

Newhaven Estate - Stage 12, Tarneit

Level 1 Inspection & Testing Report

Reference: 1120 0228-1



Prepared for:

BMD Urban

April 2021



A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Document Control Record

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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

This report has been prepared for the benefit for our client with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose without our prior review and agreement.

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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 12, Tarneit.

2 Project Summary

It is understood that BMD Urban require the fill platforms within Newhaven Estate - Stage 12 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 six (6) working days on 29th of March 2021, 30th of March 2021, 31st of March 2021, 1st of April 2021, 6th of April 2021 and 7th of April 2021

This report is applicable for fill placed by BMD Urban for the following lots located in Newhaven Estate - Stage 12, Tarneit, as shown in Appendix A – Site Plan.

- Lot 1201 to Lot 1206
- Lot 1217 to Lot 1237 and
- Lot 1209 to Lot 1216

3 Project Specifications

No specification has been provided for the construction works in Newhaven Estate - Stage 12, Tarneit. The supervision and inspections were performed based on AS3798. A short summary of the requirements outline in AS3798 is provided below:

- All filling in excess of 300mm depth within the building envelope of allotments shall be undertaken to specifications satisfying the requirements of AS3798.
- Material to be used for fill construction shall satisfy the requirements of 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 26th of March 2021 as mentioned in report *1120 0228-1 (SSI1)*.

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

5 Earthworks

The earthworks for this project included stripping of topsoil, removing of tree roots, proof rolling the subgrade and placement and compaction of fill to construct engineered platforms. Based on design plans and site inspection, it appears that the average fill thickness placed is approximately 150mm to 300mm on following Lots.

- Lot 1201 to Lot 1206
- Lot 1217 to Lot 1237 and
- Lot 1209 to Lot 1216

6 Fill Material

The fill material used for the platform consisted of site derived material. The site derived material was predominantly comprising of Clay.

7 Testing

Field density testing was undertaken on the compacted fill at a frequency of a minimum of 3 tests per 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 18 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 18 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 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.

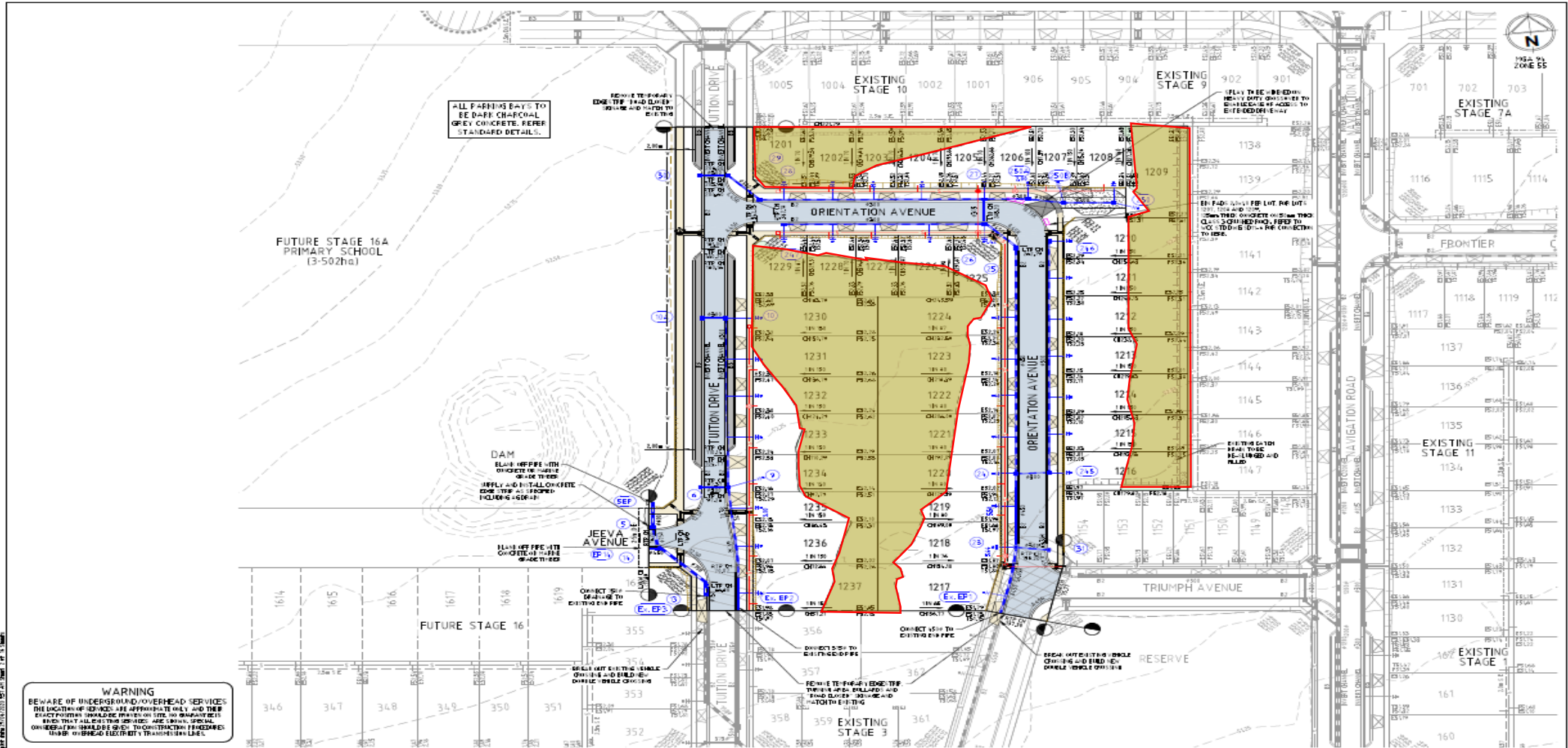
9 Conclusion

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

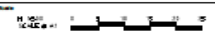


Area Supervised & Tested



WARNING
BEWARE OF UNDERGROUND OVERHEAD SERVICES
THE LOCATION OF SERVICES ARE APPROXIMATE ONLY AND THEIR EXACT POSITION SHOULD BE CHECKED ON SITE. NO GUARANTEE IS GIVEN THAT ALL EXISTING SERVICES ARE SHOWN. SPECIAL CONSIDERATION SHOULD BE GIVEN TO CONSTRUCTION PROCEDURES UNDER OVERHEAD ELECTRICAL TRANSMISSION LINES.

Rev	Description	Author	Checked	Date
0	ISSUED FOR CONSTRUCTION	M.H.	P.C.	29/04/20
1	SHD HOUSE DRAIN LOCATIONS AMENDED	M.H.	P.C.	14/04/20
2	ISSUED FOR APPROVAL	M.H.	P.C.	23/03/20



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Designed: K. AYRES
Authorised: M. HOLMES
Checked: P. COUNSEL
Date: 23/03/20

NEWHAVEN ESTATE STAGE 12 ROAD AND DRAINAGE FACE PLAN
WYNDHAM CITY COUNCIL
PEET NO. 1895 PTY LTD
CONSTRUCTION 306258CR200

PROJECT:
Newhaven Estate – Stage 12

LOCATION:
Tarnet

CLIENT:
BMD Urban

PROJECT No:
1120 0228-1

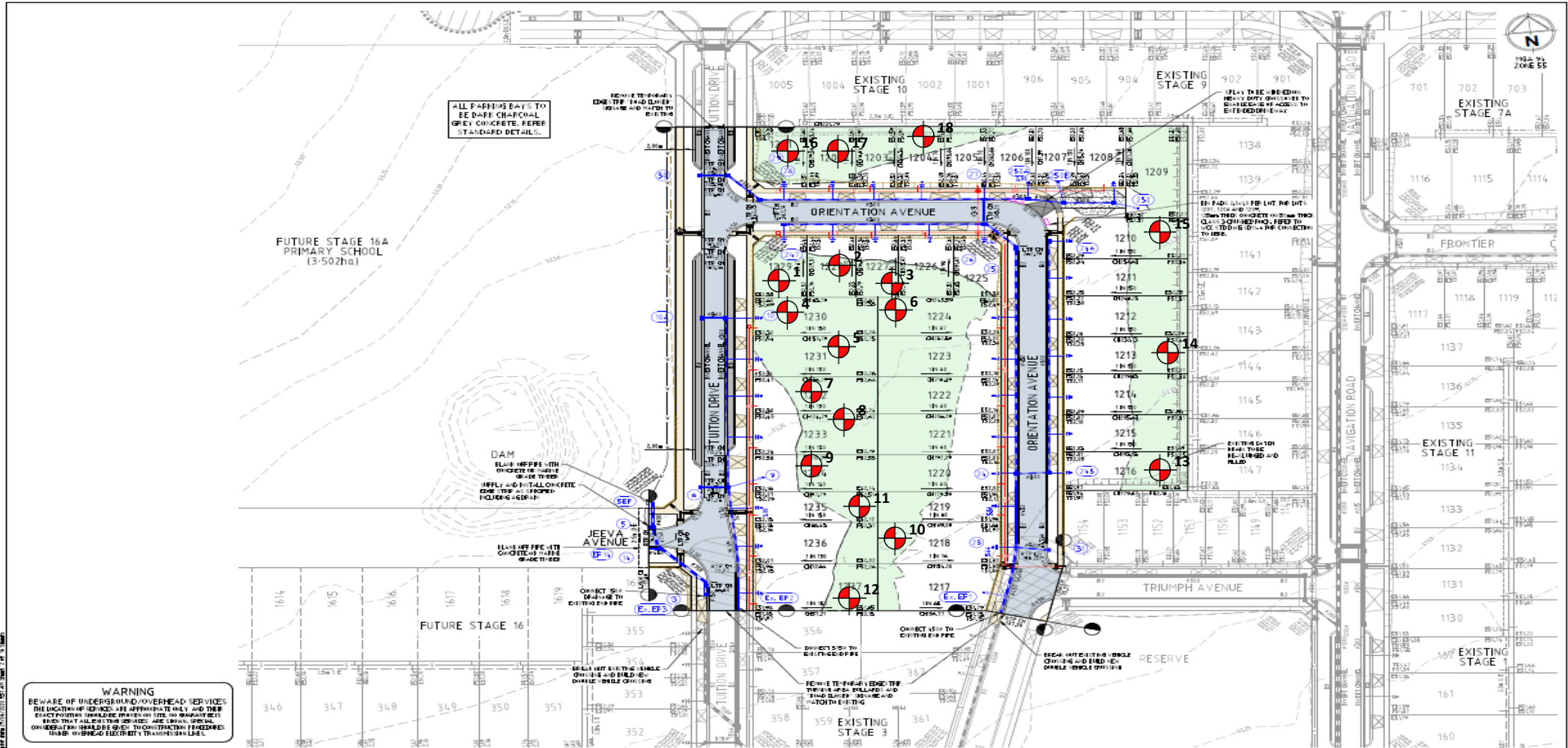
SITE PLAN SKETCH—NOT TO SCALE

A&Y ASSOCIATES
GEOTECHNICAL ENGINEERING CONSULTANTS

Appendix B – Test Locations

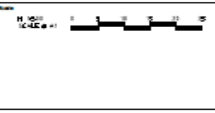


Indicative Test Location



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Rev	Description	M.H.	Date
0	ISSUED FOR CONSTRUCTION	M.H.	29/04/20
B	SWD HOUSE DRAIN LOCATIONS AMENDED	M.H.	14/04/20
A	ISSUED FOR APPROVAL	M.H.	23/03/20



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 Date: 23/03/20

**NEWHAVEN ESTATE
 STAGE 12
 ROAD AND DRAINAGE
 FACE PLAN
 WYNDHAM CITY COUNCIL
 PEET NO. 1895 PTY LTD
 CONSTRUCTION 306258CR200**

PROJECT:
 Newhaven Estate – Stage 12

LOCATION:
 Tarneit


CLIENT:
 BMD Urban

PROJECT No:
 1120 0228-1

SITE PLAN SKETCH—NOT TO SCALE



Appendix C – Test Results Summary

Project No		1120 0228-1			Client	BMD Urban				
Project Name		Newhaven Estate - Stage 12			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	-	29/03/2021	-	1	0.0	97.0	98.5	0.0	Pass	-
2	-	29/03/2021	-	1	0.0	98.0	98.0	-0.5	Pass	-
3	-	29/03/2021	-	1	0.0	96.5	98.0	-0.5	Pass	-
4	-	30/03/2021	-	1	0.0	97.0	98.5	-0.5	Pass	-
5	-	30/03/2021	-	1	0.0	95.5	99.0	0.0	Pass	-
6	-	30/03/2021	-	1	0.0	98.0	98.0	-0.5	Pass	-
7	-	31/03/2021	-	FSL	0.0	96.0	100.0	0.0	Pass	-
8	-	31/03/2021	-	FSL	0.0	96.0	98.5	-0.5	Pass	-
9	-	31/03/2021	-	FSL	0.0	95.0	99.5	0.0	Pass	-
10	-	1/04/2021	-	FSL	0.0	96.0	97.5	-0.5	Pass	-
11	-	1/04/2021	-	FSL	0.0	96.0	100.0	0.0	Pass	-
12	-	1/04/2021	-	FSL	0.0	96.5	98.0	-0.5	Pass	-
13	-	6/04/2021	-	FSL	0.0	96.0	100.0	0.0	Pass	-
14	-	6/04/2021	-	FSL	0.0	96.0	98.0	-0.5	Pass	-
15	-	6/04/2021	-	FSL	0.0	95.0	99.5	0.0	Pass	-
16	-	7/04/2021	-	FSL	0.0	97.5	100.0	0.0	Pass	-
17	-	7/04/2021	-	FSL	0.0	97.5	98.5	-0.5	Pass	-
18	-	7/04/2021	-	FSL	0.0	96.0	98.0	-0.5	Pass	-
** Negative (-) value indicates that the field moisture content is drier than the optimum moisture content (OMC)									 <small>PROFESSIONAL ENGINEERING CONSULTANTS</small>	
** 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:	BMD1540
Project:	Newhaven Estate - Stage 12 (Level 1)	Report:	1
Location:	Tarneit		



Sample No	1	2	3			
Date Tested	29/03/2021	29/03/2021	29/03/2021			
Time Tested	PM	PM	PM			

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	1	1	1			
Layer Thickness	mm 200	mm 200	mm 200			
Test Depth	mm 175	mm 175	mm 175			
Field Wet Density	t/m ³ 1.82	t/m ³ 1.83	t/m ³ 1.82			
Field Moisture Content	% 24.1	% 25.5	% 26.0			
Material:	Site Derived Clay	Site Derived Clay	Site Derived Clay			

Oversize Material	WET, %	0.0	0.0	0.0		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.88	1.87	1.89		
Optimum Moisture Content	%	24.5	26	26.5		

Moisture Ratio	%	98.5	98	98		
Moisture Variation from OMC	%	0.0	-0.5	-0.5		
Density Ratio	%	97.0	98.0	96.5		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0228-1 (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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Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1540
Project:	Newhaven Estate - Stage 12 (Level 1)	Report:	2
Location:	Tarneit		



Sample No	4	5	6			
Date Tested	30/03/2021	30/03/2021	30/03/2021			
Time Tested	AM	PM	PM			

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	1	1	1			
Layer Thickness	mm 200	mm 200	mm 200			
Test Depth	mm 175	mm 175	mm 175			
Field Wet Density	t/m ³ 1.81	t/m ³ 1.84	t/m ³ 1.86			
Field Moisture Content	% 26.1	% 24.8	% 24.0			
Material:	Site Derived Clay	Site Derived Clay	Site Derived Clay			

Oversize Material	WET, %	0.0	0.0	0.0		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.87	1.93	1.90		
Optimum Moisture Content	%	26.5	25	24.5		

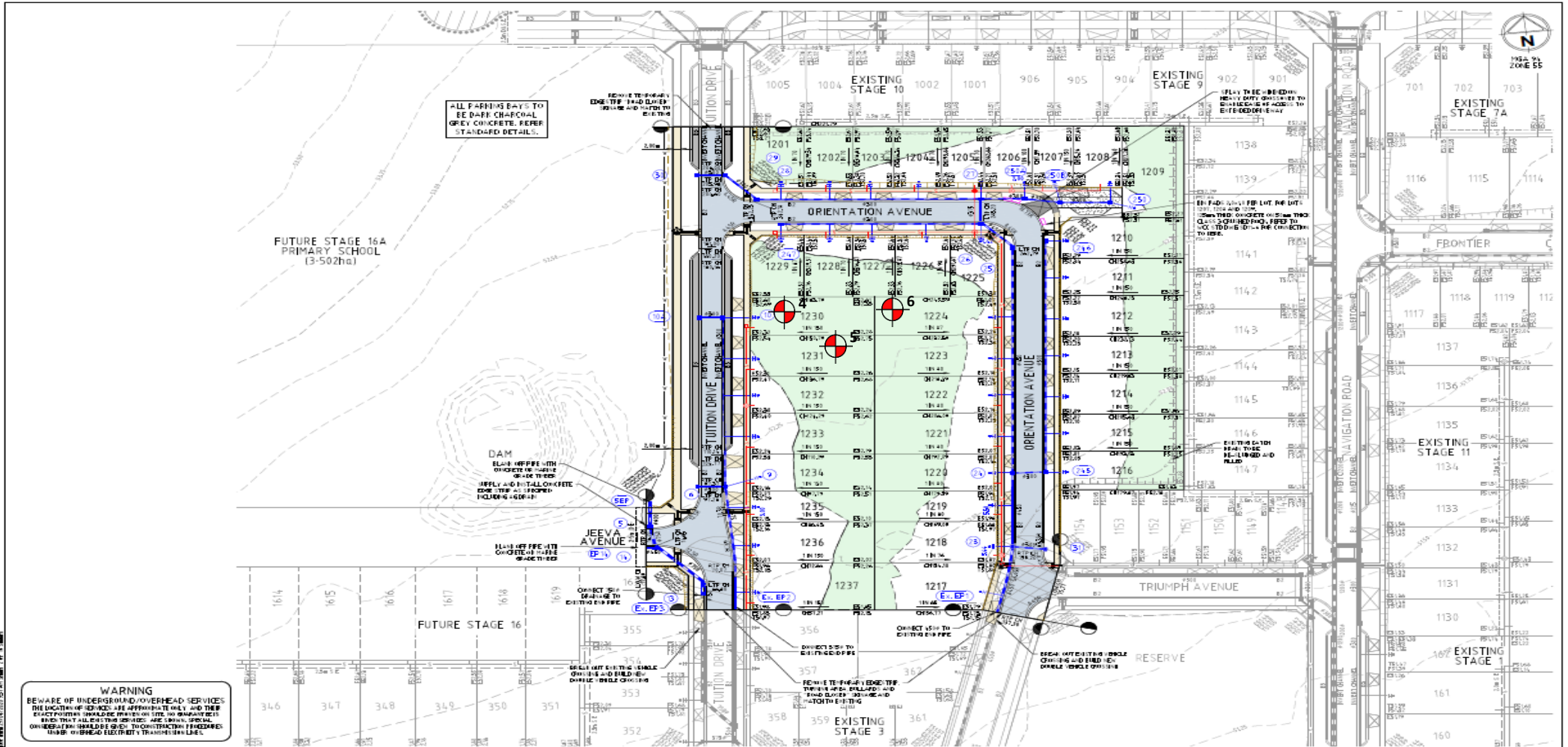
Moisture Ratio	%	98.5	99	98		
Moisture Variation from OMC	%	-0.5 Drier	0.0 OMC	-0.5 Drier		
Density Ratio	%	97.0	95.5	98.0		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0228-1 (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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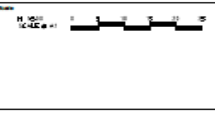


Test Location



DATE PLOTTED: 23/03/2021 10:50:11 AM

Rev.	Description	Author	Date
0	ISSUED FOR CONSTRUCTION	M.H.	29/04/20
1	SMD HOUSE DRAIN LOCATIONS AMENDED	M.H.	14/04/20
2	ISSUED FOR APPROVAL	M.H.	23/03/20



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PEET
Designed: K. AYRES
Authorised: M. HOLMES
Checked: P. COUNSEL
Date: 23/03/20

**NEWHAVEN ESTATE
STAGE 12
ROAD AND DRAINAGE
FACE PLAN**
WYNDHAM CITY COUNCIL
PEET NO. 1895 PTY LTD
CONSTRUCTION 306258CR200

PROJECT:
Newhaven Estate – Stage 12 (Level 1)

LOCATION:
Tarneit

CLIENT:
BMD Urban

PROJECT No:
1120 0228-1 (SI02)

DATE:
30/03/2021

SITE PLAN SKETCH—NOT TO SCALE



Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1540
Project:	Newhaven Estate - Stage 12 (Level 1)	Report:	3
Location:	Tarneit		



Sample No	7	8	9			
Date Tested	31/03/2021	31/03/2021	31/03/2021			
Time Tested	AM	PM	PM			

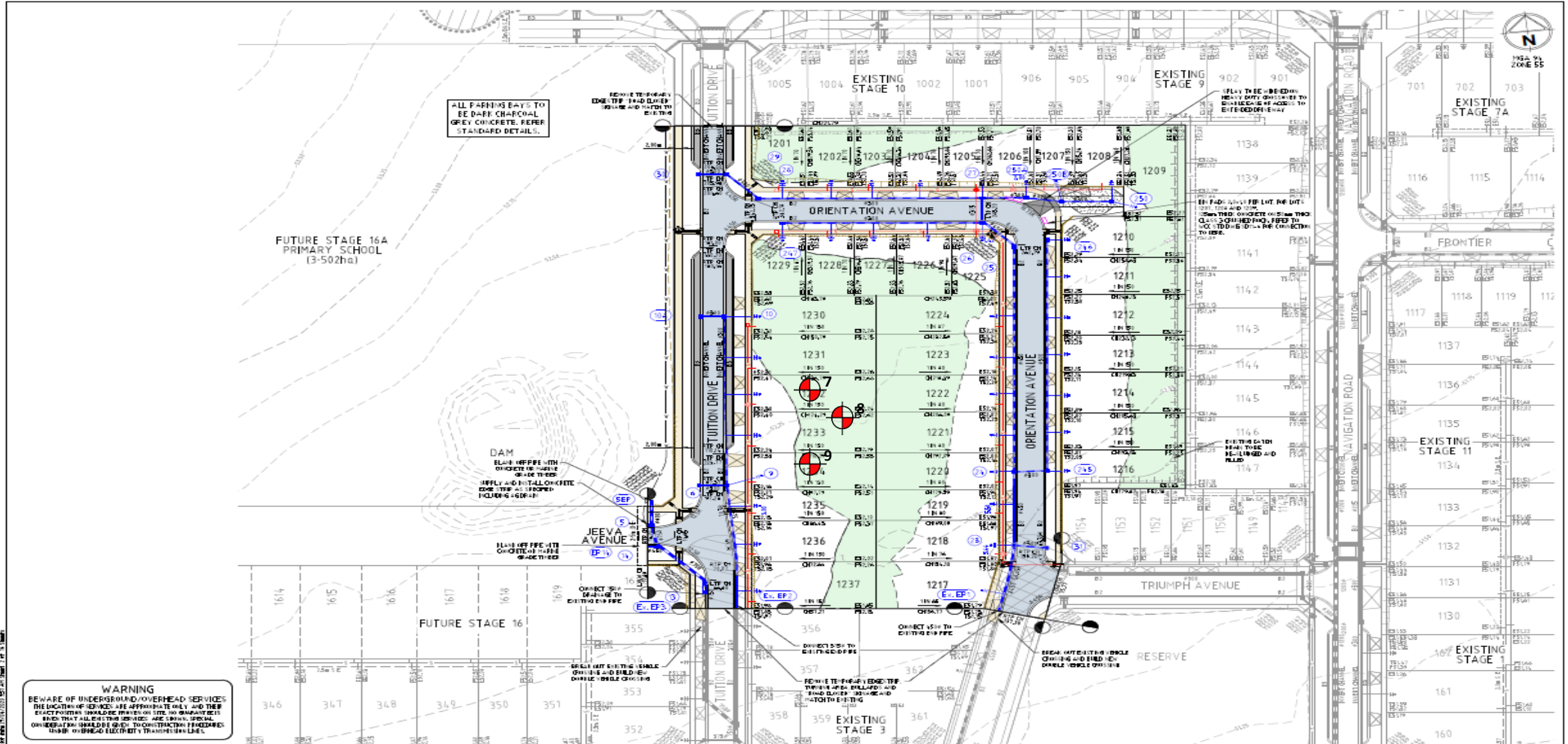
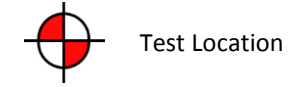
Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	FSL	FSL	FSL			
Layer Thickness	mm 200	200	200			
Test Depth	mm 175	175	175			
Field Wet Density	t/m ³ 1.80	1.82	1.81			
Field Moisture Content	% 25.0	24.1	24.8			
Material:	Site Derived Clay	Site Derived Clay	Site Derived Clay			

Oversize Material	WET, %	0.0	0.0	0.0		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.88	1.90	1.90		
Optimum Moisture Content	%	25	24.5	25		

Moisture Ratio	%	100	98.5	99.5		
Moisture Variation from OMC	%	0.0	-0.5	0.0		
Density Ratio	%	96.0	96.0	95.0		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0228-1 (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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11/20/2021 10:52:02 AM 11/20/2021 10:52:02 AM 11/20/2021 10:52:02 AM 11/20/2021 10:52:02 AM 11/20/2021 10:52:02 AM	D	ISSUED FOR CONSTRUCTION	M.H.	29/04/20
	B	SWD HOUSE DRAIN LOCATIONS AMENDED	M.H.	14/04/20
	A	ISSUED FOR APPROVAL	M.H.	23/03/20
	Rev	Amendments	Approved	Date

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Designed: K. AYRES
Authorised: M. HOLMES
Checked: P. COUNSEL
Date: 23/03/20

**NEWHAVEN ESTATE
STAGE 12
ROAD AND DRAINAGE
FACE PLAN**
WYNDHAM CITY COUNCIL
PEET NO. 1895 PTY LTD
CONSTRUCTION 306258CR200

PROJECT:
Newhaven Estate – Stage 12 (Level 1)

LOCATION:
Tarneit

CLIENT:
BMD Urban

PROJECT No:
1120 0228-1 (SI03)

DATE:
31/03/2021

SITE PLAN SKETCH—NOT TO SCALE

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Field Density Test Results
AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1540
Project:	Newhaven Estate - Stage 12 (Level 1)	Report:	4
Location:	Tarneit		



Sample No	10	11	12			
Date Tested	1/04/2021	1/04/2021	1/04/2021			
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	mm 200	mm 200			
Test Depth	mm 175	mm 175	mm 175			
Field Wet Density	t/m ³ 1.95	t/m ³ 1.92	t/m ³ 1.93			
Field Moisture Content	% 21.0	% 23.0	% 22.5			
Material:	Site Derived Clay	Site Derived Clay	Site Derived Clay			

Oversize Material	WET, % 0.0	0.0	0.0			
Sieve Size	mm 19	mm 19	mm 19			
Peak Converted Wet Density	t/m ³ 2.02	t/m ³ 2.00	t/m ³ 2.00			
Optimum Moisture Content	% 21.5	% 23	% 23			

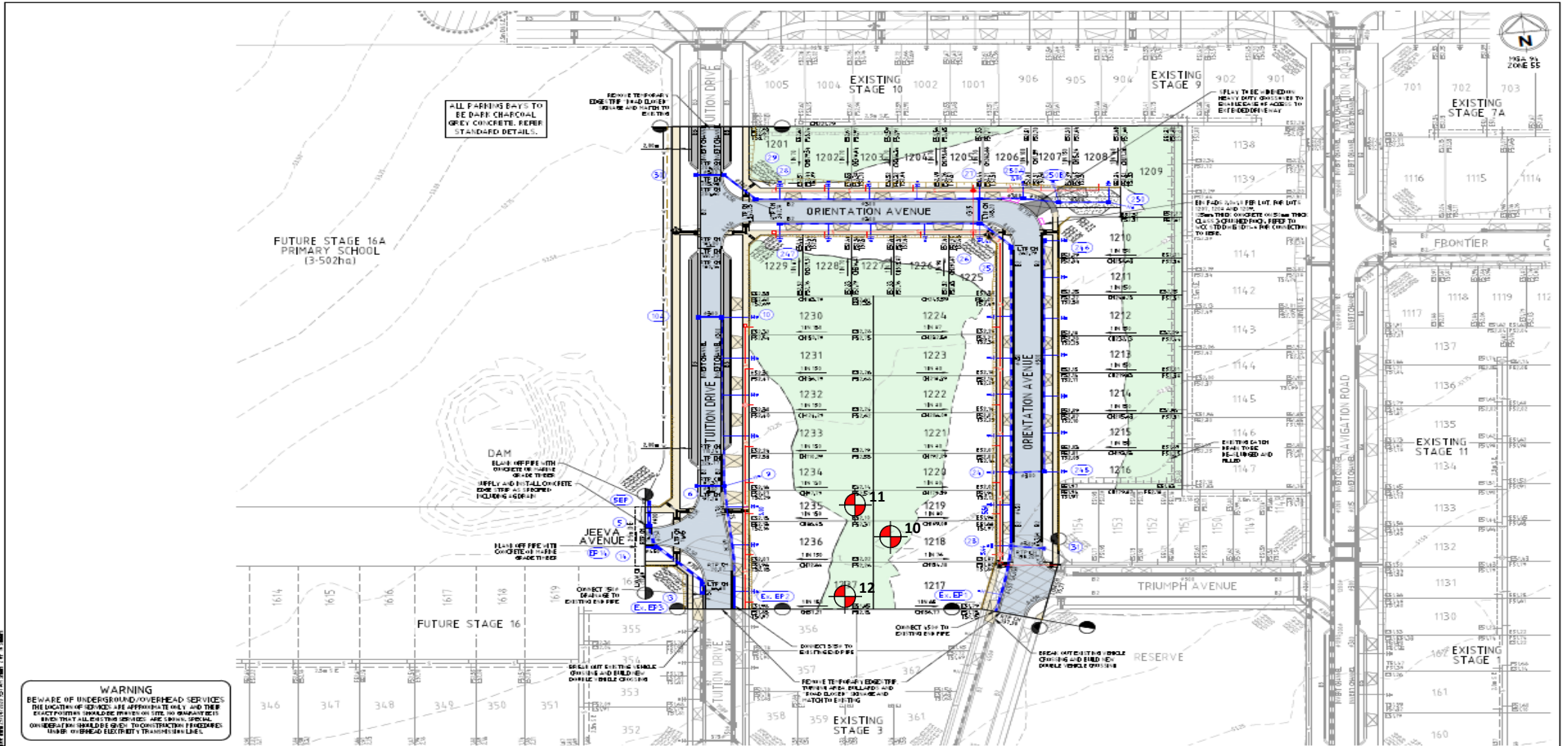
Moisture Ratio	%	97.5	100	98		
Moisture Variation from OMC	%	-0.5 Drier	0.0 OMC	-0.5 Drier		
Density Ratio	%	96.0	96.0	96.5		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0228-1 (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)

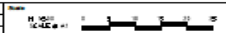
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Test Location



WARNING
 BEWARE OF UNDERGROUND OVERHEAD SERVICES
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 Designer: K. AYRES
 Authorised: M. HOLMES
 Checked: P. COUNSEL
 Date: 23/03/20

**NEWHAVEN ESTATE
 STAGE 12
 ROAD AND DRAINAGE
 FACE PLAN**
 WYNDHAM CITY COUNCIL
 PEET NO. 1895 PTY LTD
CONSTRUCTION 306258CR200

PROJECT: Newhaven Estate – Stage 12 (Level 1)	CLIENT: BMD Urban	DATE: 1/04/2021
LOCATION: Tarnet	PROJECT No: 1120 0228-1 (SI04)	SITE PLAN SKETCH—NOT TO SCALE





Field Density Test Results
AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1540
Project:	Newhaven Estate - Stage 12 (Level 1)	Report:	5
Location:	Tarneit		



Sample No	13	14	15			
Date Tested	6/04/2021	6/04/2021	6/04/2021			
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	mm 200	mm 200			
Test Depth	mm 175	mm 175	mm 175			
Field Wet Density	t/m ³ 1.88	t/m ³ 1.91	t/m ³ 1.88			
Field Moisture Content	% 23.0	% 22.5	% 23.9			
Material:	Site Derived Clay	Site Derived Clay	Site Derived Clay			

Oversize Material	WET, % 0.0	0.0	0.0			
Sieve Size	mm 19	mm 19	mm 19			
Peak Converted Wet Density	t/m ³ 1.96	t/m ³ 1.99	t/m ³ 1.97			
Optimum Moisture Content	% 23	% 23	% 24			

Moisture Ratio	%	100	98	99.5		
Moisture Variation from OMC	%	0.0	-0.5	0.0		
Density Ratio	%	96.0	96.0	95.0		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0228-1 (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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Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1540
Project:	Newhaven Estate - Stage 12 (Level 1)	Report:	6
Location:	Tarneit		



Sample No	16	17	18			
Date Tested	7/04/2021	7/04/2021	7/04/2021			
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	mm 200	mm 200			
Test Depth	mm 175	mm 175	mm 175			
Field Wet Density	t/m ³ 1.86	t/m ³ 1.91	t/m ³ 1.89			
Field Moisture Content	% 24.0	% 22.1	% 23.0			
Material:	Site Derived Clay	Site Derived Clay	Site Derived Clay			

Oversize Material	WET, %	0.0	0.0	0.0		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.91	1.96	1.97		
Optimum Moisture Content	%	24	22.5	23.5		

Moisture Ratio	%	100	98.5	98		
Moisture Variation from OMC	%	0.0	-0.5	-0.5		
Density Ratio	%	97.5	97.5	96.0		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0228-1 (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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