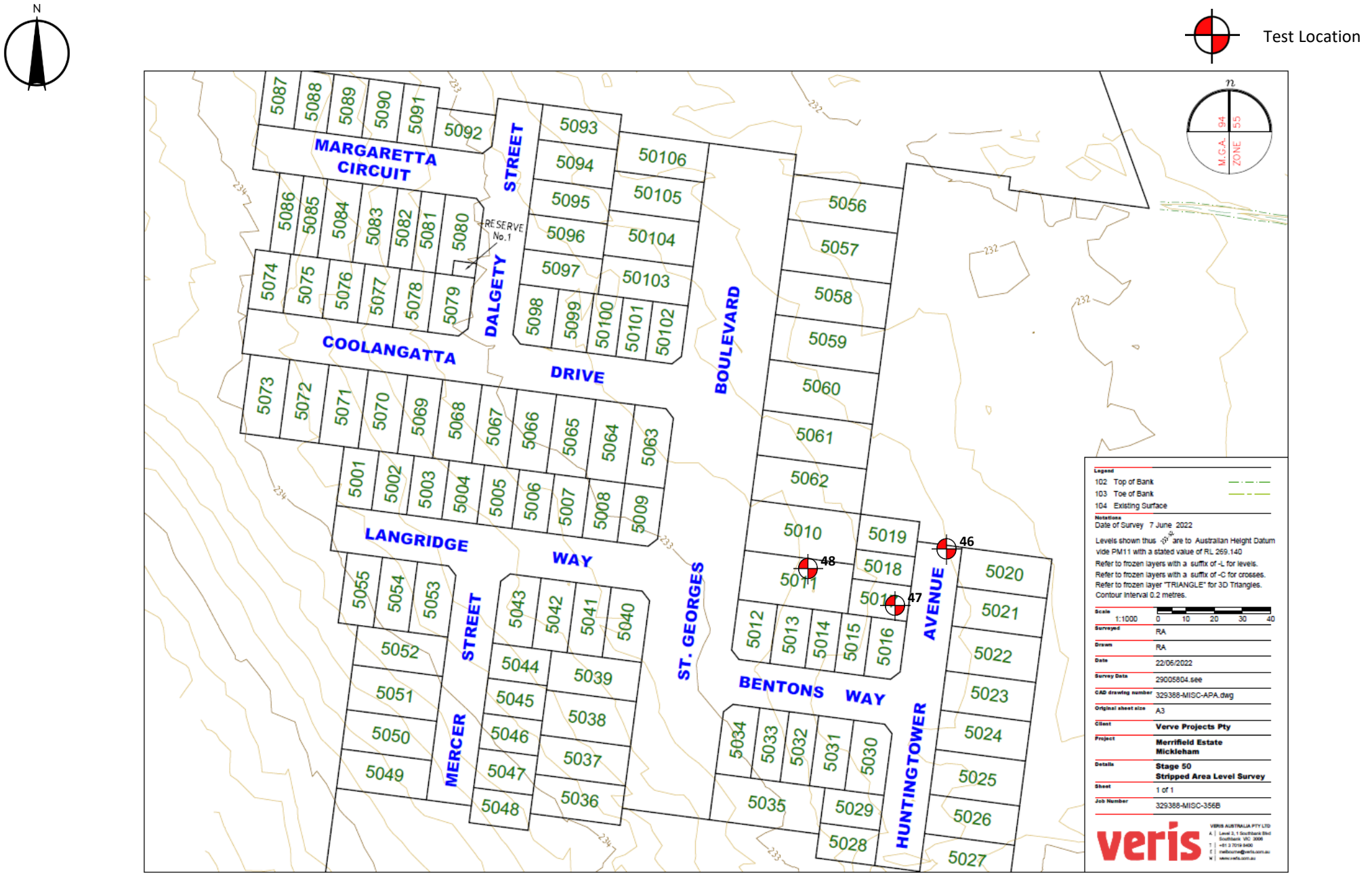
**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 15/06/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI16) | |

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| | | | | | | |
|---|---|---|---|---|---|---|
| **Client:** | BMD Urban | | | **Job No:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 17 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 49 | 50 | 51 | | | |
| Date Tested | | 20/06/2022 | 20/06/2022 | 20/06/2022 | | | |
| 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$^3$ | 1.91 | 1.82 | 1.80 | | | |
| Field Moisture Content | % | 19.9 | 24.1 | 20.1 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 2.5 | 2.9 | 3.8 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.94 | 1.84 | 1.82 | | | |
| Optimum Moisture Content | % | 18 | 25 | 18.5 | | | |
| **Moisture Ratio** | % | 110.5 | 96.5 | 108.5 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 98.0 | 98.0 | 98.0 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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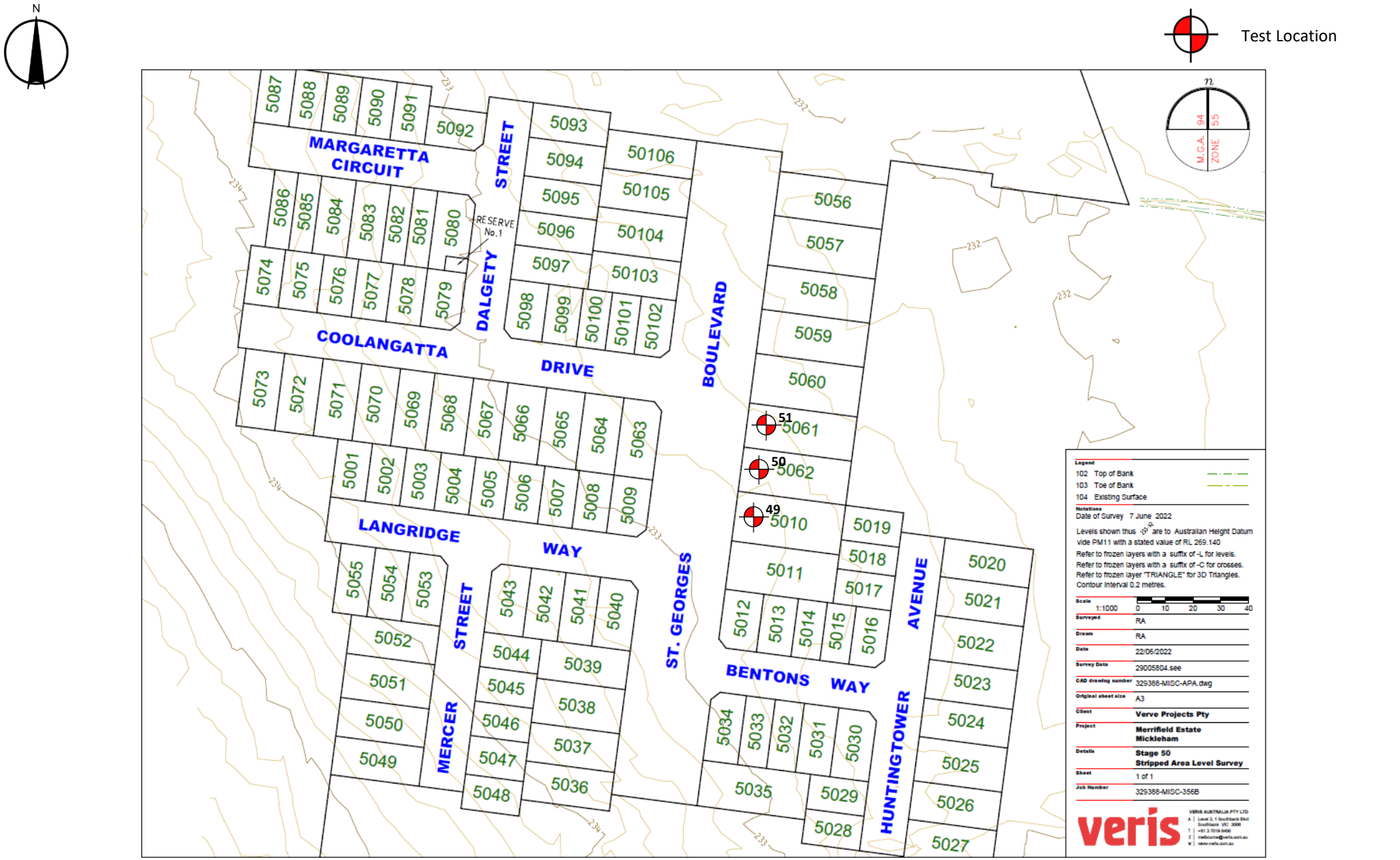
**Approved Signatory:**

David Burns

**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: | |
|---|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 20/06/2022 | |
| LOCATION: | PROJECT No: | SITE PLAN SKETCH—NOT TO SCALE | A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS |
| Mickleham | 1120 0343-1 (SI17) | | |

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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 18 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 52 | 53 | 54 | | | |
| Date Tested | | 23/06/2022 | 23/06/2022 | 23/06/2022 | | | |
| 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 | $t/m^3$ | 1.90 | 1.92 | 1.95 | | | |
| Field Moisture Content | % | 22.0 | 21.5 | 21.0 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.8 | 3.5 | 4.8 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.93 | 1.98 | 1.98 | | | |
| Optimum Moisture Content | % | 22.5 | 19.5 | 21.5 | | | |
| **Moisture Ratio** | % | 98 | 110.5 | 97.5 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | 1.5 Wetter | -0.5 Drier | | | |
| **Density Ratio** | % | 98.0 | 96.5 | 98.0 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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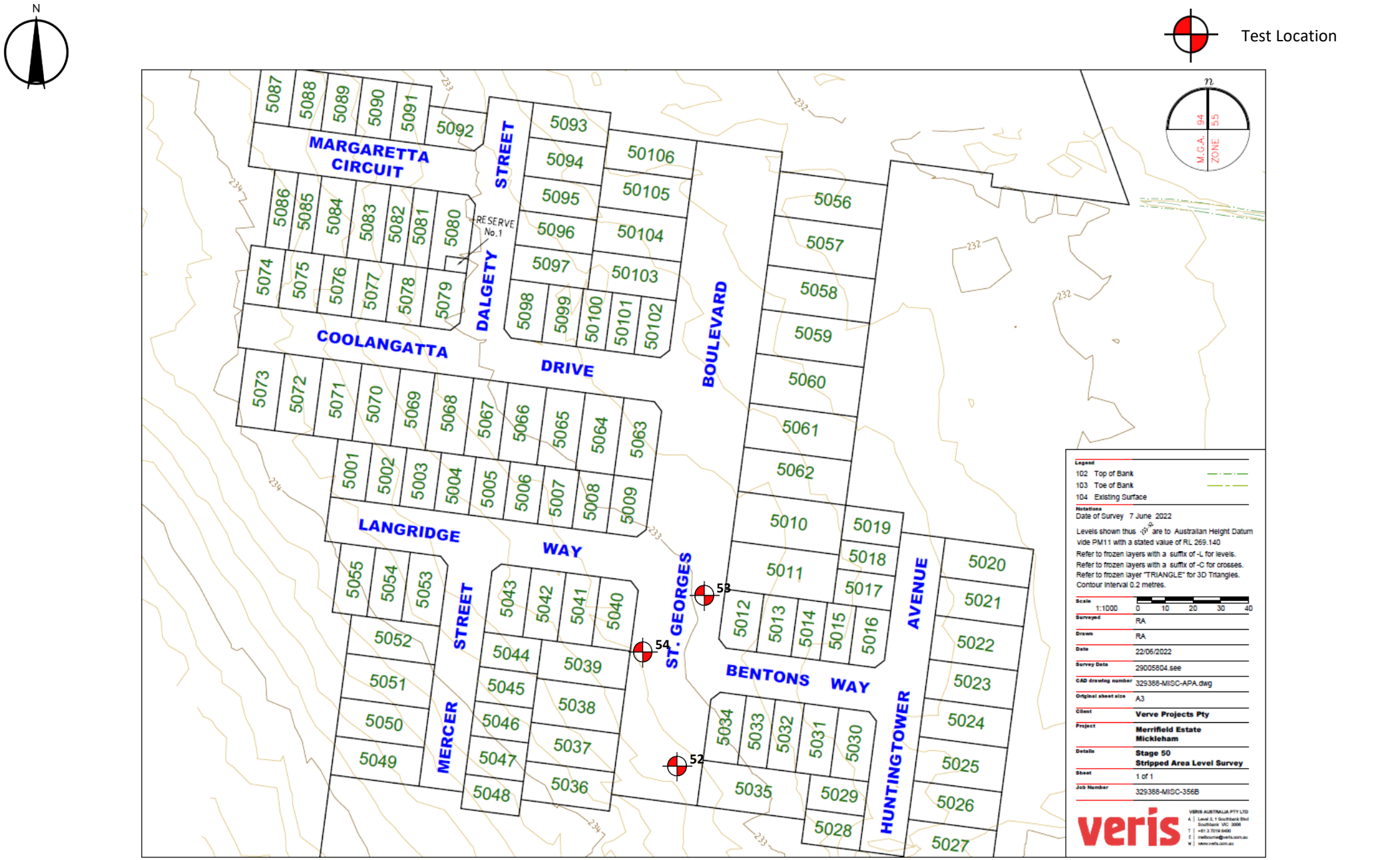
**Approved Signatory:**

David Burns

**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: | |
|---|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 23/06/2022 | |
| LOCATION: | PROJECT No: | SITE PLAN SKETCH—NOT TO SCALE | A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS |
| Mickleham | 1120 0343-1 (SI18) | | |

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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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 19 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 55 | 56 | 57 | | | |
| Date Tested | | 27/06/2022 | 27/06/2022 | 27/06/2022 | | | |
| 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 | 1.84 | | | |
| Field Moisture Content | % | 18.1 | 20.1 | 21.4 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.8 | 2.0 | 4.3 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.94 | 1.87 | 1.89 | | | |
| Optimum Moisture Content | % | 16 | 21 | 19.5 | | | |
| **Moisture Ratio** | % | 113.5 | 96 | 109.5 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 98.0 | 98.5 | 96.5 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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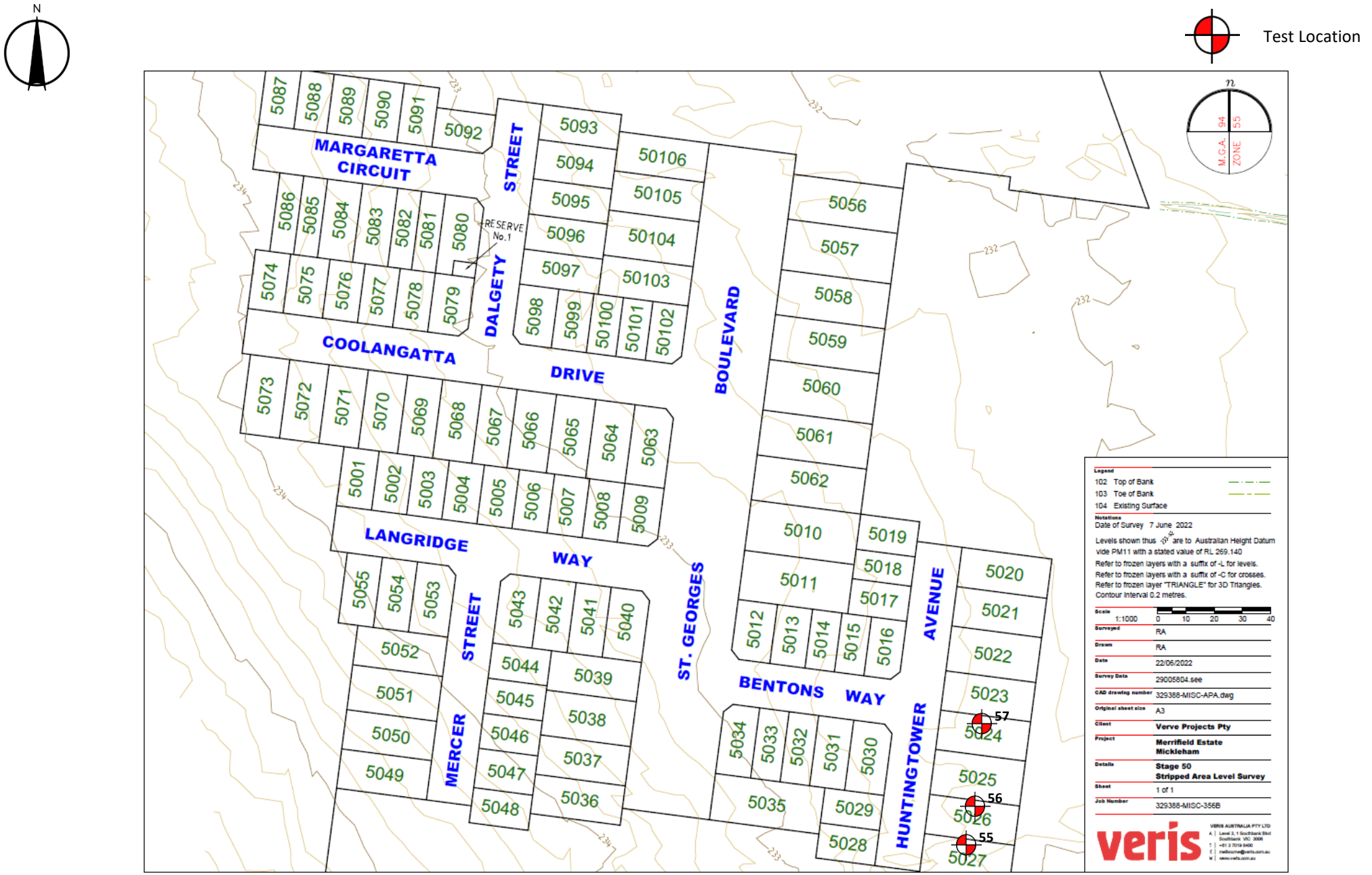
**Approved Signatory:**

David Burns

**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 27/06/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI19) | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 20

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 58 | 59 | 60 | | | |
| Date Tested | | 28/06/2022 | 28/06/2022 | 28/06/2022 | | | |
| 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$^3$ | 1.95 | 1.93 | 1.94 | | | |
| Field Moisture Content | % | 18.3 | 19.2 | 19.7 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 4.8 | 3.6 | 4.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.96 | 1.95 | 1.95 | | | |
| Optimum Moisture Content | % | 19 | 17.5 | 18 | | | |
| **Moisture Ratio** | % | 96.5 | 109.5 | 109.5 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | 1.5 Wetter | 1.5 Wetter | | | |
| **Density Ratio** | % | 98.5 | 98.5 | 99.0 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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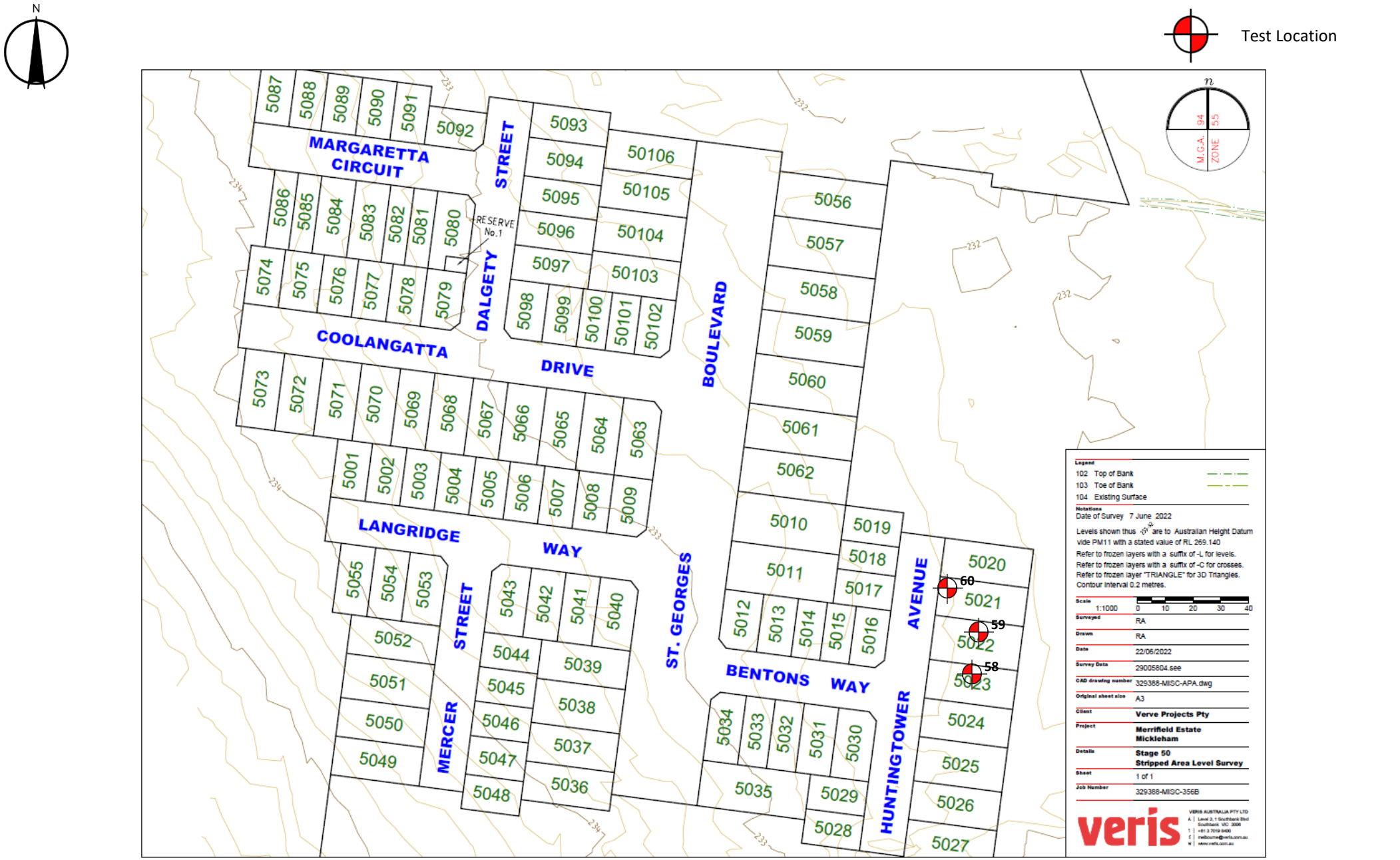
**Approved Signatory:** David Burns

**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: | |
|---|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 28/06/2022 | |
| LOCATION: | PROJECT No: | SITE PLAN SKETCH—NOT TO SCALE | |
| Mickleham | 1120 0343-1 (SI20) | | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 21

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 61 | 62 | 63 | | | |
| Date Tested | | 29/06/2022 | 29/06/2022 | 29/06/2022 | | | |
| 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 | 1.82 | 1.89 | | | |
| Field Moisture Content | % | 22.3 | 24.3 | 23.1 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 4.5 | 3.0 | 3.8 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.99 | 1.87 | 1.93 | | | |
| Optimum Moisture Content | % | 22.5 | 22.5 | 21.5 | | | |
| **Moisture Ratio** | % | 99 | 108 | 107.5 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | 1.5 Wetter | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.0 | 97.0 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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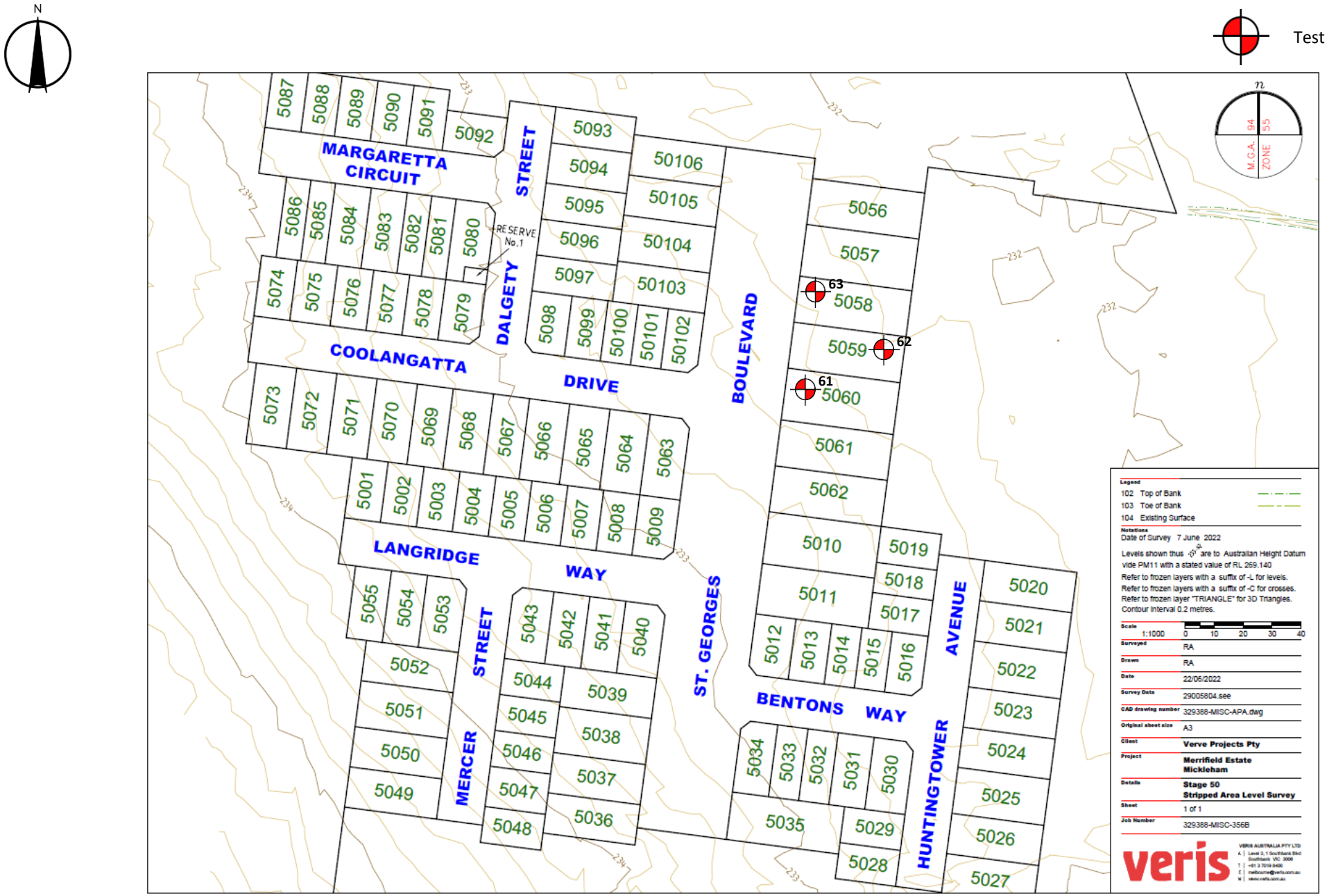
**Approved Signatory:** David Burns

**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 29/06/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI21) | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 22

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 64 | 65 | 66 | | | |
| Date Tested | | 30/06/2022 | 30/06/2022 | 30/06/2022 | | | |
| 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$^3$ | 1.84 | 1.84 | 1.94 | | | |
| Field Moisture Content | % | 24.4 | 24.6 | 22.2 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 1.8 | 2.1 | 4.2 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.89 | 1.89 | 1.97 | | | |
| Optimum Moisture Content | % | 23 | 22.5 | 23 | | | |
| **Moisture Ratio** | % | 106 | 109.5 | 96.5 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | 2.0 Wetter | -0.5 Drier | | | |
| **Density Ratio** | % | 97.0 | 97.0 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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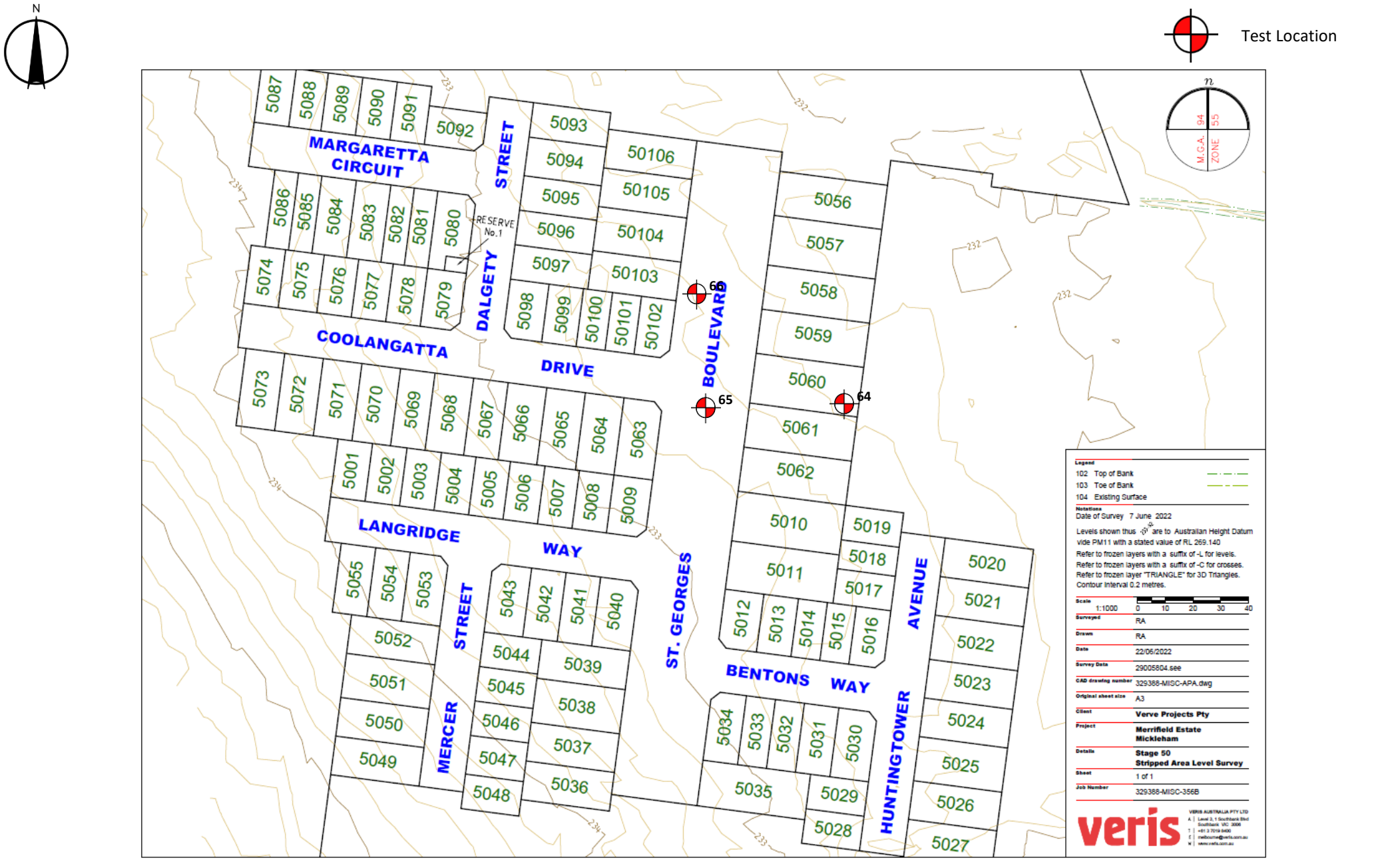
**Approved Signatory:** David Burns

**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 30/06/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI22) | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 23

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 67 | 68 | 69 | | | |
| Date Tested | | 01/07/2022 | 01/07/2022 | 01/07/2022 | | | |
| 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$^3$ | 1.94 | 1.81 | 1.84 | | | |
| Field Moisture Content | % | 20.9 | 24.8 | 23.3 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 4.0 | 2.8 | 3.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.99 | 1.86 | 1.88 | | | |
| Optimum Moisture Content | % | 21.5 | 23 | 21.5 | | | |
| **Moisture Ratio** | % | 97.5 | 108 | 108.5 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | 1.5 Wetter | 2.0 Wetter | | | |
| **Density Ratio** | % | 97.0 | 96.5 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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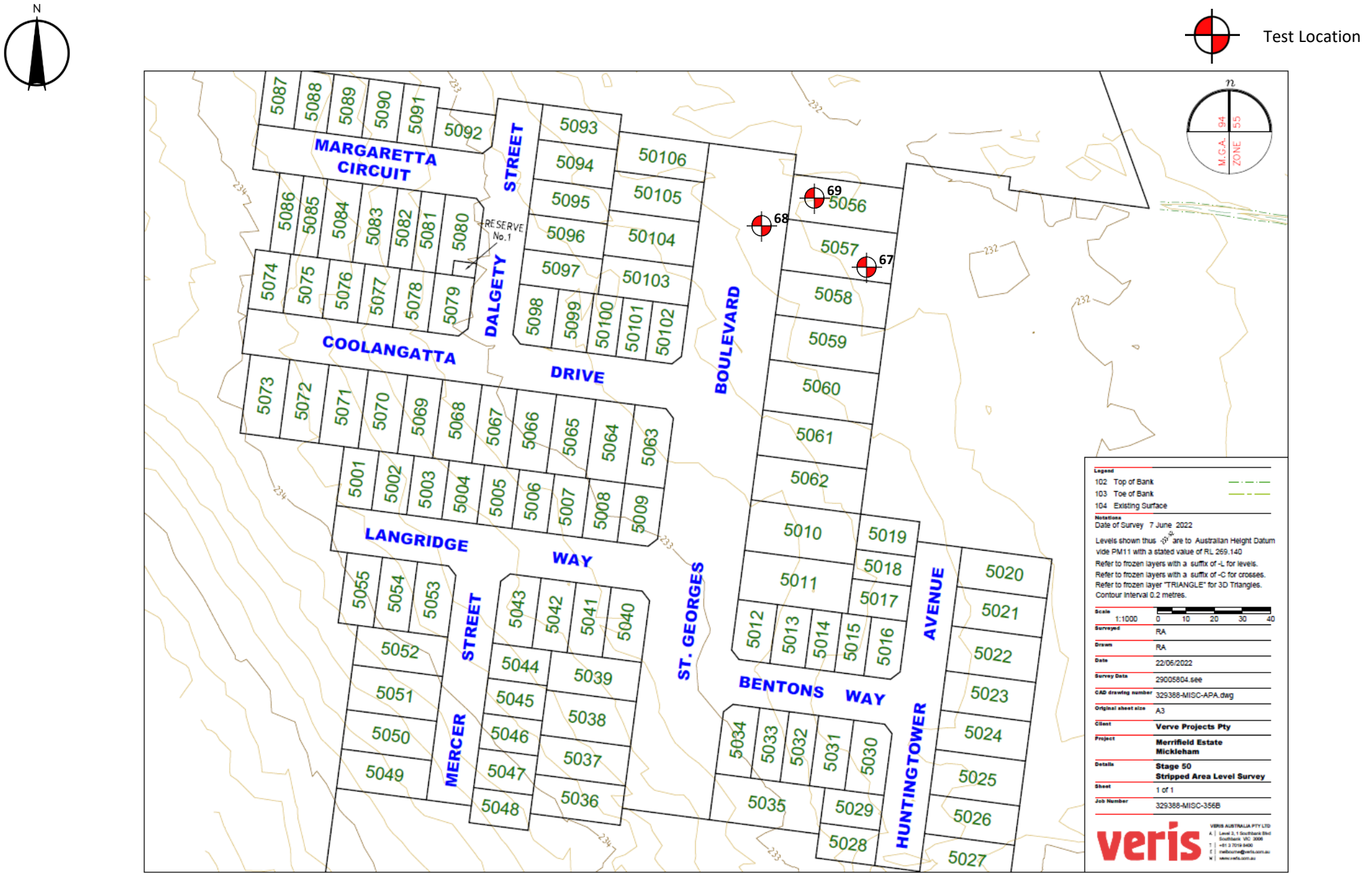
**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 01/07/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI23) | |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 24

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 70 | 71 | 72 | | | |
| Date Tested | | 04/07/2022 | 04/07/2022 | 04/07/2022 | | | |
| 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$^3$ | 1.84 | 1.89 | 1.94 | | | |
| Field Moisture Content | % | 24.6 | 23.0 | 22.2 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 2.9 | 3.4 | 4.6 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.88 | 1.94 | 1.98 | | | |
| Optimum Moisture Content | % | 23 | 24 | 23 | | | |
| **Moisture Ratio** | % | 107 | 96 | 96.5 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | -0.5 Drier | -0.5 Drier | | | |
| **Density Ratio** | % | 97.0 | 96.5 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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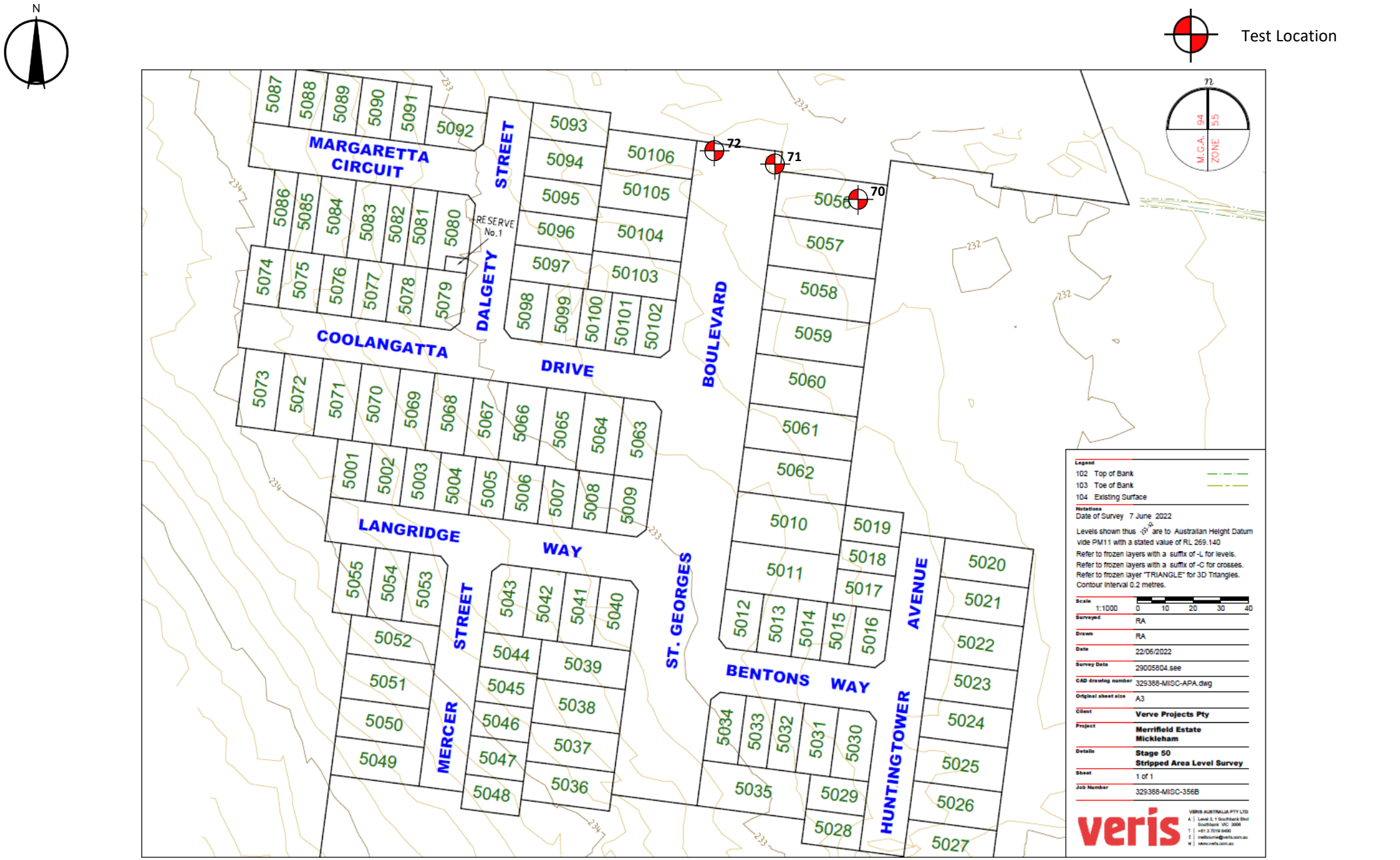
**Approved Signatory:** David Burns

**Date:** 29/07/2022




| PROJECT: | CLIENT: | DATE: |
|---|---|---|
| Merrifield Estate – Stage 50 (Level 1) | BMD Urban | 04/07/2022 |
| **LOCATION:** | **PROJECT No:** | SITE PLAN SKETCH—NOT TO SCALE |
| Mickleham | 1120 0343-1 (SI24) | |

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GEOTECHNICAL ENGINEERING CONSULTANTS

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GEOTECHNICAL ENGINEERING CONSULTANTS

# 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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 25

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 73 | 74 | 75 | | | |
| Date Tested | | 06/09/2022 | 06/09/2022 | 06/09/2022 | | | |
| Time Tested | | AM | AM | AM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 1 | 1 | 1 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | t/m$^3$ | 1.85 | 1.81 | 1.82 | | | |
| Field Moisture Content | % | 24.3 | 25.3 | 25.0 | | | |
| 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$^3$ | 1.88 | 1.89 | 1.89 | | | |
| Optimum Moisture Content | % | 25 | 23.5 | 23 | | | |
| **Moisture Ratio** | % | 97 | 107.5 | 108.5 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | 2.0 Wetter | 2.0 Wetter | | | |
| **Density Ratio** | % | 98.0 | 95.5 | 96.0 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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WORLD RECOGNISED ACCREDITATION

**NATA Accredited Laboratory No. 20172**

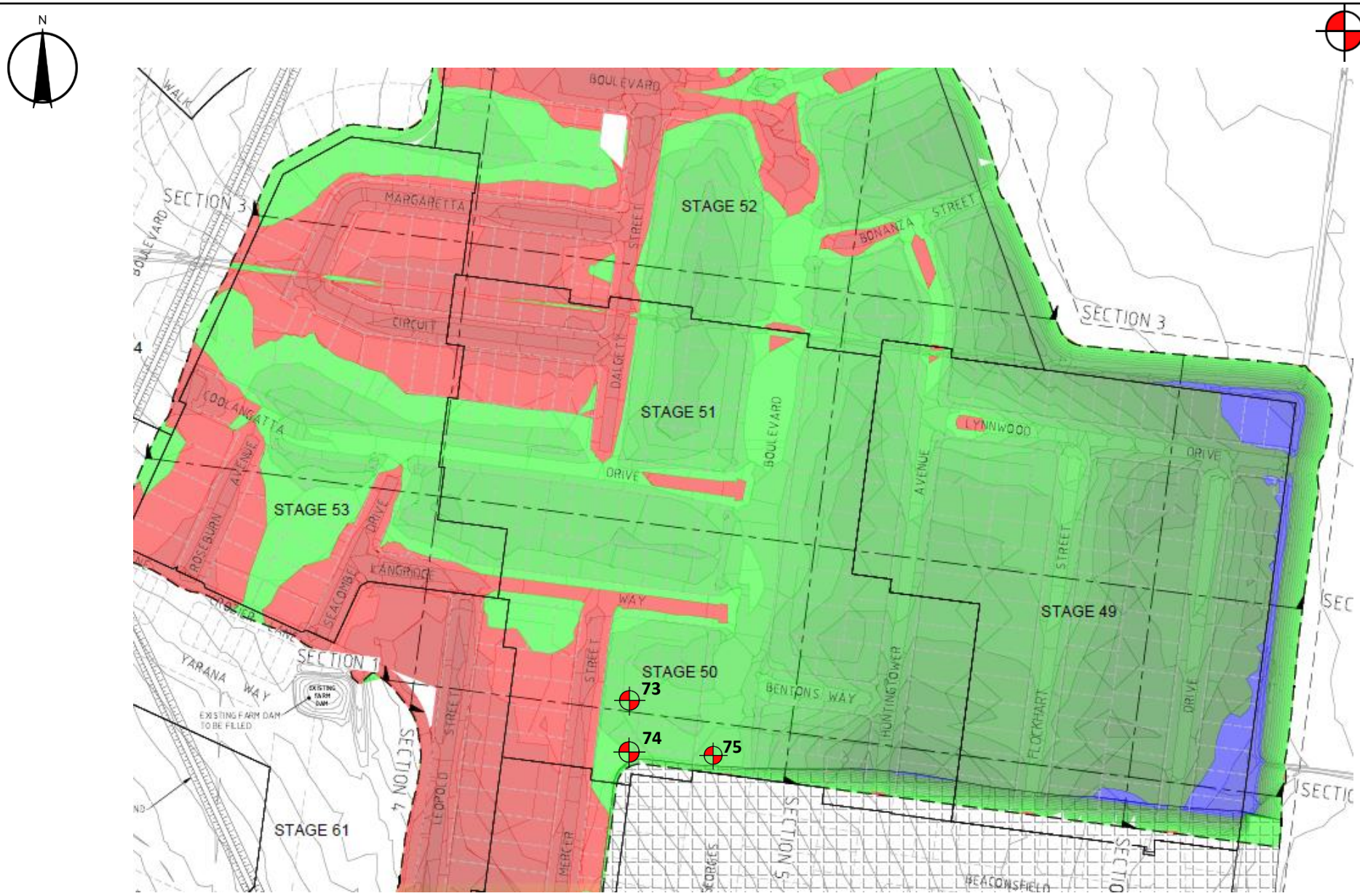
**Accreditation for compliance with ISO/IEC 17025 - Testing**

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

**Approved Signatory:**

David Burns

**Date:** 13/10/2022




| | | | |
|---|---|---|---|
| **PROJECT**<br>**Merrifield Estate - Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**06/09/2022** | A&Y ASSOCIATES<br>GEOTECHNICAL ENGINEERING CONSULTANTS |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI25)** | **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:** | BMD2324 | |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | **Report:** | 26 | |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 76 | 77 | 78 | | | |
| Date Tested | | 07/09/2022 | 07/09/2022 | 07/09/2022 | | | |
| Time Tested | | AM | AM | AM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 1 | 1 | 1 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | t/m$^3$ | 1.81 | 1.82 | 1.86 | | | |
| Field Moisture Content | % | 25.8 | 25.3 | 24.5 | | | |
| 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$^3$ | 1.88 | 1.85 | 1.86 | | | |
| Optimum Moisture Content | % | 26.5 | 26 | 22.5 | | | |
| **Moisture Ratio** | % | 97.5 | 97.5 | 109 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | -0.5 Drier | 2.0 Wetter | | | |
| **Density Ratio** | % | 96.5 | 98.5 | 100.0 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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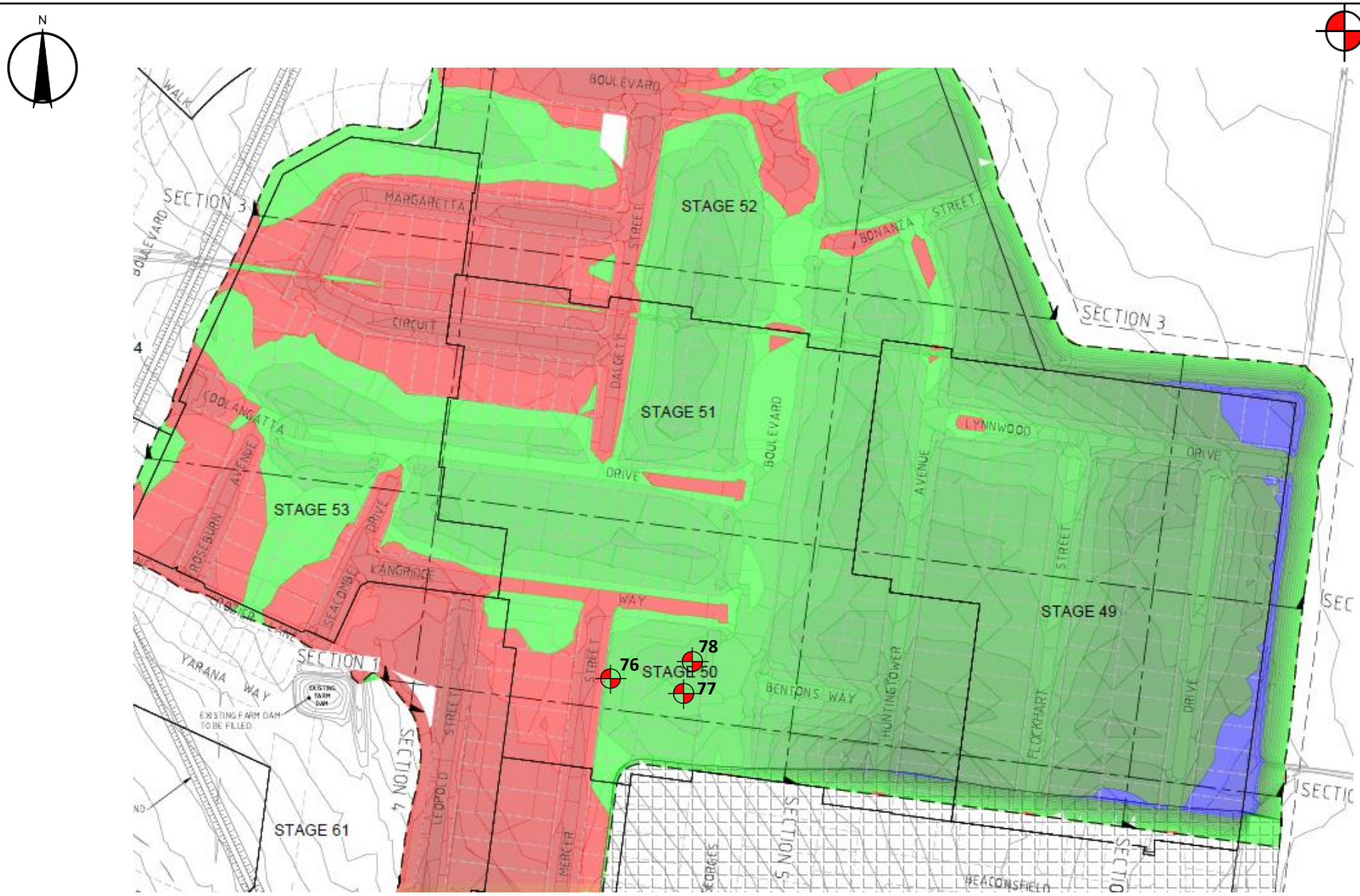
**NATA Accredited Laboratory No. 20172**

**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:** 13/10/2022




| PROJECT | CLIENT: | DATE: | |
|---|---|---|---|
| Merrifield Estate - Stage 50 (Level 1) | BMD Urban | 07/09/2022 | |
| LOCATION: | Project No: | SITE PLAN SKETCH—NOT TO SCALE | A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS |
| Mickleham | 1120 0343–1 (SI26) | | |

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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 27

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 79 | 80 | 81 | | | |
| Date Tested | | 05/10/2022 | 05/10/2022 | 05/10/2022 | | | |
| Time Tested | | AM | AM | AM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 1 | 1 | 1 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | t/m$^3$ | 1.82 | 1.84 | 1.87 | | | |
| Field Moisture Content | % | 25.1 | 24.3 | 24.0 | | | |
| 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 | 1.87 | 1.90 | | | |
| Optimum Moisture Content | % | 23.5 | 24.5 | 25 | | | |
| **Moisture Ratio** | % | 107 | 99 | 96 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | -0.5 Drier | -1.0 Drier | | | |
| **Density Ratio** | % | 98.5 | 98.5 | 98.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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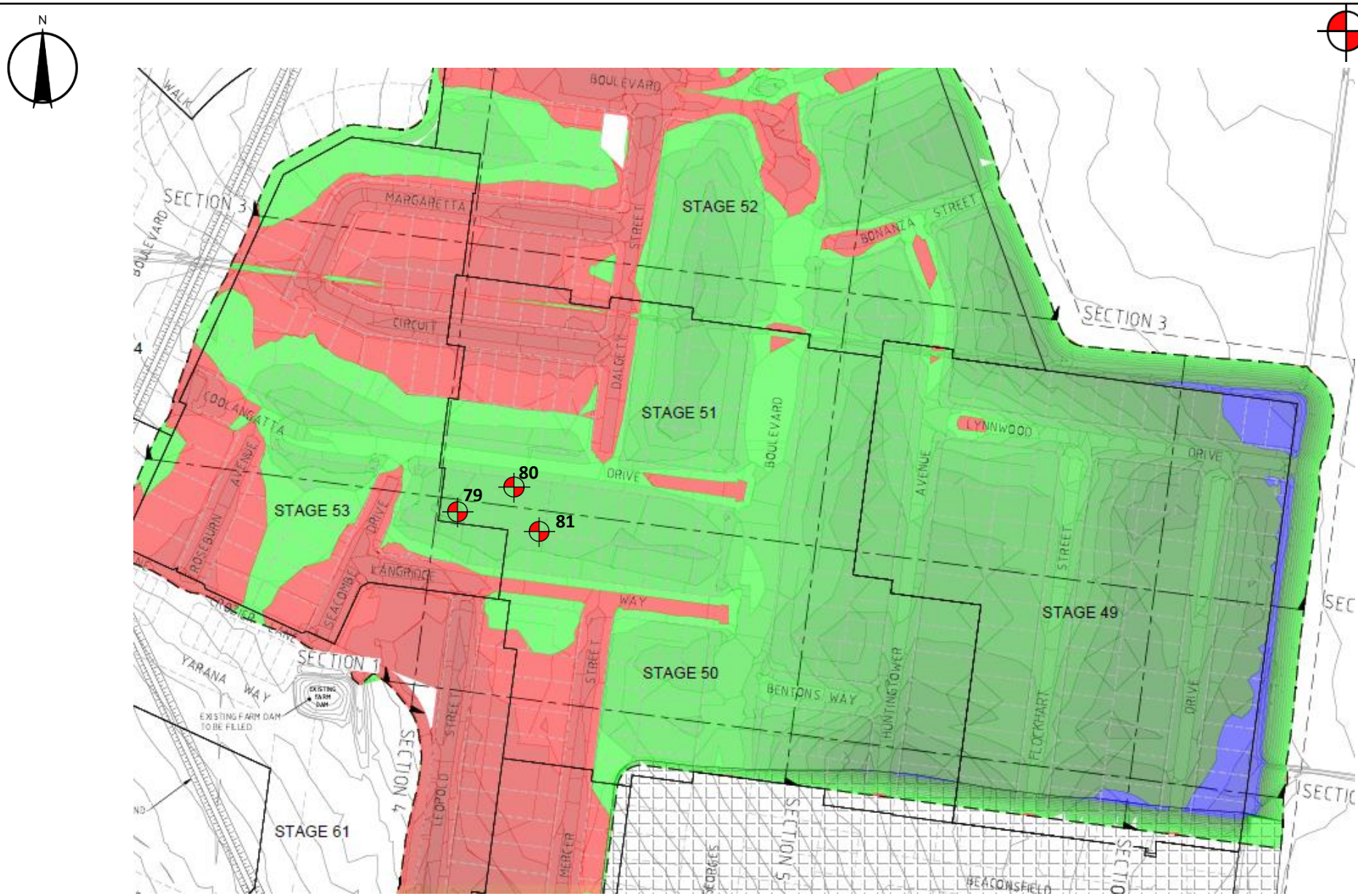
**NATA Accredited Laboratory No. 20172**

**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:** 13/10/2022




| | | | |
|---|---|---|---|
| **PROJECT**<br>Merrifield Estate – Stage 50 (Level 1) | **CLIENT:**<br>BMD Urban | **DATE:**<br>05/10/2022 | A&Y ASSOCIATES<br>GEOTECHNICAL ENGINEERING CONSULTANTS |
| **LOCATION:**<br>Mickleham | **Project No:**<br>1120 0343–1 (SI27) | **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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 28

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 82 | 83 | 84 | | | |
| Date Tested | | 11/01/2023 | 11/01/2023 | 11/01/2023 | | | |
| Time Tested | | PM | PM | PM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 5 | 5 | 5 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | $t/m^3$ | 1.91 | 1.83 | 1.86 | | | |
| Field Moisture Content | % | 20.3 | 24.6 | 23.1 | | | |
| Material: | | Imported Clay Fill | Imported Clay Fill | Imported Clay Fill | | | |
| Oversize Material | WET, % | 3.0 | 0.0 | 0.0 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.96 | 1.88 | 1.90 | | | |
| Optimum Moisture Content | % | 18.5 | 23 | 24 | | | |
| **Moisture Ratio** | % | 110 | 107 | 96.5 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | 1.5 Wetter | -0.5 Drier | | | |
| **Density Ratio** | % | 97.0 | 97.0 | 98.0 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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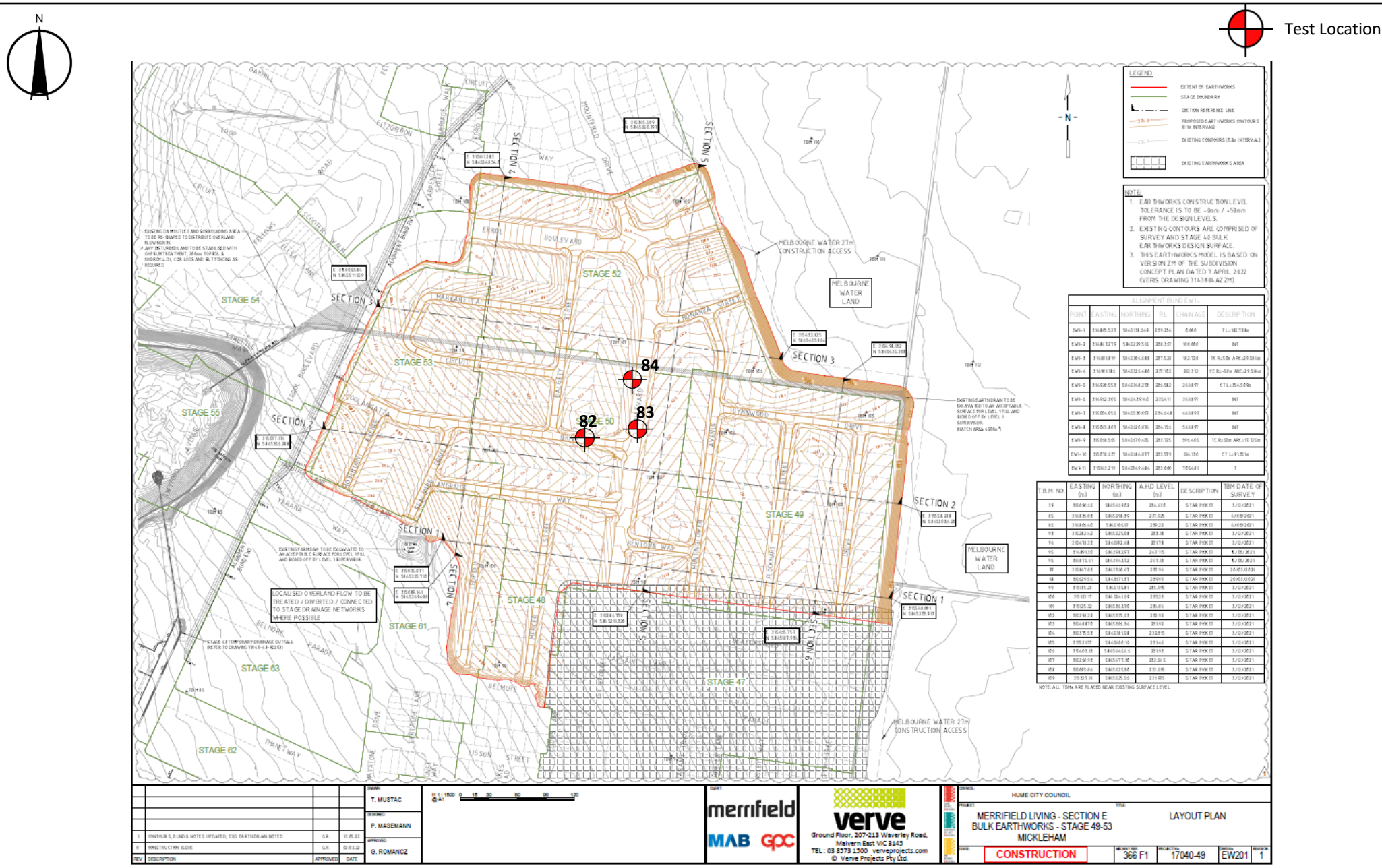
**NATA Accredited Laboratory No. 20172**

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

**Approved Signatory:**

David Burns

**Date:** 03/02/2023




| | | |
|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**11/01/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI28)** | **SITE PLAN SKETCH—NOT TO SCALE** |

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GEOTECHNICAL ENGINEERING CONSULTANTS

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 29

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 85 | 86 | 87 | | | |
| Date Tested | | 12/01/2023 | 12/01/2023 | 12/01/2023 | | | |
| Time Tested | | AM | AM | AM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 4 | 4 | 4 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | t/m$^3$ | 1.92 | 1.84 | 1.87 | | | |
| Field Moisture Content | % | 19.3 | 24.0 | 23.4 | | | |
| Material: | | Imported Clay Fill | Imported Clay Fill | Imported Clay Fill | | | |
| Oversize Material | WET, % | 4.6 | 2.0 | 3.8 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.97 | 1.89 | 1.95 | | | |
| Optimum Moisture Content | % | 17.5 | 24.5 | 22 | | | |
| **Moisture Ratio** | % | 110.5 | 98 | 106.5 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.0 | 97.0 | 95.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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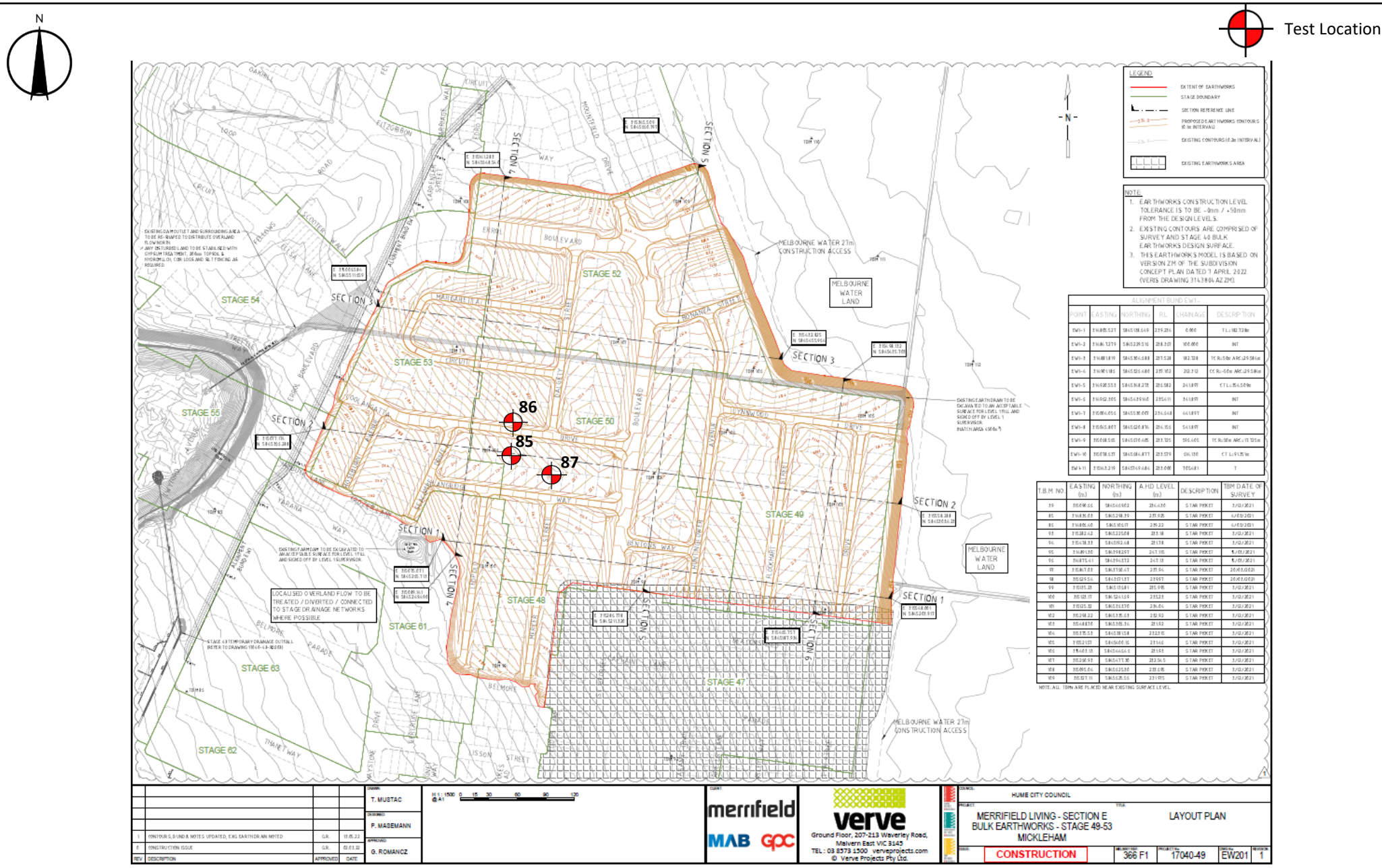
**NATA Accredited Laboratory No. 20172**

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

**Approved Signatory:**

David Burns

**Date:** 03/02/2023




| | | |
|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**12/01/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI29)** | **SITE PLAN SKETCH—NOT TO SCALE** |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 30

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 88 | 89 | 90 | | | |
| Date Tested | | 13/01/2023 | 13/01/2023 | 13/01/2023 | | | |
| Time Tested | | AM | AM | AM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 6 | 6 | 6 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | $t/m^3$ | 1.96 | 1.85 | 1.91 | | | |
| Field Moisture Content | % | 21.7 | 23.6 | 22.0 | | | |
| Material: | | Imported Clay Fill | Imported Clay Fill | Imported Clay Fill | | | |
| Oversize Material | WET, % | 5.0 | 2.0 | 3.5 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.97 | 1.89 | 1.91 | | | |
| Optimum Moisture Content | % | 22 | 24.5 | 23 | | | |
| **Moisture Ratio** | % | 98.5 | 96.5 | 96 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | -0.5 Drier | -0.5 Drier | | | |
| **Density Ratio** | % | 98.5 | 97.5 | 99.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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**NATA Accredited Laboratory No. 20172**

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

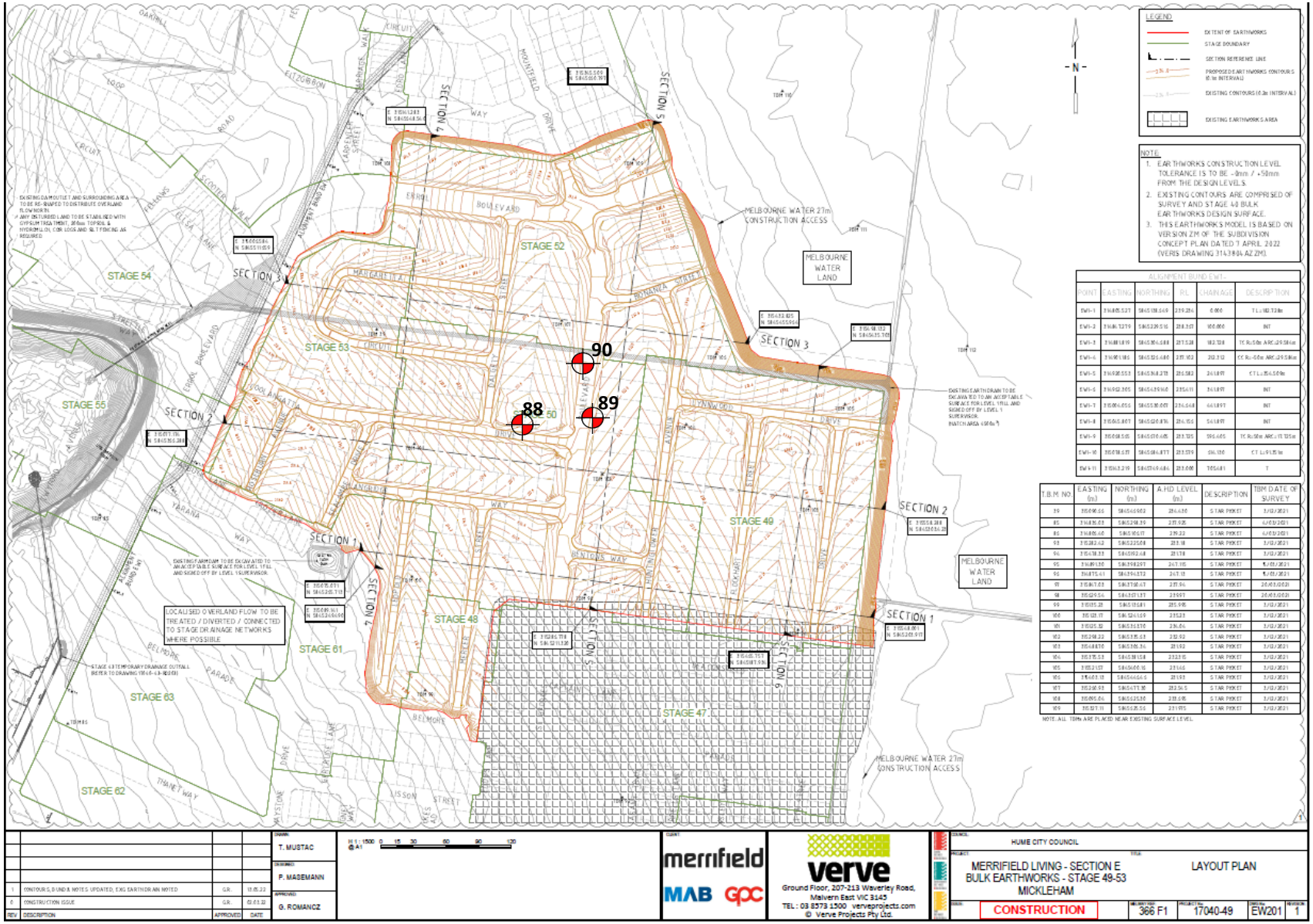
**Approved Signatory:**

David Burns

**Date:** 03/02/2023

N

Test Location




| | | |
|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**13/01/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI30)** | **SITE PLAN SKETCH—NOT TO SCALE** |

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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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 31

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 91 | 92 | 93 | | | |
| Date Tested | | 31/01/2023 | 31/01/2023 | 31/01/2023 | | | |
| Time Tested | | AM | AM | AM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 5 | 7 | 7 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | $t/m^3$ | 1.95 | 2.00 | 1.90 | | | |
| Field Moisture Content | % | 20.8 | 19.5 | 19.7 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 4.2 | 6.1 | 3.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.98 | 2.07 | 1.95 | | | |
| Optimum Moisture Content | % | 21.5 | 20.5 | 18 | | | |
| **Moisture Ratio** | % | 96.5 | 95 | 109 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | -0.5 Drier | 1.5 Wetter | | | |
| **Density Ratio** | % | 97.5 | 96.0 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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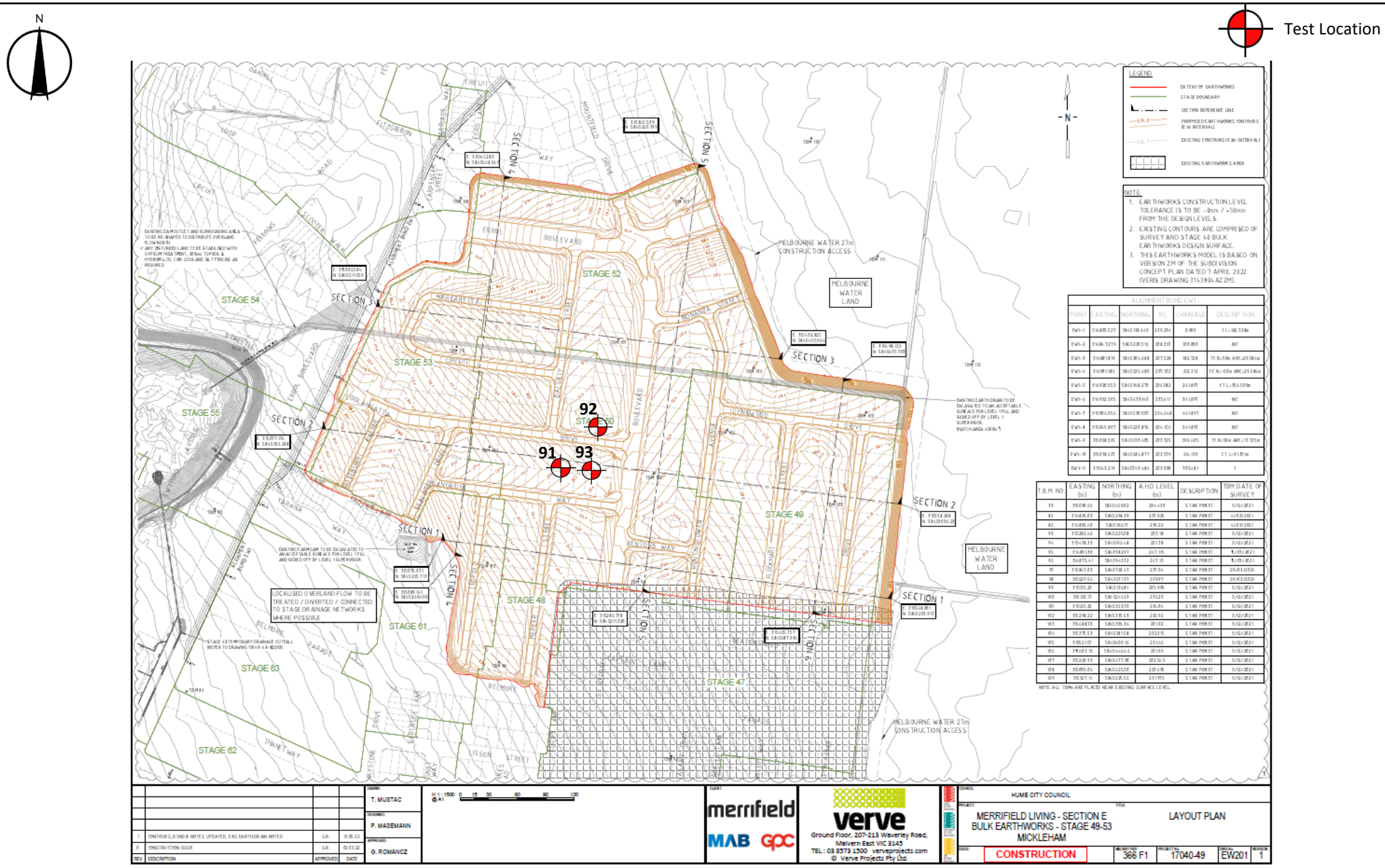
**NATA Accredited Laboratory No. 20172**

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

**Approved Signatory:**

David Burns

**Date:** 20/02/2023




| | | |
|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**31/01/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI31)** | **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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 32

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 94 | 95 | 96 | | | |
| Date Tested | | 01/02/2023 | 01/02/2023 | 01/02/2023 | | | |
| 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$^3$ | 1.81 | 1.80 | 1.84 | | | |
| Field Moisture Content | % | 24.6 | 25.0 | 24.1 | | | |
| 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$^3$ | 1.87 | 1.88 | 1.91 | | | |
| Optimum Moisture Content | % | 22.5 | 23 | 22.5 | | | |
| **Moisture Ratio** | % | 109.5 | 108.5 | 107 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | 2.0 Wetter | 1.5 Wetter | | | |
| **Density Ratio** | % | 96.5 | 96.0 | 96.0 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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**NATA Accredited Laboratory No. 20172**

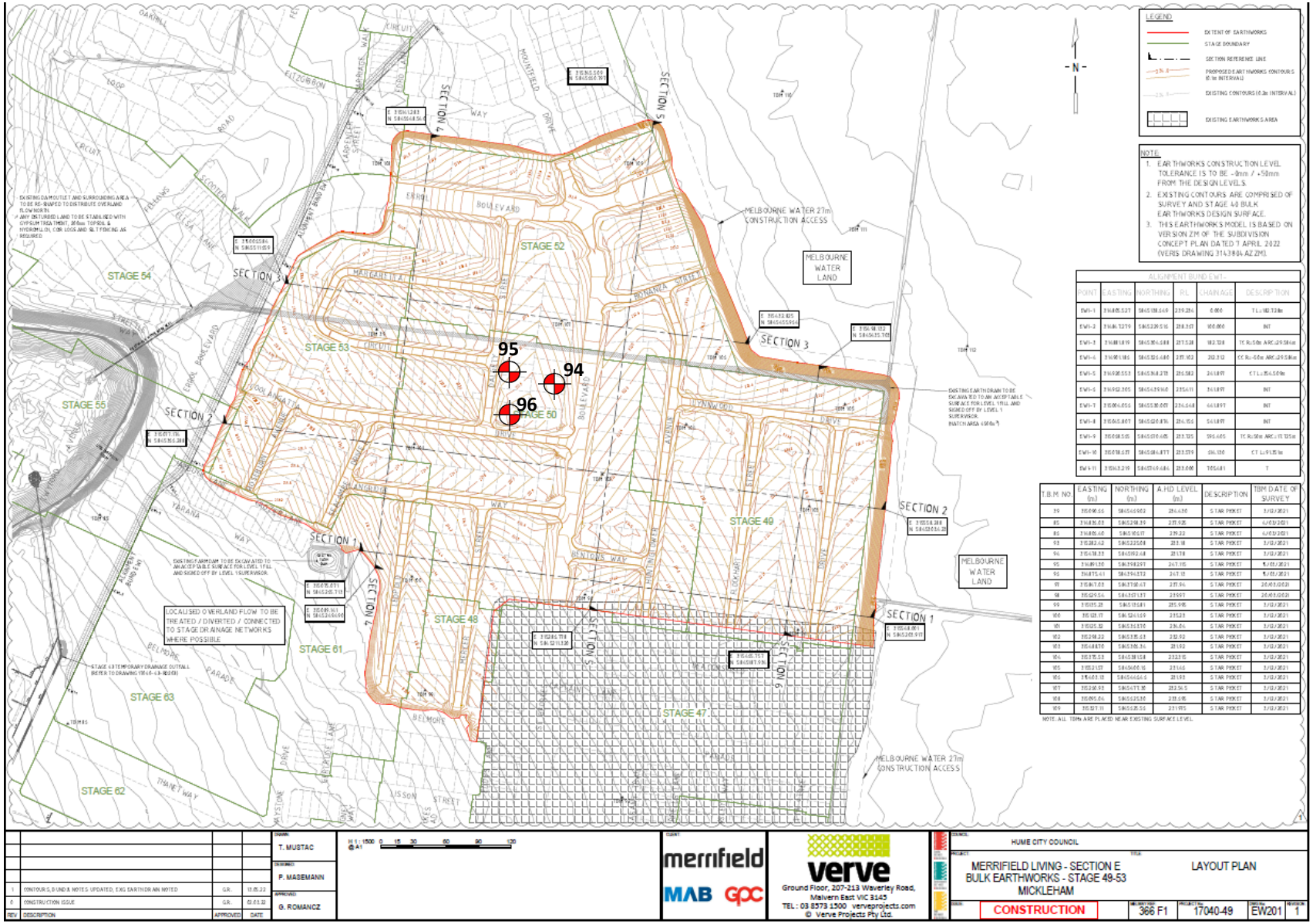
**Accreditation for compliance with ISO/IEC 17025 - Testing**

**Approved Signatory:**

David Burns

**Date:** 16/02/2023

Test Location




| | | |
|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**01/02/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI32)** | **SITE PLAN SKETCH—NOT TO SCALE** |

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

# 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:** | BMD2324 |
| **Project:** | Merrifield Estate - Stage 50 (Level 1) | | | | **Report:** | 33 |
| **Location:** | Mickleham | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 97 | 98 | 99 | | | |
| Date Tested | | 02/02/2023 | 02/02/2023 | 02/02/2023 | | | |
| Time Tested | | AM | AM | AM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 8 | 8 | 9 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | t/m$^3$ | 1.82 | 1.92 | 1.96 | | | |
| Field Moisture Content | % | 25.2 | 23.8 | 23.2 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 0.0 | 3.8 | 4.5 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.85 | 2.00 | 2.04 | | | |
| Optimum Moisture Content | % | 23.5 | 24.5 | 24 | | | |
| **Moisture Ratio** | % | 107 | 97 | 96.5 | | | |
| **Moisture Variation from OMC** | % | 1.5 Wetter | -0.5 Drier | -0.5 Drier | | | |
| **Density Ratio** | % | 98.0 | 95.5 | 96.0 | | | |

| | | | |
|---|---|---|---|
| **Specification:** | 95% STD | **Test Selection:** | N/A |
| **Notes:** | Ref : 1120 0343-1 (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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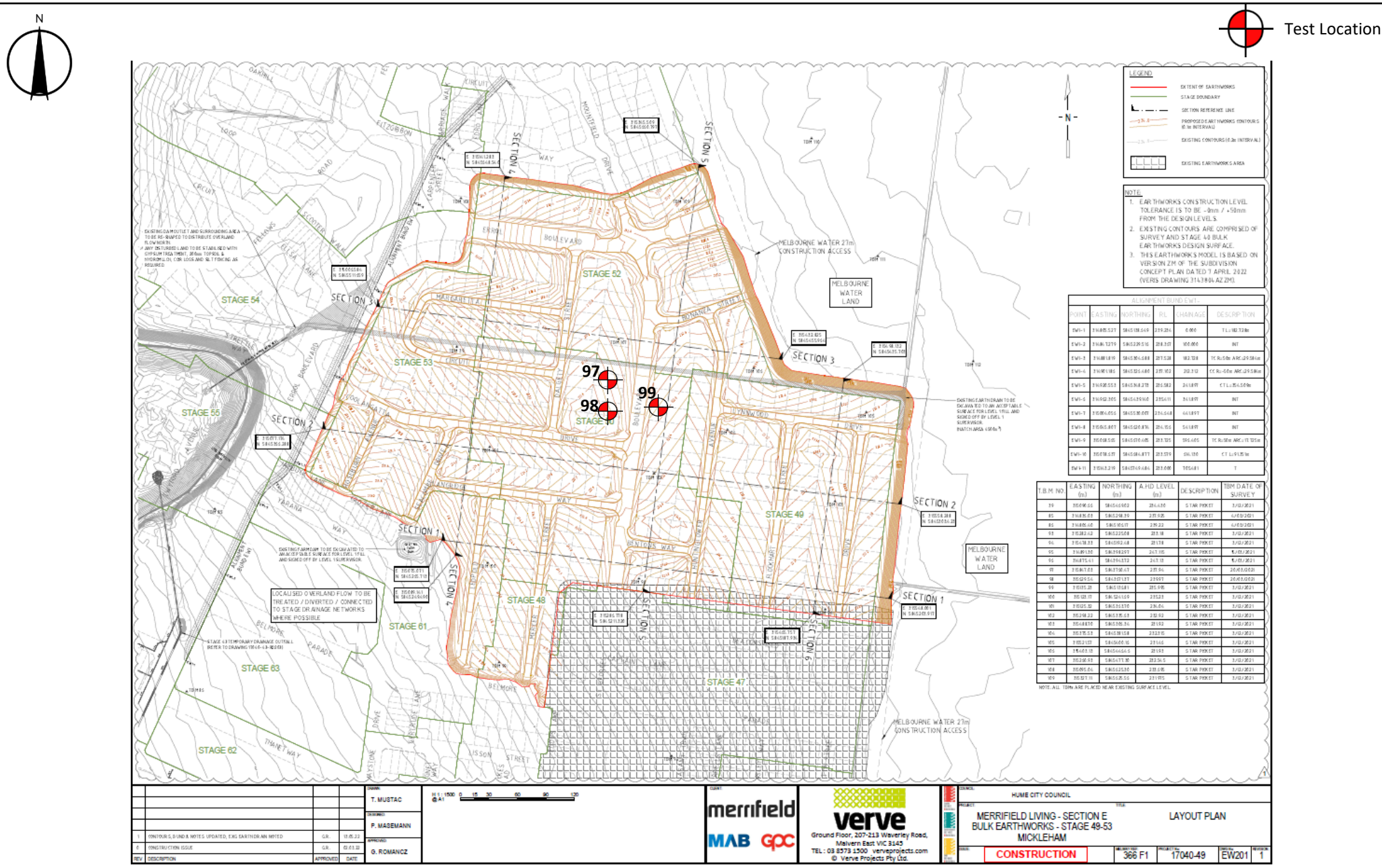
**NATA Accredited Laboratory No. 20172**

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

**Approved Signatory:**

David Burns

**Date:** 20/02/2023




| | | |
|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**02/02/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI33)** | **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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 34

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 100 | 101 | 102 | | | |
| Date Tested | | 24/02/2023 | 24/02/2023 | 24/02/2023 | | | |
| Time Tested | | PM | PM | PM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | FSL | FSL | FSL | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | $t/m^3$ | 1.92 | 1.82 | 1.93 | | | |
| Field Moisture Content | % | 23.2 | 24.7 | 22.8 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 2.9 | 0.0 | 4.1 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.99 | 1.88 | 1.97 | | | |
| Optimum Moisture Content | % | 23.5 | 23 | 23.5 | | | |
| **Moisture Ratio** | % | 98.5 | 107.5 | 97 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | 2.0 Wetter | -0.5 Drier | | | |
| **Density Ratio** | % | 96.0 | 97.0 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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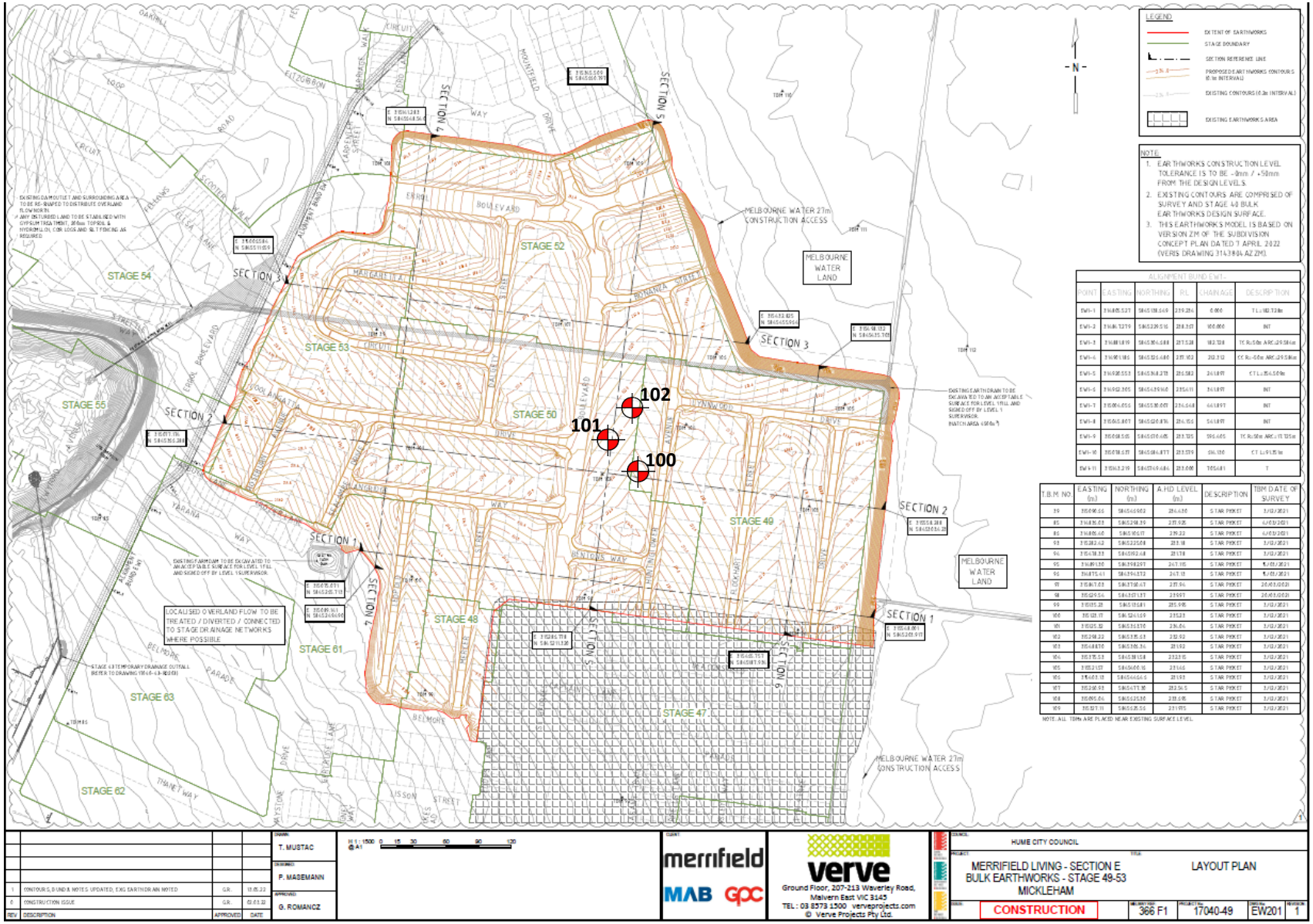
**Accreditation for compliance with ISO/IEC 17025 - Testing**

**Approved Signatory:**

David Burns

**Date:** 28/02/2023

Test Location




| | | |
|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**24/02/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI34)** | **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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 35

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 103 | 104 | 105 | | | |
| Date Tested | | 27/02/2023 | 27/02/2023 | 27/02/2023 | | | |
| Time Tested | | AM | AM | AM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | FSL | FSL | FSL | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | t/m$^3$ | 1.90 | 1.84 | 1.86 | | | |
| Field Moisture Content | % | 23.1 | 24.4 | 23.8 | | | |
| 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$^3$ | 1.96 | 1.87 | 1.94 | | | |
| Optimum Moisture Content | % | 23.5 | 22.5 | 22 | | | |
| **Moisture Ratio** | % | 98.5 | 108.5 | 108 | | | |
| **Moisture Variation from OMC** | % | -0.5 Drier | 2.0 Wetter | 2.0 Wetter | | | |
| **Density Ratio** | % | 97.0 | 98.5 | 96.0 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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**Accreditation for compliance with ISO/IEC 17025 - Testing**

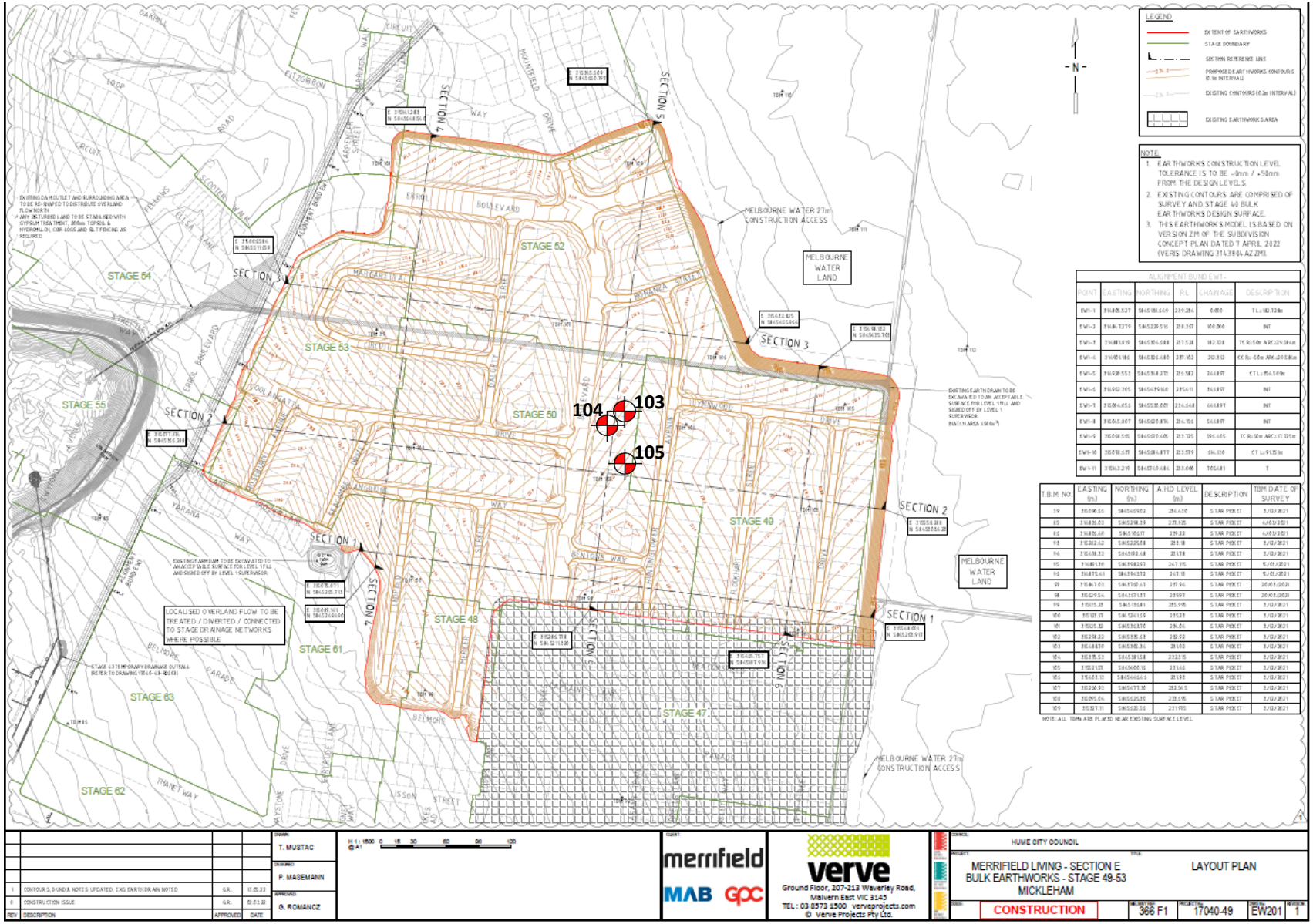
**Approved Signatory:**

David Burns

**Date:** 28/02/2023

N

Test Location

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|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**27/02/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI35)** | **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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 36

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 106 | 107 | 108 | | | |
| Date Tested | | 07/03/2023 | 07/03/2023 | 07/03/2023 | | | |
| Time Tested | | PM | PM | PM | | | |
| Test Location | | Refer to Plan | Refer to Plan | Refer to Plan | | | |
| Level/Layer | | 6 | 6 | 6 | | | |
| Layer Thickness | mm | 200 | 200 | 200 | | | |
| Test Depth | mm | 175 | 175 | 175 | | | |
| Field Wet Density | t/m$^3$ | 1.85 | 1.94 | 1.98 | | | |
| Field Moisture Content | % | 25.0 | 23.8 | 22.2 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 0.0 | 4.6 | 5.2 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | t/m$^3$ | 1.90 | 2.00 | 2.02 | | | |
| Optimum Moisture Content | % | 23 | 24 | 22.5 | | | |
| **Moisture Ratio** | % | 108.5 | 99 | 98.5 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | -0.5 Drier | -0.5 Drier | | | |
| **Density Ratio** | % | 97.0 | 96.0 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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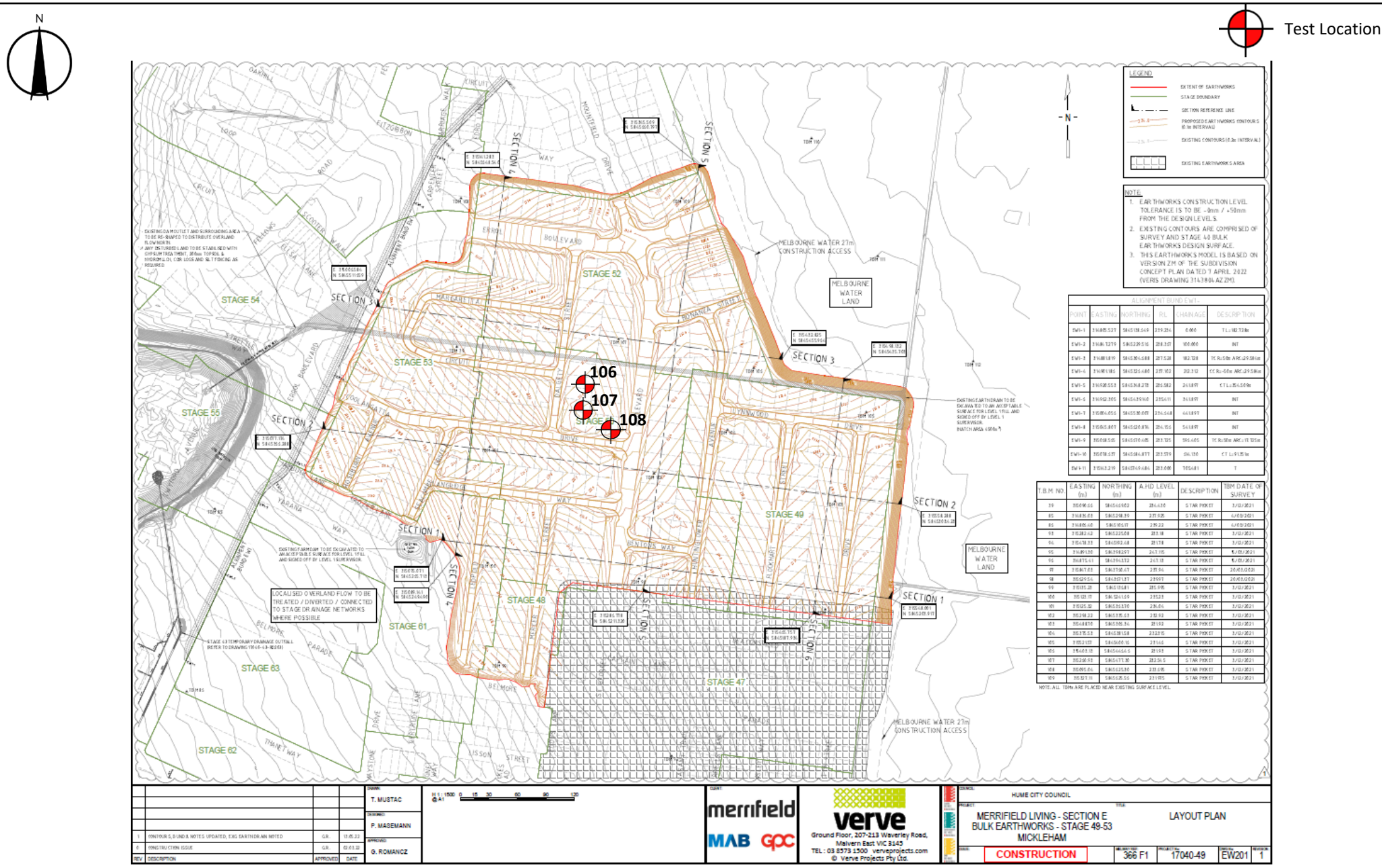
**NATA Accredited Laboratory No. 20172**

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

**Approved Signatory:**

David Burns

**Date:** 30/03/2023

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|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**07/03/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI36)** | **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:** BMD2324

**Project:** Merrifield Estate - Stage 50 (Level 1) **Report:** 37

**Location:** Mickleham

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Sample No | | 109 | 110 | 111 | | | |
| Date Tested | | 10/03/2023 | 10/03/2023 | 10/03/2023 | | | |
| 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 | $t/m^3$ | 1.92 | 1.91 | 1.97 | | | |
| Field Moisture Content | % | 22.2 | 23.0 | 21.8 | | | |
| Material: | | Imported Clay | Imported Clay | Imported Clay | | | |
| Oversize Material | WET, % | 3.2 | 2.9 | 4.9 | | | |
| Sieve Size | mm | 19 | 19 | 19 | | | |
| Peak Converted Wet Density | $t/m^3$ | 1.98 | 1.97 | 2.01 | | | |
| Optimum Moisture Content | % | 20 | 21 | 22.5 | | | |
| **Moisture Ratio** | % | 111 | 109.5 | 97 | | | |
| **Moisture Variation from OMC** | % | 2.0 Wetter | 1.5 Wetter | -0.5 Drier | | | |
| **Density Ratio** | % | 96.5 | 96.0 | 97.5 | | | |

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

**Notes:** Ref : 1120 0343-1 (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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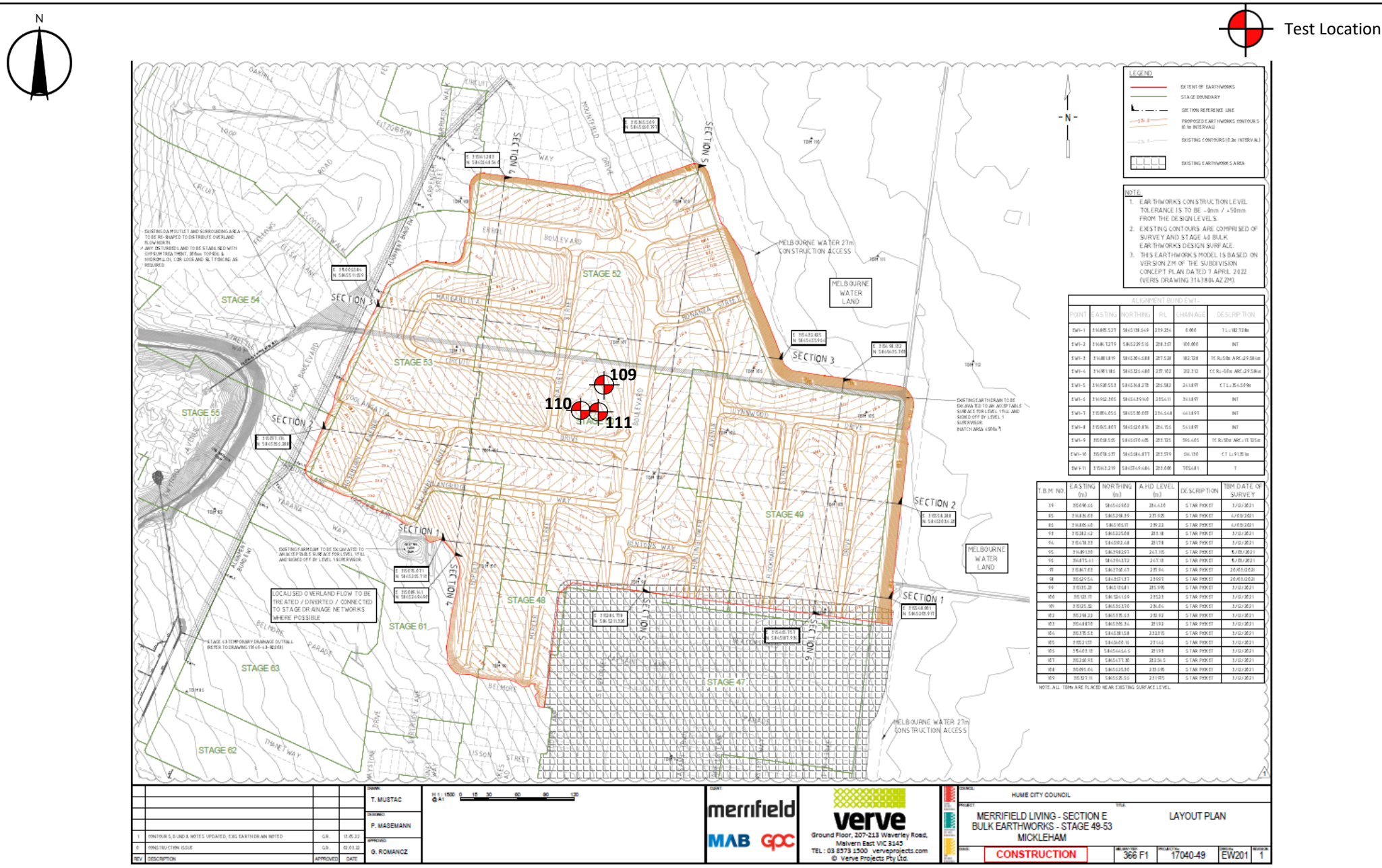
**NATA Accredited Laboratory No. 20172**

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

**Approved Signatory:**

David Burns

**Date:** 30/03/2023

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|---|---|---|
| **PROJECT**<br>**Merrifield Estate – Stage 50 (Level 1)** | **CLIENT:**<br>**BMD Urban** | **DATE:**<br>**10/03/2023** |
| **LOCATION:**<br>**Mickleham** | **Project No:**<br>**1120 0343–1 (SI37)** | **SITE PLAN SKETCH—NOT TO SCALE** |

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