Modeina Estate - Stage 26, Burnside

Level 1 Inspection & Testing Report

Reference: 1120 0333-1

Prepared for:

DFC (Project Management) Pty Ltd

January 2023

A&Y ASSOCIATES

GEOTECHNICAL ENGINEERING CONSULTANTS

Document Control Record

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0	**24/01/2023**	**First Issue**	**Y Balkis**	**A Tan**	**A Tan**

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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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Contents

1 Introduction

This report presents the results of the Level 1 Inspection and Testing for the construction of the fill platforms located in Modeina Estate - Stage 26, Burnside.

2 Project Summary

It is understood that Excell Gray Bruni, on behalf of DFC (Project Management) Pty Ltd requires the fill platforms within Modeina Estate - Stage 26 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 three (3) working days from the **31st May 2022 to 6th June 2022.**

This report is applicable for fill placed by DFC (Project Management) Pty Ltd for the following lots located in Modeina Estate - Stage 26 of Burnside, as shown in Appendix A – Site Plan.

- Lot 2603 – 2610
- Lot 2612 – 2613
- Lot 2615 – 2617
- Lot 2620 – 2621
- Lot 2624 – 2628

3 Project Specifications

The supervision and inspections were performed based on AS3798 and the specifications provided in the drawing (ref: Project: Modeina Stage 26 Roads and Drainage, Drawing No. 1275/26/NE/5 – REVC1, by DPM Consulting Group Pty Ltd, dated 18/01/2022). 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 **30th May 2022** as mentioned in report *1120 0333-1 (SSI1)*.

The exposed subgrade material comprised of 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 150mm - 450mm. 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 site derived material. The material was found predominantly comprising of Silty Clay with gravels.

7 Testing

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

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

A total of 9 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 9 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

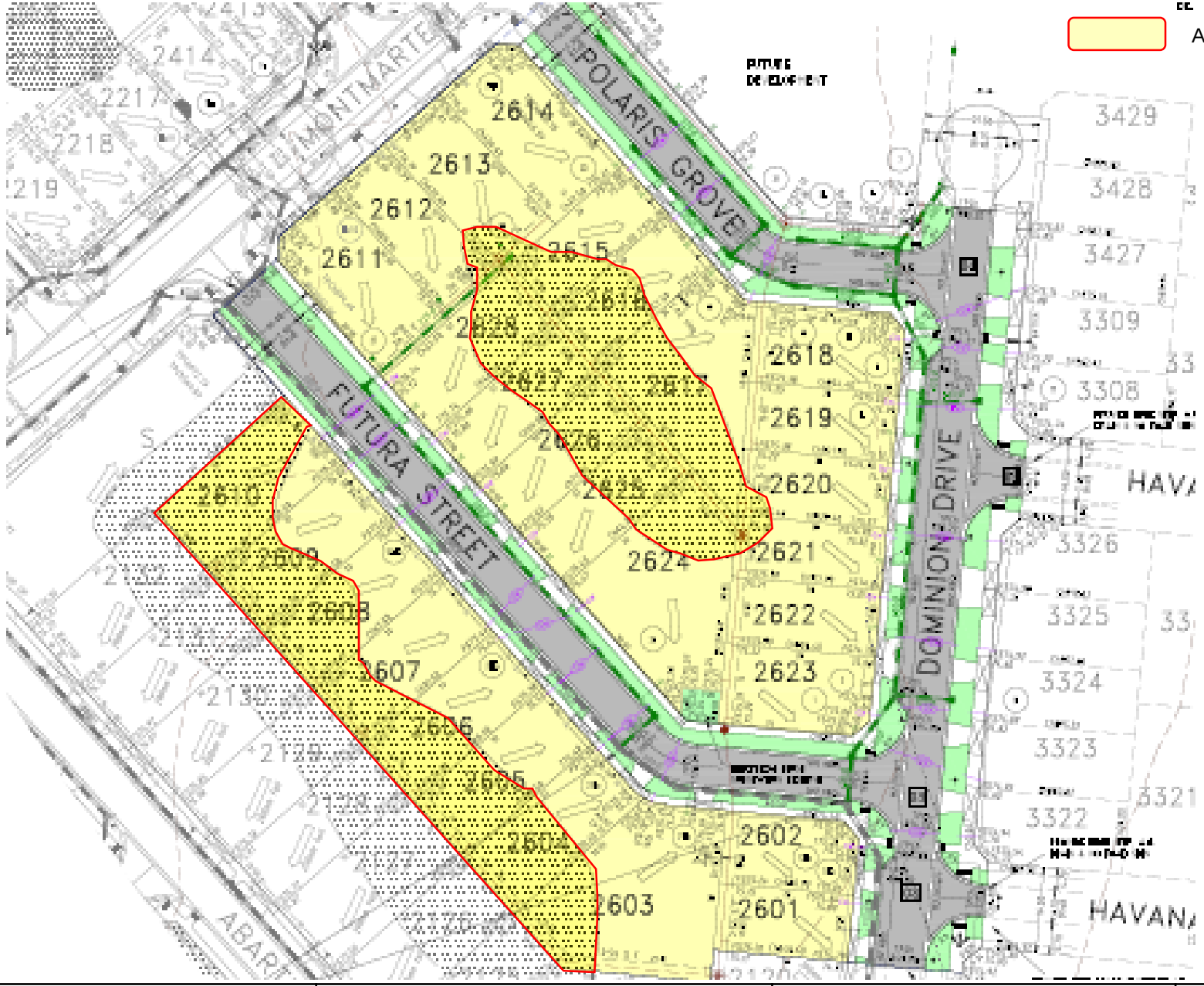
A&Y Associates was not involved in monitoring and testing the following works and as such are not included in the Level 1 report.

- 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

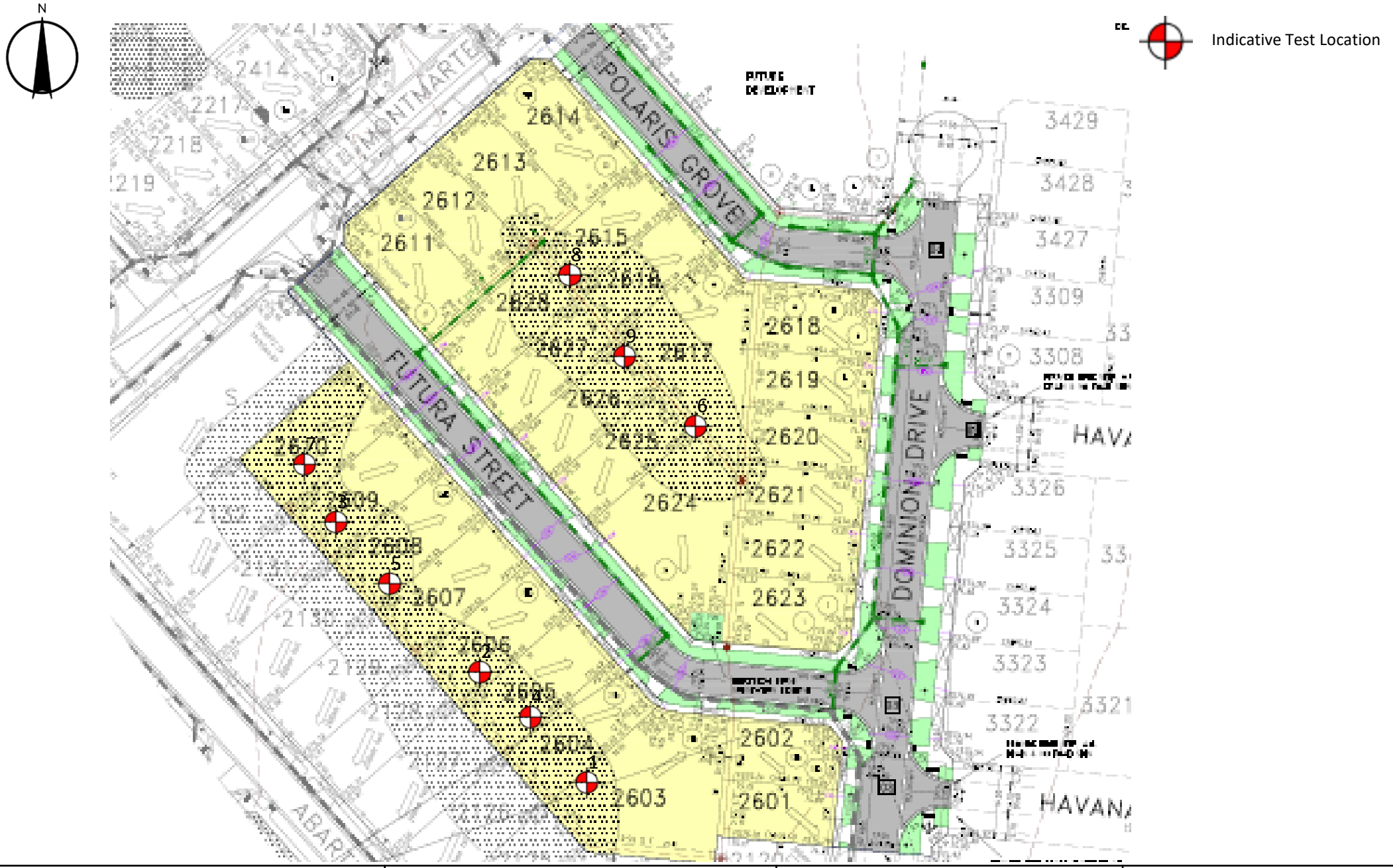
On the completion of the earthworks and after analysing the materials used, it has been concluded that the filling procedure conducted by DFC (Project Management) Pty Ltd appears to be consistent with the requirements of AS 3798 in regards to the placement of fill materials on a project under Level 1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

Appendix A - Site Plan



PROJECT: Modeina Estate – Stage 26 (Level 1)	**CLIENT:** DFC (Project Management) Pty Ltd	**SITE PLAN SKETCH—NOT TO SCALE**	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Burnside	**PROJECT No:** 1120 0333-1		

Appendix B – Test Locations



PROJECT: Modeina Estate – Stage 26 (Level 1)	**CLIENT:** DFC (Project Management) Pty Ltd	**SITE PLAN SKETCH—NOT TO SCALE**	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Burnside	**PROJECT No:** 1120 0333-1		

Appendix C – Test Results Summary

Project No	1120 0333-1				Client	DFC (Project Management) Pty Ltd				
Project Name	Modeina Estate - Stage 26 (Level 1)				Specification			Density Ratio ≥ 95% of Peak Wet Density		
Location	Burnside									
Test No	Retest of Test	Date	Location	Layer	Oversize	Density Ratio	Moisture Ratio	Moisture Variation	Pass / Fail	Retest
#	#		Lot #	#	%	%	%	%		Pass / Fail
1	-	31/05/2022	-	1	5.0	97.0	99.0	-0.5	Pass	-
2	-	31/05/2022	-	1	4.7	99.0	89.5	-2.5	Pass	-
3	-	31/05/2022	-	1	4.9	97.5	97.5	-0.5	Pass	-
4	-	3/06/2022	-	2	5.1	98.0	108.5	1.5	Pass	-
5	-	3/06/2022	-	2	4.6	98.5	96.0	-0.5	Pass	-
6	-	3/06/2022	-	2	5.7	96.5	99.5	0.0	Pass	-
7	-	6/06/2022	-	FSL	5.6	98.0	97.0	-0.5	Pass	-
8	-	6/06/2022	-	2	5.4	97.5	96.0	-0.5	Pass	-
9	-	6/06/2022	-	FSL	5.7	97.5	98.0	-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)										

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Appendix D – NATA Test Results

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Field Density Test Results
AS1289.5.7.1

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

Client: Excell Gray Bruni **Job No:** EGB2274

Project: Modeina Estate - Stage 26 (Level 1) **Report:** 1

Location: Burnside

Sample No		1	2	3		
Date Tested		31/05/2022	31/05/2022	31/05/2022		
Time Tested		AM	AM	AM		
Test Location		Refer to Plan	Refer to Plan	Refer to Plan		
Level/Layer		1	1	1		
Layer Thickness	mm	150	150	150		
Test Depth	mm	125	125	125		
Field Wet Density	t/m^3	1.95	1.90	1.91		
Field Moisture Content	%	22.3	23.3	22.0		
Material:		Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill		
Oversize Material	WET, %	5.0	4.7	4.9		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m^3	2.00	1.90	1.94		
Optimum Moisture Content	%	22.5	26	22.5		
Moisture Ratio	%	99	89.5	97.5		
Moisture Variation from OMC	%	-0.5 Drier	-2.5 Drier	-0.5 Drier		
Density Ratio	%	97.0	99.0	97.5		

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

Notes: Ref : 1120 0333-1 (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

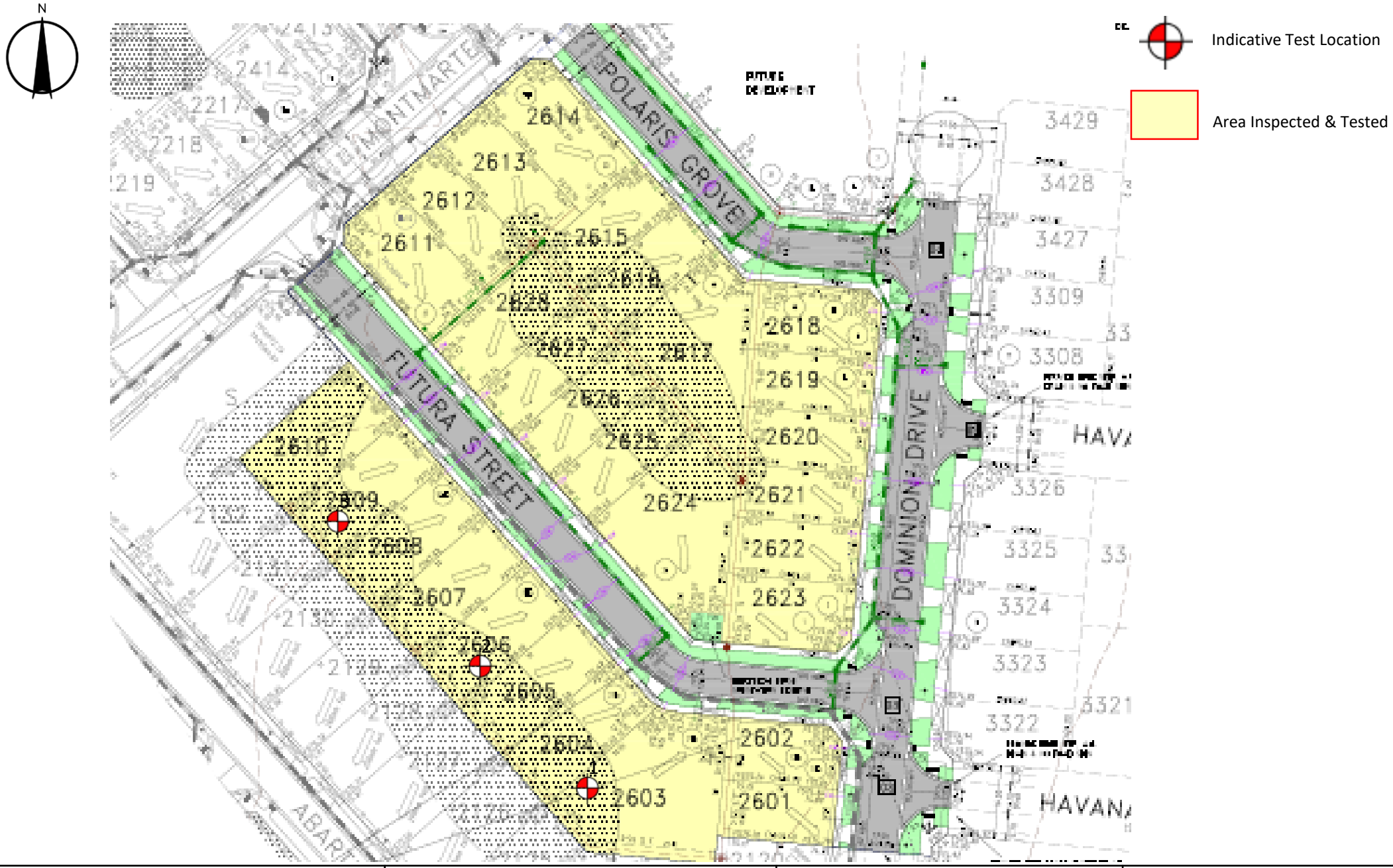
NATA Accredited Laboratory No. 20172

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: 1/06/2022



PROJECT: Modeina Estate – Stage 26 (Level 1)	**CLIENT:** Excell Gray Bruni	**SITE PLAN SKETCH—NOT TO SCALE**	A&Y ASSOCIATES GEOTECHNICAL ENGINEERING CONSULTANTS
LOCATION: Burnside	**PROJECT No:** 1120 0333-1 (SI01)		

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Field Density Test Results
AS1289.5.7.1

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

Client:	Excell Gray Bruni				**Job No:**	EGB2274
Project:	Modeina Estate - Stage 26 (Level 1)				**Report:**	2
Location:	Burnside					

Sample No		4	5	6			
Date Tested		03/06/2022	03/06/2022	03/06/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		2	2	2			
Layer Thickness	mm	150	150	150			
Test Depth	mm	125	125	125			
Field Wet Density	t/m^3	1.90	1.96	1.93			
Field Moisture Content	%	23.3	22.6	22.9			
Material:		Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			
Oversize Material	WET, %	5.1	4.6	5.7			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.92	1.97	1.98			
Optimum Moisture Content	%	21.5	23.5	23			
Moisture Ratio	%	108.5	96	99.5			
Moisture Variation from OMC	%	1.5 Wetter	-0.5 Drier	0.0 OMC			
Density Ratio	%	98.0	98.5	96.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0333-1 (SI02)		
Test Method	AS1289 5.8.1, 5.7.1, 2.1.1, 1.1	**Sampling Method:**	AS 1289 1.2.1 6.4(b)

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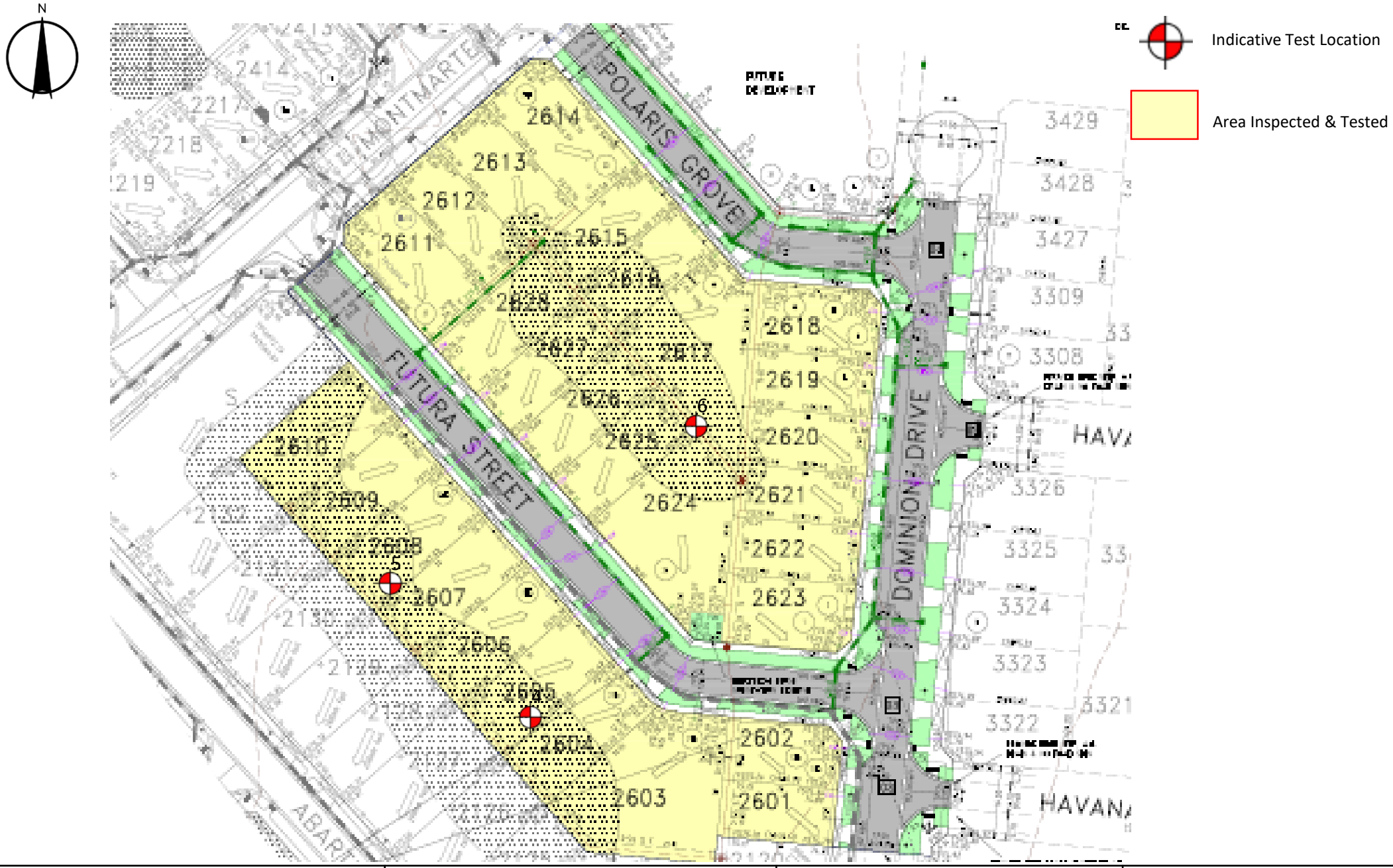
Approved Signatory:

David Burns

Date: 06/06/2022



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LOCATION: Burnside	**PROJECT No:** 1120 0333-1 (SI02)		

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GEOTECHNICAL ENGINEERING CONSULTANTS

Field Density Test Results
AS1289.5.7.1

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Client:	Excell Gray Bruni				**Job No:**	EGB2274
Project:	Modeina Estate - Stage 26 (Level 1)				**Report:**	3
Location:	Burnside					

Sample No		7	8	9			
Date Tested		06/06/2022	06/06/2022	06/06/2022			
Time Tested		PM	PM	PM			
Test Location		Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer		FSL	2	FSL			
Layer Thickness	mm	150	150	150			
Test Depth	mm	125	125	125			
Field Wet Density	t/m^3	1.95	1.89	1.92			
Field Moisture Content	%	20.8	21.1	20.6			
Material:		Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			
Oversize Material	WET, %	5.6	5.4	5.7			
Sieve Size	mm	19	19	19			
Peak Converted Wet Density	t/m^3	1.97	1.92	1.95			
Optimum Moisture Content	%	21.5	22	21			
Moisture Ratio	%	97	96	98			
Moisture Variation from OMC	%	-0.5 Drier	-0.5 Drier	-0.5 Drier			
Density Ratio	%	98.0	97.5	97.5			

Specification:	95% STD	**Test Selection:**	N/A
Notes:	Ref : 1120 0333-1 (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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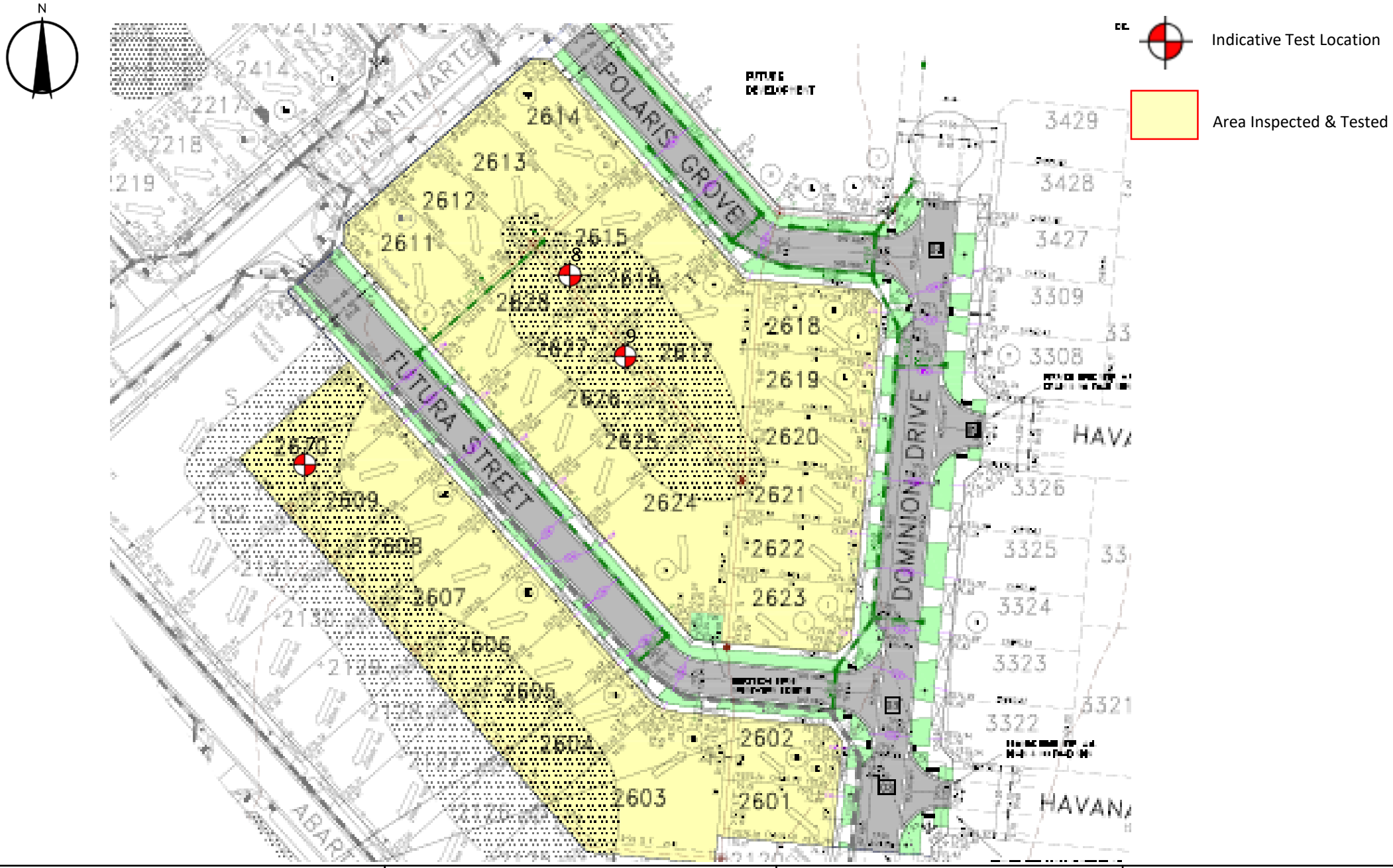
Approved Signatory:

David Burns

Date: 07/06/2022



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LOCATION: Burnside	**PROJECT No:** 1120 0333-1 (SI03)		