

Level One Inspection & Testing Report

MAIDENS GREEN – STAGE 5A

Prepared for Northern Constructions Group PTY LTD

17/7/2025





Document Information

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Date approved: 17/07/2025

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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 Maidens Green – Stage 5A.

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: Maidens Green – Stage 5A

The earthworks for Stage 5A were carried out September 2023

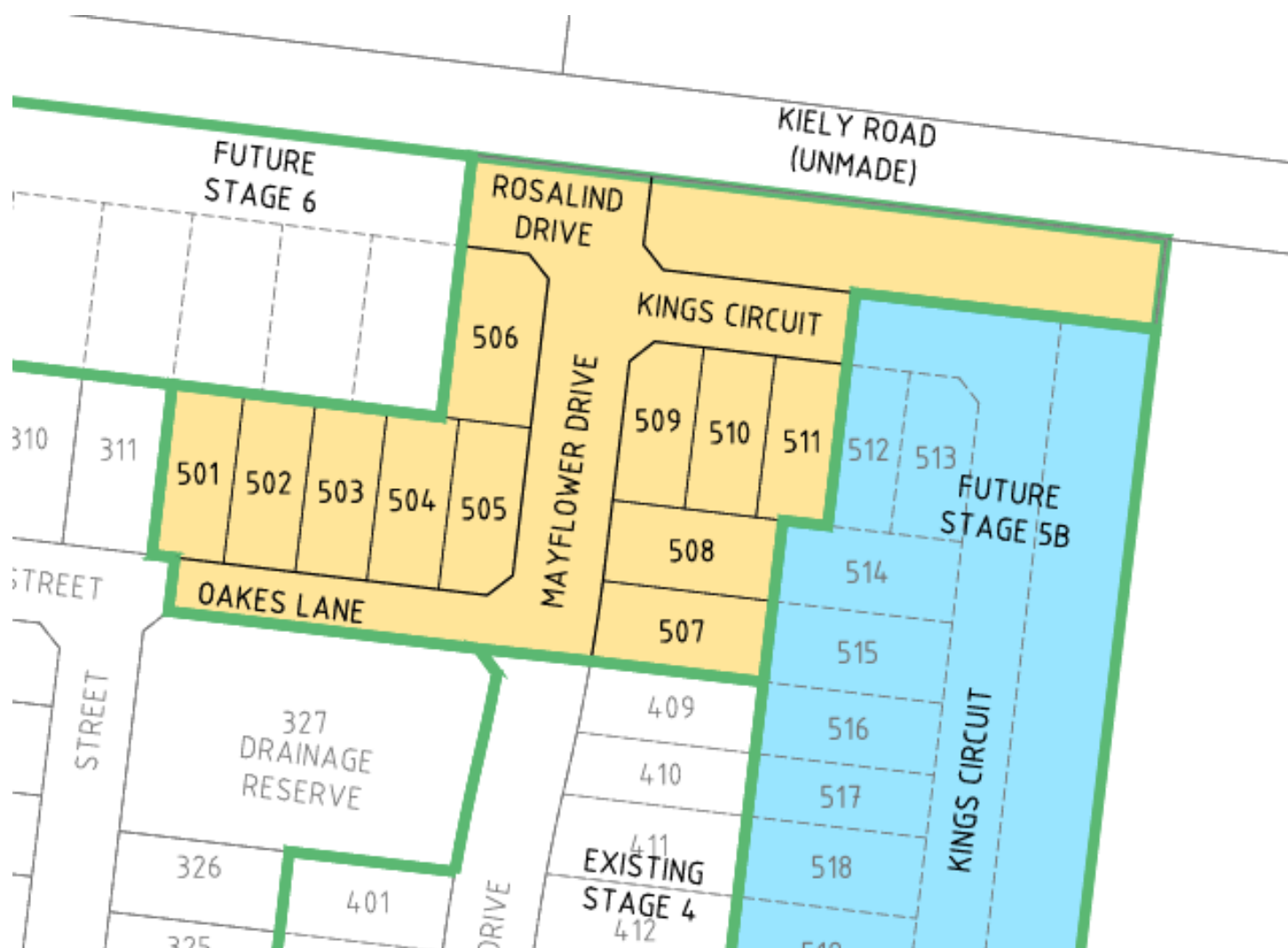


Figure 1.1: Project Location – Maidens Green – Stage 5A, Moama, NSW

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 5A was sourced from onsite and conditioned for use. Estimated fill quantity was approximately 1,138m³ of controlled fill equating to 1 test every 190m³. 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:

- Backhoe
- Pad-foot compactor.
- Excavator
- Water Cart
- Laser Bucket
- 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 1. A total of 6 field density tests were carried out throughout the earthworks. The average density ratio was 99.0% with a standard deviation of 1.61%.



4.1 Summary of Field Testing

Date	RL (m)	Density Ratio
4/9/2023	91.42	101.5
4/9/2023	93.97	104.0
4/9/2023	95.07	101.5
15/9/2023	94.58	101.0
15/9/2023	94.53	100.5
15/9/2023	94.78	101.5

Table 4.1: Summary of field density test results - Level One Inspection & Testing Report

5. Conclusion

It is considered that the placement of fill at Maidens Green – Stage 5A 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



Client:	Northern Construction Group	Test Request Number:	23860/T/16464
Project:	Maidens Green	Project Number:	23860/P/307
Sub-Project:	-	Inspector:	Mark Scoullar
Client Reference:	-	Inspection Date:	12/08/2023
Owner:	Mark Scoullar	Arrival / Departure Time:	11:15 / 11:55
Constructor:	Northern Construction	Superintendent:	Damian Smith

Earthworks in current progress	Element:	
	Result:	Stripping of topsoil and removal of all organic material from Stage 4

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:	No material testing carried out, stripping inspection only

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:	No field testing conducted

Laboratory compaction testing	Element:	Refer to test methods, location of sampling, sample reference numbers, results obtained, and to whom distributed.
	Result:	No material to be tested in laboratory

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:	Yes

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:	NA

Remarks	Element:	Include observations on works, site conditions, meetings or conversations on site, and the like.
	Result:	Continue works

Reviewed By: Mark Scoullar 	Corrective Action Required? No	Re-Inspection Date: -
	Corrective Action Details:	



Client:	Northern Construction Group	Test Request Number:	23860/T/16464
Project:	Maidens Green	Project Number:	23860/P/307
Sub-Project:	-	Inspector:	Mark Scoullar
Client Reference:	-	Inspection Date:	12/08/2023
Owner:	Mark Scoullar	Arrival / Departure Time:	11:15 / 11:55
Constructor:	Northern Construction	Superintendent:	Damian Smith

Image Description:



Image Description:



Reviewed By: Mark Scoullar

Corrective Action Required? No

Re-Inspection Date: -

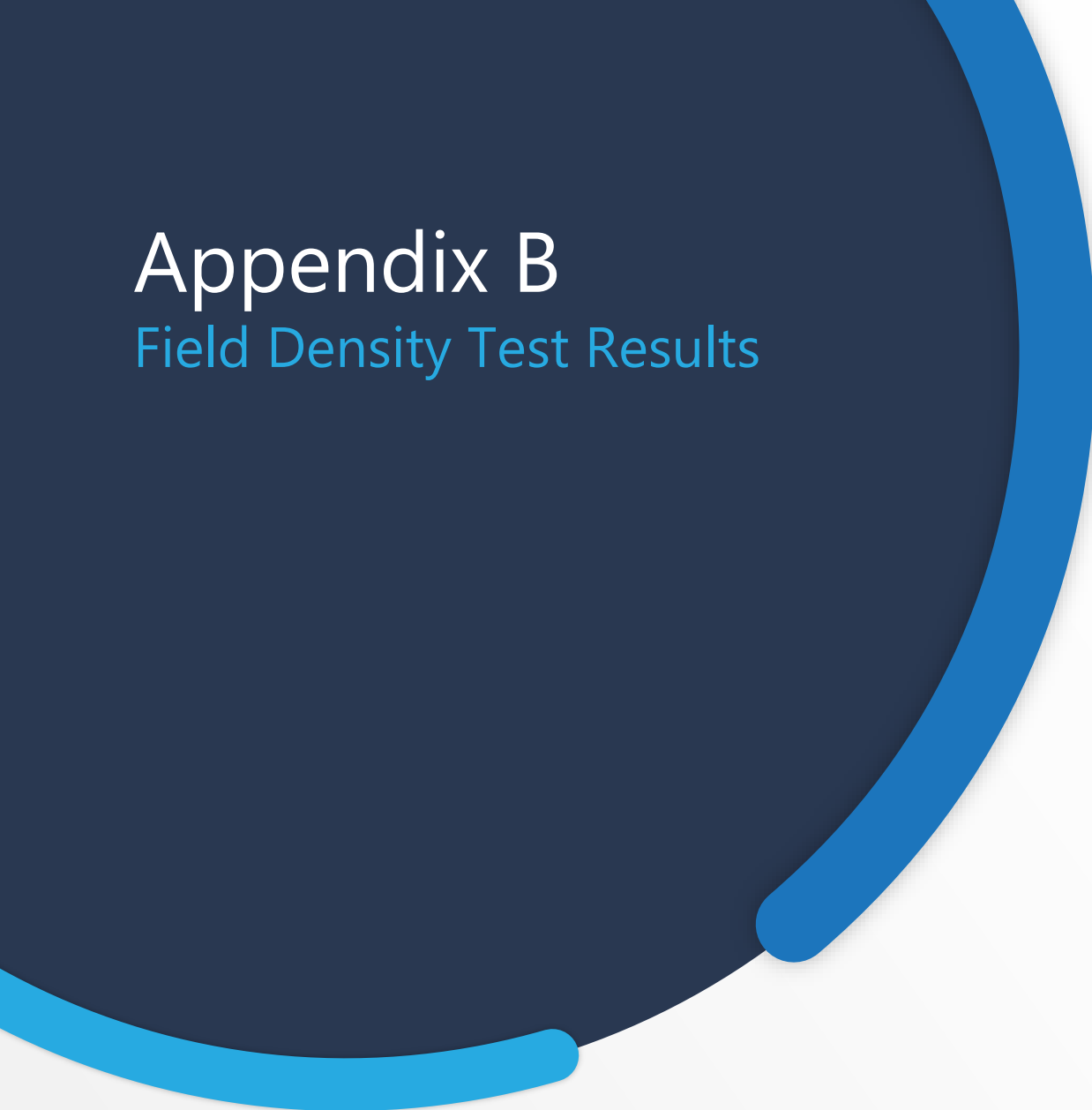


Client:	Northern Construction Group	Test Request Number:	23860/T/16464
Project:	Maidens Green	Project Number:	23860/P/307
Sub-Project:	-	Inspector:	Mark Scoullar
Client Reference:	-	Inspection Date:	12/08/2023
Owner:	Mark Scoullar	Arrival / Departure Time:	11:15 / 11:55
Constructor:	Northern Construction	Superintendent:	Damian Smith

Image Description:



Reviewed By:	Mark Scoullar	Corrective Action Required?	No	Re-Inspection Date:	-
					



Appendix B

Field Density Test Results

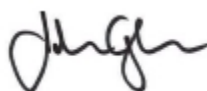
LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/47373-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21752
Supplied To:	Northern Construction Group	Client Reference/s:	Backfill of Existing Dam
Area Description:	Stage 5	Report Date / Page:	12/09/2023 Page 1 of 2

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	23860/S/106220	23860/S/106221	23860/S/106222	
ID / Client ID	-	-	-	
Lot Number	-	-	-	
Date / Time Tested	4/09/2023 06:50	4/09/2023 06:50	4/09/2023 06:50	
Material Source	Onsite	Onsite	Onsite	
Material Type	Allotment Fill	Allotment Fill	Allotment Fill	
Sampling Method	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	
Depths: Test / Nom / Actual (mm)	175 / 200 / -	175 / 200 / -	175 / 200 / -	
Standard or Modified	Standard	Standard	Standard	
Easting	299296.73	299296.73	299296.73	
Northing	6002925.74	6002925.74	6002925.74	
RL	91.42	93.97	95.07	
Lot				
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	
Sample Oversize (%)	0	0	0	
Compaction Sample Number	23860/S/106220	23860/S/106221	23860/S/106222	
Sample Description	Allotment Fill	Allotment Fill	Allotment Fill	
Moisture Test Results:				
Field Moisture Content (%)	12.8	12.6	12.8	
Adjusted / Moist. Variation (%)	2.0	2.0	2.0	
Density Test Results:				
Field Wet Density (t/m³)	2.10	2.17	2.10	
Adj/Peak Conv Wet Density (t/m³)	2.07	2.09	2.08	
Density Ratio Required (%)	-	-	-	
Hilf Density Ratio (%)	101.5	104.0	101.5	

Remarks

 Accredited for compliance with ISO/IEC 17025 – Testing Accreditation Number: 1986 Corporate Site Number: 23860		 Approved Signatory: Adam Gleeson Form ID: W5ASRepSum Rev 5
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LOT REPORT - WET DENSITY RATIO

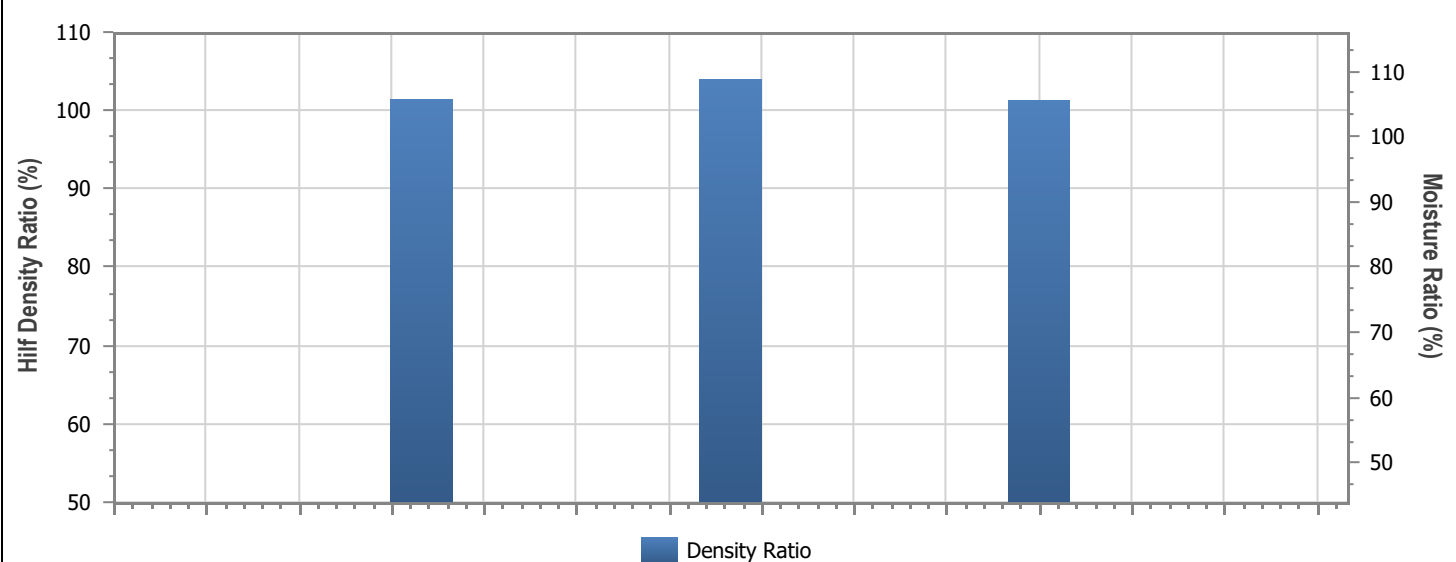
Client:	Northern Construction Group	Report Number:	23860/R/47373-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21752
Supplied To:	Northern Construction Group	Client Reference/s:	Backfill of Existing Dam
Area Description:	Stage 5	Report Date / Page:	12/09/2023 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

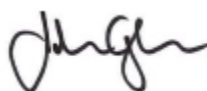


Tests in Lot = 3	Lot Minimum	Lot Maximum	Lot Mean	Standard Deviation
Hilf Density Ratio (%)	101.3	103.9	102.2	1.473

Lot Number: -

Mean Density Ratio (%): 102.2

Remarks

	Accredited for compliance with ISO/IEC 17025 – Testing		
	Accreditation Number:	1986	
	Corporate Site Number:	23860	Approved Signatory: Adam Gleeson Form ID: W5ASRepSum Rev 5

LOT REPORT - WET DENSITY RATIO

Client:	Northern Construction Group	Report Number:	23860/R/47652-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21836
Component:	Allotment Fill	Client Reference/s:	Stage 5 Allotment Fill
Area Description:	Stage 5	Report Date / Page:	26/09/2023 Page 1 of 2

Test Procedures:	AS1289.5.7.1, AS1289.5.8.1, AS1289.2.1.1
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Sample Number	23860/S/106662	23860/S/106663	23860/S/106664	
ID / Client ID	-	-	-	
Lot Number	-	-	-	
Date / Time Tested	15/09/2023 07:40	15/09/2023 07:40	15/09/2023 07:40	
Material Source	Onsite	Onsite	Onsite	
Material Type	Allotment Fill	Allotment Fill	Allotment Fill	
Sampling Method	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	AS1289.1.2.1 CI 6.4b	
Depths: Test / Nom / Actual (mm)	175 / 200 / -	175 / 200 / -	175 / 200 / -	
Standard or Modified	Standard	Standard	Standard	
Easting	299216.44	299201.96	299175.66	
Northing	6002891.57	6002891.69	6002894.36	
RL	94.58	94.53	94.78	
Lot	504	503	501	
Test Fraction (mm)	< 19.0 mm	< 19.0 mm	< 19.0 mm	
Sample Oversize (%)	0	0	0	
Compaction Sample Number	23860/S/106662	23860/S/106663	23860/S/106664	
Sample Description	Allotment Fill	Allotment Fill	Allotment Fill	
Moisture Test Results:				
Field Moisture Content (%)	14.0	12.3	14.4	
Adjusted / Moist. Variation (%)	0.0	0.0	0.0	
Density Test Results:				
Field Wet Density (t/m³)	2.14	2.15	2.15	
Adj/Peak Conv Wet Density (t/m³)	2.12	2.14	2.12	
Density Ratio Required (%)	95	95	95	
Hilf Density Ratio (%)	101.0	100.5	101.5	

Remarks

Accredited for compliance with ISO/IEC 17025 – Testing


 Accreditation Number: 1986
Corporate Site Number: 23860



 Approved Signatory: Mark Scoullar
Form ID: W5ASRepSum Rev 5

LOT REPORT - WET DENSITY RATIO

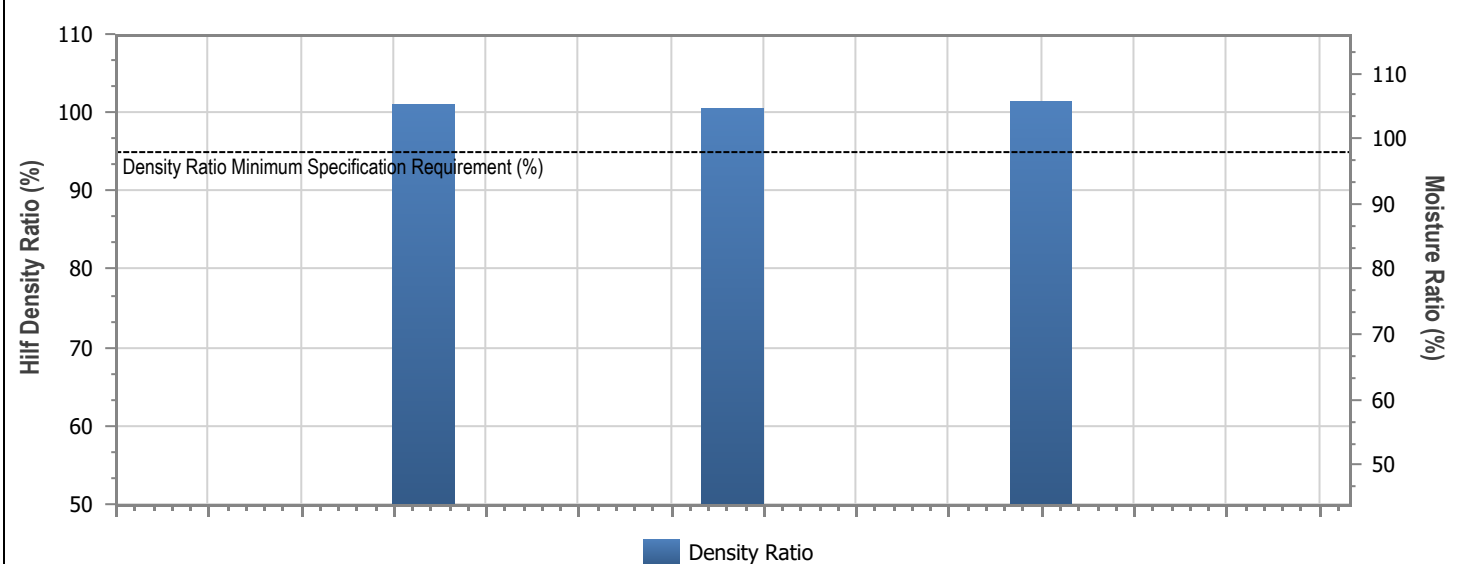
Client:	Northern Construction Group	Report Number:	23860/R/47652-1
Client Address:	33 Mundarra Rd, Echuca	Project Number:	23860/P/307
Project:	Maidens Green	Lot Number:	
Location:	Moama	Internal Test Request:	23860/T/21836
Component:	Allotment Fill	Client Reference/s:	Stage 5 Allotment Fill
Area Description:	Stage 5	Report Date / Page:	26/09/2023 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 (%)	100.5	101.4	101.0	0.453

Lot Number: -

Mean Density Ratio (%): 101.0

Remarks

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

VIC

Ararat
Bendigo
Echuca
Melbourne (Chadstone)
Melbourne (Pakenham)
Melbourne (Oaklands Junction)
Melbourne (Sunshine West)
Traralgon

WA

Bunbury
Newman
Perth
Port Hedland

SA

Adelaide
Port Augusta

NT

Darwin

ACT

Canberra

NZ

Wellington