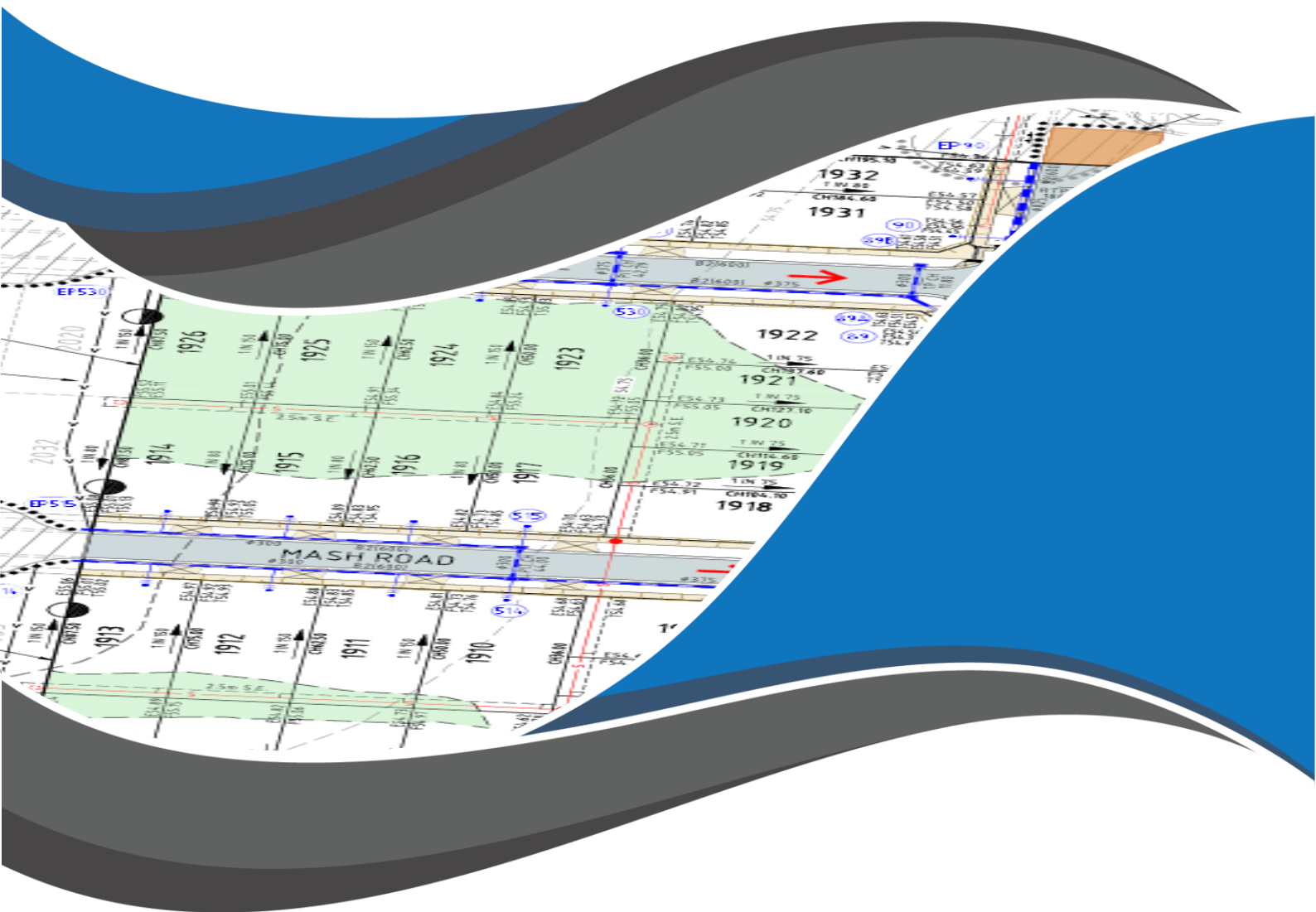


Newhaven Estate - Stage 19, Tarneit

Level 1 Inspection & Testing Report

Reference: 1120 0371-1



Prepared for:

BMD Urban

March 2023



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Report title	Level 1 Inspection & Testing				
Project reference number	1120 0371-1				
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Revision	Date	Descriptions/Status	Author	Reviewer	Approver
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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.

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1 Introduction

This report presents the results of the Level 1 Inspection and Testing for the construction of the fill platforms located in Newhaven Estate - Stage 19, Tarneit.

2 Project Summary

It is understood that BMD Urban require the fill platforms within Stage 19 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 **3 working days** from the **10th October 2022 to 12th October 2022**.

This report is applicable for fill placed by BMD Urban for the following lots located in Newhaven Estate - Stage 19 of Tarneit, as shown in Appendix A – Site Plan.

- Lot 1901- 1904
- Lot 1910- 1917
- Lot 1919- 1930

3 Project Specifications

The supervision and inspections were performed based on AS3798 and the specifications provided in drawing (ref: Newhaven Estate Stage 19, Drawing No. 304672CR100 – Rev2 by PEET Pty Ltd, Dated 10/12/2021). A short summary of the requirements is provided below:

- All filling in excess of 200mm depth within the building envelope of allotments shall be undertaken to specifications satisfying the requirements of AS3798.
- Material to be used for fill construction shall satisfy the requirements of 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 removal of topsoil and before any fill was placed. The subgrade assessment was undertaken on the **10th of October 2022** as mentioned in report **1120 0371-1 (SS11)**.

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 200mm – 300mm. 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 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.

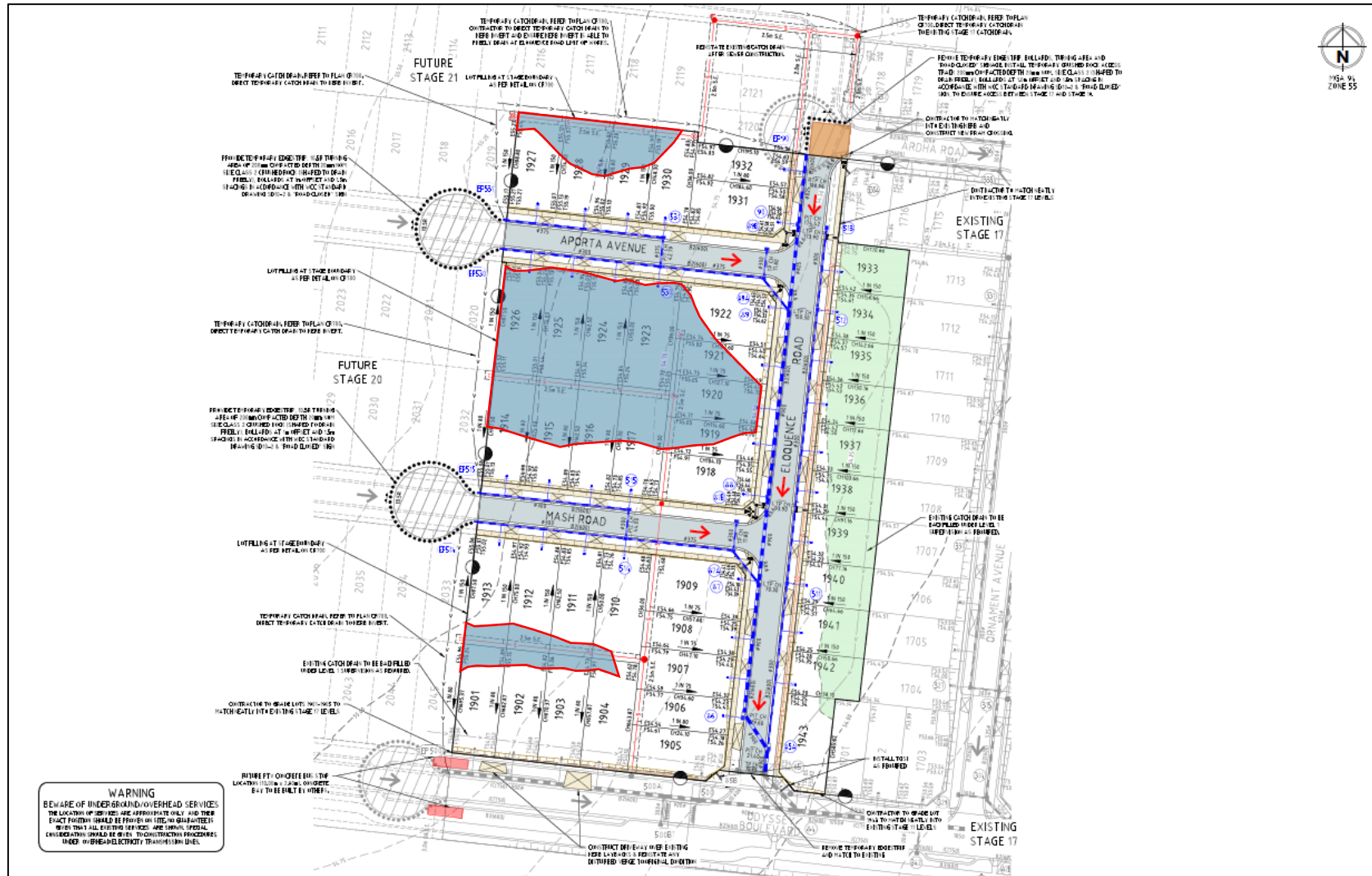
10 Conclusion

On the completion of the earthworks and after analysing the materials used, it has been concluded that the filling procedure conducted by 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

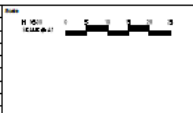


Area Inspected and tested



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Rev	Amendments	Approved	Date
1	BASEMENT AMENDED IN LOT 1902	M.H.	20/05/22
2	ISSUED FOR CONSTRUCTION	M.H.	20/05/22
3	DRAINAGE AMENDED	M.H.	11/01/22
A	ISSUED FOR APPROVAL	M.H.	10/12/21



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P. CLIFTON
Authorised
M. HOLMES
Checked
J. KOEHLER
Date
10/12/21

**NEWHAVEN ESTATE
STAGE 19
ROAD AND DRAINAGE
FACE PLAN
WINDHAM CITY COUNCIL
PEET NO. 1895 PTY LTD**
CONSTRUCTION 304672CR200 1

PROJECT:
Newhaven Estate – Stage 19 (Level 1)

LOCATION:
Tarneit

CLIENT:
BMD Urban

PROJECT No:
1120 0371-1

SITE PLAN SKETCH—NOT TO SCALE



Appendix B – Test Locations



Indicative Test Location



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Rev	Amendments	Approved	Date
1	SUBMISSION AMENDED IN LOT 1922	M.H.	29/05/22
0	ISSUED FOR CONSTRUCTION	M.H.	29/05/22
0	DRAINAGE AMENDED	M.H.	11/01/22
A	ISSUED FOR APPROVAL	M.H.	10/12/21



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**NEWHAVEN ESTATE
STAGE 19
ROAD AND DRAINAGE
FACE PLAN
WYNDHAM CITY COUNCIL
PEET NO. 1895 PTY LTD**
CONSTRUCTION 304672CR200 1

PROJECT:
Newhaven Estate – Stage 19 (Level 1)

LOCATION:
Tarneit


CLIENT:
BMD Urban

PROJECT No:
1120 0371-1

SITE PLAN SKETCH—NOT TO SCALE



Appendix C – Test Results Summary

Project No		1120 0371-1			Client	BMD Urban				
Project Name		Newhaven Estate - Stage 19			Specification			Density Ratio \geq 95% of Peak Wet Density		
Location		Tarneit								
Test No	Retest of Test	Date	Location	Layer	Oversize	Density Ratio	Moisture Ratio	Moisture Variation	Pass / Fail	Retest
#	#		Lot #	#	%	%	%	%		Pass / Fail
1	-	10/10/2022	-	1	8.2	99.0	97.0	-0.5	Pass	-
2	-	10/10/2022	-	1	7.8	98.5	99.0	-0.5	Pass	-
3	-	10/10/2022	-	1	6.3	99.5	98.0	-0.5	Pass	-
4	-	11/10/2022	-	1	7.0	99.5	97.0	-0.5	Pass	-
5	-	11/10/2022	-	1	6.8	98.5	97.5	-0.5	Pass	-
6	-	11/10/2022	-	1	6.3	99.5	97.5	-1.0	Pass	-
7	-	12/10/2022	-	1	7.2	99.5	98.0	-0.5	Pass	-
8	-	12/10/2022	-	1	7.0	99.0	97.5	-0.5	Pass	-
9	-	12/10/2022	-	1	6.9	99.5	97.0	-1.0	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)										

Appendix D – NATA Test Results

Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD2479
Project:	Newhaven Estate - Stage 19 (Level 1)	Report:	1
Location:	Tarneit		



Sample No	1	2	3			
Date Tested	10/10/2022	10/10/2022	10/10/2022			
Time Tested	PM	PM	PM			

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	1	1	1			
Layer Thickness	mm 150	mm 150	mm 150			
Test Depth	mm 125	mm 125	mm 125			
Field Wet Density	t/m ³ 1.88	t/m ³ 1.89	t/m ³ 1.93			
Field Moisture Content	% 27.2	% 28.2	% 28.4			
Material:	Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			

Oversize Material	WET, %	8.2	7.8	6.3		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.86	1.89	1.91		
Optimum Moisture Content	%	28	28.5	29		

Moisture Ratio	%	97	99	98		
Moisture Variation from OMC	%	-0.5	-0.5	-0.5		
Density Ratio	%	99.0	98.5	99.5		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref : 1120 0371-1 (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)

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Test Location



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Rev	Amendments	Approved	Date
1	SUBMISSION AMENDED IN LOT 1922	M.H.	20/05/22
0	ISSUED FOR CONSTRUCTION	M.H.	20/05/22
0	DRAINAGE AMENDED	M.H.	11/01/22
A	ISSUED FOR APPROVAL	M.H.	10/10/21



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NEWHAVEN ESTATE
 STAGE 19
 ROAD AND DRAINAGE
 FACE PLAN
 WINDHAM CITY COUNCIL
 PEET NO. 1895 PTJ LTD
CONSTRUCTION 304672CR200

PROJECT:
 Newhaven Estate – Stage 19 (Level 1)

LOCATION:
 Tarneit

CLIENT:
 BMD Urban

PROJECT No:
 1120 0371-1 (SI01)

DATE:
 10/10/2022

SITE PLAN SKETCH—NOT TO SCALE



Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD2479
Project:	Newhaven Estate - Stage 19 (Level 1)	Report:	2
Location:	Tarneit		



Sample No	4	5	6			
Date Tested	11/10/2022	11/10/2022	11/10/2022			
Time Tested	PM	PM	PM			

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	1	1	1			
Layer Thickness	mm 150	mm 150	mm 150			
Test Depth	mm 125	mm 125	mm 125			
Field Wet Density	t/m ³ 1.89	t/m ³ 1.86	t/m ³ 1.90			
Field Moisture Content	% 27.2	% 26.8	% 27.8			
Material:	Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			

Oversize Material	WET, %	7.0	6.8	6.3		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.87	1.86	1.89		
Optimum Moisture Content	%	28	27.5	28.5		

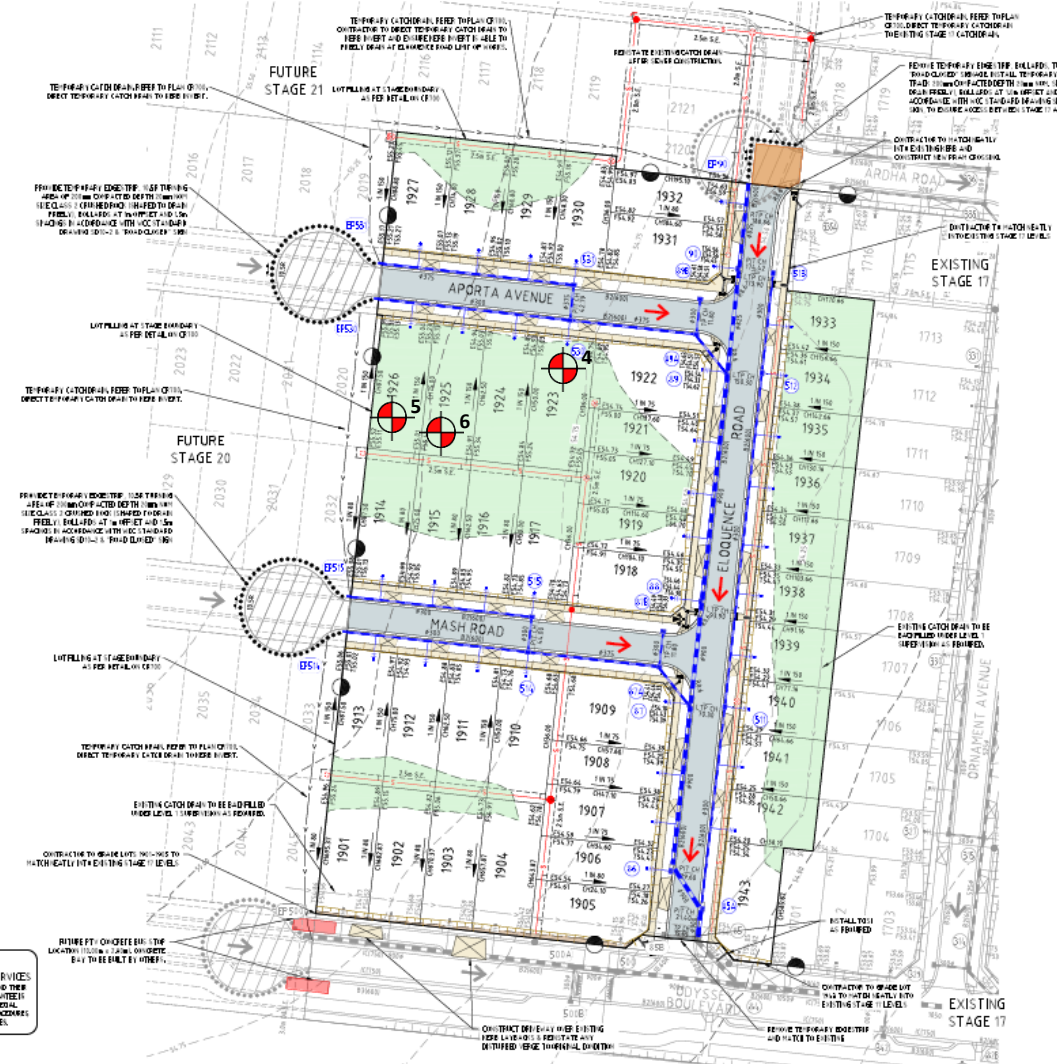
Moisture Ratio	%	97	97.5	97.5		
Moisture Variation from OMC	%	-0.5	-0.5	-1.0		
Density Ratio	%	99.5	98.5	99.5		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref : 1120 0371-1 (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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Test Location



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Rev	Amendments	Approved	Date
1	BASEMENT AMENDED IN LOT 1922	M.H.	25/05/22
0	ISSUED FOR CONSTRUCTION	M.H.	25/05/22
0	DRAINAGE AMENDED	M.H.	11/01/22
A	ISSUED FOR APPROVAL	M.H.	10/10/21



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PEET NO. 1895 PTY LTD
CONSTRUCTION 304672CR200 1

PROJECT:
Newhaven Estate – Stage 19 (Level 1)

CLIENT:
BMD Urban

DATE:
11/10/2022

LOCATION:
Tarneit

PROJECT No:
1120 0371-1 (SI02)

SITE PLAN SKETCH—NOT TO SCALE



Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD2479
Project:	Newhaven Estate - Stage 19 (Level 1)	Report:	3
Location:	Tarneit		



Sample No	7	8	9			
Date Tested	12/10/2022	12/10/2022	12/10/2022			
Time Tested	PM	PM	PM			

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	1	1	1			
Layer Thickness	mm 150	mm 150	mm 150			
Test Depth	mm 125	mm 125	mm 125			
Field Wet Density	t/m ³ 1.92	t/m ³ 1.90	t/m ³ 1.93			
Field Moisture Content	% 26.9	% 27.3	% 27.1			
Material:	Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			

Oversize Material	WET, %	7.2	7.0	6.9		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.90	1.90	1.92		
Optimum Moisture Content	%	27.5	28	28		

Moisture Ratio	%	98	97.5	97		
Moisture Variation from OMC	%	-0.5	-0.5	-1.0		
Density Ratio	%	99.5	99.0	99.5		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref : 1120 0371-1 (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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Test Location



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Rev	Amendments	Approved	Date
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0	ISSUED FOR CONSTRUCTION	M.H.	25/05/22
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A	ISSUED FOR APPROVAL	M.H.	10/10/21



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ROAD AND DRAINAGE
FACE PLAN**
PEET NO. 1895 PTY LTD
CONSTRUCTION 304672CR200 1

PROJECT:
Newhaven Estate – Stage 19 (Level 1)

LOCATION:
Tarneit

CLIENT:
BMD Urban

PROJECT No:
1120 0371-1 (SI03)

DATE:
12/10/2022

SITE PLAN SKETCH—NOT TO SCALE

