



**SQS** [www.sqs.net.au](http://www.sqs.net.au)

AMB GEOTECH PTY LTD T/A SQS  
ABN 36 631 788 620

**SQS**

A.B.N. 36 631 788 620

# **LEVEL 1 EARTHWORKS**

**RESIDENTIAL SUBDIVISION  
174 ADARE ROAD  
ADARE  
QLD 4343**



# **CERTIFICATE**

21<sup>st</sup> March 2023

Newlands Civil Construction Pty Ltd,  
6 Ann Street,  
TOOWOOMBA QLD 4350

Dear Sir

**RE: LEVEL 1 EARTHWORKS  
RESIDENTIAL SUBDIVISION  
AT 174 ADARE ROAD, ADARE, QLD, 4343.**

Supervision of earthwork operations was carried out at the above location by SQS. The Level 1 Supervision and associated field density testing on the earthworks commenced on 20/12/2022 and was completed on 03/03/2023.

The supervision and testing of the earthworks were undertaken in general accordance with the Level 1 requirements of AS3798 – Guidelines on Earthworks for Commercial and Residential Developments and the Earthworks. Structural fill used in the project was placed compacted and tested in accordance with Section 6 and 7 of AS3798 (2007) – Guidelines on Earthworks for Commercial and Residential Development.

The site supervision and testing were performed by experienced geotechnicians from the SQS Toowoomba laboratory as per Section 8.2 AS3798 (2007). Supervision of the works included, test rolling of subgrade, placing of imported structural fill, compaction and adding or removal of moisture as required. Any areas that were deemed unsatisfactory were reworked and retested under the supervision of SQS. Testing was performed to the relevant Australian Standards and all test reports carry NATA endorsement. All compaction tests were located randomly throughout the fill profile are considered to be representative of the fill materials that was placed in the above-mentioned period. When interpreting the requirements of AS2870 – Residential Slabs and Footings 2011, we are of the view that all of the material that has been placed across the site during the aforementioned period can be considered as having been placed in a controlled manner to a minimum density ratio of 98% +/-2% standard compaction for the fill.

All NATA endorsed test certificates associated with the filling are held in the Toowoomba Laboratory Office of SQS. These test certificates are in electronic format and held on computer data base. Hard copies of the test reports are also filed in the Toowoomba Laboratory Office.

This Certificate applies to all fill material placed in the construction of the project within the boundaries of the project sites as listed and shown on the drawing included in this report –Bulk Earthworks Layout Plan Drawing No C1200 Rev O



Should you require any further information or clarification of this matter, please contact Ray Hicks by telephoning 0428187579 during business hours.

Yours faithfully,

A handwritten signature in black ink, appearing to read "Ray Hicks", is written over a solid black horizontal line.

Ray Hicks  
RPEQ 1149





# **DRAWINGS**



**CONTROL LINE SETOUT - BUSHFIRE TRAIL 1**

PT	CHANGE	EASTING	NORTHING	HEIGHT	BEARING	DEFL. ANGLE
P1	4280.54	4280.54	4280.54	100.00	0.00	0.00
P2	4280.54	4280.54	4280.54	100.00	0.00	0.00
P3	4280.54	4280.54	4280.54	100.00	0.00	0.00

**CONTROL LINE SETOUT - ROAD 2**

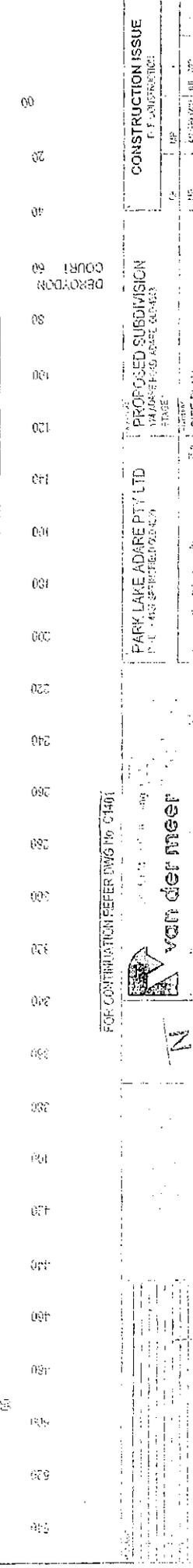
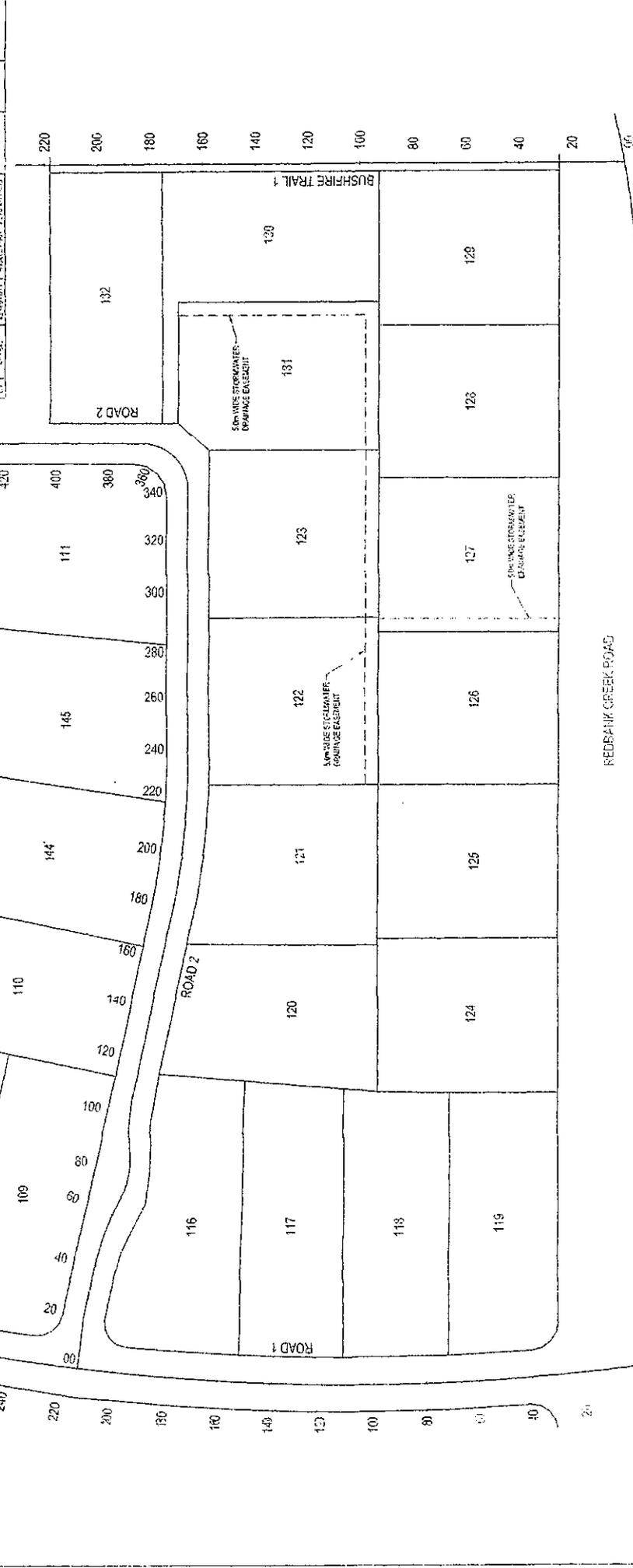
PT	CHANGE	EASTING	NORTHING	HEIGHT	BEARING	DEFL. ANGLE
P1	330.00	330.00	330.00	100.00	0.00	0.00
P2	330.00	330.00	330.00	100.00	0.00	0.00
P3	330.00	330.00	330.00	100.00	0.00	0.00

**CONTROL LINE SETOUT - ROAD 1**

PT	CHANGE	EASTING	NORTHING	HEIGHT	BEARING	DEFL. ANGLE
P1	330.00	330.00	330.00	100.00	0.00	0.00
P2	330.00	330.00	330.00	100.00	0.00	0.00
P3	330.00	330.00	330.00	100.00	0.00	0.00

**CONTROL LINE SETOUT - REDBANK CREEK ROAD**

PT	CHANGE	EASTING	NORTHING	HEIGHT	BEARING	DEFL. ANGLE
P1	330.00	330.00	330.00	100.00	0.00	0.00
P2	330.00	330.00	330.00	100.00	0.00	0.00
P3	330.00	330.00	330.00	100.00	0.00	0.00



FOR INFORMATION REFER DWG No. C1401

**van der meer**

PROPOSED SUBDIVISION  
PARK LAKE ADARE PTY LTD  
114/ADARE PT ROAD, ADARE

CONSTRUCTION ISSUE  
P.F. CONSTRUCTION

DATE: 11/01/2025  
DRAWN BY: [Name]  
CHECKED BY: [Name]  
SCALE: 1:1000

BP222025 C1002





# **TEST REPORTS AND LOCATIONS**

# Material Test Report



**Report Number:** T-22-681-2  
**Issue Number:** 1  
**Date Issued:** 22/12/2022  
**Client:** Newlands Civil Construction Pty Ltd  
 6 Ann Street (PO Box 3407), Toowoomba QLD 4350  
**Project Number:** T-22-681  
**Project Name:** 63 Redbank Creek Road, Adare - Sub-division  
**Work Request:** 9647  
**Date Sampled:** 20/12/2022  
**Dates Tested:** 20/12/2022 - 21/12/2022  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Preparation Method:** AS 1289.1.1 - Sampling and preparation of soils  
**Specification:** COMPACTION STD: 98% of Standard Compaction with +/- 2% OMC (as advised by client)  
**Location:** Adare Subdivision - Dam #1  
**Material:** Silty Gravelly Clay  
**Material Source:** Existing / Cut to Fill

SQS  
 Toowoomba Laboratory  
 15 Rocla Court Toowoomba QLD 4350  
 Phone (07) 4633 4875  
 Email Neil.hooper@sqs.net.au



Accredited for compliance with ISO/IEC 17025 - Testing

*Neil Hooper*

Approved Signatory: Neil Hooper  
 Senior Technician  
 NATA Accredited Laboratory Number: 2911

## Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1

	T-9647A	T-9647B	T-9647C
Sample Number	T-9647A	T-9647B	T-9647C
Date Tested	20/12/2022	20/12/2022	20/12/2022
Time Tested	13:20	13:30	13:40
Test Request #/Location	Dam #1	Dam #1	Dam #1
Easting	430072.510	430081.780	430095.820
Northing	6954054.990	6954048.610	6954047.440
Elevation (m)	107.350	106.870	106.840
Layer / Reduced Level	General Fill	General Fill	General Fill
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy Gravelly Clay	Sandy Gravelly Clay	Sandy Gravelly Clay
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	3	3	3
Oversize (dry basis) %	3	3	3
Curing Hours	2.6	5.1	5.5
Method used to Determine Plasticity	Visual	Visual	Visual
Field Wet Density t/m <sup>3</sup>	2.05	2.09	2.13
Field Moisture Content %	15.1	15.1	15.5
Field Dry Density t/m <sup>3</sup>	1.78	1.81	1.84
Maximum Dry Density t/m <sup>3</sup>	1.81	1.81	1.82
Adjusted Maximum Dry Density t/m <sup>3</sup>	1.82	1.82	1.84
Optimum Moisture Content %	15.0	15.5	16.0
Adjusted Optimum Moisture Content %	14.5	15.0	15.5
Moisture Variation %	-1.0	0.0	0.0
Moisture Ratio %	105.0	101.5	101.5
Density Ratio %	98.0	99.5	100.0
Compaction Method	Standard	Standard	Standard

### Moisture Variation Note:

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** T-22-681-4  
**Issue Number:** 1  
**Date Issued:** 06/01/2023  
**Client:** Newlands Civil Construction Pty Ltd  
 6 Ann Street (PO Box 3407), Toowoomba QLD 4350  
**Project Number:** T-22-681  
**Project Name:** 63 Redbank Creek Road, Adare - Sub-division  
**Work Request:** 9656  
**Date Sampled:** 21/12/2022  
**Dates Tested:** 21/12/2022 - 05/01/2023  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Preparation Method:** AS 1289.1.1 - Sampling and preparation of soils  
**Specification:** COMPACTION STD: 98% of Standard Compaction with +/- 2% OMC (as advised by client)  
**Location:** Redbank Creek Rd Adare - Dam 2  
**Material:** Sandy Clay  
**Material Source:** Existing / Cut to Fill

SQS  
 Toowoomba Laboratory  
 15 Rocla Court Toowoomba QLD 4350  
 Phone: (07) 4633 4875  
 Email: Neil.hooper@sqs.net.au



Accredited for compliance with ISO/IEC 17025 - Testing

*Neil Hooper*

Approved Signatory Neil Hooper  
 Senior Technician  
 NATA Accredited Laboratory Number 2911

## Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1

	T-9656A	T-9656B	T-9656C
Sample Number	T-9656A	T-9656B	T-9656C
Date Tested	21/12/2022	21/12/2022	21/12/2022
Time Tested	10:15	12:10	12:30
Test Request #/Location	Dam 2	Dam 2	Dam 2
Easting	430252.840	430249.120	403245.590
Northing	6954120.500	6954122.030	6954115.640
Elevation (m)	113.870	114.180	113.860
Layer / Reduced Level	General Fill	General Fill	General Fill
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy Clay	Sandy Clay	Sandy Clay
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	**	**	**
Oversize (dry basis) %	**	**	**
Curing Hours	4.4	3.3	2.9
Method used to Determine Plasticity	Visual	Visual	Visual
Field Wet Density t/m <sup>3</sup>	2.16	2.12	2.14
Field Moisture Content %	11.4	12.5	12.2
Field Dry Density t/m <sup>3</sup>	1.94	1.88	1.91
Maximum Dry Density t/m <sup>3</sup>	1.95	1.92	1.90
Adjusted Maximum Dry Density t/m <sup>3</sup>	**	**	**
Optimum Moisture Content %	11.5	11.0	14.0
Adjusted Optimum Moisture Content %	**	**	**
Moisture Variation %	0.0	-1.5	1.5
Moisture Ratio %	101.5	115.0	88.5
Density Ratio %	99.5	98.0	100.0
Compaction Method	Standard	Standard	Standard

### Moisture Variation Note:

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** T-22-681-5  
**Issue Number:** 1  
**Date Issued:** 06/01/2023  
**Client:** Newlands Civil Construction Pty Ltd  
 6 Ann Street (PO Box 3407), Toowoomba QLD 4350

SQS  
 Toowoomba Laboratory  
 15 Rocla Court Toowoomba QLD 4350  
 Phone: (07) 4633 4875  
 Email: Neil.hooper@sqs.net.au

**Project Number:** T-22-681  
**Project Name:** 63 Redbank Creek Road, Adare - Sub-division  
**Work Request:** 9657  
**Date Sampled:** 21/12/2022  
**Dates Tested:** 21/12/2022 - 05/01/2023  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted



Accredited for compliance with ISO/IEC 17025 - Testing

*Neil Hooper*

Approved Signatory: Neil Hooper

Senior Technician

NATA Accredited Laboratory Number: 2911

**Preparation Method:** AS 1289.1.1 - Sampling and preparation of soils  
**Specification:** COMPACTION STD: 98% of Standard Compaction (as advised by client)

**Location:** Redbank Adare - Road 2 Subgrade

**Material:** Sandy Clay

**Material Source:** Onsite Existing / Insitu

## Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	T-9657A	T-9657B	T-9657C
Date Tested	21/12/2022	21/12/2022	21/12/2022
Time Tested	12:35	12:45	12:55
Test Request #/Location	Road 2	Road 2	Road 2
Chainage (m)	CH 300	CH 180	CH 50
Location Offset (m)	1.5 LHS from CL	2.0 RHS from CL	3.0 LHS from CL
Layer / Reduced Level	Subgrade	Subgrade	Subgrade
Thickness of Layer (mm)	150	150	150
Soil Description	Silty Gravelly Clay	Silty Gravelly Clay	Sandy Clay
Test Depth (mm)	150	150	150
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	**	**	**
Oversize (dry basis) %	**	**	**
Curing Hours	2.6	2.3	2.1
Method used to Determine Plasticity	Visual	Visual	Visual
Field Wet Density t/m <sup>3</sup>	2.10	2.09	2.12
Field Moisture Content %	8.5	9.3	8.6
Field Dry Density t/m <sup>3</sup>	1.94	1.91	1.95
Maximum Dry Density t/m <sup>3</sup>	1.88	1.90	1.91
Adjusted Maximum Dry Density t/m <sup>3</sup>	**	**	**
Optimum Moisture Content %	12.5	12.5	12.5
Adjusted Optimum Moisture Content %	**	**	**
Moisture Variation %	4.0	3.0	4.0
Moisture Ratio %	68.5	75.0	69.5
Density Ratio %	103.0	100.5	102.0
Compaction Method	Standard	Standard	Standard

### Moisture Variation Note:

Positive values = test is dry of OMC

Negative values = test is wet of OMC

# Material Test Report



**Report Number:** T-22-681-6  
**Issue Number:** 1  
**Date Issued:** 08/01/2023  
**Client:** Newlands Civil Construction Pty Ltd  
 6 Ann Street (PO Box 3407), Toowoomba QLD 4350  
**Project Number:** T-22-681  
**Project Name:** 63 Redbank Creek Road, Adare - Sub-division  
**Work Request:** 9661  
**Date Sampled:** 22/12/2022  
**Dates Tested:** 22/12/2022 - 06/01/2023  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Preparation Method:** AS 1289.1 1 - Sampling and preparation of soils  
**Specification:** COMPACTION STD: 98% of Standard Compaction with +/- 2% OMC (as advised by client)  
**Site Selection:** Selected by Client  
**Location:** 63 Redbank Creek Road, Adare - Sub-division - Dam 2  
 General Fill  
**Material:** Sandy Clay  
**Material Source:** Onsite / Cut to Fill

SQS  
 Toowoomba Laboratory  
 15 Rocla Court Toowoomba QLD 4350  
 Phone: (07) 4633 4875  
 Email: Neil.hooper@sqs.net.au



Accredited for compliance with ISO/IEC 17025 - Testing

*Neil Hooper*

Approved Signatory: Neil Hooper  
 Senior Technician  
 NATA Accredited Laboratory Number: 2911

## Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	T-9661A	T-9661B	T-9661C
Date Tested	22/12/2022	22/12/2022	22/12/2022
Time Tested	10:20	10:30	10:40
Test Request #/Location	Dam 2	Dam 2	Dam 2
Easting	430251.000	430246.650	430243.470
Northing	6954119.290	6954124.600	6954115.420
Elevation (m)	114.480	114.770	114.260
Layer / Reduced Level	General Fill	General Fill	General Fill
Thickness of Layer (mm)	300	300	300
Soil Description	Sandy Clay	Sandy Clay	Sandy Clay
Test Depth (mm)	250	250	250
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	**	**	**
Oversize (dry basis) %	**	**	**
Curing Hours	3.0	0.3	3.6
Method used to Determine Plasticity	Visual	Visual	Visual
Field Wet Density t/m <sup>3</sup>	2.15	2.15	2.14
Field Moisture Content %	13.5	13.5	13.8
Field Dry Density t/m <sup>3</sup>	1.89	1.89	1.88
Maximum Dry Density t/m <sup>3</sup>	1.89	1.88	1.88
Adjusted Maximum Dry Density t/m <sup>3</sup>	**	**	**
Optimum Moisture Content %	15.0	15.0	15.5
Adjusted Optimum Moisture Content %	**	**	**
Moisture Variation %	1.5	1.5	1.5
Moisture Ratio %	89.0	90.0	90.5
Density Ratio %	100.5	100.5	100.0
Compaction Method	Standard	Standard	Standard

### Moisture Variation Note:

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** T-22-681-7  
**Issue Number:** 1  
**Date Issued:** 12/01/2023  
**Client:** Newlands Civil Construction Pty Ltd  
 6 Ann Street (PO Box 3407), Toowoomba QLD 4350  
**Project Number:** T-22-681  
**Project Name:** 63 Redbank Creek Road, Adare - Sub-division  
**Work Request:** 9693  
**Date Sampled:** 10/01/2023  
**Dates Tested:** 11/01/2023 - 11/01/2023  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Preparation Method:** AS 1289.1.1 - Sampling and preparation of soils  
**Specification:** COMPACTION STD: 98% of Standard Compaction with +/- 2% OMC (as advised by client)  
**Site Selection:** Selected by Client  
**Location:** Adare Subdivision - Dam 1 General Fill  
**Material:** Sandy Gravelly Clay  
**Material Source:** Existing / Cut to Fill

SQS  
 Toowoomba Laboratory  
 15 Rocla Court Toowoomba QLD 4350  
 Phone (07) 4633 4875  
 Email Toowoomba@sqs.net.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Kevin Kivinen  
 Laboratory Manager  
 NATA Accredited Laboratory Number 2911

## Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	T-9693A	T-9693B	T-9693C
Date Tested	10/01/2023	10/01/2023	10/01/2023
Time Tested	12:30	13:00	13:20
Test Request #/Location	Dam 1	Dam 1	Dam 1
Easting	430066.920	430085.880	430074.420
Northing	6954044.110	6954049.480	6954060.790
Elevation (m)	107.088	107.302	107.732
Layer / Reduced Level	General Fill	General Fill	General Fill
Thickness of Layer (mm)	200	200	200
Soil Description	Silty Gravelly Clay	Silty Gravelly Clay	Silty Gravelly Clay
Test Depth (mm)	175	175	175
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	**	**	**
Oversize (dry basis) %	**	**	**
Curing Hours	2.3	2.0	2.7
Method used to Determine Plasticity	Visual	Visual	Visual
Field Wet Density t/m <sup>3</sup>	2.07	2.13	2.07
Field Moisture Content %	10.9	10.7	10.3
Field Dry Density t/m <sup>3</sup>	1.87	1.92	1.88
Maximum Dry Density t/m <sup>3</sup>	1.88	1.92	1.88
Adjusted Maximum Dry Density t/m <sup>3</sup>	**	**	**
Optimum Moisture Content %	12.5	12.5	12.0
Adjusted Optimum Moisture Content %	**	**	**
Moisture Variation %	2.0	1.5	1.5
Moisture Ratio %	86.0	86.0	87.0
Density Ratio %	99.0	100.5	100.0
Compaction Method	Standard	Standard	Standard

### Moisture Variation Note:

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** T-22-681-11  
**Issue Number:** 1  
**Date Issued:** 27/02/2023  
**Client:** Newlands Civil Construction Pty Ltd  
 6 Ann Street (PO Box 3407), Toowoomba QLD 4350  
**Project Number:** T-22-681  
**Project Name:** 63 Redbank Creek Road, Adare - Sub-division  
**Work Request:** 10179  
**Date Sampled:** 23/02/2023  
**Dates Tested:** 24/02/2023 - 24/02/2023  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Preparation Method:** AS 1289.1.1 - Sampling and preparation of soils  
**Specification:** COMPACTION STD: 98% of Standard Compaction with +/- 2% OMC (as advised by client)  
**Site Selection:** Selected by Client  
**Location:** Adare Subdivision - Dam 1 General Fill  
**Material:** Silty Sandy Clay  
**Material Source:** Existing / Cut to Fill

SQS  
 Toowoomba Laboratory  
 15 Rocla Court Toowoomba QLD 4350  
 Phone: (07) 4633 4875  
 Email: Toowoomba@sqs.net.au



Accredited for compliance with ISO/IEC 17025 - Testing

*Handwritten signature*

Approved Signatory: Kevin Kivinen  
 Laboratory Manager  
 NATA Accredited Laboratory Number: 2911

## Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1

	T-10179A	T-10179B	T-10179C
Sample Number	T-10179A	T-10179B	T-10179C
Date Tested	23/02/2023	23/02/2023	23/02/2023
Time Tested	09:30	09:50	10:30
Test Request #/Location	Dam 1	Dam 1	Dam 1
Easting	430074.200	430099.600	430064.600
Northing	6954063.100	6954061.400	6954066.100
Elevation (m)	108.635	108.635	108.145
Layer / Reduced Level	General Fill	General Fill	General Fill
Thickness of Layer (mm)	200	200	200
Soil Description	Silty Sandy Clay	Silty Sandy Clay	Silty Sandy Clay
Test Depth (mm)	175	175	175
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	**	**	**
Oversize (dry basis) %	**	**	**
Curing Hours	2.8	2.2	2.0
Method used to Determine Plasticity	Visual	Visual	Visual
Field Wet Density t/m <sup>3</sup>	2.00	1.96	1.95
Field Moisture Content %	12.2	12.8	14.9
Field Dry Density t/m <sup>3</sup>	1.78	1.74	1.70
Maximum Dry Density t/m <sup>3</sup>	1.78	1.75	1.73
Adjusted Maximum Dry Density t/m <sup>3</sup>	**	**	**
Optimum Moisture Content %	12.0	12.5	14.5
Adjusted Optimum Moisture Content %	**	**	**
Moisture Variation %	0.0	0.0	-0.5
Moisture Ratio %	102.0	101.5	102.5
Density Ratio %	100.0	99.5	98.5
Compaction Method	Standard	Standard	Standard

### Moisture Variation Note:

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

# Material Test Report



**Report Number:** T-22-681-18  
**Issue Number:** 1  
**Date Issued:** 07/03/2023  
**Client:** Newlands Civil Construction Pty Ltd  
 6 Ann Street (PO Box 3407), Toowoomba QLD 4350  
**Project Number:** T-22-681  
**Project Name:** 63 Redbank Creek Road, Adare - Sub-division  
**Work Request:** 10304  
**Date Sampled:** 03/03/2023  
**Dates Tested:** 03/03/2023 - 04/03/2023  
**Sampling Method:** AS 1289.1.2.1 6.4 (b) - Sampling from layers in earthworks or pavement - compacted  
**Preparation Method:** AS 1289.1.1 - Sampling and preparation of soils  
**Specification:** COMPACTION STD: 98% of Standard Compaction with +/- 2% OMC (as advised by client)  
**Location:** Adare Subdivision - Lots 125, 126 General Fill  
**Material:** General Fill  
**Material Source:** Existing / Cut to Fill

SQS  
 Toowoomba Laboratory  
 15 Rocla Court Toowoomba QLD 4350  
 Phone (07) 4633 4875  
 Email Toowoomba@sqs.net.au



Accredited for compliance with ISO/IEC 17025 - Testing

*Handwritten signature*

Approved Signatory Kevin Kivinen  
 Laboratory Manager  
 NATA Accredited Laboratory Number: 2911

## Compaction Control AS 1289 5.1.1 & 5.4.1 & 5.8.1 & 2.1.1

Sample Number	T-10304A	T-10304B	T-10304C
Date Tested	03/03/2023	03/03/2023	03/03/2023
Time Tested	08:20	08:30	08:40
Test Request #/Location	Lot 125	Lot 125	Lot 126
Easting	430060.100	430095.170	430141.800
Northing	6954033.900	6954027.100	6954027.300
Elevation (m)	106.903	105.967	Layer 1
Layer / Reduced Level	General Fill	General Fill	General Fill
Thickness of Layer (mm)	200	200	200
Soil Description	Sandy Silty Clay	Sandy Silty Clay	Sandy Silty Clay
Test Depth (mm)	175	175	175
Fraction Tested (mm)	19.0	19.0	19.0
Oversize (wet basis) %	**	**	**
Oversize (dry basis) %	**	**	**
Curing Hours	2.8	2.5	2.0
Method used to Determine Plasticity	Visual	Visual	Visual
Field Wet Density t/m <sup>3</sup>	2.09	2.09	2.11
Field Moisture Content %	13.3	10.0	9.3
Field Dry Density t/m <sup>3</sup>	1.85	1.90	1.93
Maximum Dry Density t/m <sup>3</sup>	1.85	1.90	1.93
Adjusted Maximum Dry Density t/m <sup>3</sup>	**	**	**
Optimum Moisture Content %	15.0	11.5	11.0
Adjusted Optimum Moisture Content %	**	**	**
Moisture Variation %	2.0	1.5	1.5
Moisture Ratio %	88.5	85.0	85.0
Density Ratio %	99.5	100.0	99.5
Compaction Method	Standard	Standard	Standard

### Moisture Variation Note:

Positive values = test is dry of OMC  
 Negative values = test is wet of OMC

BULK EARTHWORKS QUANTITIES	
150mm STRIPPING	4.47m <sup>3</sup>
TOTAL CUT VOLUME	4.36m <sup>3</sup>
TOTAL FILL VOLUME	3.28m <sup>3</sup>
DAM FILL (BENEATH WATER LEVEL)	380m <sup>3</sup> (ASSUMPTION)

CUT	
0.0m - 0.25m	0.25m
0.25m - 0.50m	0.50m
0.50m - 1.00m	1.00m
1.00m - 2.00m	2.00m
> 2.00m	> 2.00m

**NOTE**

- REFER TO CIVIL SPECIFICATIONS ON DRAWING C001 FOR SUBGRADE PREPARATION REQUIREMENTS
- THIS PLAN IS TO BE READ IN CONJUNCTION WITH THE GEOTECHNICAL REPORT
- DETAILED BULK EARTHWORKS MODELING HAS NOT BEEN UNDERTAKEN FOR PIPE TRENCHING

**EXISTING DAMS**

THE EXISTING DAMS WITHIN THE SITE ARE TO BE DE-WATERED REMOVE ALL ORGANIC AND VEGETATION WATER AND EXCAVATE AND FILL WITH COMPACTED FILL TO SOLIDIFIED SUBGRADE. THE DAMS SHALL BE RECONSTRUCTED TO A MINIMUM STATIC WEIGHT (SIBSTRY PAD TYPE ROLLER UNDER THE SUPERVISION OF A GEOTECHNICAL ENGINEER ANY SOFT SPOTS AND/OR LOOSE AREAS ARE TO BE EXCAVATED TO A DEPTH OF 500mm AND FILL WITH COMPACTED FILL TO SOLIDIFIED SUBGRADE. FURTHER EXCAVATION IS REQUIRED SELECT REPLACEMENT MATERIAL TO BE IN MINIMUM CBR19 PLACED IN LAYERS NOT EXCEEDING 150mm COMPACTED THICKNESS COMPACTED TO THE COMPACTION REQUIREMENTS

**SERVICES (PIP) LEGEND**

EXISTING	PROPOSED
COMMUNICATIONS	COMMUNICATIONS
DRAINAGE (AWAY FROM DA)	DRAINAGE (AWAY FROM DA)
DRAINAGE (TOWARD DA)	DRAINAGE (TOWARD DA)
ELECTRICITY	ELECTRICITY
CH/ELECTRICITY & POLE	CH/ELECTRICITY & POLE
GAS	GAS
WATER MAIN	WATER MAIN

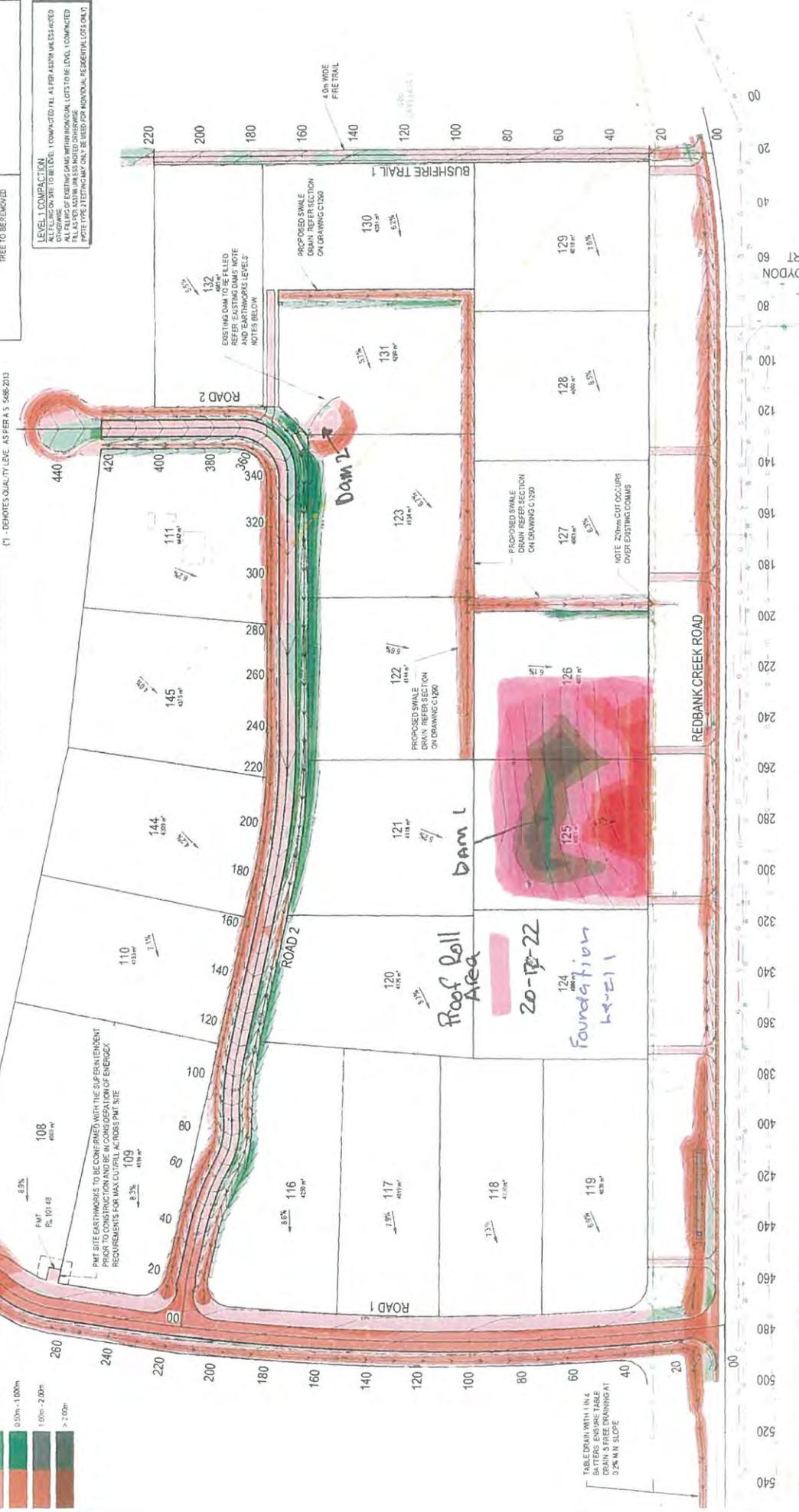
**LEGEND**

EXISTING	PROPOSED
FENCE	FENCE
OPEN DRAIN	OPEN DRAIN
KERB AND CHANNEL	KERB AND CHANNEL
KERB ONLY	KERB ONLY
CONTOUR	CONTOUR
ROAD EDGE BITUMEN	ROAD EDGE BITUMEN
ROAD SHOULDER	ROAD SHOULDER
TREE TO REMAIN	TREE TO REMAIN

**LEVEL 1 COMPACTION**

ALL FILL ON SITE TO BE LEVEL 1 COMPACTED FILL AS PER ASPM UK 53 NOTED ALL FILL TO BE EXISTING DAMS WITHIN ROAD LOTS TO BE LEVEL 1 COMPACTED FILL AS PER ASPM UK 53 UNLESS NOTED OTHERWISE

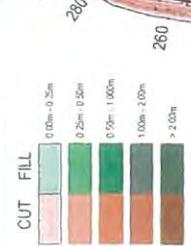
NOTE: FILL TYPE 1 (2) FILL CAN ONLY BE USED FOR INDIVIDUAL RESIDENTIAL LOTS ONLY



<b>van der Meer Consulting</b> <b>van der meer</b> 100/110, PARK LAKE, QLD 4106 Telephone: 07 5321 8666 A B N 63 109 83 15	SCALE: 1:500 DATE: 21-08-22 DRAWN: [Name] CHECKED: [Name]	PROJECT NO: BR222025 PROJECT NAME: BULK EARTHWORKS PLAN	ORIGINAL ISSUE FOR CONSTRUCTION AS SHOWN JUL 2022 DRAWN BY: [Name] CHECKED BY: [Name]
	PROJECT NO: BR222025 PROJECT NAME: BULK EARTHWORKS PLAN	SCALE: 1:500 DATE: 21-08-22 DRAWN: [Name] CHECKED: [Name]	PROJECT NO: BR222025 PROJECT NAME: BULK EARTHWORKS PLAN

**BULK EARTHWORKS QUANTITIES**

150mm STRIPPING	4,474m <sup>3</sup>
TOTAL CUT VOLUME	4,346m <sup>3</sup>
TOTAL FILL VOLUME	3,381m <sup>3</sup>
DAM FILL (BENEATH WATER LEVEL)	362m <sup>3</sup> (ASSUMPTION)



**NOTE**

- REFER TO CIVIL SPECIFICATIONS ON DRAWING C001 FOR SUBGRADE PREPARATION REQUIREMENTS TO BE USED IN CONJUNCTION WITH THE GEOTECHNICAL REPORT.
- DETAILED BULK EARTHWORKS MODELLING HAS NOT BEEN UNDERTAKEN FOR PIPE TRENCHING

**EXISTING DAMS**

THE EXISTING DAMS WITHIN THE SITE ARE TO BE DE-WATERED REMOVE ALL ORGANIC AND DELETTERIOUS MATTER AND SCAVENGE PROOF ROLL THE SITE USING SIX PASSES OF A 10 TONNE MINIMUM STATIC WEIGHT VIBRATORY PAID TYPE ROLLER UNDER THE SUPERVISION OF A GEO-TECHNICAL ENGINEER. ANY SOFT SPOTS AND/OR LOOSE AREAS ARE TO BE EXCAVATED TO A DEPTH OF 300mm INSPECTED BY A GEO-TECHNICAL ENGINEER TO ASSESS WHETHER FURTHER EXCAVATION IS REQUIRED. SELECT REPLACEMENT MATERIAL TO BE MINIMUM (CRN15) PLACED IN LAYERS NOT EXCEEDING 150mm COMPACTED TO THICKNESS COMPACTED TO THE COMPACTOR REQUIREMENTS.

**SERVICES (PIP) LEGEND**

EXISTING: COMMUNICATIONS, DRAINAGE (UNPAVED G/L), DRAINAGE (PAVED G/L), ELECTRICITY, OHM ELECTRICITY X POLE, GAS, WATER MAIN

PROPOSED: FENCE, OPEN DRAIN, KERB AND CHANNEL, MOUNTABLE KERB TYPE 1M, MOUNTABLE KERB TYPE 1M, ROAD EDGE BITUMEN, ROAD SHOULDER, DRAINAGE

**LEGEND**

EXISTING: FENCE, OPEN DRAIN, KERB AND CHANNEL, MOUNTABLE KERB TYPE 1M, MOUNTABLE KERB TYPE 1M, ROAD EDGE BITUMEN, ROAD SHOULDER, DRAINAGE

PROPOSED: FENCE, OPEN DRAIN, KERB AND CHANNEL, MOUNTABLE KERB TYPE 1M, MOUNTABLE KERB TYPE 1M, ROAD EDGE BITUMEN, ROAD SHOULDER, DRAINAGE

**LEVEL 1 COMPACTION**

ALL FILL ON SITE TO BE LEVEL 1 COMPACTION AS PER AS1361 UNLESS NOTED OTHERWISE. ALL FILLING OF EXISTING DAMS WITHIN INDIVIDUAL LOTS TO BE LEVEL 1 COMPACTION. ALL FILLING OF EXISTING DAMS WITHIN INDIVIDUAL LOTS TO BE LEVEL 1 COMPACTION. FILL FOR AS1361 UNLESS NOTED OTHERWISE. IN THE TYPE EXISTING DAM ONLY BE USED FOR INDIVIDUAL RESIDENTIAL LOTS (N/L1)





# **DAILY EARTHWORKS**

# SQS

Client: Newlands Civil Construction Pty Ltd Project #: T-22-681

Project Name: 63 Redbank Creek Road, Adare - Sub-division

Location: Test Date: 20/12/2022

Tested By: sqs-michaelc

Work Request: 9647

## Level 1 Monitoring Worksheet

Daily Checks (AS 3798)		
Have you undertaken a safety check?	Yes	
Have you discussed daily works program with Clients site foreman?	Yes	
Has a stripped survey been done for the area?	Yes	If not, speak to client about getting it done. It must be done before filling takes place on the area. Discuss movement, water issues etc with site supervisor
Does the fill area look as it was when you were last here?	Yes	If not, check levels and compare to last ones taken are they comparable? Make notes regarding this issue. Call Supervisor to discuss.
Has unsuitable material been removed?	Yes	Record material description, location, and where it was sent
Does the material meet specifications and is it fit for purpose?	Yes	If not, speak to client about other sources of material. Make notes on this issue.
Have you noted the source of the material?	Yes	
Is the material at a suitable moisture content for placement?	Yes / No	If not, is there a way to moisture condition the material to bring it within specifications? Make notes on this issue
Have you marked on the plan where the material is being placed today?	No	Refer to plan
Have you done required testing for the day?	Yes	Marked with GPS
Have you got accurate and useful locations for tests taken?	Yes	Marked with GPS
Have you noted on a plan of the job the approximate locations of tests taken?	No	Marked with GPS
Have you filled out the summary sheet including hours onsite and lots worked on?	Yes	
Have you filled out Daily Monitoring Sheet with actions taken for the day?	Yes	
Have you noted construction methods and machinery used for the day?	Yes	
Have you made notes of any significant conversations had with the client or contractors?	No	N/A
Have you estimated quantity of material placed for the day	Yes	
Weather Observations	Fine	

Potential Contaminations / Environmental Indications							
Note	Notify site foreman and site manager IMMEDIATELY if any of the following are detected.						
Odorous Material	No	Stained Material	No	Deleterious Material	No	Potential Petroleum Contamination	No
Hazardous Building Materials	No	General Waste Material	No				
Remarks							

Equipment									
Compactor	No	Size ?		Grader	Yes			Highway Truck	Yes
Roller- Padfoot	Yes	Weight ?		Bulldozer	No	Size ?		Moxy	No
Roller- Smoothdrum	No	Weight ?		Excavator	Yes	Size ?		Scraper	No
Water Cart	Yes								
Other									

Remarks	
Time	Remarks
	Proof rolled dam 1 area with loaded water cart with no visible movement. Placing material @ 300mm loose layers than testing @ 250mm compacted layer with good moisture.
	3 x AS1289.5.8.1                      3 x AS1289.35.1.1
	1 x Pad Foot Roller   1 x Grader   1 x Water Cart   1 x Excavator
	Onsite Hours 5

# SQS

Client : Newlands Civil Construction Pty Ltd Project #: T-22-681

Project Name: 63 Redbank Creek Road, Adare - Sub-division

Location: Test Date: 21/12/2022

Tested By: sqs-michaelc  
Work Request: 9656

## Level 1 Monitoring Worksheet

Daily Checks (AS 3793)		
Have you undertaken a safety check?	Yes	
Have you discussed daily works program with Clients site foreman?	Yes	
Has a stripped survey been done for the area?	Yes	If not, speak to client about getting it done. It must be done before filling takes place on the area. Discuss movement, water issues etc with site supervisor
Does the fill area look as it was when you were last here?	Yes	If not, check levels and compare to last ones taken. are they comparable? Make notes regarding this issue. Call Supervisor to discuss.
Has unsuitable material been removed?	Yes	Record material description, location, and where it was sent
Does the material meet specifications and is it fit for purpose?	Yes	If not, speak to client about other sources of material. Make notes on this issue.
Have you noted the source of the material?	Yes	
Is the material at a suitable moisture content for placement?	Yes	If not, is there a way to moisture condition the material to bring it within specifications? Make notes on this issue
Have you marked on the plan where the material is being placed today?	No	Refer to plan
		Marked with GPS
Have you done required testing for the day?	Yes	
Have you got accurate and useful locations for tests taken?	Yes	Marked with GPS
Have you noted on a plan of the job the approximate locations of tests taken?	No	Marked with GPS
Have you filled out the summary sheet including hours onsite and lots worked on?	Yes	
Have you filled out Daily Monitoring Sheet with actions taken for the day?	Yes	
Have you noted construction methods and machinery used for the day?	Yes	
Have you made notes of any significant conversations had with the client or contractors?	No	N/A
Have you estimated quantity of material placed for the day	Yes	
Weather Observations	Fine	

Potential Contaminations / Environmental Indications							
Note	Notify site foreman and site manager IMMEDIATELY if any of the following are detected.						
Odorous Material	No	Stained Material	No	Deleterious Material	No	Potential Petroleum Contamination	No
Hazardous Building Materials	No	General Waste Material	No				
Remarks							

Equipment								
Compactor	No	Size ?		Grader	Yes		Highway Truck	Yes
Roller- Padfoot	Yes	Weight ?	16t	Bulldozer	No	Size ?	Moxy	No
Roller- Smoothdrum	No	Weight ?		Excavator	Yes	Size ?	20t	Scraper
Water Cart	Yes							
Other								

Remarks	
Time	Remarks
	Conducted proof roll on dam 2. Conducted proof roll with loaded water cart with no visible movement. Started to place existing cut to fill material on dam 2 @ 300mm loose layers than testing @ 250mm compacted layers with good moisture. Also Testing subgrade level on road 2
	3 x AS1289.5.8.1      3 x AS1289.5.1.1
	1 x Grader   1 x Water Cart   1 x Excavator   1 x Pad Foot Roller
	Onsite Hours 5

## SQS

Client: Newlands Civil Construction Pty Ltd Project #: T-22-681

Project Name: 63 Redbank Creek Road, Adare - Sub-division

Location: Test Date: 22/12/2022

Tested By: sqs-michaelc  
Work Request: 9661

### Level 1 Monitoring Worksheet

Daily Checks (AS 3798)		
Have you undertaken a safety check?	Yes	
Have you discussed daily works program with Clients site foreman?	Yes	
Has a stripped survey been done for the area?	Yes	If not, speak to client about getting it done. It must be done before filling takes place on the area. Discuss movement, water issues etc with site supervisor
Does the fill area look as it was when you were last here?	Yes	If not, check levels and compare to last ones taken. are they comparable? Make notes regarding this issue. Call Supervisor to discuss.
Has unsuitable material been removed?	Yes	Record material description, location, and where it was sent
Does the material meet specifications and is it fit for purpose?	Yes	If not, speak to client about other sources of material. Make notes on this issue.
Have you noted the source of the material?	Yes	
Is the material at a suitable moisture content for placement?	Yes	If not, is there a way to moisture condition the material to bring it within specifications? Make notes on this issue
Have you marked on the plan where the material is being placed today?	No	Refer to plan
		Marked with GS
Have you done required testing for the day?	Yes	
Have you got accurate and useful locations for tests taken?	Yes	Marked with GPS
Have you noted on a plan of the job the approximate locations of tests taken?	No	Marked with GPS
Have you filled out the summary sheet including hours onsite and lots worked on?	Yes	
Have you filled out Daily Monitoring Sheet with actions taken for the day?	Yes	
Have you noted construction methods and machinery used for the day?	Yes	
Have you made notes of any significant conversations had with the client or contractors?	No	N/A
Have you estimated quantity of material placed for the day	Yes	
Weather Observations	Fine	

Potential Contaminations / Environmental Indications							
Note	Notify site foreman and site manager IMMEDIATELY if any of the following are detected.						
Odorous Material	No	Stained Material	No	Deleterious Material	No	Potential Petroleum Contamination	No
Hazardous Building Materials	No	General Waste Material	No				
Remarks							

Equipment									
Compactor	No	Size ?		Grader	Yes		Highway Truck	Yes	
Roller- Padfoot	Yes	Weight ?	16t	Bulldozer	No	Size ?	Moxy	No	
Roller- Smoothdrum	No	Weight ?		Excavator	Yes	Size ?	Scraper	No	
Water Cart	Yes								
Other									



## SQS

Client : Newlands Civil Construction Ply Ltd Project #: T-22-681

Project Name: 63 Redbank Creek Road, Adare - Sub-division

Location: Test Date: 10/01/2023

Tested By: sqs-michaelc  
Work Request: 9693

### Level 1 Monitoring Worksheet

Daily Checks (AS 3798)		
Have you undertaken a safety check?	Yes	
Have you discussed daily works program with Clients site foreman?	Yes	
Has a stripped survey been done for the area?	Yes	If not, speak to client about getting it done. It must be done before filling takes place on the area. Discuss movement, water issues etc with site supervisor
Does the fill area look as it was when you were last here?	Yes	If not, check levels and compare to last ones taken. are they comparable? Make notes regarding this issue. Call Supervisor to discuss.
Has unsuitable material been removed?	Yes	Record material description, location, and where it was sent
Does the material meet specifications and is it fit for purpose?	Yes	If not, speak to client about other sources of material. Make notes on this issue.
Have you noted the source of the material?	Yes	
Is the material at a suitable moisture content for placement?	Yes	If not, is there a way to moisture condition the material to bring it within specifications? Make notes on this issue
Have you marked on the plan where the material is being placed today?	No	Refer to plan
		Marked with GPS
Have you done required testing for the day?	Yes	
Have you got accurate and useful locations for tests taken?	Yes	Marked with GPS
Have you noted on a plan of the job the approximate locations of tests taken?	No	Marked with GPS
Have you filled out the summary sheet including hours onsite and lots worked on?	Yes	
Have you filled out Daily Monitoring Sheet with actions taken for the day?	Yes	
Have you noted construction methods and machinery used for the day?	Yes	
Have you made notes of any significant conversations had with the client or contractors ?	No	N/A
Have you estimated quantity of material placed for the day	Yes	
Weather Observations	Fine	

Potential Contaminations / Environmental Indications							
Note	Notify site foreman and site manager IMMEDIATELY if any of the following are detected.						
Odorous Material	No	Stained Material	No	Deleterious Material	No	Potential Petroleum Contamination	No
Hazardous Building Materials	No	General Waste Material	No				
Remarks							

Equipment									
Compactor	No	Size ?		Grader	Yes			Highway Truck	Yes
Roller- Padfoot	Yes	Weight ?	16t	Bulldozer	No	Size ?		Moxy	No
Roller- Smoothdrum	No	Weight ?		Excavator	Yes	Size ?	30t	Scraper	No
Water Cart	Yes								
Other									



## SQS

Client : Newlands Civil Construction Pty Ltd Project #: T-22-681

Project Name: 63 Redbank Creek Road, Adare - Sub-division

Location: Test Date: 23/02/2023

Tested By: sqs-michaelc

Work Request: 10179

### Level 1 Monitoring Worksheet

Daily Checks (AS 3798)		
Have you undertaken a safety check?	Yes	
Have you discussed daily works program with Clients site foreman?	Yes	
Has a stripped survey been done for the area?	Yes	If not, speak to client about getting it done. It must be done before filling takes place on the area. Discuss movement, water issues etc with site supervisor
Does the fill area look as it was when you were last here?	Yes	If not, check levels and compare to last ones taken. are they comparable? Make notes regarding this issue. Call Supervisor to discuss.
Has unsuitable material been removed?	Yes	Record material description, location, and where it was sent
Does the material meet specifications and is it fit for purpose?	Yes	If not, speak to client about other sources of material. Make notes on this issue.
Have you noted the source of the material?	Yes	
Is the material at a suitable moisture content for placement?	Yes	If not, is there a way to moisture condition the material to bring it within specifications? Make notes on this issue
Have you marked on the plan where the material is being placed today?	No	Refer to plan
Have you done required testing for the day?	Yes	Marked With GPS
Have you got accurate and useful locations for tests taken?	Yes	Marked with GPS
Have you noted on a plan of the job the approximate locations of tests taken?	No	Marked with GPS
Have you filled out the summary sheet including hours onsite and lots worked on?	Yes	
Have you filled out Daily Monitoring Sheet with actions taken for the day?	Yes	
Have you noted construction methods and machinery used for the day?	Yes	
Have you made notes of any significant conversations had with the client or contractors ?	No	N/A
Have you estimated quantity of material placed for the day	Yes	
Weather Observations	Fine	

Potential Contaminations / Environmental Indications							
Note	Notify site foreman and site manager IMMEDIATELY if any of the following are detected.						
Odorous Material	No	Stained Material	No	Deleterious Material	No	Potential Petroleum Contamination	No
Hazardous Building Materials	No	General Waste Material	No				
Remarks							

Equipment								
Compactor	No	Size ?		Grader	Yes		Highway Truck	Yes
Roller- Padfoot	Yes	Weight ?		Bulldozer	No	Size ?	Moxy	No
Roller- Smoothdrum	No	Weight ?		Excavator	Yes	Size ?	Scraper	No
Water Cart	Yes							
Other								



# SQS

**Client :** Newlands Civil Construction Pty Ltd **Project #:** T-22-681

**Project Name:** 63 Redbank Creek Road, Adare - Sub-division

**Location:** **Test Date:** 03/03/2023

**Tested By:** sqs-michaelc

**Work Request:** 10304

## Level 1 Monitoring Worksheet

Daily Checks (AS 3798)		
Have you undertaken a safety check?	Yes	
Have you discussed daily works program with Clients site foreman?	Yes	
Has a stripped survey been done for the area?	Yes	If not, speak to client about getting it done. It must be done before filling takes place on the area. Discuss movement, water issues etc with site supervisor
Does the fill area look as it was when you were last here?	Yes	If not, check levels and compare to last ones taken, are they comparable? Make notes regarding this issue. Call Supervisor to discuss.
Has unsuitable material been removed?	Yes	Record material description, location, and where it was sent
Does the material meet specifications and is it fit for purpose?	Yes	If not, speak to client about other sources of material. Make notes on this issue.
Have you noted the source of the material?	Yes	
Is the material at a suitable moisture content for placement?	Yes	If not, is there a way to moisture condition the material to bring it within specifications? Make notes on this issue
Have you marked on the plan where the material is being placed today?	No	Refer to plan
		Marked with GPS
Have you done required testing for the day?	Yes	
Have you got accurate and useful locations for tests taken?	Yes	Marked with GPS
Have you noted on a plan of the job the approximate locations of tests taken?	No	Marked with GPS
Have you filled out the summary sheet including hours onsite and lots worked on?	Yes	
Have you filled out Daily Monitoring Sheet with actions taken for the day?	Yes	
Have you noted construction methods and machinery used for the day?	Yes	
Have you made notes of any significant conversations had with the client or contractors?	No	N/A
Have you estimated quantity of material placed for the day	Yes	
Weather Observations	Overcast	

Potential Contaminations / Environmental Indications							
Note	Notify site foreman and site manager IMMEDIATELY if any of the following are detected.						
Odorous Material	No	Stained Material	No	Deleterious Material	Yes / No	Potential Petroleum Contamination	No
Hazardous Building Materials	Yes	General Waste Material	No				
Remarks							

Equipment								
Compactor	No	Size ?		Grader	Yes		Highway Truck	Yes
Roller- Padfoot	Yes	Weight ?	165t	Bulldozer	No	Size ?	Moxy	No
Roller- Smoothdrum	No	Weight ?		Excavator	No	Size ?	Scraper	No
Water Cart	Yes							
Other								

