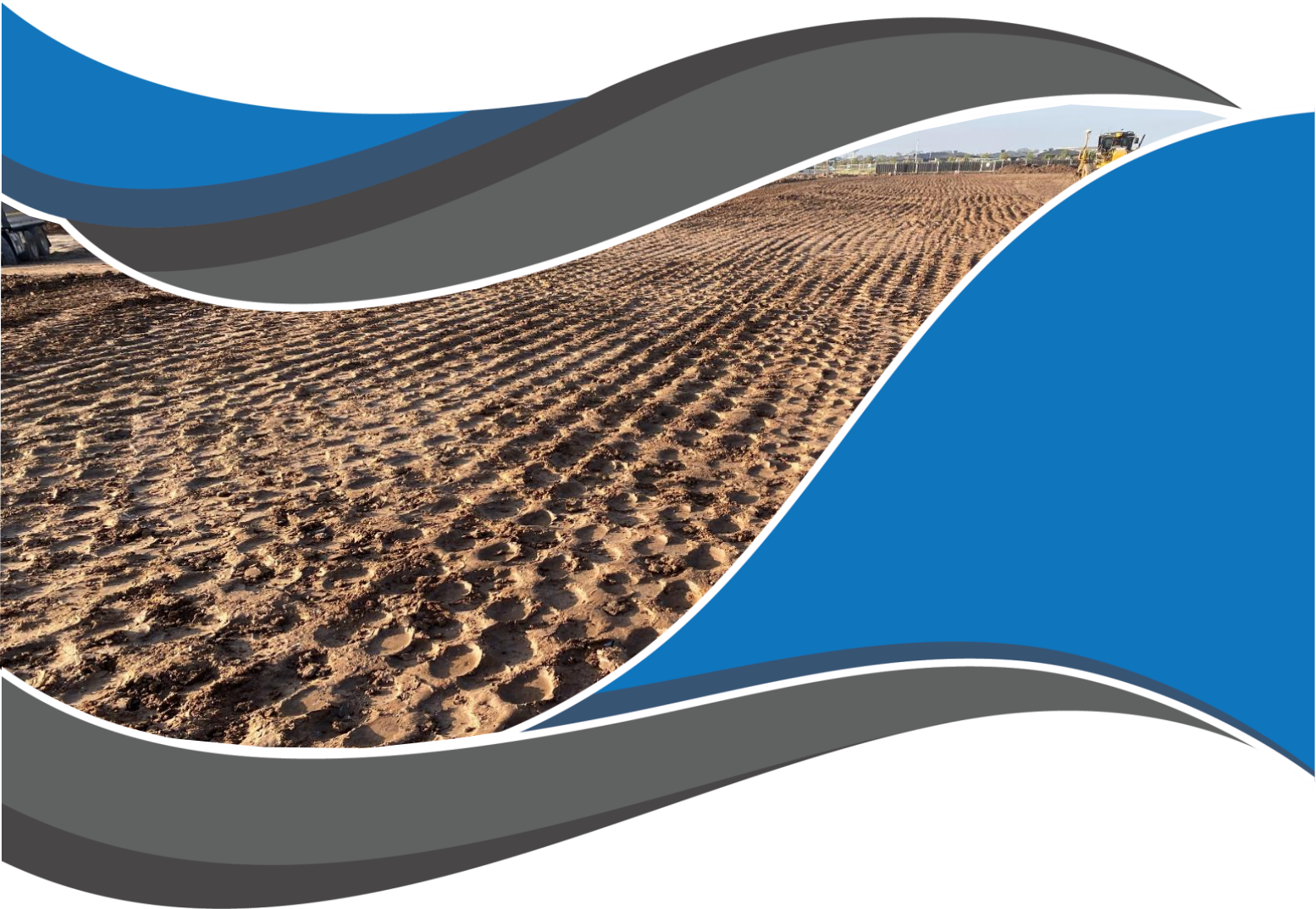


Newhaven Estate - Stage 11, Tarneit

Level 1 Inspection & Testing Report

Reference: 1120 0224-1



Prepared for:

BMD Urban

April 2021



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GEOTECHNICAL ENGINEERING CONSULTANTS

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Project reference number	1120 0224-1				
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Revision	Date	Descriptions/Status	Author	Reviewer	Approver
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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.

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 11, Tarneit.

2 Project Summary

It is understood that BMD Urban require the fill platforms within Newhaven Estate - Stage 11 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 five (5) working days on 2nd of March 2021, 3rd of March 2021, 5th of March 2021, 11th of March 2021 and 12th of March 2021.

This report is applicable for fill placed by BMD Urban for the following lots located in Newhaven Estate - Stage 11, Tarneit, as shown in Appendix A – Site Plan.

- Lot 1101 to Lot 1107
- Lot 1110 to Lot 1116
- Lot 1118 to Lot 1147 and
- Lot 1150 to Lot 1153

3 Project Specifications

No specification has been provided for the construction works in Newhaven Estate - Stage 11, 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 1st of March 2021 as mentioned in report *1120 0224-1 (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 1101 to Lot 1107
- Lot 1110 to Lot 1116
- Lot 1118 to Lot 1147 and
- Lot 1150 to Lot 1153

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 15 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 15 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.

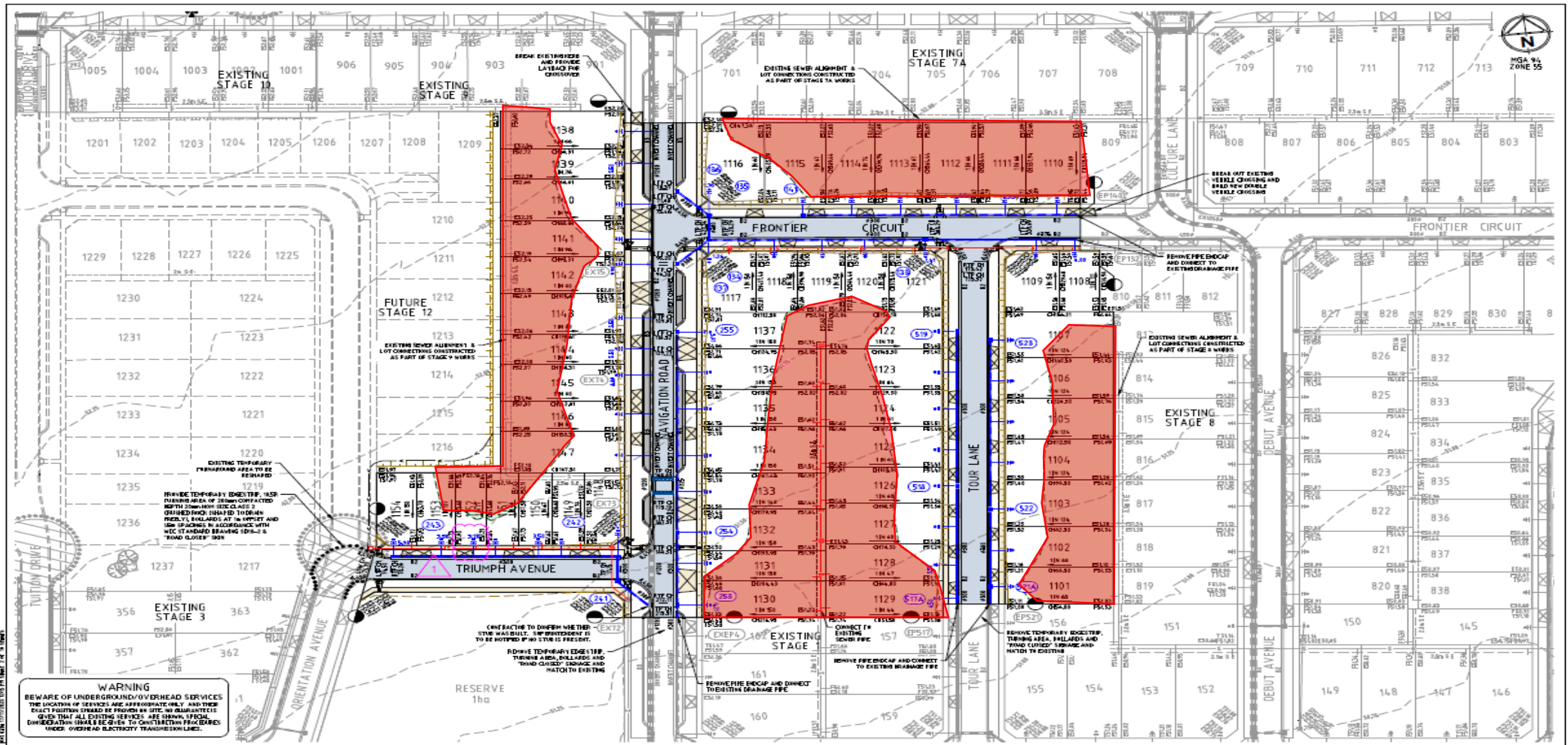
9 Conclusion

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

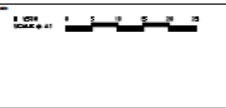


Area Supervised & Tested



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INVESTIGATION SHOULD BE GIVEN TO CONFIRMATION PROVIDED
UNDER OVERHEAD ELECTRICITY TRANSMISSION LINES.

Rev	Amendment	Approved	Date
1	LOT 1152 CROSSOVER AMENDED	M.H.	17/11/20
2	ISSUED FOR CONSTRUCTION	M.H.	17/08/20
3	RAISED PAVEMENT RELOCATED, DRIVEWAYS & PARKING BAYS AMENDED	M.H.	05/08/20
4	ISSUED FOR APPROVAL	M.H.	04/03/20



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PEET
Designed
K. AYRES
Authorised
M. HOLMES
Checked
J. KOEHLER
Date
04/03/20

**NEWHAVEN ESTATE
STAGE 11
ROAD AND DRAINAGE
FACE PLAN**
WYNDHAM CITY COUNCIL
PEET NO. 1895 PTY LTD
CONSTRUCTION 306257CR200 1

PROJECT:
Newhaven Estate – Stage 11

LOCATION:
Tarnet

CLIENT:
BMD Urban

PROJECT No:
1120 0224-1

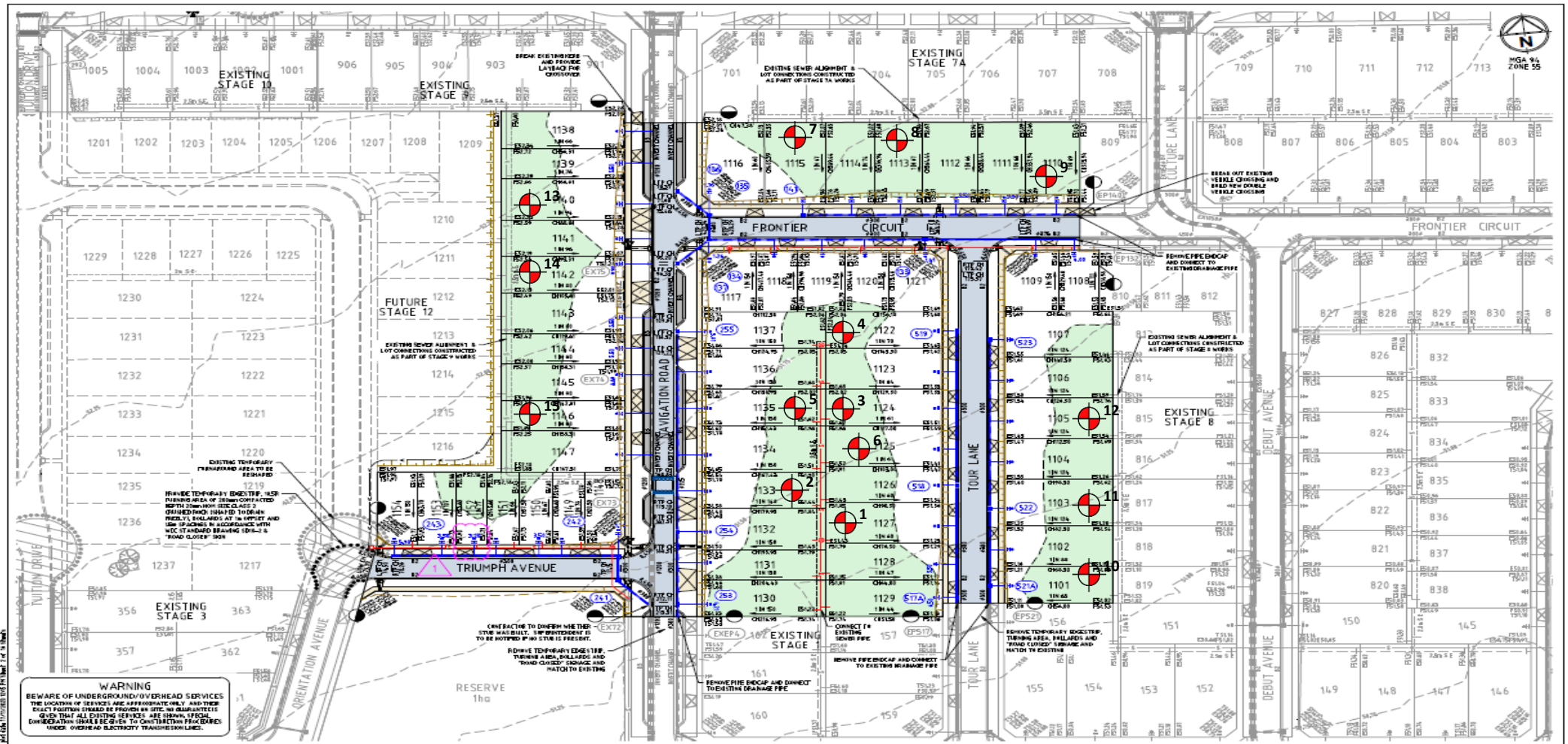
SITE PLAN SKETCH—NOT TO SCALE



Appendix B – Test Locations

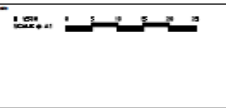


Indicative Test Locations



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**NEWHAVEN ESTATE
 STAGE 11
 ROAD AND DRAINAGE
 FACE PLAN
 WYNDHAM CITY COUNCIL
 PEET NO. 1895 PTY LTD**
CONSTRUCTION 306257CR200 1

PROJECT:
 Newhaven Estate – Stage 11

LOCATION:
 Tarneit


CLIENT:
 BMD Urban

PROJECT No:
 1120 0224-1

SITE PLAN SKETCH—NOT TO SCALE



Appendix C – Test Results Summary

Project No		1120 0224-1			Client	BMD Urban				
Project Name		Newhaven Estate - Stage 11			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	-	2/03/2021	-	1	0.0	98.5	98.0	-0.5	Pass	-
2	-	2/03/2021	-	1	0.0	98.0	98.5	0.0	Pass	-
3	-	2/03/2021	-	1	0.0	98.5	98.5	-0.5	Pass	-
4	-	3/03/2021	-	FSL	0.0	98.0	98.0	-0.5	Pass	-
5	-	3/03/2021	-	FSL	0.0	98.0	100.0	0.0	Pass	-
6	-	3/03/2021	-	FSL	0.0	99.5	98.0	-0.5	Pass	-
7	-	5/03/2021	-	1	0.0	96.0	98.0	-0.5	Pass	-
8	-	5/03/2021	-	1	0.0	95.0	99.5	0.0	Pass	-
9	-	5/03/2021	-	2	0.0	95.5	100.0	0.0	Pass	-
10	-	11/03/2021	-	1	0.0	98.5	100.0	0.0	Pass	-
11	-	11/03/2021	-	1	0.0	98.0	100.0	0.0	Pass	-
12	-	11/03/2021	-	1	0.0	98.0	98.0	-0.5	Pass	-
13	-	12/03/2021	-	1	0.0	96.5	98.0	-0.5	Pass	-
14	-	12/03/2021	-	1	0.0	96.5	100.0	0.0	Pass	-
15	-	12/03/2021	-	1	0.0	97.5	97.5	-0.5	Pass	-
<p>** Negative (-) value indicates that the field moisture content is drier than the optimum moisture content (OMC)</p> <p>** Positive (+) value indicates that the field moisture content is wetter than the optimum moisture content (OMC)</p>										

Appendix D – NATA Test Results

Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1508
Project:	Newhaven Estate - Stage 11 (Level 1)	Report:	1
Location:	Tarneit		



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

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	1	1	1			
Layer Thickness	mm 150	mm 150	mm 150			
Test Depth	mm 125	mm 125	mm 125			
Field Wet Density	t/m ³ 1.80	t/m ³ 1.81	t/m ³ 1.79			
Field Moisture Content	% 27.0	% 24.6	% 25.1			
Material:	Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			

Oversize Material	WET, %	0.0	0.0	0.0		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.82	1.84	1.81		
Optimum Moisture Content	%	27.5	25	25.5		

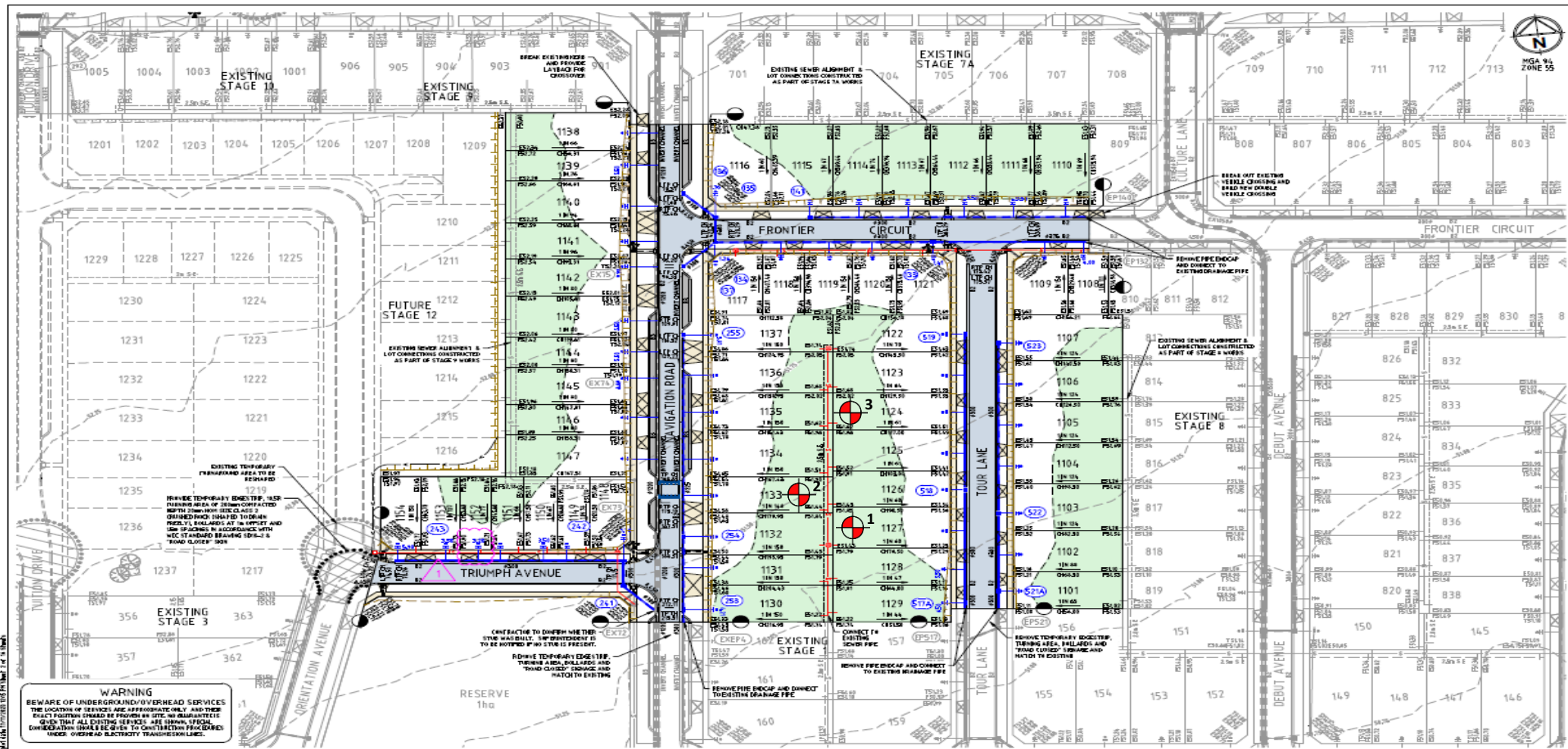
Moisture Ratio	%	98	98.5	98.5		
Moisture Variation from OMC	%	-0.5 Drier	0.0 OMC	-0.5 Drier		
Density Ratio	%	98.5	98.0	98.5		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0224-1 (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)

	<p>NATA Accredited Laboratory No. 20172</p> <p>Accreditation for compliance with ISO/IEC 17025 - Testing</p> <p>The results of tests, calibrations and/or measurements included in this document, are traceable to Australian / National Standards</p>	<p>Approved Signatory:</p> 	<p>David Burns</p> <p>Date: 10/03/2021</p>
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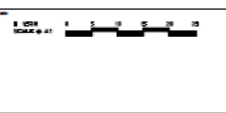


Test Location



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Rev	Amendments	Approved	Date
1	LOT 1152 CROSSOVER AMENDED	M.H.	17/11/20
2	ISSUED FOR CONSTRUCTION	M.H.	17/08/20
3	RAISED PAVEMENT RELOCATED, DRIVEWAYS & PARKING BAYS AMENDED	M.H.	05/08/20
4	ISSUED FOR APPROVAL	M.H.	04/03/20



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**NEWHAVEN ESTATE
 STAGE 11
 ROAD AND DRAINAGE
 FACE PLAN**
 WYNDHAM CITY COUNCIL
 PEET NO. 1895 PTY LTD
CONSTRUCTION 306257CR200 1

PROJECT:
 Newhaven Estate – Stage 11 (Level 1)

LOCATION:
 Tarneit

CLIENT:
 BMD Urban

PROJECT No:
 1120 0224-1 (SI01)

DATE:
 2/03/2021

SITE PLAN SKETCH—NOT TO SCALE



Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1508
Project:	Newhaven Estate - Stage 11 (Level 1)	Report:	2
Location:	Tarneit		



Sample No	4	5	6			
Date Tested	3/03/2021	3/03/2021	3/03/2021			
Time Tested	PM	PM	PM			

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	FSL	FSL	FSL			
Layer Thickness	mm 150	mm 150	mm 150			
Test Depth	mm 125	mm 125	mm 125			
Field Wet Density	t/m ³ 1.83	t/m ³ 1.83	t/m ³ 1.84			
Field Moisture Content	% 26.0	% 26.5	% 25.0			
Material:	Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			

Oversize Material	WET, %	0.0	0.0	0.0		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.86	1.86	1.86		
Optimum Moisture Content	%	26.5	26.5	25.5		

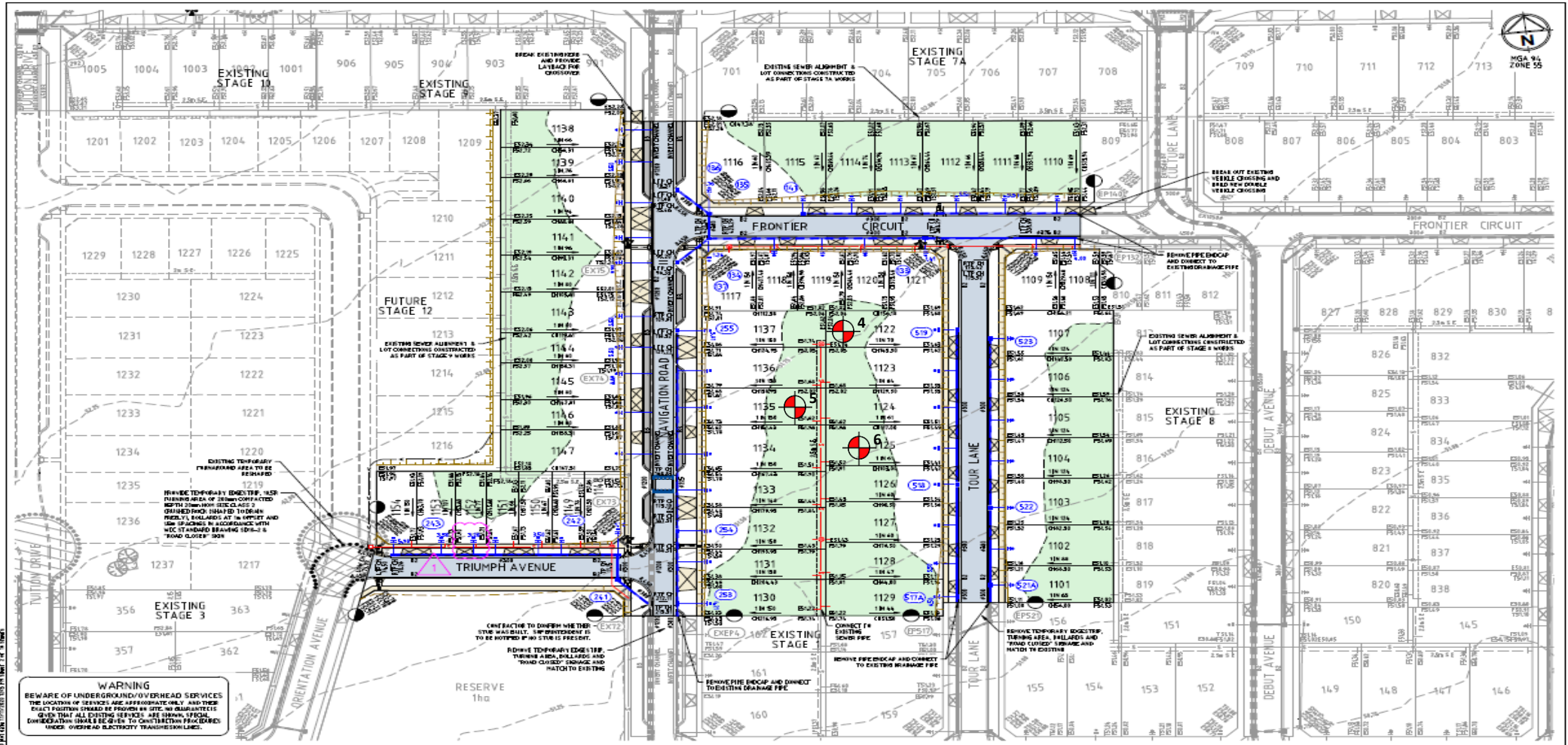
Moisture Ratio	%	98	100	98		
Moisture Variation from OMC	%	-0.5 Drier	0.0 OMC	-0.5 Drier		
Density Ratio	%	98.0	98.0	99.5		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0224-1 (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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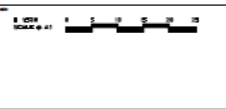


Test Location



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3	RAISED PAVEMENT RELOCATED, DRIVEWAYS & PARKING BAYS AMENDED	M.H.	05/08/20
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**NEWHAVEN ESTATE
 STAGE 11
 ROAD AND DRAINAGE
 FACE PLAN
 WYNDHAM CITY COUNCIL
 PEET NO. 1895 PTY LTD**
CONSTRUCTION 306257CR200 1

PROJECT:
 Newhaven Estate – Stage 11 (Level 1)

LOCATION:
 Tarnet

CLIENT:
 BMD Urban

PROJECT No:
 1120 0224-1 (SI02)

DATE:
 3/03/2021

SITE PLAN SKETCH—NOT TO SCALE



Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1508
Project:	Newhaven Estate - Stage 11 (Level 1)	Report:	3
Location:	Tarneit		



Sample No	7	8	9			
Date Tested	5/03/2021	5/03/2021	5/03/2021			
Time Tested	AM	PM	PM			

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	1	1	2			
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 1.85	t/m ³ 1.84			
Field Moisture Content	% 22.0	% 22.9	% 24.0			
Material:	Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			

Oversize Material	WET, %	0.0	0.0	0.0		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.97	1.94	1.92		
Optimum Moisture Content	%	22.5	23	24		

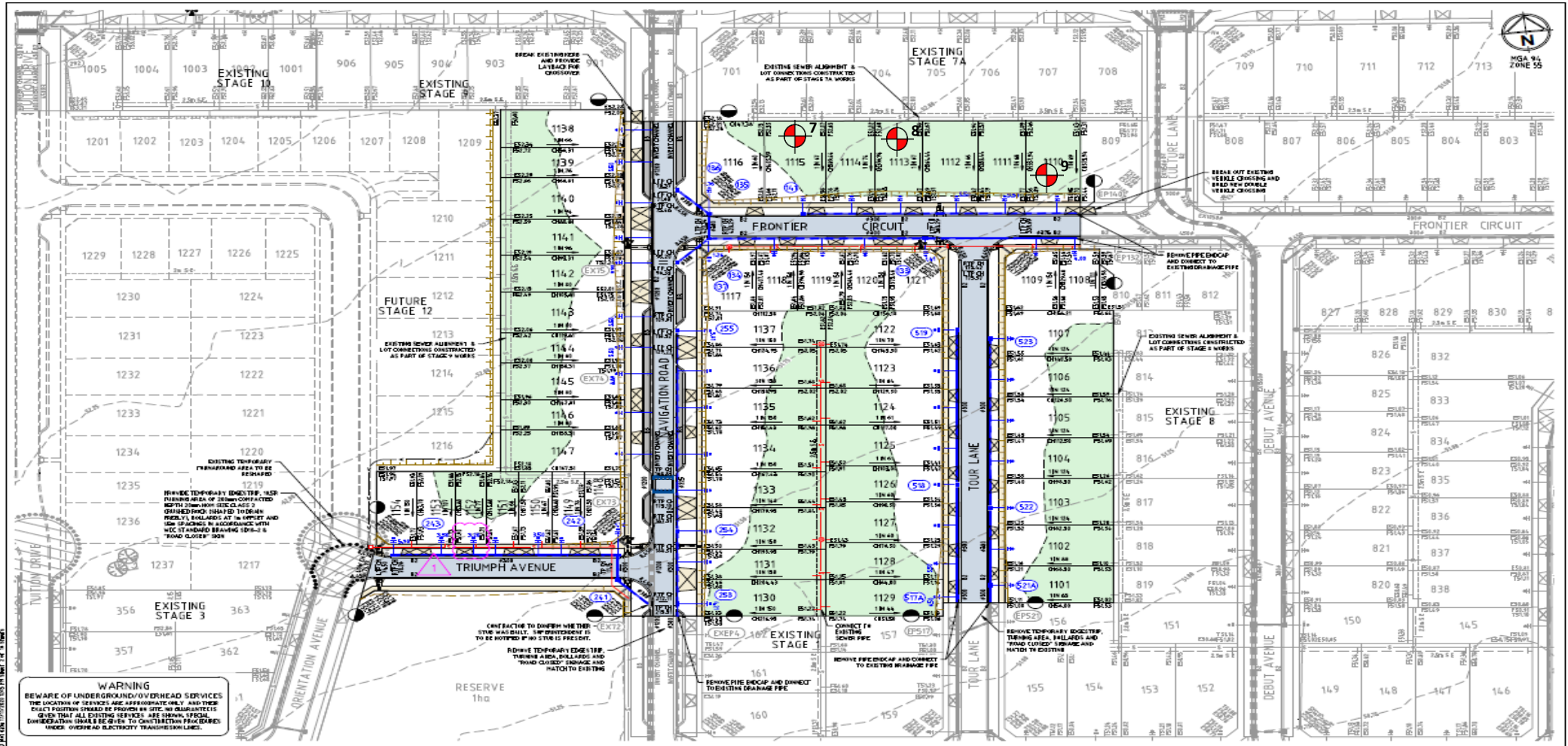
Moisture Ratio	%	98	99.5	100		
Moisture Variation from OMC	%	-0.5 Drier	0.0 OMC	0.0 OMC		
Density Ratio	%	96.0	95.0	95.5		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0224-1 (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)

 <p>NATA WORLD RECOGNISED ACCREDITATION</p>	<p>NATA Accredited Laboratory No. 20172</p> <p>Accreditation for compliance with ISO/IEC 17025 - Testing</p> <p>The results of tests, calibrations and/or measurements included in this document, are traceable to Australian / National Standards</p>	<p>Approved Signatory:</p>  <p>David Burns</p> <p>Date: 10/03/2021</p>
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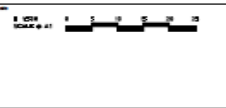


Test Location



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**NEWHAVEN ESTATE
 STAGE 11
 ROAD AND DRAINAGE
 FACE PLAN
 WYNDHAM CITY COUNCIL
 PEET NO. 1895 PTY LTD**
CONSTRUCTION 306257CR200 1

PROJECT:
 Newhaven Estate – Stage 11 (Level 1)

LOCATION:
 Tarnet

CLIENT:
 BMD Urban

PROJECT No:
 1120 0224-1 (SI03)

DATE:
 5/03/2021

SITE PLAN SKETCH—NOT TO SCALE



Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1508
Project:	Newhaven Estate - Stage 11 (Level 1)	Report:	4
Location:	Tarneit		



Sample No	10	11	12			
Date Tested	11/03/2021	11/03/2021	11/03/2021			
Time Tested	PM	PM	PM			

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	1	1	1			
Layer Thickness	mm 150	mm 150	mm 150			
Test Depth	mm 125	mm 125	mm 125			
Field Wet Density	t/m ³ 1.87	t/m ³ 1.86	t/m ³ 1.87			
Field Moisture Content	% 26.5	% 27.0	% 25.5			
Material:	Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			

Oversize Material	WET, %	0.0	0.0	0.0		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.90	1.89	1.91		
Optimum Moisture Content	%	26.5	27	26		

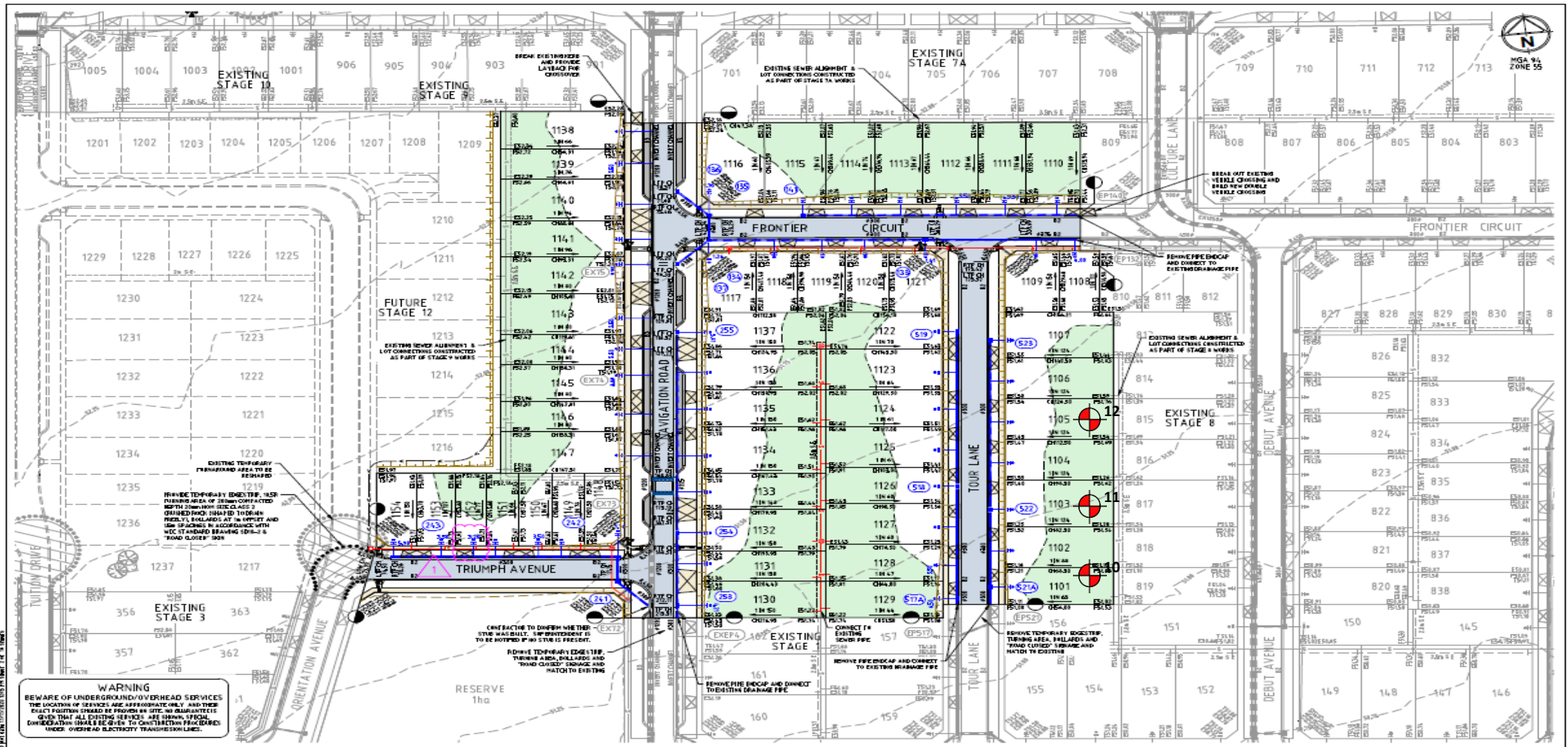
Moisture Ratio	%	100	100	98		
Moisture Variation from OMC	%	0.0	0.0	-0.5		
Density Ratio	%	98.5	98.0	98.0		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0224-1 (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)

 <p>NATA WORLD RECOGNISED ACCREDITATION</p>	<p>NATA Accredited Laboratory No. 20172</p> <p>Accreditation for compliance with ISO/IEC 17025 - Testing</p> <p>The results of tests, calibrations and/or measurements included in this document, are traceable to Australian / National Standards</p>	<p>Approved Signatory:</p> 	<p>David Burns</p> <p>Date: 17/03/2021</p>
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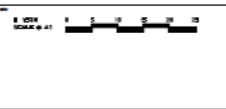


Test Location



WARNING
 BEWARE OF UNDERGROUND/OVERHEAD SERVICES
 THE LOCATION OF SERVICES ARE APPROXIMATE ONLY AND THESE
 EXACT POSITIONS SHOULD BE PROVIDED AS QUANTIFIED
 GIVEN THAT ALL EXISTING SERVICES ARE SHOWN, SPECIAL
 INVESTIGATION SHOULD BE GIVEN TO CONFIRMATION PROVIDED
 UNDER OVERHEAD ELECTRICITY TRANSMISSION LINES.

Rev	Amendment	Approved	Date
1	ISSUED FOR CONSTRUCTION	M.H.	17/08/20
2	ISSUED FOR CONSTRUCTION	M.H.	17/08/20
3	ISSUED FOR CONSTRUCTION	M.H.	05/09/20
4	ISSUED FOR CONSTRUCTION	M.H.	04/03/20



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 spiire.com.au ABN 52 555 028 825

PEET
 Designed: K. AYRES
 Checked: J. KOEHLER
 Authorised: M. HOLMES
 Date: 04/03/20

**NEWHAVEN ESTATE
 STAGE 11
 ROAD AND DRAINAGE
 FACE PLAN
 WYNDHAM CITY COUNCIL
 PEET NO. 1895 PTY LTD**
CONSTRUCTION 306257CR200 1

PROJECT:
 Newhaven Estate – Stage 11 (Level 1)

LOCATION:
 Tarneit

CLIENT:
 BMD Urban

PROJECT No:
 1120 0224-1 (S104)

DATE:
 11/03/2021

SITE PLAN SKETCH—NOT TO SCALE



Field Density Test Results AS1289.5.7.1

Client:	BMD Urban	Job No:	BMD1508
Project:	Newhaven Estate - Stage 11 (Level 1)	Report:	5
Location:	Tarneit		



Sample No	13	14	15			
Date Tested	12/03/2021	12/03/2021	12/03/2021			
Time Tested	AM	PM	PM			

Test Location	Refer to Plan	Refer to Plan	Refer to Plan			
Level/Layer	1	1	1			
Layer Thickness	mm 150	mm 150	mm 150			
Test Depth	mm 125	mm 125	mm 125			
Field Wet Density	t/m ³ 1.87	t/m ³ 1.86	t/m ³ 1.88			
Field Moisture Content	% 27.5	% 27.0	% 25.8			
Material:	Site Derived Clay Fill	Site Derived Clay Fill	Site Derived Clay Fill			

Oversize Material	WET, %	0.0	0.0	0.0		
Sieve Size	mm	19	19	19		
Peak Converted Wet Density	t/m ³	1.93	1.92	1.92		
Optimum Moisture Content	%	28	27	26.5		

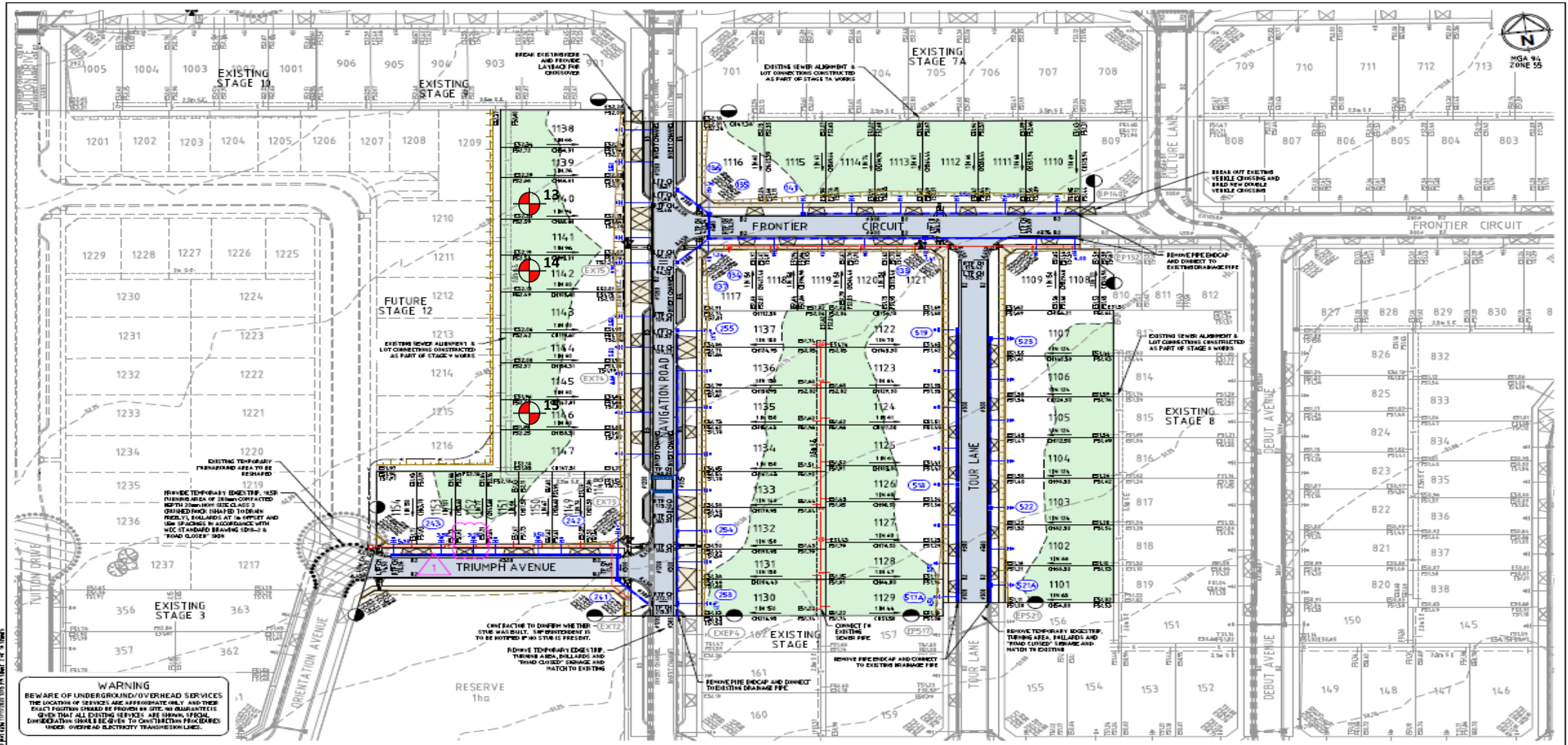
Moisture Ratio	%	98	100	97.5		
Moisture Variation from OMC	%	-0.5 Drier	0.0 OMC	-0.5 Drier		
Density Ratio	%	96.5	96.5	97.5		

Specification:	95% STD	Test Selection:	N/A
Notes:	Ref: 1120 0224-1 (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)

	<p>NATA Accredited Laboratory No. 20172</p> <p>Accreditation for compliance with ISO/IEC 17025 - Testing</p> <p>The results of tests, calibrations and/or measurements included in this document, are traceable to Australian / National Standards</p>	<p>Approved Signatory:</p>  <p>David Burns</p> <p>Date: 17/03/2021</p>
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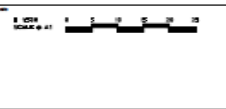


Test Location



WARNING
 BEWARE OF UNDERGROUND/OVERHEAD SERVICES
 THE LOCATION OF SERVICES ARE APPROXIMATE ONLY AND THESE
 EXACT POSITIONS SHOULD BE PROVIDED BY THE GUARANTEED
 GROUND SERVICES CONTRACTOR. ALL EXISTING SERVICES ARE SHOWN, SPECIFIC
 DIMENSIONS SHOULD BE GIVEN TO CONFIRMATION FROM THE
 UNDER OVERHEAD ELECTRICITY TRANSMISSION LINES.

Rev	Amendment	Approved	Date
1	LOT 1152 CROSSOVER AMENDED	M.H.	17/11/20
2	ISSUED FOR CONSTRUCTION	M.H.	17/08/20
3	RAISED PAVEMENT RELOCATED, DRIVEWAYS & PARKING BAYS AMENDED	M.H.	05/08/20
4	ISSUED FOR APPROVAL	M.H.	04/03/20



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 spiire.com.au ABN 52 555 028 825

PEET
 Designed: K. AYRES
 Checked: J. KOEHLER
 Authorised: M. HOLMES
 Date: 04/03/20

**NEWHAVEN ESTATE
 STAGE 11
 ROAD AND DRAINAGE
 FACE PLAN
 WYNDHAM CITY COUNCIL
 PEET NO. 1895 PTY LTD**
CONSTRUCTION 306257CR200 1

PROJECT:
 Newhaven Estate – Stage 11 (Level 1)

LOCATION:
 Tarnet

CLIENT:
 BMD Urban

PROJECT No:
 1120 0224-1 (S105)

DATE:
 12/03/2021

SITE PLAN SKETCH—NOT TO SCALE

A&Y ASSOCIATES
 GEOTECHNICAL ENGINEERING CONSULTANTS