Construction Sciences

Level One Inspection & Testing Report

MAIDEN'S GREEN, MOAMA - STAGE 2 & 3

Prepared for Northern Constructions Group PTY LTD

15/08/23

Document Information	
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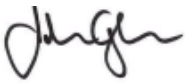
Effective date: 15/08/2023



Adam Gleeson
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Date approved: 15/08/2023

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Version	Effective Date	Revision	Author	Reviewer	Recipient
001	15/08/23	-	M.Scoullar	A.Gleeson	NCG

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1. Introduction

Construction Sciences is the largest private provider of construction materials testing services across Australia. We have a total staff of over 800 staff in 48 permanent offices/laboratories.

We have provided QA testing services to some of the largest road and mining infrastructure projects in these states, as well as overseas.

Over the last 3 to 4 years, Construction Sciences has established more site laboratories for road, rail, mining, and other large infrastructure projects than any other company.

We benefit our clients with the following clear differentiators;

- **Staff Mobilisation:** Construction Sciences' geographic expansion and mobility allow for teams to be available when required, and currently we have the lion's share of major projects in Australia.
- **Quality Management:** Construction Sciences' purpose-built software, COMPLY provides our clients with confidence, by knowing project data is securely stored. COMPLY has a built-in secure audit trail and a fully tracked Quality system. We are also ISO9001 compliant and certified.
- **Client Relationships:** We listen to your needs and respond with innovative solutions that are tailored for your business. We believe in building relationships with our staff and local community.
- **Safety:** At Construction Sciences we embrace a 'safety' culture and it is a key consideration with every project. Currently we are over 2 years LTI (lost time injury) free.

Construction Sciences Pty Ltd was commissioned by Northern Constructions Group PTY LTD to provide Level 1 inspection and testing services for the placement of fill at the Maidens Green – Stage 2 & 3.

This report represents the results of inspection activities, compaction and moisture control, and laboratory testing carried out for the placement and quality of fill material at the project.

All works were carried out in accordance with:

- AS 1289 "*Methods of Testing Soils for Engineering Purposes*".
- AS3798-2007 "Guidelines on earthworks for commercial & residential developments"

PROJECT: Maiden's Green, Moama - Stage 2 & 3

The Earthworks for Stages 2 & 3 were carried out from November 2022 to August 2023

Figure 1.1: Project Location – Maiden's Green, Moama, NSW

2. Specification Requirements

Filling was carried out in accordance with AS3798-2007 *'Guidelines on earthworks for commercial and residential developments'* and with the project specification prepared for the project.

The specification requirements were that all fill was to be placed and compacted in layers to a density ratio of not less than 95% of the maximum dry density as determined by AS1289 "*Methods of Testing Soils for Engineering Purposes*"

3. Site Works

3.1 Existing Surface Assessments

Prior to commencement of filling, it was confirmed that all unsuitable and weaker material such as top soil, silt, uncontrolled or loose soil, organic effected material and other wet/soft areas had been appropriately stripped to a firm base in accordance with AS 3798-2007. The exposed surface, after removal of unsuitable material, was compacted and checked for soft areas by proof rolling. Where no movement or vertical deflection was detected, the stripped surface was assessed to be suitable for the placement of fill.

3.2 Fill Placement

Material used in the earthworks for level 1 areas of stage 2 & 3 was sourced from onsite and conditioned for use. Estimated fill quantity was approximately 7000m^3 of controlled fill equating to 1 test every 225.m^3.
All fill material on site was inspected by Construction Sciences site representative to ensure it meets the **"suitable material"** requirements outlined in AS3798-2007.

The fill material placed/compacted typically comprised of:

- (CI) SANDY CLAY of medium plasticity.

Placement of fill was carried out using the following plants:

- 1* Backhoe & Excavator
- 1* Pad-foot compactor.
- 1* Flat Drum Roller
- 1* Water Cart
- 1*Stieger Laser Bucket
- 1* Grader

The fill material was spread in near-horizontal layers, moisture conditioned and compacted in successive layers, using available compactors.

4. Compaction Control Testing

Compaction control tests were carried out at regular intervals throughout the placement of fill in accordance with the minimum test frequency recommendations included in AS3798-2007 *'Guidelines on earthworks for commercial and residential developments'*. All test results are included in the Appendix B. A summary of the test results is included as Table 4.1. A total of 31 field density tests were carried out throughout the earthworks. The average density ratio was 101.5% with a standard deviation of 2.161%.

4.1 Summary of Field Testing

Date	Lot No.	Level (RL)	Test location (Easting/Northing)		Density Ratio
7/08/2023	222	94.48	299008.76	6002759.74	103.5
7/08/2023	220	94.44	298997.93	6002727.99	96.5
7/08/2023	224	94.70	299007.79	6002807.99	101.5
7/08/2023	218	94.61	299087.72	6002793.93	98.0
7/08/2023	215	94.71	299086.80	6002737.15	102.0
7/08/2023	210	94.65	299160.44	6002711.95	99.5
7/08/2023	210	94.68	299186.31	6002712.93	100.5
7/08/2023	323	94.77	291977.06	6002737.20	101.5
7/08/2023	325	94.74	298184.99	6002786.41	99.5
7/08/2023	319	94.69	299096.13	6002779.08	101.0
7/08/2023	316	94.62	299101.59	6002826.42	101.0
7/08/2023	308	94.56	299098.92	6002898.08	100.0
7/08/2023	311	94.68	299150.67	6002904.05	98.5
7/08/2023	305	94.73	299002.98	6002893.70	100.5
7/08/2023	302	94.74	299012.46	6002841.96	100.0
29/11/2022	207	94.87	299178.475	6002636.330	100.0
29/11/2022	205	94.95	299143.360	6002634.150	101.5
29/11/2022	310	95.03	299132.206	6002906.060	103.0
29/11/2022	308	94.97	299041.580	6002908.240	102.5
29/11/2022	306	94.88	299041.580	6002914.73	104.5
29/11/2022	305	95.06	299014.340	6002902.175	104.0
29/11/2022	305	95.11	299012.670	6002921.525	103.0
29/11/2022	304	94.81	299038.550	6002873.915	105.5
21/11/2022	326	95.02	299182.595	6002761.896	101.5
21/11/2022	322	94.89	299164.780	6002779.999	99.5
21/11/2022	322	94.97	299169.834	6002744.803	102.5
21/11/2022	210	94.88	299155.054	6002713.415	104.5
21/11/2022	326	94.93	299186.352	6002714.177	104.0
11/11/2022	313	94.61	299083.498	6002679.139	101.5
11/11/2022	316	94.76	299093.935	6002784.724	99.5
11/11/2022	317	94.91	299102.537	6002804.602	105.5
No. of tests:	**31**	**Mean:**	**101.5%**	**Standard Dev:**	**2.161%**

5. Conclusion

It is considered that the placement of fill at Maiden's Green, Stage 2&3 was carried out in a controlled manner and the fill was compacted to a dry density ratio not less than the specified requirement. It is concluded that the fill may be deemed to be *'controlled fill'* in accordance with AS2870 – 2011 *'Residential Slabs & Footings'*.

6. Limit of Liability

This report has been produced for, and is the property of our client Northern Construction Group.

Construction Sciences accepts no liability to any third party, and will not enter into any communication with a third party regarding this report.

Construction Sciences will not release this report to any third party without the written permission of our Client.

Appendix A

Stripping Inspection

Construction Sciences

Daily Geotechnical Report

Client:	Northern Construction Group	**Test Request Number:**	23860/T/19146
Project:	Maidens Green	**Project Number:**	23860/P/307
Client Reference:	Stripping Inspection	**Inspector:**	Mark Scoullar
Owner:	Mark Scoullar	**Inspection Date:**	11/11/2022
Constructor:	-	**Arrival Time:**	13:00
Superintendent:	Damian Smith	**Departure Time:**	13:45

Earthworks in current progress	**Element:**	
	Result:	Stripping works for Stage 2&3
Materials testing	**Element:**	Refer to material, type, source, purpose of testing, sampling methods and locations, test types, sample reference numbers, results obtained, and to whom distributed.
	Result:	Stripping of topsoil
Field density testing	**Element:**	Refer to types of test, section of work to which tests apply, test locations and levels, test reference numbers, results obtained, and to whom distributed.
	Result:	N/A
Laboratory compaction testing	**Element:**	Refer to test methods, location of sampling, sample reference numbers, results obtained, and to whom distributed.
	Result:	N/A
Works meeting geotechnical requirements	**Element:**	Refer to work type (e.g. stripping, subgrade compaction), basis of assessment (e.g. inspection, test reference numbers, and the like), extent of works apparently complying and requirements met.
	Result:	All works satisfactory, no topsoil or organic matter present
Works failing to meet geotechnical requirements	**Element:**	Refer to work type (e.g., stripping, subgrade compaction), basis of assessment (e.g., inspection, test reference numbers, and the like), extent of work apparently failing to comply, requirements not met, action taken (instructions issued, retests ordered, and the like).
	Result:	Nil
Remarks	**Element:**	Include observations on works, site conditions, meetings or conversations on site, and the like.
	Result:	No action required, advised to continue works as observed.

Reviewed By: -	**Corrective Action Required?** -	**Re-Inpsection Date:** 11/11/2022
	Corrective Action Details:	

Construction Sciences

Daily Geotechnical Report

Client:	Northern Construction Group	**Test Request Number:**	23860/T/19146
Project:	Maidens Green	**Project Number:**	23860/P/307
Client Reference:	Stripping Inspection	**Inspector:**	Mark Scoullar
Owner:	Mark Scoullar	**Inspection Date:**	11/11/2022
Constructor:	-	**Arrival Time:**	13:00
Superintendent:	Damian Smith	**Departure Time:**	13:45

Image Description:

Image Description:

Reviewed By: -	**Corrective Action Required?** -	**Re-Inpsection Date:** 11/11/2022

Construction Sciences

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Constructor:	-	**Arrival Time:**	13:00
Superintendent:	Damian Smith	**Departure Time:**	13:45

Image Description:

Image Description:

Reviewed By: -	**Corrective Action Required?** -	**Re-Inpsection Date:** 11/11/2022

Appendix B

Field Density Test Results

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Laboratory: **Echuca Laboratory**
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Fax: 03 5444 4812
Email: Bendigo@constructionsciences.net

LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/46598-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	Allotment Fill - Stage 3
Location:	Moama	Internal Test Request:	23860/T/19299
Component:	Insitu	Client Reference/s:	Allotment Fill
Area Description:		Report Date / Page:	4/08/2023 Page 1 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1

Sample Number		23860/S/94571	23860/S/94572	23860/S/94573	23860/S/94574
ID / Client ID		-	-	-	-
Lot Number		Allotment Fill - Stage 3	Allotment Fill - Stage 3	Allotment Fill - Stage 3	Allotment Fill - Stage 3
Date / Time Tested		29/11/2022 11:50	29/11/2022 11:50	29/11/2022 11:50	29/11/2022 11:50
Material Source		Onsite	Onsite	Onsite	Onsite
Material Type		Existing	Existing	Existing	Existing
Sampling Method		AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b
Depths: Test / Nom / Actual (mm)		175 / 300/200 / 200	175 / 300/200 / 200	175 / 300/200 / 200	175 / 300/200 / 200
Standard or Modified		Standard	Standard	Standard	Standard
Eastings	m	299178.475	299143.360	299132.206	299041.580
Northings	m	6002636.330	6002634.150	6002906.060	6002908.240
RL	m	94.87	94.95	95.03	94.97
Lot		207	205	310	308
Test Fraction (mm)		< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)		0	0	0	0
Compaction Sample Number		23860/S/94571	23860/S/94572	23860/S/94573	23860/S/94574
Sample Description		Existing	Existing	Existing	Existing
Moisture Test Results:					
Field Moisture Content (%)		7.8	7.8	14.3	13.8
Adjusted / Moist. Variation (%)		**4.0**	**4.0**	**2.0**	**2.0**
Density Test Results:					
Field Wet Density (t/m³)		2.10	2.16	2.11	2.11
Adj/Peak Conv Wet Density (t/m³)		2.10	2.13	2.05	2.05
Density Ratio Required (%)		98	98	98	98
Hilf Density Ratio (%)		**100.0**	**101.5**	**103.0**	**102.5**

Remarks

Accredited for compliance with ISO/IEC 17025 – Testing

NATA

Accreditation Number: 1986
Corporate Site Number: 23860

Approved Signatory: Mark Scoullar
Form ID: W22Rep Rev 4

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Client:	Northern Construction Group	Report Number:	23860/R/46598-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	Allotment Fill - Stage 3
Location:	Moama	Internal Test Request:	23860/T/19299
Component:	Insitu	Client Reference/s:	Allotment Fill
Area Description:		Report Date / Page:	4/08/2023 Page 2 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1

Sample Number		23860/S/94575	23860/S/94576	23860/S/94577	23860/S/94578
ID / Client ID		-	-	-	-
Lot Number		Allotment Fill - Stage 3	Allotment Fill - Stage 3	Allotment Fill - Stage 3	Allotment Fill - Stage 3
Date / Time Tested		29/11/2022 11:50	29/11/2022 11:50	29/11/2022 11:50	29/11/2022 11:50
Material Source		Onsite	Onsite	Onsite	Onsite
Material Type		Existing	Existing	Existing	Existing
Sampling Method		AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b
Depths: Test / Nom / Actual (mm)		175 / 300/200 / 200	300 / 300/200 / 300	300 / 300/200 / 300	175 / 300/200 / 200
Standard or Modified		Standard	Standard	Standard	Standard
Eastings	m	299041.580	299014.340	299012.670	299038.550
Northings	m	6002914.73	6002902.175	6002921.525	6002873.915
RL	m	94.88	95.06	95.11	94.81
Lot		306	305	305	304
Test Fraction (mm)		< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)		0	0	0	0
Compaction Sample Number		23860/S/94575	23860/S/94576	23860/S/94577	23860/S/94578
Sample Description		Existing	Existing	Existing	Existing
Moisture Test Results:					
Field Moisture Content (%)		7.2	8.8	8.7	6.7
Adjusted / Moist. Variation (%)		**4.0**	**3.0**	**3.0**	**4.5**
Density Test Results:					
Field Wet Density (t/m³)		2.15	2.15	2.13	2.16
Adj/Peak Conv Wet Density (t/m³)		2.06	2.07	2.06	2.05
Density Ratio Required (%)		98	98	98	98
Hilf Density Ratio (%)		**104.5**	**104.0**	**103.0**	**105.5**

Remarks

NATA

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Approved Signatory: Mark Scoullar
Form ID: W22Rep Rev 4

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LOT REPORT - WET DENSITY RATIO

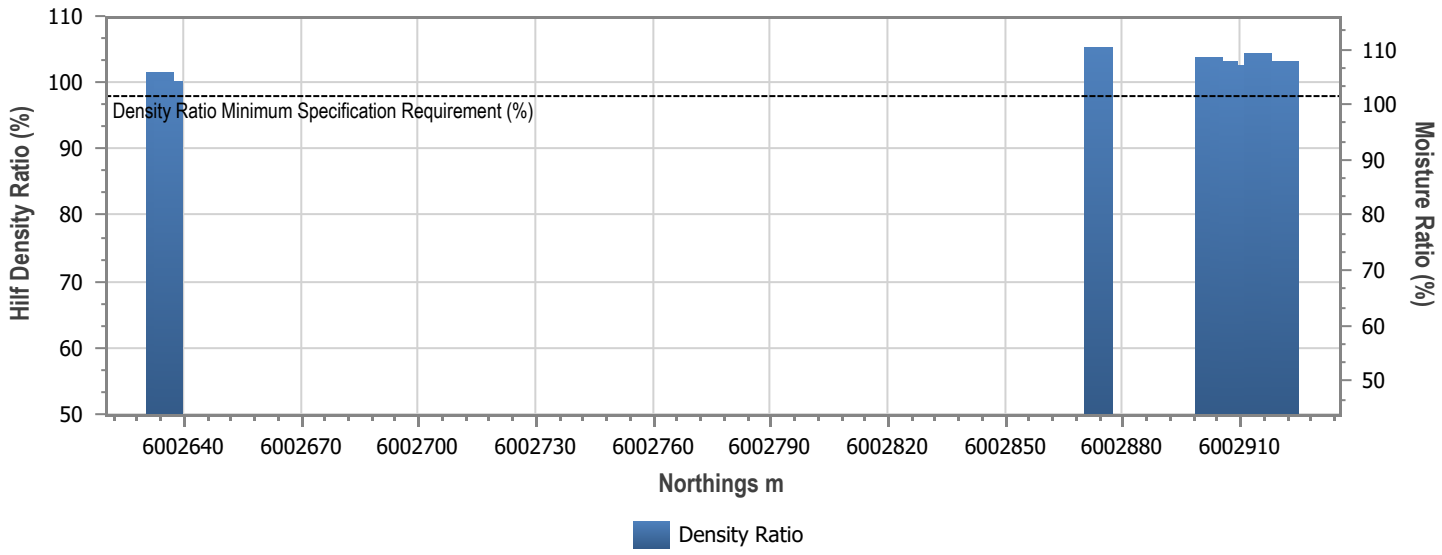
Client:	Northern Construction Group	Report Number:	23860/R/46598-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	Allotment Fill - Stage 3
Location:	Moama	Internal Test Request:	23860/T/19299
Component:	Insitu	Client Reference/s:	Allotment Fill
Area Description:		Report Date / Page:	4/08/2023 Page 3 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
Statistical Analysis Test Method:	Lot Average (Lot average calculations are not covered by endorsement)

Nuclear Gauge Calibration Details

Calibration Number	-	Material Source	-
Calibration Last Updated	-	Material Type	-
Nominated Calibration Layer Depth (mm)	-	-	

LOT TEST RESULT SUMMARY



Tests in Lot = 8	Lot Minimum	Lot Maximum	Lot Mean	Standard Deviation
Hilf Density Ratio (%)	100.1	105.3	103.0	1.638

Lot Number: Allotment Fill - Stage 3

Mean Density Ratio (%): 103.0

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LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/46701-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21418
Component:	Controlled Fill	Client Reference/s:	Stage 2 Allotment Fill
Area Description:	Stage 2	Report Date / Page:	9/08/2023 Page 1 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1

Sample Number	23860/S/104636	23860/S/104637	23860/S/104638	23860/S/104639
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	7/08/2023 09:40	7/08/2023 09:40	7/08/2023 09:40	7/08/2023 09:40
Material Source	Onsite	Onsite	Onsite	Onsite
Material Type	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b
Depths: Test / Nom / Actual (mm)	175 / 200 / 200	175 / 200 / 200	175 / 200 / 200	175 / 200 / 200
Standard or Modified	Standard	Standard	Standard	Standard
Easting	299008.76	298997.93	299007.79	299087.72
Northing	6002759.74	6002727.99	6002807.99	6002793.93
RL m	94.48	94.44	94.70	94.61
Lot	222	220	224	218
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)	0	0	0	0
Compaction Sample Number	23860/S/104636	23860/S/104637	23860/S/104638	23860/S/104639
Sample Description	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Moisture Test Results:				
Field Moisture Content (%)	13.1	12.6	13.6	13.6
Adjusted / Moist. Variation (%)	**2.0**	**2.0**	**1.0**	**0.0**
Density Test Results:				
Field Wet Density (t/m³)	2.16	1.93	2.08	1.97
Adj/Peak Conv Wet Density (t/m³)	2.09	2.00	2.05	2.02
Density Ratio Required (%)	200	200	200	200
Hilf Density Ratio (%)	**103.5**	**96.5**	**101.5**	**98.0**

Remarks

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LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/46701-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21418
Component:	Controlled Fill	Client Reference/s:	Stage 2 Allotment Fill
Area Description:	Stage 2	Report Date / Page:	9/08/2023 Page 2 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1

Sample Number	23860/S/104640	23860/S/104641	23860/S/104642	
ID / Client ID	-	-	-	
Lot Number	-	-	-	
Date / Time Tested	7/08/2023 09:40	7/08/2023 09:40	7/08/2023 09:40	
Material Source	Onsite	Onsite	Onsite	
Material Type	Allotment Fill	Allotment Fill	Allotment Fill	
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	
Depths: Test / Nom / Actual (mm)	175 / 200 / 200	175 / 200 / 200	175 / 200 / 200	
Standard or Modified	Standard	Standard	Standard	
Easting	299086.80	299160.44	299186.31	
Northing	6002737.15	6002711.95	6002712.93	
RL m	94.71	94.65	94.68	
Lot	215	210	210	
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	
Sample Oversize (%)	0	0	0	
Compaction Sample Number	23860/S/104640	23860/S/104641	23860/S/104642	
Sample Description	Allotment Fill	Allotment Fill	Allotment Fill	
Moisture Test Results:				
Field Moisture Content (%)	15.3	15.3	15.0	
Adjusted / Moist. Variation (%)	**0.0**	**0.0**	**0.0**	
Density Test Results:				
Field Wet Density (t/m³)	2.04	2.01	2.02	
Adj/Peak Conv Wet Density (t/m³)	2.01	2.02	2.01	
Density Ratio Required (%)	200	200	200	
Hilf Density Ratio (%)	**102.0**	**99.5**	**100.5**	

Remarks

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LOT REPORT - WET DENSITY RATIO

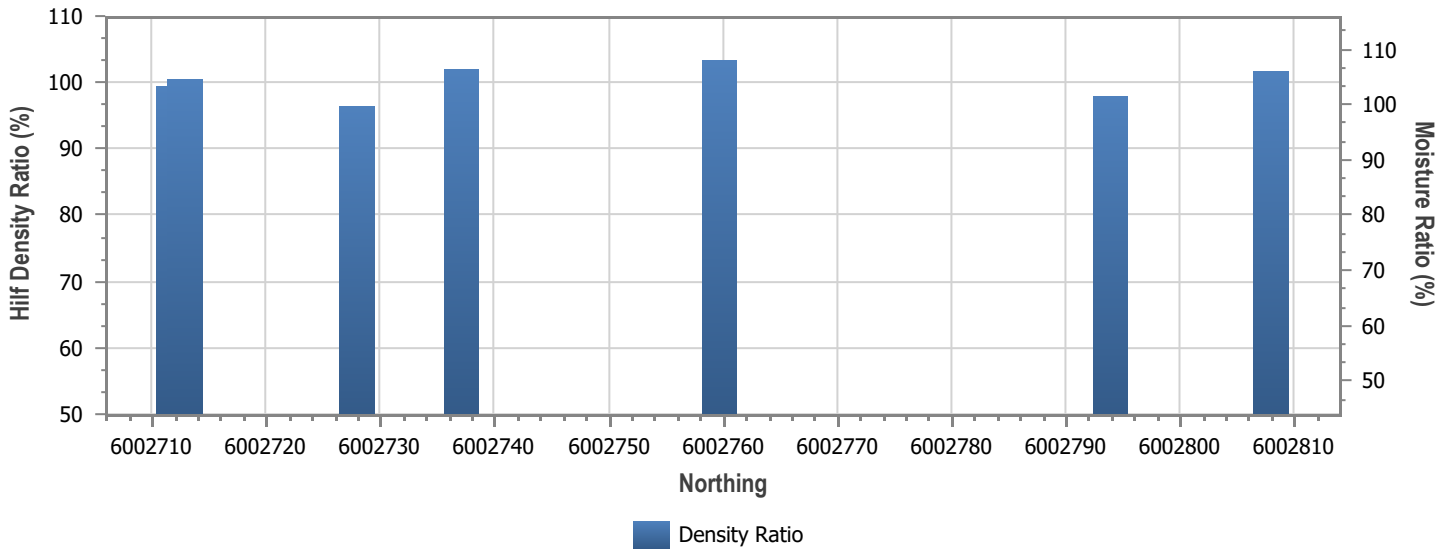
Client:	Northern Construction Group	Report Number:	23860/R/46701-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21418
Component:	Controlled Fill	Client Reference/s:	Stage 2 Allotment Fill
Area Description:	Stage 2	Report Date / Page:	9/08/2023 Page 3 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
Statistical Analysis Test Method:	Lot Average (Lot average calculations are not covered by endorsement)

Nuclear Gauge Calibration Details

Calibration Number	-	Material Source	-
Calibration Last Updated	-	Material Type	-
Nominated Calibration Layer Depth (mm)	-	-	

LOT TEST RESULT SUMMARY



Tests in Lot = 7	Lot Minimum	Lot Maximum	Lot Mean	Standard Deviation
Hilf Density Ratio (%)	96.4	103.3	100.1	2.410

Lot Number: -

Mean Density Ratio (%): 100.1

Remarks

Accredited for compliance with ISO/IEC 17025 – Testing

NATA

Accreditation Number: 1986
Corporate Site Number: 23860

Approved Signatory: Mark Scoullar
Form ID: W22Rep Rev 4

Construction Sciences

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LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/46702-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21419
Component:	Allotment Fill	Client Reference/s:	Stage 3 Allotment Fill
Area Description:	Stage 3	Report Date / Page:	9/08/2023 Page 1 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1

Sample Number	23860/S/104643	23860/S/104644	23860/S/104645	23860/S/104646
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	7/08/2023 11:15	7/08/2023 11:15	7/08/2023 11:15	7/08/2023 11:15
Material Source	Onsite	Onsite	Onsite	Onsite
Material Type	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b
Depths: Test / Nom / Actual (mm)	175 / 200 / 200	175 / 200 / 200	175 / 200 / 200	175 / 200 / 200
Standard or Modified	Standard	Standard	Standard	Standard
Easting	291977.06	298184.99	299096.13	299101.59
Northing	6002737.20	6002786.41	6002779.08	6002826.42
RL m	94.77	94.74	94.69	94.62
Lot	323	325	319	316
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)	0	0	0	0
Compaction Sample Number	23860/S/104643	23860/S/104644	23860/S/104645	23860/S/104646
Sample Description	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Moisture Test Results:				
Field Moisture Content (%)	15.5	15.2	12.9	12.8
Adjusted / Moist. Variation (%)	**0.0**	**0.0**	**0.0**	**0.0**
Density Test Results:				
Field Wet Density (t/m³)	2.20	2.07	2.08	2.10
Adj/Peak Conv Wet Density (t/m³)	2.17	2.08	2.07	2.08
Density Ratio Required (%)	95	95	95	95
Hilf Density Ratio (%)	**101.5**	**99.5**	**101.0**	**101.0**

Remarks

NATA

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LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/46702-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21419
Component:	Allotment Fill	Client Reference/s:	Stage 3 Allotment Fill
Area Description:	Stage 3	Report Date / Page:	9/08/2023 Page 2 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1

Sample Number	23860/S/104647	23860/S/104648	23860/S/104649	23860/S/104650
ID / Client ID	-	-	-	-
Lot Number	-	-	-	-
Date / Time Tested	7/08/2023 11:15	7/08/2023 11:15	7/08/2023 11:15	7/08/2023 11:15
Material Source	Onsite	Onsite	Onsite	Onsite
Material Type	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b
Depths: Test / Nom / Actual (mm)	175 / 200 / 200	175 / 200 / 200	175 / 200 / 200	175 / 200 / 200
Standard or Modified	Standard	Standard	Standard	Standard
Easting	299098.92	299150.67	299002.98	299012.46
Northing	6002898.08	6002904.05	6002893.70	6002841.96
RL m	94.56	94.68	94.73	94.74
Lot	308	311	305	302
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)	0	0	0	0
Compaction Sample Number	23860/S/104647	23860/S/104648	23860/S/104649	23860/S/104650
Sample Description	Allotment Fill	Allotment Fill	Allotment Fill	Allotment Fill
Moisture Test Results:				
Field Moisture Content (%)	12.7	12.4	15.8	15.3
Adjusted / Moist. Variation (%)	**0.0**	**0.0**	**0.0**	**0.0**
Density Test Results:				
Field Wet Density (t/m³)	2.08	2.06	2.12	2.08
Adj/Peak Conv Wet Density (t/m³)	2.08	2.09	2.10	2.09
Density Ratio Required (%)	95	95	95	95
Hilf Density Ratio (%)	**100.0**	**98.5**	**100.5**	**100.0**

Remarks

NATA

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LOT REPORT - WET DENSITY RATIO

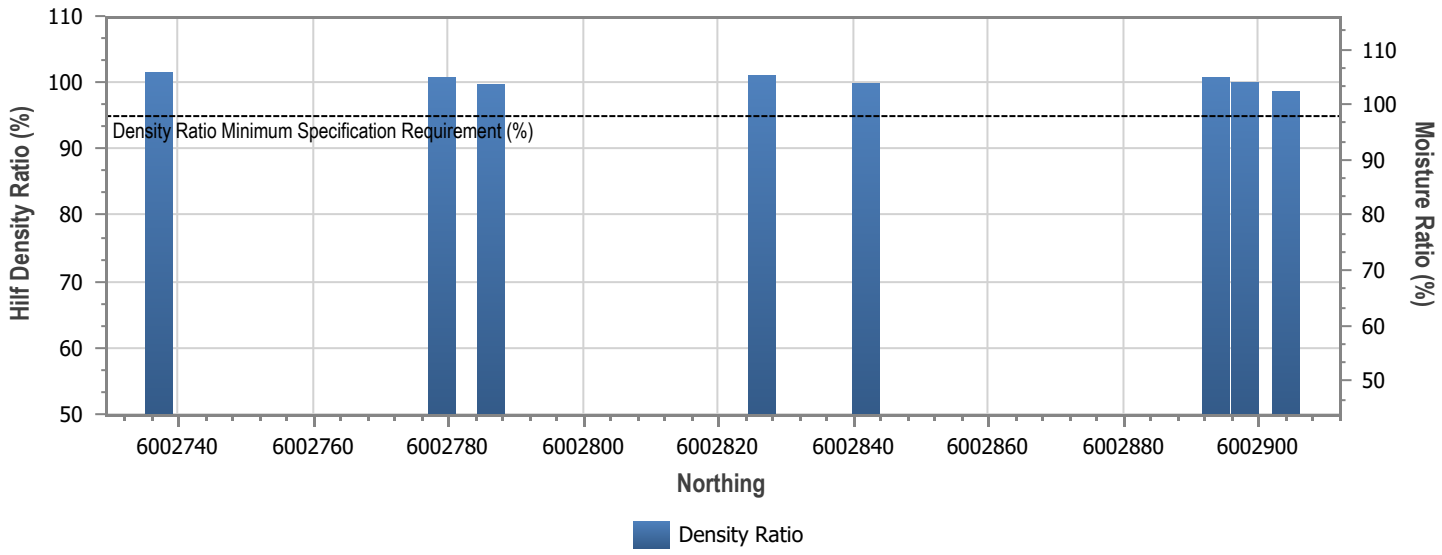
Client:	Northern Construction Group	Report Number:	23860/R/46702-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21419
Component:	Allotment Fill	Client Reference/s:	Stage 3 Allotment Fill
Area Description:	Stage 3	Report Date / Page:	9/08/2023 Page 3 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
Statistical Analysis Test Method:	Lot Average (Lot average calculations are not covered by endorsement)

Nuclear Gauge Calibration Details

Calibration Number	-	Material Source	-
Calibration Last Updated	-	Material Type	-
Nominated Calibration Layer Depth (mm)	-	-	

LOT TEST RESULT SUMMARY



Tests in Lot = 8	Lot Minimum	Lot Maximum	Lot Mean	Standard Deviation
Hilf Density Ratio (%)	98.7	101.5	100.3	0.887

Lot Number: -

Mean Density Ratio (%): 100.3

Remarks

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LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/46703-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/19146
Component:	Allotment Fill	Client Reference/s:	Allotment Fill Stage 3
Area Description:	Stage 3	Report Date / Page:	10/08/2023 Page 1 of 2

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1

Sample Number	23860/S/93800	23860/S/93801	23860/S/93802	
ID / Client ID	-	-	-	
Lot Number	-	-	-	
Date / Time Tested	11/11/2022 12:50	11/11/2022 12:50	11/11/2022 12:50	
Material Source	Onsite	Onsite	Onsite	
Material Type	Existing	Existing	Existing	
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	
Depths: Test / Nom / Actual (mm)	125 / 150 / 150	125 / 150 / 150	125 / 150 / 150	
Standard or Modified	Standard	Standard	Standard	
Easting	299083.498	299093.935	299102.537	
Northing	6002679.139	6002784.724	6002804.602	
RL m	94.61	94.76	94.91	
Lot	313	316	317	
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	
Sample Oversize (%)	0	0	0	
Compaction Sample Number	23860/S/93800	23860/S/93801	23860/S/93802	
Sample Description	Existing	Existing	Existing	
Moisture Test Results:				
Field Moisture Content (%)	10.3	9.1	11.1	
Adjusted / Moist. Variation (%)	**2.5**	**2.5**	**0.0**	
Density Test Results:				
Field Wet Density (t/m³)	2.10	2.05	2.19	
Adj/Peak Conv Wet Density (t/m³)	2.07	2.06	2.08	
Density Ratio Required (%)	95	95	95	
Hilf Density Ratio (%)	**101.5**	**99.5**	**105.5**	

Remarks

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LOT REPORT - WET DENSITY RATIO

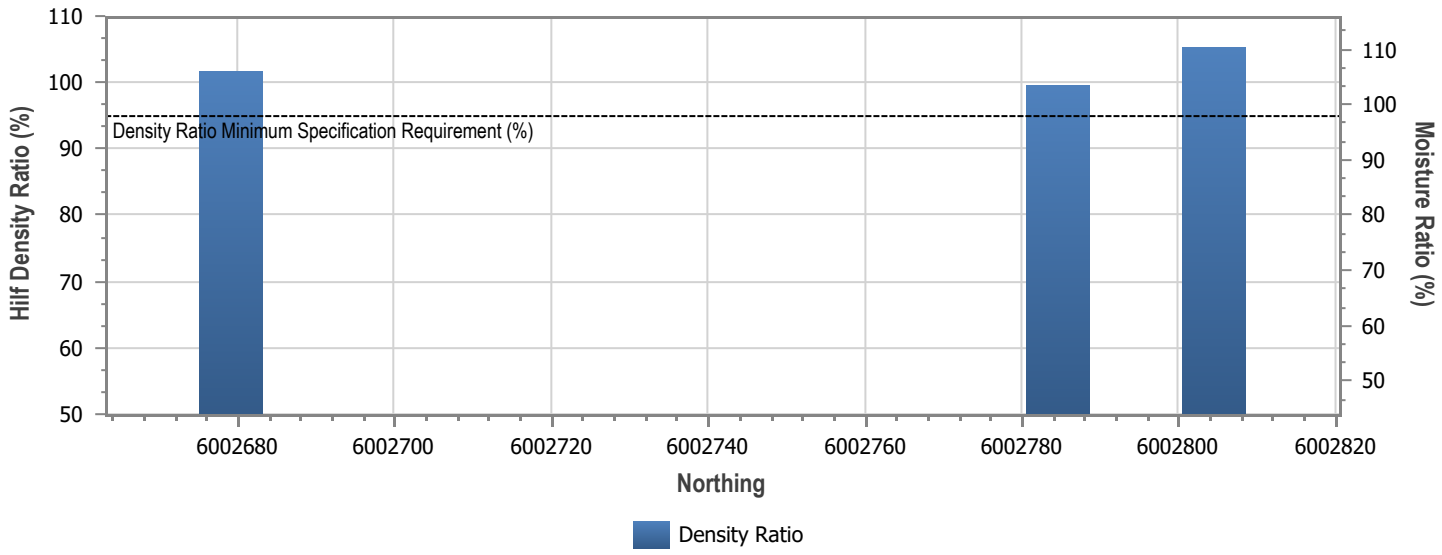
Client:	Northern Construction Group	Report Number:	23860/R/46703-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/19146
Component:	Allotment Fill	Client Reference/s:	Allotment Fill Stage 3
Area Description:	Stage 3	Report Date / Page:	10/08/2023 Page 2 of 2

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
Statistical Analysis Test Method:	Lot Average (Lot average calculations are not covered by endorsement)

Nuclear Gauge Calibration Details

Calibration Number	-	Material Source	-
Calibration Last Updated	-	Material Type	-
Nominated Calibration Layer Depth (mm)	-	-	

LOT TEST RESULT SUMMARY



Tests in Lot = 3	Lot Minimum	Lot Maximum	Lot Mean	Standard Deviation
Hilf Density Ratio (%)	99.5	105.3	102.1	2.937

Lot Number: -

Mean Density Ratio (%): 102.1

Remarks

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LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/44100-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green Stage 1	Lot Number:	Allotment Fill - Stage 3
Location:	Moama	Internal Test Request:	23860/T/19218
Component:	Insitu	Client Reference/s:	Allotment Fill - Stage 3
Area Description:	Eastings/Northings - Stage 3	Report Date / Page:	31/03/2023 Page 1 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1

Sample Number	23860/S/94149	23860/S/94150	23860/S/94151	23860/S/94152
ID / Client ID	-	-	-	-
Lot Number	Allotment Fill - Stage 3	Allotment Fill - Stage 3	Allotment Fill - Stage 3	Allotment Fill - Stage 3
Date / Time Tested	21/11/2022 13:30	21/11/2022 13:30	21/11/2022 13:30	21/11/2022 13:30
Material Source	Onsite	Onsite	Onsite	Onsite
Material Type	Existing	Existing	Existing	Existing
Sampling Method	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b	AS1289.1.2.1 Cl 6.4b
Depths: Test / Nom / Actual (mm)	300 / 300 / 300	300 / 300 / 300	300 / 300 / 300	175 / 200 / 200
Standard or Modified	Standard	Standard	Standard	Standard
Easting	299182.595	29916.478	299169.834	299155.054
Northing	6002761.896	6002779.999	6002744.803	6002713.415
RL m	95.02	94.89	94.97	94.88
Lot				
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	< 19.0 mm
Sample Oversize (%)	0	0	0	0
Compaction Sample Number	23860/S/94149	23860/S/94150	23860/S/94151	23860/S/94152
Sample Description	Insitu	Insitu	Insitu	Insitu
Moisture Test Results:				
Field Moisture Content (%)	18.1	15.9	16.7	13.1
Adjusted / Moist. Variation (%)	**0.0**	**0.0**	**2.0**	**2.0**
Density Test Results:				
Field Wet Density (t/m³)	2.11	2.04	2.08	2.16
Adj/Peak Conv Wet Density (t/m³)	2.08	2.05	2.04	2.07
Density Ratio Required (%)	95	95	95	95
Hilf Density Ratio (%)	**101.5**	**99.5**	**102.5**	**104.5**

Remarks

NATA

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Form ID: W22Rep Rev 4

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LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/44100-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green Stage 1	Lot Number:	Allotment Fill - Stage 3
Location:	Moama	Internal Test Request:	23860/T/19218
Component:	Insitu	Client Reference/s:	Allotment Fill - Stage 3
Area Description:	Eastings/Northings - Stage 3	Report Date / Page:	31/03/2023 Page 2 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1

Sample Number		23860/S/94153			
ID / Client ID		-			
Lot Number		Allotment Fill - Stage 3			
Date / Time Tested		21/11/2022 13:30			
Material Source		Onsite			
Material Type		Existing			
Sampling Method		AS1289.1.2.1 Cl 6.4b			
Depths: Test / Nom / Actual (mm)		175 / 200 / 200			
Standard or Modified		Standard			
Easting		299186.352			
Northing		6002714.177			
RL	m	94.93			
Lot					
Test Fraction (mm)		< 19.0 mm			
Sample Oversize (%)		0			
Compaction Sample Number		23860/S/94153			
Sample Description		Insitu			
Moisture Test Results:					
Field Moisture Content (%)		12.6			
Adjusted / Moist. Variation (%)		**2.0**			
Density Test Results:					
Field Wet Density (t/m³)		2.15			
Adj/Peak Conv Wet Density (t/m³)		2.07			
Density Ratio Required (%)		95			
Hilf Density Ratio (%)		**104.0**			

Remarks

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LOT REPORT - WET DENSITY RATIO

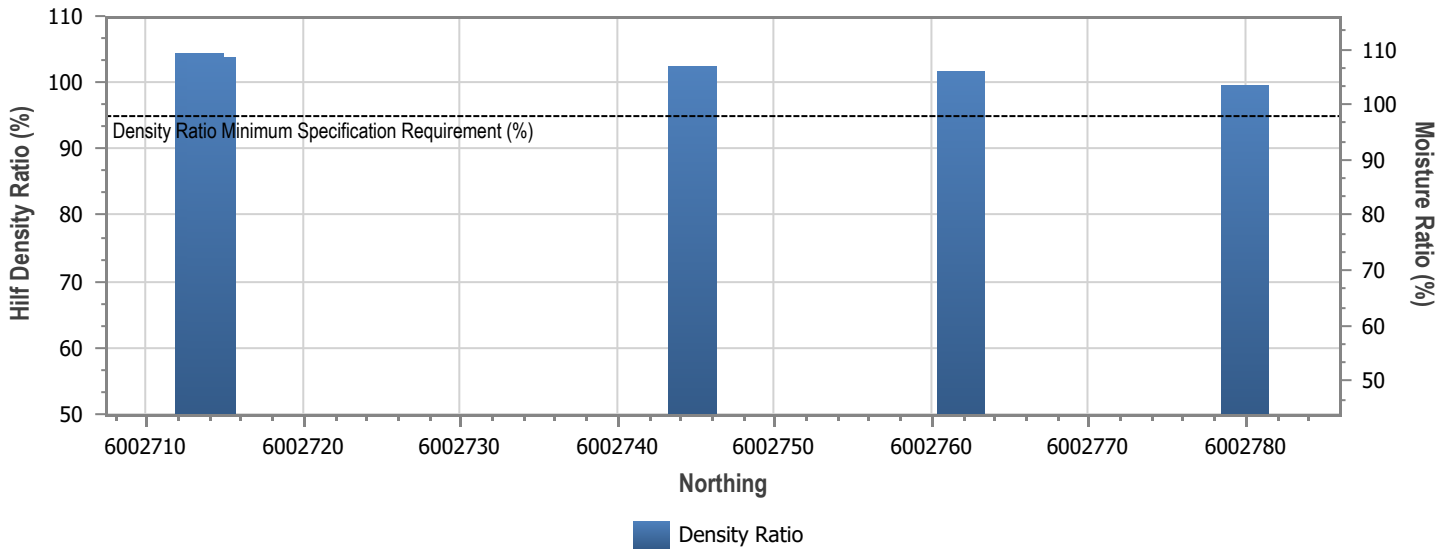
Client:	Northern Construction Group	Report Number:	23860/R/44100-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green Stage 1	Lot Number:	Allotment Fill - Stage 3
Location:	Moama	Internal Test Request:	23860/T/19218
Component:	Insitu	Client Reference/s:	Allotment Fill - Stage 3
Area Description:	Eastings/Northings - Stage 3	Report Date / Page:	31/03/2023 Page 3 of 3

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
Statistical Analysis Test Method:	Lot Average (Lot average calculations are not covered by endorsement)

Nuclear Gauge Calibration Details

Calibration Number	-	Material Source	-
Calibration Last Updated	-	Material Type	-
Nominated Calibration Layer Depth (mm)	-	-	

LOT TEST RESULT SUMMARY



Tests in Lot = 5	Lot Minimum	Lot Maximum	Lot Mean	Standard Deviation
Hilf Density Ratio (%)	99.5	104.4	102.3	1.936

Lot Number: Allotment Fill - Stage 3

Mean Density Ratio (%): 102.3

Remarks

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NATA

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Approved Signatory: Samuel Hardy
Form ID: W22Rep Rev 4

Located across Australia and New Zealand

QLD
Airlie
Bowen
Brisbane (Albion)
Brisbane (Acacia Ridge)
Brisbane (Beenleigh)
Brisbane (Brendale)
Brisbane (Petrie)
Cairns
Emerald
Gladstone
Gold Coast
Mackay
Moranbah
Rockhampton
Sunshine Coast
Toowoomba
Townsville

NSW
Ballina
Coffs Harbour
Lynwood
Newcastle
Sydney (Glendenning)
Sydney (Seven Hills)
Sydney (St Peters)
Taree
Wollongong

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Bendigo
Echuca
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