Table 17 Profile: Mesonatric Brown Sodosol (Site M6)

Profile	Horizon / Depth (m)	Description
	A1 0.0 – 0.15	Brown (10YR 5/3) loam, weakly structured 5-20 mm crumb peds with a weak consistence and a rough fabric. Nil mottling, <5% gravel 5-15 mm, abundant fine roots. Well drained with a clear and even boundary. Sampled 0.0 – 0.10
	B21 0.15 – 0.40	Yellowish brown (10YR 5/4^) heavy clay, strongly structured 20-30 mm subangular blocky peds with strong consistence and a rough fabric. 25% faint grey mottles, nil stone content, common coarse roots. Poorly drained with a gradual and even boundary. Sampled 0.20 – 0.30
	B22 0.40 – 0.90	Yellowish brown (10YR 5/8^) medium clay, strongly structured >40 mm subangular blocky peds with strong consistence and a rough fabric. 30% distinct-grey mottles, nil stone content, few coarse roots. Poorly drained with a clear and even boundary. Sampled 0.50 – 0.60
	BC +0.90	Weathered parent material. Not sampled

Table 18 Field Chemical Parameters: Mesonatric Brown Sodosol (Site M6)

Layer	pH ($CaCl_2$)		ESP		ECe (1:5)		Ca:Mg	
	Unit	rating	%	rating	dS/m	rating	ratio	rating
A1	4.1	Strongly Acidic	12.3	Sodic	0.5	Non-saline	0.04	Very Low
B21	4.3	Strongly Acidic	15.6	Strongly Sodic	1.2	Non-saline	<0.01	Very Low
B22	4.4	Strongly Acidic	19.4	Strongly Sodic	2.0	Non-saline	<0.01	Very Low

Table 19 Summary: Mesonatric Brown Sodosol (Site M7)

Overview	
	
Landscape Site M7	
ASC Name	Mesonatric Brown Sodosol
Representative Site	Site M7
Survey Type	Detail
Dominant Topography	Drainage Flat
Current Land Use	Native Vegetation
Vegetation	Sydney Blue Gum, Stringybark, Blady Grass
Inherent Soil Fertility	Moderately Low
Slope	1%
Verified	Non-BSAL

Table 20 Profile: Mesonatric Brown Sodosol (Site M7)

Profile	Horizon / Depth (m)	Description
	A1 0.0 – 0.15	Dark brown (7.5YR 3/3) silty loam, weakly structured 5-10 mm crumb peds with moderate consistence and a rough fabric. Nil mottling, <5% gravel <10 mm, abundant fine roots. Well drained with a gradual and wavy boundary. Sampled 0.0 – 0.10
	A2 0.15 – 0.40	Brown (7.5YR 4/3) bleached loamy sand, apedal with weak consistence and a rough fabric. Nil mottling, nil stone content, common fine roots. Well drained with a clear and wavy boundary. Sampled 0.20 – 0.30
	B21 0.40 – 0.50	Yellowish brown (10YR 5/4^) sandy clay loam*, moderately structured 10-20 mm blocky peds with weak consistence and a rough fabric. 20% distinct yellow mottles, nil stone content, common coarse roots. Imperfectly drained with a gradual and wavy boundary. Sampled 0.40 – 0.50
	B22 +0.50	Light yellowish brown (10YR 6/4^) silty clay loam, moderately structured 20-40 mm subangular blocky peds with strong consistence and a rough fabric. 30% distinct orange mottles, nil stone content, few coarse roots. Poorly drained with layer continuing beyond sampling depth. Sampled 0.65 – 0.75
		*Field texture was used for Sites M1 and M7 at the B21 horizon (as per page 112 of the *Australian Soil Classification Revised Edition* (Isbell, 2002)), as this provides a better example of how the soil will behave compared to Particle Size Analysis (PSA), showing the evident texture contrast

Table 21 Chemical Parameters: Mesonatric Brown Sodosol (Site M7)

Layer	pH ($CaCl_2$)		ESP		ECe (1:5)		Ca:Mg	
	Unit	rating	%	rating	dS/m	rating	ratio	rating
A1	4.3	Strongly Acidic	4.8	Non-sodic	0.2	Non-saline	0.73	Low
A2	4.3	Strongly Acidic	8.5	Marginally Sodic	0.1	Non-saline	0.06	Very Low
B21	4.2	Strongly Acidic	15.2	Strongly Sodic	0.6	Non-saline	0.02	Very Low
B22	4.0	Strongly Acidic	20.0	Strongly Sodic	2.2	Slightly saline	0.01	Very Low

Table 22 Summary: Subnatric Brown Sodosol (Site 2)

Overview	
	
Landscape Site 2	
ASC Name	Subnatric Brown Sodosol
Representative Site	Site 2
Survey Type	Detail
Dominant Topography	Creek Flat
Dominant Land Use	Horse Grazing
Vegetation	Spotted Gum, Kikuyu
Inherent Soil Fertility	Moderately Low
Slope	9%
Verified	Non-BSAL

Table 23 Profile: Subnatric Brown Sodosol (Site 2)

Profile	Horizon / Depth (m)	Description
	A1 0.0 – 0.25	Greyish-brown (10YR 5/2) loamy sand, weakly structured 5-15 mm blocky peds with weak consistence and a rough fabric. Nil mottling, nil stone content, abundant fine roots. Well drained with a gradual and even boundary. Sampled 0.0 – 0.10
	A2 0.25 – 0.45	Brown (10YR 6/2) bleached loamy sand, weakly structured 5-10 mm blocky peds with weak consistence and a rough fabric. Nil mottling, nil stone content, abundant fine roots. Well drained with a clear and even boundary. Sampled 0.30 – 0.40
	B21 0.45 – 0.60	Yellowish brown (10YR 5/4^) clay loam, moderately structured 20-30 mm subangular blocky peds with moderate consistence and a rough fabric. 20% distinct yellow mottles; nil stone content; coarse roots common. Poorly drained with a gradual and even boundary. Sampled 0.40 – 0.50
	B22 0.60 – 0.80	Yellowish brown (10YR 5/4^) clay loam, moderately structured 30-50 mm subangular blocky peds with moderate consistence and a rough fabric. 30% distinct orange mottles, nil stone content, few coarse roots. Poorly drained with clear and even boundary. Sampled 0.65 – 0.75
	BC +0.80	Weathered parent material. Not sampled

Table 24 Chemical Parameters: Subnatric Brown Sodosol (Site 2)

Layer	pH ($CaCl_2$)		ESP		ECe (1:5)		Ca:Mg	
	Unit	rating	%	rating	dS/m	rating	ratio	rating
A1	5.0	Moderately Acidic	1.2	Non-sodic	0.5	Non-saline	7.25	High
A2	5.4	Moderately Acidic	3.5	Non-sodic	0.2	Non-saline	4.07	Balanced
B21	4.9	Strongly Acidic	7.8	Marginally Sodic	0.3	Non-saline	0.94	Low
B22	4.5	Strongly Acidic	11.5	Strongly Sodic	0.6	Non-saline	0.39	Low

Table 25 Summary: Mesonatric Brown Sodosol (Site 4)

Overview	
	
Landscape Site 4	
ASC Name	Mesonatric Brown Sodosol
Representative Site	Site 4
Survey Type	Detail
Dominant Topography	Mid slope
Dominant Land Use	Mown Lawn
Vegetation	Spotted Gum, Kikuyu
Inherent Soil Fertility	Moderately Low
Slope	10%
Verified	Non-BSAL

Table 26 Profile: Mesonatric Brown Sodosol (Site 4)

Profile	Horizon / Depth (m)	Description
	A1 0.0 – 0.10	Greyish-brown (10YR 5/2) silty loam, moderately structured 5-10 mm blocky peds with weak consistence and a rough fabric. Nil mottling, <5% gravel 5-10 mm, abundant fine roots. Well drained with a gradual and even boundary. Sampled 0.0 – 0.10
	A2 0.10 – 0.30	Light brownish-grey (10YR 6/2) bleached loam, moderately structured 5-20 mm blocky peds with weak consistence and a rough fabric. Nil mottling, nil stone content, abundant fine roots. Well drained with an abrupt and even boundary. Sampled 0.15 – 0.25
	B21 0.30 – 0.60	Yellowish brown (10YR 5/4^) light-medium clay, moderately structured 20-40 mm subangular blocky peds with moderate consistence and a rough fabric. 20% distinct yellow mottles; nil stone content; coarse roots common. Poorly drained with a gradual and even boundary. Sampled 0.40 – 0.50
	B22 +0.60	Yellowish brown (10YR 5/6^) light clay, moderately structured 30-50 mm subangular blocky peds with strong consistence and a rough fabric. 30% distinct yellow mottles, nil stone content, few coarse roots. Poorly drained with layer continuing beyond sampling depth. Sampled 0.65 – 0.75

Table 27 Chemical Parameters: Mesonatric Brown Sodosol (Site 4)

Layer	pH ($CaCl_2$)		ESP		ECe (1:5)		Ca:Mg	
	Unit	rating	%	rating	dS/m	rating	ratio	rating
A1	4.4	Strongly Acidic	3.1	Non-sodic	0.2	Non-saline	1.17	Low
A2	4.4	Strongly Acidic	14.3	Strongly Sodic	0.4	Non-saline	0.43	Low
B21	4.3	Strongly Acidic	19.2	Strongly Sodic	1.7	Non-saline	0.15	Low
B22	4.2	Strongly Acidic	26.4	Strongly Sodic	2.5	Slightly Saline	0.10	Low

Soil Unit 3: Brown Dermosol

Soil Type 3 is a Brown Dermosol. Dermosols are soils with structured B2 horizons and lacking strong texture contrast between the A and B horizons. The sodic nature of the B horizon in some of these Dermosols leave them prone to dispersion and tunnel erosion if left exposed for prolonged periods to water movement or rainfall. Four representative sites for Soil Unit 3 are described be

Table 28 Summary: Eutrophic Brown Dermosol (Site 3)

Overview	
	
Landscape Site 3	
ASC Name	Eutrophic Brown Dermosol
Representative Site	Site 3
Survey Type	Detail
Dominant Topography	Mid Slope
Dominant Land Use	Horse Grazing
Vegetation	Spotted Gum, Kikuyu
Inherent Soil Fertility	Moderately High
Slope	6%
Verified	Non-BSAL

Table 29 Profile: Eutrophic Brown Dermosol (Site 3)

Profile	Horizon / Depth (m)	Description
	A1 0.0 – 0.10	Brown (10YR 5/3) loamy sand, weakly structured 5-15 mm blocky peds with weak consistence and a rough fabric. Nil mottling, nil stone content, abundant fine roots. Well drained with a gradual and even boundary. Sampled 0.0 – 0.10
	A2 0.10 – 0.35	Pale brown (10YR 6/3) loam, moderately structured 10-20 mm blocky peds with weak consistence and a rough fabric. Nil mottling, nil stone content, abundant fine roots. Well drained with a gradual and even boundary. Sampled 0.20 – 0.30
	B21 0.35 – 0.60	Yellowish brown (10YR 5/4^) loam, moderately structured 20-30 mm blocky peds with weak consistence and a rough fabric. 30% distinct yellow mottles; <5% gravel 5-15 mm; coarse roots common. Poorly drained with a gradual and even boundary. Sampled 0.40 – 0.50
	B22 +0.60	Yellowish brown (10YR 5/8^) loam, moderately structured 20-40 mm blocky peds with moderate consistence and a rough fabric. 40% distinct grey mottles, <5% gravel 5-15 mm, few coarse roots. Poorly drained with layer continuing beyond sampling depth. Sampled 0.65 – 0.75

Table 30 Chemical Parameters: Eutrophic Brown Dermosol (Site 3)

Layer	pH ($CaCl_2$)		ESP		ECe (1:5)		Ca:Mg	
	Unit	rating	%	rating	dS/m	rating	ratio	rating
A1	5.0	Moderately Acidic	1.6	Non-sodic	1.2	Non-saline	2.38	Low
A2	4.4	Strongly Acidic	2.2	Non-sodic	0.3	Non-saline	1.00	Low
B21	4.4	Strongly Acidic	4.9	Non-sodic	0.2	Non-saline	0.19	Low
B22	4.1	Strongly Acidic	16.4	Strongly Sodic	0.7	Non-saline	0.02	Very Low

Table 33 Summary: Eutrophic Brown Dermosol (Site 5)

Overview	
	
Landscape Site 5	
ASC Name	Eutrophic Brown Dermosol
Representative Site	Site 5
Survey Type	Detail
Dominant Topography	Lower Slope
Dominant Land Use	Mown Lawn
Vegetation	Melaleuca, Spotted Gum, Kikuyu
Inherent Soil Fertility	Moderately High
Slope	1%
Verified	Non-BSAL

Table 32 Profile: Eutrophic Brown Dermosol (Site 5)

Profile	Horizon / Depth (m)	Description
	A1 0.0 – 0.20	Greyish-brown (10YR 5/2) silty loam, weakly structured 5-20 mm blocky peds with weak consistence and a rough fabric. Nil mottling, nil stone content, abundant fine roots. Well drained with a gradual and even boundary. Sampled 0.0 – 0.10
	A2 0.20 – 0.40	Greyish-brown (10YR 5/2) silty loam, weakly structured 10-20 mm blocky peds with weak consistence and a rough fabric. Nil mottling, <5% gravel 5-10 mm, abundant fine roots. Well drained with a gradual and even boundary. Sampled 0.25 – 0.35
	B21 0.40 – 0.60	Dark-yellowish brown (10YR 4/4^) loam, moderately structured 20-30 mm blocky peds with weak consistence and a rough fabric. 20% distinct grey mottles; <5% gravel 5-10 mm; coarse roots common. Poorly drained with a gradual and even boundary. Sampled 0.40 – 0.50
	B22 0.60 – 0.75	Dark-yellowish brown (10YR 4/6^) loam, moderately structured 20-40 mm blocky peds with moderate consistence and a rough fabric. 20% distinct grey and 20% distinct yellow mottles, 5% gravel 5-15 mm, few coarse roots. Poorly drained a distinct and even boundary. Sampled 0.65 – 0.75
	BC +0.75	Weathered parent material. Not sampled

Table 33 Chemical Parameters: Eutrophic Brown Dermosol (Site 5)

Layer	pH ($CaCl_2$)		ESP		ECe (1:5)		Ca:Mg	
	Unit	rating	%	rating	dS/m	rating	ratio	rating
A1	4.4	Strongly Acidic	2.0	Non-sodic	0.2	Non-saline	0.78	Low
A2	4.4	Strongly Acidic	3.9	Non-sodic	0.1	Non-saline	0.48	Low
B21	4.2	Strongly Acidic	6.3	Marginally Sodic	<0.1	Non-saline	0.21	Low
B22	4.2	Strongly Acidic	10.7	Sodic	0.1	Non-saline	0.03	Very Low

Table 34 Summary: Mesotrophic Brown Dermosol (Site 6)

Overview	
	
Landscape Site 6	
ASC Name	Mesotrophic Brown Dermosol
Representative Site	Site 6
Survey Type	Detail
Dominant Topography	Lower Slope
Dominant Land Use	Native Vegetation
Vegetation	Spotted Gum, Couch, Hakea
Inherent Soil Fertility	Moderate
Slope	4%
Verified	Non-BSAL

Table 35 Profile: Mesotrophic Brown Dermosol (Site 6)

Profile	Horizon / Depth (m)	Description
	A1 0.0 – 0.15	Dark greyish-brown (10YR 4/2) loamy sand, weakly structured 5-15 mm blocky peds with weak consistence and a rough fabric. Nil mottling, nil stone content, abundant fine roots. Well drained with a gradual and even boundary. Sampled 0.0 – 0.10
	A2 0.15 – 0.35	Greyish-brown (10YR 5/2) loam, weakly structured 5-20 mm blocky peds with weak consistence and a rough fabric. Nil mottling, nil stone content, abundant fine roots. Well drained with gradual and even boundary. Sampled 0.20 – 0.30
	B21 0.35 – 0.55	Brown (10YR 5/3^) loam, moderately structured 15-30 mm blocky peds with weak consistence and a rough fabric. 30% distinct grey mottles; nil stone content; coarse roots common. Poorly drained with a gradual and even boundary. Sampled 0.40 – 0.50
	B22 0.55 – 0.75	Yellowish brown (10YR 4/4^) loam, moderately structured 20-40 mm blocky peds with moderate consistence and a rough fabric. 30% distinct yellow mottles, <5% gravel 5-15 mm, few coarse roots. Poorly drained with a gradual and even boundary. Sampled 0.65 – 0.75
	B23 +0.75	Yellowish brown (10YR 5/6) light clay, moderately structured 20-40 mm blocky peds with strong consistence and a rough fabric. 40% distinct yellow mottles, nil stone content, few coarse roots. Poorly drained with layer continuing beyond sampling depth. Not sampled

Table 36 Chemical Parameters: Mesotrophic Brown Dermosol (Site 6)

Layer	pH ($CaCl_2$)		ESP		ECe (1:5)		Ca:Mg	
	Unit	rating	%	rating	dS/m	rating	ratio	rating
A1	4.0	Strongly Acidic	4.7	Non-sodic	0.5	Non-saline	0.29	Low
A2	4.2	Strongly Acidic	5.9	Non-sodic	0.1	Non-saline	0.23	Low
B21	4.2	Strongly Acidic	7.4	Marginally Sodic	0.1	Non-saline	0.11	Low
B22	4.0	Strongly Acidic	8.6	Marginally Sodic	0.1	Non-saline	0.01	Very Low

Table 37 Summary: Dystrophic Brown Dermosol (Site 8)

Overview	
	
Landscape Site 8	
ASC Name	Dystrophic Brown Dermosol
Representative Site	Site 8
Survey Type	Detail
Dominant Topography	Lower Slope
Dominant Land Use	Cattle Grazing
Vegetation	Melaleuca, Kikuyu, Rhodes Grass
Inherent Soil Fertility	Moderate
Slope	7%
Verified	Non-BSAL

Table 38 Profile: Dystrophic Brown Dermosol (Site 8)

Profile	Horizon / Depth (m)	Description
	A1 0.0 – 0.10	Greyish-brown (10YR 5/2) loam, weakly structured 5-20 mm blocky peds with weak consistence and a rough fabric. Nil mottling, nil stone content, abundant fine roots. Well drained with a gradual and even boundary. Sampled 0.0 – 0.10
	A2 0.10 – 0.35	Pale brown (10YR 6/3) sandy loam, weakly structured 10-20 mm blocky peds with weak consistence and a rough fabric. Nil mottling, <5% gravel 5-10 mm, abundant fine roots. Well drained with a gradual and even boundary. Sampled 0.20 – 0.30
	B21 0.35 – 0.50	Yellowish brown (10YR 5/6^) clay loam, moderately structured 20-30 mm subangular blocky peds with moderate consistence and a rough fabric. 20% distinct yellow mottles; nil stone content; coarse roots common. Poorly drained with a gradual and even boundary. Sampled 0.40 – 0.50
	B22 0.50 – 0.80	Yellowish brown (10YR 5/8^) light clay, strongly structured 30-40 mm subangular blocky peds with moderate consistence and a rough fabric. 30% distinct orange mottles, nil stone content, few coarse roots. Poorly drained with layer continuing beyond sampling depth. Sampled 0.65 – 0.75
	BC +0.80	Weathered parent material. Not sampled

Table 39 Chemical Parameters: Dystrophic Brown Dermosol (Site 8)

Layer	pH ($CaCl_2$)		ESP		ECe (1:5)		Ca:Mg	
	Unit	rating	%	rating	dS/m	rating	ratio	rating
A1	4.4	Strongly Acidic	2.9	Non-sodic	0.1	Non-saline	1.48	Low
A2	4.2	Strongly Acidic	4.0	Non-sodic	0.1	Non-saline	0.32	Low
B21	3.9	Strongly Acidic	3.3	Non-sodic	0.1	Non-saline	0.07	Low
B22	3.8	Strongly Acidic	3.4	Non-sodic	0.2	Non-saline	0.04	Very Low

Note 1: Field texture, indicated by * was used at Sites M1 and M7 at the B21 horizon for texture contrast (as per page 112 of the A*ustralian Soil Classification Revised Edition* (Isbell, 2002)), as this provided a more realistic example of how the soil will behave in the field compared to Particle Size Analysis (PSA).

Note 2: Where mottling presence was 20% or greater Munsell field colour, indicated by ^ was used as a more representative soil colour.

Department of Primary Industries
Soil Conservation Service

SOIL TEST REPORT

Scone Research Centre

REPORT NO:	SCO16/099R1
REPORT TO:	Murray Fraser SLR Consulting 10 Kings Rd New Lambton NSW 2305
REPORT ON:	Fifteen soil samples Your ref: 630.11678 Mandalong EP
PRELIMINARY RESULTS ISSUED:	Not issued
REPORT STATUS:	Final
DATE REPORTED:	27 June 2016
METHODS:	Information on test procedures can be obtained from Scone Research Centre

TESTING CARRIED OUT ON SAMPLE AS RECEIVED

SR Young
(Laboratory Manager)

SOIL CONSERVATION SERVICE
Scone Research Centre

Report No: SCO16/099R1
Client Reference: Murray Fraser
SLR Consulting
10 Kings Rd
New Lambton NSW 2305

Lab No	Method	C1A/5	C2A/4	C2B/4	P9B/2	P7B/2 Particle Size Analysis (%)					Colour	
	Sample Id	EC (dS/m)	pH	pH ($CaCl_2$)	EAT	clay	silt	fine sand	coarse sand	gravel	Dry	Moist
1	M1 0-10	0.04	5.8	4.8	7	5	19	57	18	1	7.5YR 6/2	7.5YR 4/2
2	M1 20-30	<0.01	5.9	4.7	3(1)	8	20	54	17	1	7.5YR 6/2	7.5YR 4/3
3	M1 45-55	0.01	6.4	4.6	2(2)	15	20	49	16	<1	10YR 6/3	10YR 5/4
4	M1 65-75	0.04	6.2	4.4	2(3)	21	4	42	18	15	10YR 6/4	10YR 5/6
5	M3 0-10	0.02	5.2	4.1	8	5	10	38	28	19	10YR 5/4	10YR 3/6
6	M3 20-30	<0.01	5.7	4.4	3(2)	9	11	53	24	3	10YR 6/3	10YR 4/4
7	M3 50-60	0.08	6.0	4.6	2(1)	19	9	31	36	5	10YR 6/4	10YR 5/6
8	M4 0-10	0.02	5.5	4.4	3(1)	10	15	46	27	2	7.5YR 5/2	7.5YR 4/2
9	M4 15-25	<0.01	5.8	4.3	3(2)	12	15	44	24	5	10YR 6/2	10YR 4/3
10	M4 40-50	0.01	6.0	4.3	2(1)	21	16	37	24	2	10YR 6/3	10YR 5/4
11	M4 65-75	0.11	5.2	4.0	2(1)	40	16	30	14	<1	10YR 6/3	10YR 5/4
12	M7 0-10	0.02	5.5	4.3	8	7	25	55	12	1	7.5YR 5/2	7.5YR 3/3
13	M7 20-30	<0.01	6.1	4.3	2(1)	11	23	56	10	<1	7.5YR 6/2	7.5YR 4/3
14	M7 40-50	0.06	5.7	4.2	2(1)	16	24	52	8	0	10YR 6/3	10YR 5/4
15	M7 65-75	0.25	5.1	4.0	2(1)	38	37	22	3	0	10YR 7/3	10YR 6/4

END OF TEST REPORT

Department of Primary Industries

Biosecurity Laboratory Operations
Environmental Laboratory
1243 Bruxner Highway, WOLLONGBAR NSW 2477
Phone 02 6626 1103 Email: wollongbar.csu@dpi.nsw.gov.au

Report No. **WN160475**

Stephen Young
Soil Conservation Service
PO Box 283
SCONE NSW 2337

Soil Analysis Report

Samples as received on 15/06/16, 15 Soil sample(s). Tested as per the following methods.

Method	Method Description
S273	Gillman & Sumpter Exchangeable Cations

Notes:

Results relate only to the items tested.

- When required, samples air dried at 40ºC as per Soil Chemical Methods - Australasia (Rayment and Lyons 2011).
- Results are expressed on an air-dry weight basis unless otherwise stated.
- This report should not be reproduced except in full.
- Samples will be retained for one calendar month from the date of the final report. Samples will then be discarded.
- Clients wishing to recover their samples must contact the laboratory within this period. This laboratory will return residual samples at client expense.

Date of issue 24/06/16

NATA ACCREDITED FOR TECHNICAL COMPETENCE
Accredited for compliance with ISO/IEC 17025
Accreditation No. 14173

ASPAC

Approved for Release by: Craig Hunt.
Craig Hunt
Technical Officer

Sample No. Identification	Units	Limit of Reporting	1 SCO16/099 /1	2 SCO16/099 /2	3 SCO16/099 /3	4 SCO16/099 /4	5 SCO16/099 /5
Exchangeable Cations							
Exchangeable Sodium	%		4.3	6.2	12	17	3.1
Exchangeable Magnesium	%		17	14	61	61	30
Exchangeable Potassium	%		4.4	2.2	0.89	0.98	9.8
Exchangeable Calcium	%		67	63	15	3.8	8.9
Aluminium Saturation	%		7.4	15	11	17	48
Calcium/ Magnesium			4.0	4.5	0.24	0.06	0.30
CEC	cmol(+)/kg	0.20	3.1	1.6	3.8	5.8	3.6
Sodium	cmol(+)/kg	0.03	0.13	0.098	0.46	0.99	0.11
Magnesium	cmol(+)/kg	0.007	0.52	0.22	2.3	3.6	1.1
Potassium	cmol(+)/kg	0.01	0.14	0.035	0.034	0.057	0.36
Calcium	cmol(+)/kg	0.03	2.1	0.99	0.56	0.22	0.32
Aluminium	cmol(+)/kg	0.1	0.23	0.24	0.42	0.99	1.8

Sample No. Identification	Units	Limit of Reporting	6 SCO16/099 /6	7 SCO16/099 /7	8 SCO16/099 /8	9 SCO16/099 /9	10 SCO16/099 /10
Exchangeable Cations							
Exchangeable Sodium	%		3.0	13	4.8	6.2	7.0
Exchangeable Magnesium	%		49	75	39	42	57
Exchangeable Potassium	%		8.9	1.6	3.8	3.2	2.2
Exchangeable Calcium	%		N/A	0.48	25	8.5	3.6
Aluminium Saturation	%		40	10	28	40	31
Calcium/ Magnesium			N/A	0.006	0.66	0.20	0.06
CEC	cmol(+)/kg	0.20	2.9	9.3	3.6	2.6	5.7
Sodium	cmol(+)/kg	0.03	0.085	1.2	0.17	0.16	0.40
Magnesium	cmol(+)/kg	0.007	1.4	7.0	1.4	1.1	3.2
Potassium	cmol(+)/kg	0.01	0.25	0.15	0.14	0.082	0.12
Calcium	cmol(+)/kg	0.03	<0.03	0.045	0.91	0.22	0.21
Aluminium	cmol(+)/kg	0.1	1.1	0.95	0.99	1.0	1.8

Sample No. Identification	Units	Limit of Reporting	11 SCO16/099 /11	12 SCO16/099 /12	13 SCO16/099 /13	14 SCO16/099 /14	15 SCO16/099 /15
Exchangeable Cations							
Exchangeable Sodium	%		16	4.8	8.7	15	20
Exchangeable Magnesium	%		44	34	46	46	38
Exchangeable Potassium	%		2.1	4.1	3.3	1.4	1.4
Exchangeable Calcium	%		0.33	26	2.5	0.81	0.44
Aluminium Saturation	%		38	31	40	37	40
Calcium/ Magnesium			0.008	0.76	0.06	0.02	0.01
CEC	cmol(+)/kg	0.20	11	4.2	2.7	5.0	12
Sodium	cmol(+)/kg	0.03	1.8	0.20	0.23	0.76	2.4
Magnesium	cmol(+)/kg	0.007	4.9	1.5	1.2	2.3	4.5
Potassium	cmol(+)/kg	0.01	0.23	0.17	0.087	0.069	0.16
Calcium	cmol(+)/kg	0.03	0.037	1.1	0.068	0.040	0.053
Aluminium	cmol(+)/kg	0.1	4.3	1.3	1.1	1.8	4.8

Department of Industry
Soil Conservation Service

SOIL TEST REPORT

Scone Research Centre

REPORT NO:	SCO16/175R3
REPORT TO:	Murray Fraser SLR Consulting 10 Kings Rd New Lambton NSW 2305
REPORT ON:	Fifty Four soil samples Your ref: 630.11810 Mandalong BSAL
PRELIMINARY RESULTS ISSUED:	18 October 2016, 21 October 2016
REPORT STATUS:	Final
DATE REPORTED:	31 October 2016
METHODS:	Information on test procedures can be obtained from Scone Research Centre

TESTING CARRIED OUT ON SAMPLE AS RECEIVED

L Dunn
Scone Laboratory

Report No: SCO16/175R3
Client Reference: Murray Fraser
SLR Consulting
10 Kings Rd
New Lambton NSW 2305

Lab No	Method	C1A/5	C2A/4	C2B/4	P7B/2 Particle Size Analysis (%)					Colour	
	Sample Id	EC (dS/m)	pH	pH ($CaCl_2$)	clay	silt	f sand	c sand	gravel	Dry	Moist
1	1 0-10	0.03	5.8	4.9	12	48	30	10	<1	10YR 6/2	10YR 4/2
2	1 15-25	0.01	5.9	4.3	15	51	25	9	<1	10YR 6/2	10YR 4/3
3	1 40-50	0.08	5.3	4.0	51	34	11	4	<1	10YR 6/4	10YR 5/4
4	1 65-75	0.11	4.8	3.8	38	27	29	5	1	10YR 6/4	10YR 5/4
5	1 80-90	nt	nt	nt	nt	nt	nt	nt	nt	nt	nt
6	2 0-10	0.02	6.0	5.0	4	21	66	9	<1	10YR 5/2	7.5YR 3/2
7	2 30-40	0.01	6.6	5.4	11	20	62	7	<1	10YR 6/2	10YR 4/3
8	2 -40-50	0.04	6.3	4.9	25	19	50	6	<1	10YR 6/4	10YR 5/4
9	2 65-75	0.07	5.9	4.5	26	16	51	7	<1	10YR 6/4	10YR 5/4
10	3 0-10	0.05	5.9	5.0	8	23	59	10	0	10YR 5/3	10YR 3/4
11	3 20-30	0.03	5.5	4.4	12	22	58	8	<1	10YR 6/3	10YR 4/4
12	3 40-50	0.02	5.6	4.4	15	20	56	8	1	10YR 6/3	10YR 5/4
13	3 65-75	0.07	5.7	4.1	19	13	54	10	4	10YR 6/4	10YR 4/6
14	4 0-10	0.02	5.6	4.4	9	25	49	14	3	10YR 5/2	10YR 3/3
15	4 15-25	0.04	6.1	4.4	16	23	50	11	<1	10YR 6/2	10YR 4/4

nt = not tested

SOIL CONSERVATION SERVICE
Scone Research Centre

Report No: SCO16/175R3
Client Reference: Murray Fraser
SLR Consulting
10 Kings Rd
New Lambton NSW 2305

Lab No	Method	C1A/5	C2A/4	C2B/4	P7B/2 Particle Size Analysis (%)					Colour	
	Sample Id	EC (dS/m)	pH	pH ($CaCl_2$)	clay	silt	f sand	c sand	gravel	Dry	Moist
16	4 40-50	0.20	5.5	4.3	41	18	33	8	<1	10YR 6/4	10YR 5/4
17	4 65-75	0.29	5.4	4.2	38	16	37	9	<1	10YR 6/4	10YR 5/4
18	5 0-10	0.02	5.7	4.4	16	29	40	15	<1	10YR 5/2	7.5YR 3/2
19	5 25-35	0.01	5.8	4.4	14	27	39	19	1	10YR 5/2	7.5YR 3/2
20	5 40-50	<0.01	6.1	4.2	13	24	36	24	3	10YR 5/3	7.5YR 3/3
21	5 65-75	0.01	6.3	4.2	14	19	34	28	5	10YR 5/3	7.5YR 3/3
22	6 0-10	0.02	5.2	4.0	11	19	57	13	<1	10YR 4/2	10YR 2/2
23	6 20-30	0.01	5.6	4.2	13	18	57	12	<1	10YR 5/2	10YR 3/2
24	6 40-50	0.01	5.8	4.2	13	18	59	10	<1	10YR 5/2	7.5YR 3/3
25	6 65-75	0.01	5.9	4.0	26	11	50	11	2	10YR 5/3	10YR 4/3
26	7 0-10	0.01	5.4	4.2	11	15	50	23	1	10YR 4/2	10YR 2/2
27	7 20-30	0.01	5.7	4.1	18	15	50	16	1	10YR 6/2	10YR 4/3
28	7 40-50	0.04	5.3	3.9	54	13	27	6	<1	10YR 6/3	10YR 4/4
29	7 65-75	0.06	5.1	3.8	45	13	35	7	0	10YR 6/4	10YR 5/4
30	8 0-10	0.01	5.7	4.4	12	12	39	37	<1	10YR 5/2	10YR 3/3

nt = not tested

SOIL CONSERVATION SERVICE
Scone Research Centre

Report No: SCO16/175R3
Client Reference: Murray Fraser
SLR Consulting
10 Kings Rd
New Lambton NSW 2305

Lab No	Method	C1A/5	C2A/4	C2B/4	P7B/2 Particle Size Analysis (%)					Colour	
	Sample Id	EC (dS/m)	pH	pH ($CaCl_2$)	clay	silt	f sand	c sand	gravel	Dry	Moist
31	8 20-30	<0.01	5.6	4.2	18	9	37	35	1	10YR 6/3	10YR 5/4
32	8 40-50	0.01	5.2	3.9	32	11	26	31	0	10YR 6/6	10YR 5/6
33	8 65-75	0.02	5.1	3.8	35	8	26	31	0	10YR 6/6	10YR 5/8
34	9 0-10	0.02	5.6	4.4	16	22	43	17	2	10YR 5/3	7.5YR 3/3
35	9 10-20	0.01	5.6	4.2	16	18	42	17	7	10YR 6/2	10YR 4/3
36	9 30-40	0.04	5.4	4.0	54	17	20	9	0	10YR 6/4	10YR 5/4
37	9 40-50	0.05	5.3	4.0	54	17	20	9	0	10YR 7/3	10YR 5/6
38	9 65-75	0.02	5.4	4.1	65	0	24	11	<1	10YR 7/4	10YR 6/4
39	10 0-10	0.03	6.0	5.0	12	21	56	11	<1	10YR 5/2	7.5YR 3/2
40	10 20-30	<0.1	6.1	4.4	15	17	55	12	1	10YR 6/3	10YR 5/4
41	10 40-50	0.02	5.9	4.3	27	18	41	14	<1	10YR 6/4	10YR 5/6
42	10 65-75	0.03	5.8	4.4	22	15	52	11	<1	10YR 6/4	10YR 5/6
43	M2 0-10	0.02	5.8	4.9	12	32	47	9	<1	10YR 6/2	10YR 4/2
44	M2 15-25	0.01	6.0	4.6	13	35	43	9	<1	10YR 6/2	10YR 5/2
45	M2 25-35	0.03	6.3	4.6	25	32	34	6	3	10YR 7/2	10YR 6/3

nt = not tested

SOIL CONSERVATION SERVICE
Scone Research Centre

Report No: SCO16/175R3
Client Reference: Murray Fraser
SLR Consulting
10 Kings Rd
New Lambton NSW 2305

Lab No	Method	C1A/5	C2A/4	C2B/4	P7B/2 Particle Size Analysis (%)					Colour	
	Sample Id	EC (dS/m)	pH	pH ($CaCl_2$)	clay	silt	f sand	c sand	gravel	Dry	Moist
46	M2 40-50	0.09	5.9	4.3	45	23	27	5	0	10YR 7/4	10YR 5/3
47	M2 65-75	0.16	5.5	4.2	36	22	33	9	0	10YR 6/4	10YR 5/4
48	M5 0-10	0.02	5.6	4.5	11	15	64	10	<1	10YR 5/3	10YR 3/3
49	M5 30-40	<0.01	6.0	4.4	14	20	56	10	<1	10YR 6/2	7.5YR 4/3
50	M5 50-60	0.01	6.2	4.3	20	19	53	6	2	10YR 6/2	10YR 5/3
51	M5 65-75	0.02	6.2	4.2	27	15	53	5	0	10YR 7/3	10YR 5/4
52	M6 0-10	0.05	5.5	4.1	16	12	57	12	3	10YR 5/3	10YR 3/3
53	M6 20-30	0.20	5.5	4.3	53	11	33	3	<1	2.5Y 6/4	10YR 5/6
54	M6 50-60	0.26	5.5	4.4	47	13	39	1	<1	10YR 7/6	10YR 6/6

nt = not tested

END OF TEST REPORT

Department of Primary Industries

Biosecurity Laboratory Operations
Environmental Laboratory
1243 Bruxner Highway, WOLLONGBAR NSW 2477
Phone 02 6626 1103 Email: wollongbar.csu@dpi.nsw.gov.au

Report No. **WN160808**

Lynn Dunn
Soil Conservation Service
PO Box 283
SCONE NSW 2337

Soil Analysis Report

54 Sample(s) received on 19/10/16 . Tested as per the following methods.

Method	Method Description
S017	Gillman & Sumpter Exchangeable Cations

Notes: Sample 5 was received, but will not be tested, as per your instructions.

Results relate only to the items tested.

- When required, samples air dried at 40ºC as per Soil Chemical Methods - Australasia (Rayment and Lyons 2011).
- Results are expressed on an air-dry weight basis unless otherwise stated.
- This report should not be reproduced except in full.
- Samples will be retained for one calendar month from the date of the final report. Samples will then be discarded.
- Clients wishing to recover their samples must contact the laboratory within this period. This laboratory will return residual samples at client expense.

Date of issue 21/10/16

Approved for Release by: Craig Hunt
Craig Hunt
Technical Officer

Laboratory No. Client's ID	Units	Limit of Reporting	1 SCO016/ 175/1	2 SCO016/ 175/2	3 SCO016/ 175/3	4 SCO016/ 175/4	6 SCO016/ 175/6
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	0.35	1.2	5.9	6.5	0.12
Calcium	cmol(+)/kg	0.03	3.3	0.31	0.055	0.079	5.8
Potassium	cmol(+)/kg	0.01	0.14	0.091	0.24	0.21	0.16
Magnesium	cmol(+)/kg	0.007	2.1	2.5	5.9	3.2	0.80
Sodium	cmol(+)/kg	0.03	0.27	0.31	1.0	0.81	0.087
CEC	cmol(+)/kg	0.20	6.2	4.4	13	11	7.0
Calcium/ Magnesium			1.6	0.13	0.009	0.02	7.2
Aluminium Saturation	%		5.6	27	45	60	2
Exchangeable Calcium	%		54	7.1	0.42	0.73	83
Exchangeable Potassium	%		2.3	2.1	1.9	2.0	2.2
Exchangeable Magnesium	%		34	57	45	30	12
Exchangeable Sodium	%		4.4	7.2	7.8	7.5	1.3

Laboratory No. Client's ID	Units	Limit of Reporting	7 SCO016/ 175/7	8 SCO016/ 175/8	9 SCO016/ 175/9	10 SCO016/ 175/10	11 SCO016/ 175/11
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	<0.1	0.17	0.79	<0.1	0.80
Calcium	cmol(+)/kg	0.03	3.3	3.3	1.9	3.8	1.9
Potassium	cmol(+)/kg	0.01	0.042	0.088	0.11	0.58	0.30
Magnesium	cmol(+)/kg	0.007	0.81	3.5	4.9	1.6	1.9
Sodium	cmol(+)/kg	0.03	0.15	0.59	1.0	0.093	0.11
CEC	cmol(+)/kg	0.20	4.3	7.6	8.7	6.0	5.0
Calcium/ Magnesium			4.1	0.95	0.39	2.4	1.0
Aluminium Saturation	%		N/A	2	9.0	N/A	16
Exchangeable Calcium	%		77	43	22	63	38
Exchangeable Potassium	%		0.98	1.2	1.3	9.6	5.9
Exchangeable Magnesium	%		19	45	56	26	38
Exchangeable Sodium	%		3.5	7.8	12	1.5	2.3

Laboratory No. Client's ID	Units	Limit of Reporting	12 SCO016/ 175/12	13 SCO016/ 175/13	14 SCO016/ 175/14	15 SCO016/ 175/15	16 SCO016/ 175/16
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	0.68	1.4	0.57	0.43	1.6
Calcium	cmol(+)/kg	0.03	0.50	0.069	2.1	0.98	0.98
Potassium	cmol(+)/kg	0.01	0.064	0.11	0.16	0.092	0.25
Magnesium	cmol(+)/kg	0.007	2.7	3.9	1.8	2.3	6.5
Sodium	cmol(+)/kg	0.03	0.25	1.1	0.15	0.63	2.3
CEC	cmol(+)/kg	0.20	4.2	6.7	4.8	4.4	12
Calcium/ Magnesium			0.19	0.02	1.1	0.43	0.15
Aluminium Saturation	%		17	21	12	9.9	14
Exchangeable Calcium	%		12	1.0	43	22	8.4
Exchangeable Potassium	%		1.5	1.7	3.4	2.1	2.1
Exchangeable Magnesium	%		64	59	38	51	56
Exchangeable Sodium	%		6.0	17	3.2	14	20

Laboratory No. Client's ID	Units	Limit of Reporting	17 SCO016/ 175/17	18 SCO016/ 175/18	19 SCO016/ 175/19	20 SCO016/ 175/20	21 SCO016/ 175/21
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	1.3	0.90	1.2	1.3	1.2
Calcium	cmol(+)/kg	0.03	0.61	2.9	1.1	0.41	0.087
Potassium	cmol(+)/kg	0.01	0.25	0.22	0.12	0.081	0.092
Magnesium	cmol(+)/kg	0.007	6.1	3.7	2.3	2.0	2.5
Sodium	cmol(+)/kg	0.03	2.9	0.16	0.19	0.25	0.46
CEC	cmol(+)/kg	0.20	11	8.0	4.9	4.0	4.3
Calcium/ Magnesium			0.10	0.79	0.45	0.21	0.03
Aluminium Saturation	%		12	11	24	33	27
Exchangeable Calcium	%		5.5	37	22	10	2.0
Exchangeable Potassium	%		2.2	2.8	2.4	2.0	2.1
Exchangeable Magnesium	%		55	47	48	49	58
Exchangeable Sodium	%		26	2.0	3.8	6.2	11

Laboratory No. Client's ID	Units	Limit of Reporting	22 SCO016/ 175/22	23 SCO016/ 175/23	24 SCO016/ 175/24	25 SCO016/ 175/25	26 SCO016/ 175/26
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	2.5	1.8	1.4	2.3	1.7
Calcium	cmol(+)/kg	0.03	0.22	0.16	0.11	0.031	2.5
Potassium	cmol(+)/kg	0.01	0.11	0.045	0.066	0.12	0.20
Magnesium	cmol(+)/kg	0.007	0.75	0.70	0.96	2.6	1.4
Sodium	cmol(+)/kg	0.03	0.18	0.17	0.20	0.48	0.16
CEC	cmol(+)/kg	0.20	3.8	2.9	2.7	5.6	5.9
Calcium/ Magnesium			0.29	0.23	0.11	0.01	1.8
Aluminium Saturation	%		66	63	51	42	28
Exchangeable Calcium	%		5.9	5.5	3.9	0.55	42
Exchangeable Potassium	%		3.0	1.6	2.5	2.1	3.4
Exchangeable Magnesium	%		20	24	36	47	23
Exchangeable Sodium	%		4.7	6.0	7.5	8.6	2.7

Laboratory No. Client's ID	Units	Limit of Reporting	27 SCO016/ 175/27	28 SCO016/ 175/28	29 SCO016/ 175/29	30 SCO016/ 175/30	31 SCO016/ 175/31
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	1.7	6.9	7.6	0.83	1.4
Calcium	cmol(+)/kg	0.03	1.3	1.4	1.1	1.2	0.21
Potassium	cmol(+)/kg	0.01	0.14	0.27	0.27	0.17	0.095
Magnesium	cmol(+)/kg	0.007	1.7	4.0	4.2	0.81	0.66
Sodium	cmol(+)/kg	0.03	0.23	0.58	0.67	0.090	0.10
CEC	cmol(+)/kg	0.20	5.1	13	14	3.1	2.5
Calcium/ Magnesium			0.72	0.35	0.26	1.5	0.32
Aluminium Saturation	%		34	52	55	27	57
Exchangeable Calcium	%		25	11	7.9	39	8.5
Exchangeable Potassium	%		2.8	2.0	1.9	5.4	3.8
Exchangeable Magnesium	%		34	31	30	26	26
Exchangeable Sodium	%		4.5	4.4	4.8	2.9	4.1

Laboratory No. Client's ID	Units	Limit of Reporting	32 SCO016/ 175/32	33 SCO016/ 175/33	34 SCO016/ 175/34	35 SCO016/ 175/35	36 SCO016/ 175/36
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	5.0	5.8	1.0	1.8	7.8
Calcium	cmol(+)/kg	0.03	0.068	0.039	1.6	0.44	0.32
Potassium	cmol(+)/kg	0.01	0.16	0.17	0.32	0.15	0.31
Magnesium	cmol(+)/kg	0.007	0.96	1.1	2.8	1.2	5.4
Sodium	cmol(+)/kg	0.03	0.21	0.25	0.23	0.16	0.56
CEC	cmol(+)/kg	0.20	6.3	7.3	6.0	3.7	14
Calcium/ Magnesium			0.07	0.04	0.57	0.38	0.06
Aluminium Saturation	%		78	79	17	49	54
Exchangeable Calcium	%		1.1	0.53	27	12	2.2
Exchangeable Potassium	%		2.5	2.4	5.2	3.9	2.2
Exchangeable Magnesium	%		15	15	47	31	38
Exchangeable Sodium	%		3.4	3.4	3.8	4.4	3.9

Laboratory No. Client's ID	Units	Limit of Reporting	37 SCO016/ 175/37	38 SCO016/ 175/38	39 SCO016/ 175/39	40 SCO016/ 175/40	41 SCO016/ 175/41
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	7.9	6.8	<0.1	0.71	1.1
Calcium	cmol(+)/kg	0.03	0.21	0.10	7.8	0.85	0.82
Potassium	cmol(+)/kg	0.01	0.32	0.29	0.27	0.13	0.18
Magnesium	cmol(+)/kg	0.007	5.8	6.3	1.7	0.83	1.7
Sodium	cmol(+)/kg	0.03	0.61	0.69	0.18	0.12	0.34
CEC	cmol(+)/kg	0.20	15	14	10	2.6	4.1
Calcium/ Magnesium			0.04	0.02	4.5	1.0	0.49
Aluminium Saturation	%		53	48	N/A	27	26
Exchangeable Calcium	%		1.4	0.71	78	32	20
Exchangeable Potassium	%		2.1	2.1	2.7	4.7	4.4
Exchangeable Magnesium	%		39	44	17	32	41
Exchangeable Sodium	%		4.1	4.9	1.8	4.7	8.3

Laboratory No. Client's ID	Units	Limit of Reporting	42 SCO016/ 175/42	43 SCO016/ 175/43	44 SCO016/ 175/44	45 SCO016/ 175/45	46 SCO016/ 175/46
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	0.87	0.25	0.58	0.87	2.0
Calcium	cmol(+)/kg	0.03	0.86	4.6	2.3	0.91	0.37
Potassium	cmol(+)/kg	0.01	0.17	0.14	0.12	0.093	0.16
Magnesium	cmol(+)/kg	0.007	2.2	0.94	1.0	3.6	7.1
Sodium	cmol(+)/kg	0.03	0.40	0.089	0.21	0.83	2.0
CEC	cmol(+)/kg	0.20	4.6	6.0	4.2	6.3	12
Calcium/ Magnesium			0.38	4.8	2.3	0.26	0.05
Aluminium Saturation	%		19	4	14	14	17
Exchangeable Calcium	%		19	76	55	15	3.2
Exchangeable Potassium	%		3.8	2.4	2.8	1.5	1.4
Exchangeable Magnesium	%		49	16	23	57	62
Exchangeable Sodium	%		8.7	1.5	5.0	13	17

Laboratory No. Client's ID	Units	Limit of Reporting	47 SCO016/ 175/47	48 SCO016/ 175/48	49 SCO016/ 175/49	50 SCO016/ 175/50	51 SCO016/ 175/51
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.1	1.5	0.47	0.65	0.96	1.8
Calcium	cmol(+)/kg	0.03	0.044	2.0	0.88	0.51	0.20
Potassium	cmol(+)/kg	0.01	0.14	0.12	0.058	0.064	0.094
Magnesium	cmol(+)/kg	0.007	5.7	0.84	0.83	2.0	3.9
Sodium	cmol(+)/kg	0.03	2.4	0.15	0.16	0.38	0.66
CEC	cmol(+)/kg	0.20	9.7	3.6	2.6	3.9	6.7
Calcium/ Magnesium			0.008	2.4	1.1	0.25	0.05
Aluminium Saturation	%		15	13	25	24	27
Exchangeable Calcium	%		0.45	56	34	13	3.1
Exchangeable Potassium	%		1.5	3.4	2.3	1.6	1.4
Exchangeable Magnesium	%		58	23	32	51	58
Exchangeable Sodium	%		25	4.1	6.1	9.7	10

Laboratory No. Client's ID	Units	Limit of Reporting	52 SCO016/ 175/52	53 SCO016/ 175/53	54 SCO016/ 175/54
Exchangeable Cations					
Aluminium	cmol(+)/kg	0.1	1.8	2.6	1.3
Calcium	cmol(+)/kg	0.03	0.081	<0.03	0.034
Potassium	cmol(+)/kg	0.01	0.18	0.32	0.28
Magnesium	cmol(+)/kg	0.007	1.9	11	12
Sodium	cmol(+)/kg	0.03	0.54	2.5	3.3
CEC	cmol(+)/kg	0.20	4.4	16	17
Calcium/ Magnesium			0.04	N/A	0.003
Aluminium Saturation	%		40	17	8.0
Exchangeable Calcium	%		1.8	N/A	0.20
Exchangeable Potassium	%		4.0	2.0	1.7
Exchangeable Magnesium	%		42	66	70
Exchangeable Sodium	%		12	15	20

Appendix C

Slope Analysis Methodology

Slope Analysis Methodology

Methodology

1. Acquire appropriate elevation information. In this case, LIDAR data provided by Centennial Mandalong Pty Ltd..

2. Load Contours into ArcMap 10.3

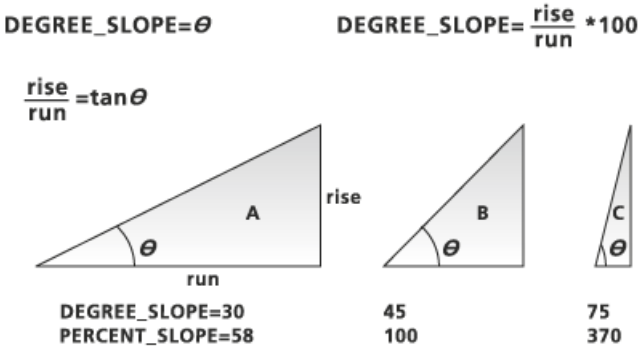
3. Using 3D Analyst Extension - Create a TIN Surface based on the contours (http://resources.arcgis.com/en/help/main/10.1/index.html#/Create_TIN/00q90000001v000000/)

4. Using 3D Analyst Extension – Run the Surface Slope Tool (http://resources.arcgis.com/en/help/main/10.1/index.html#//00q900000076000000) using a custom Break File (attached).

5. Using a Spatial Join, correlate the Surface Slope at the Soil Survey coordinates.

The Surface Slope Tool

Surface Slope creates an output polygon feature class containing polygons that classify an input TIN or terrain dataset by slope. The slope is the angle of inclination between the surface and a horizontal plane, which may be analysed in degrees or percent. Slope in degrees is given by calculating the arctangent of the ratio of the change in height (dZ) to the change in horizontal distance (dS), or slope = Arctan (dZ/dS). Percent slope is equal to the change in height divided by the change in horizontal distance multiplied by 100, or (dZ/dX) * 100.



The {**slope_field**} is the name of attribute field used to record the polygon aspect codes. Its default value is SlopeCode.

Each triangle is classified into a slope class. Contiguous triangles belonging to the same class are merged during the formation of output polygons. The {units} parameter can be set to use PERCENT or DEGREES. The default is PERCENT. The default percent slope class breaks are 1.00, 2.15, 4.64, 10.00, 21.50, 46.40, 100.00, 1000.00. Optionally, DEGREES may be used to classify slope. The default degree slope class breaks are 0.57, 1.43, 2.66, 5.71, 12.13, 24.89, 45.0, 90.0.

The {**class_breaks_table**} is used to define custom slope classes. The table can be either a TXT or DBF file for a Windows environment, and a DBF file in a UNIX environment. Each record in the table needs to contain two values that are used to represent the slope range of the class and its corresponding class code.

Table example:

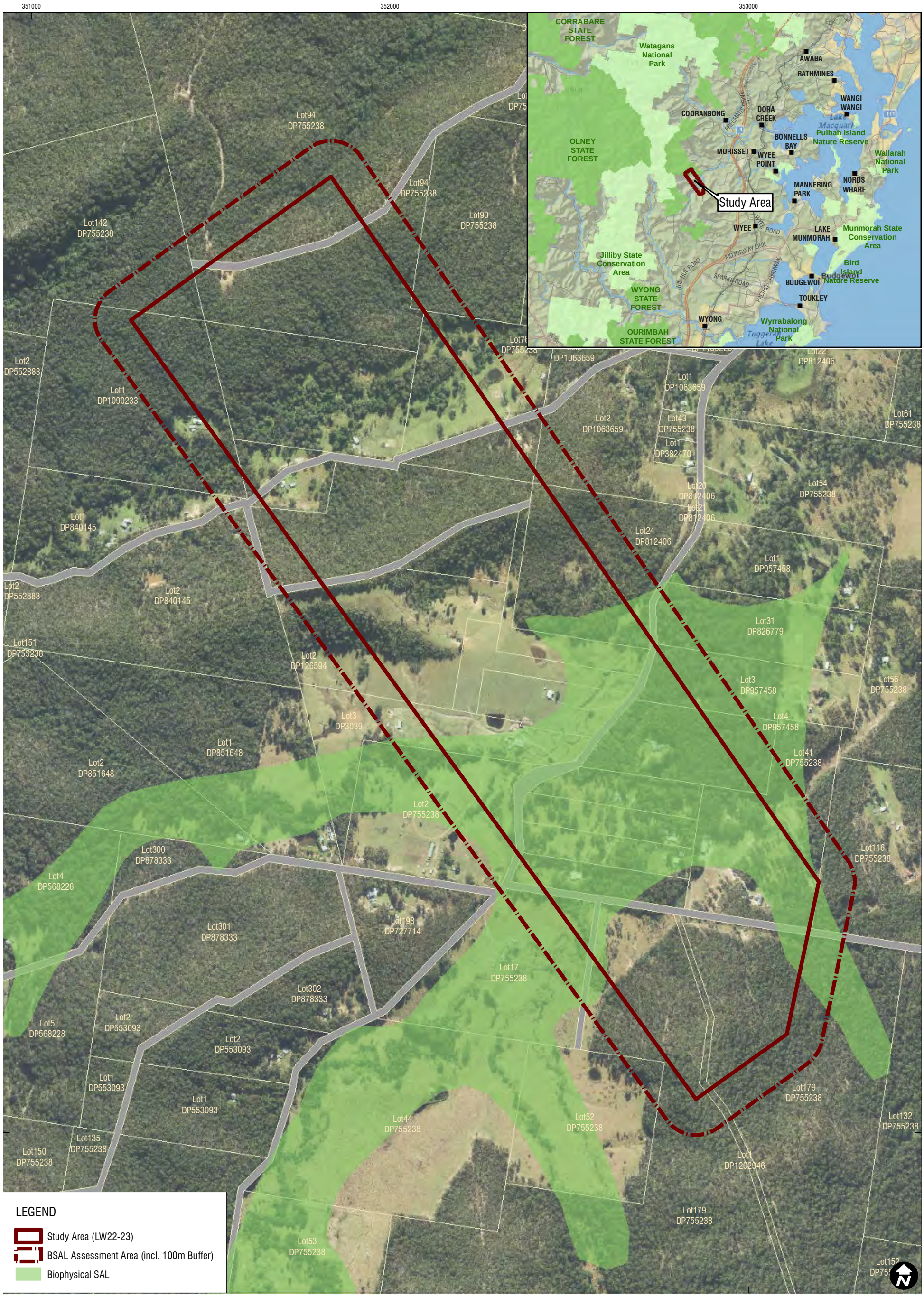
```
break, code

  10.0, 11

  25.0, 22

  40.0, 33

  70.0, 44
```

Note the comma delineation and use of decimals in the first field. Field names are needed but are ignored. The first field represents the breaks and values need to be decimal, the second field represents codes and values need to be integer. The units of the slope range are defined by the {units}. When this argument is not specified, the default classification is used.

Appendix D

Zoomed Figures

1:25,000 Scale



Sheet Size : A3

SLR

www.slrconsultingaustralia.com.au PH: 61 2 4037 3200

Study Area

FIGURE 1

351000
352000
353000
6334000
6333000
6332000
6331000
TOBINS
MORANS
LEGEND
BSAL Assessment Area
10m Contour
Watercourse
0 100 200 300 400 m
Scale: 1:10,000
GDA 1994 MGA Zone 56
31/10/2016
630.11810
H:\Projects-SLR\630-SrvNT\L\630-NTL\630.11810 Mandalong LW22-24A BSAL\06 SLR Data\01 Drafting\FiguresArcGIS\SLR630.11810_BSAL_F02_Topography_Hydrology_LW22_23_01.mxd
Sheet Size : A3
SLR
www.slrconsultingaustralia.com.au PH: 61 2 4037 3200
Topography and Hydrology
FIGURE 2

351000
352000
353000
6334000
6333000
6332000
6331000

LEGEND

BSAL Assessment Area

SlopeCode

- < 3%
- 3 - 5%
- 5 - 10%
- 10 - 18%
- 18 - 32%
- 32 - 50%
- > 50%

0 100 200 300 400 m

Scale: 1:10,000
GDA 1994 MGA Zone 56

31/10/2016
630.11678

H:\Projects-SLR\630-SrvNTL\630-NTL\630.11810 Mandalong LW22-24A BSAL\06 SLR Data\01 Drafting\Figures\ArcGIS\SLR630311810_BSAL_F03_Slopes_01.mxd

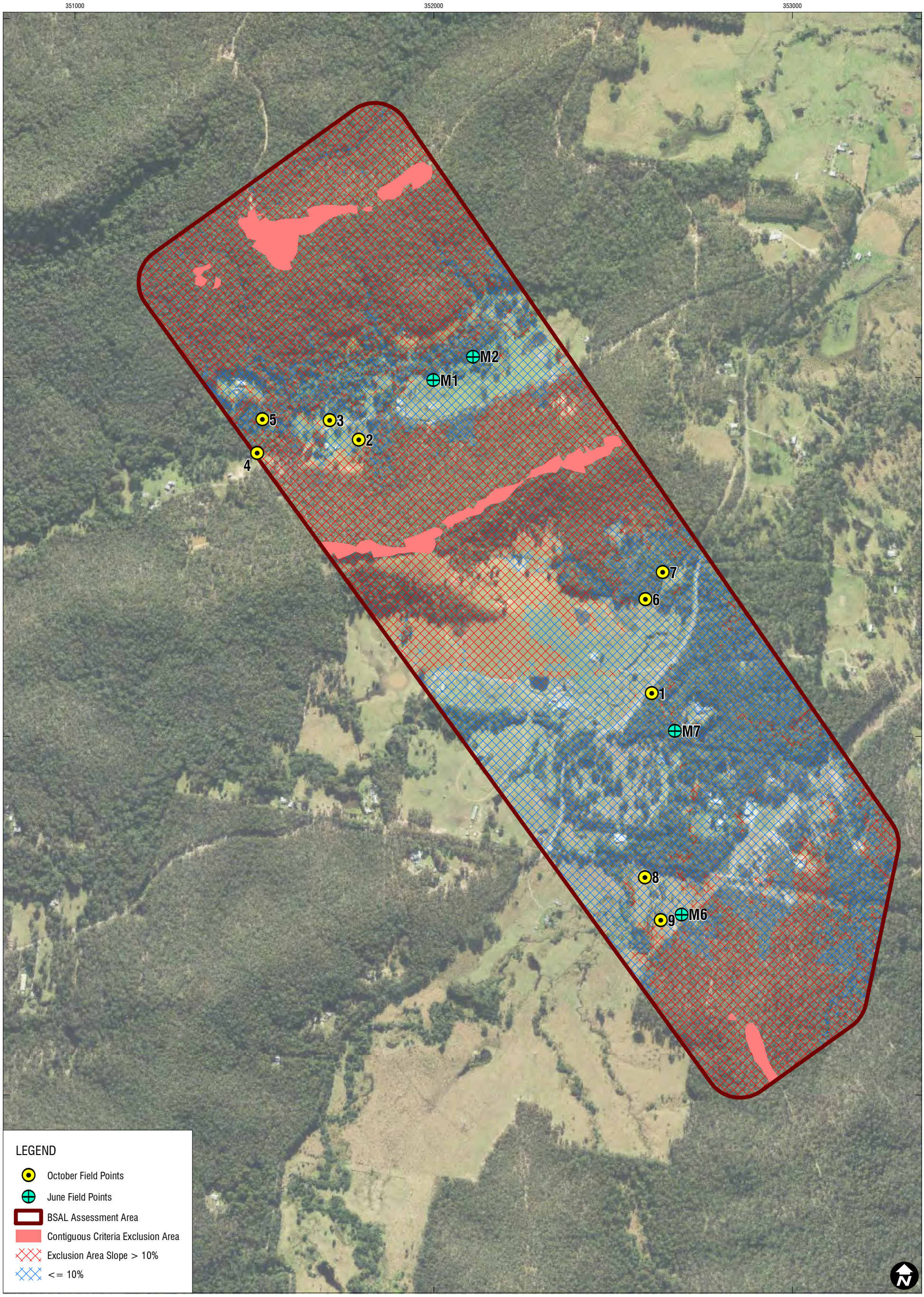
Sheet Size : A3

SLR

www.slrconsultingaustralia.com.au PH: 61 2 4037 3200

Slope Analysis

FIGURE 3



H:\Projects\SLR\630-SrvNTL\630-NTL\630.11810 Mandalong LW22-24A BSAL\06 SLR Data\01 Drafting\Figures\ArcGIS\SLR\630.11810_BSAL_F04_ExclusionArea_LW22_23_02.mxd

Scale: 1:10,000
GDA 1994 MGA Zone 56

01/11/2016
630.11810

Sheet Size : A3

SLR

www.slrconsultingaustralia.com.au PH: 61 2 4037 3200

Exclusion Areas

FIGURE 4

351000
352000
353000
6334000
6333000
6332000
6331000

M2
M1
5
3
2
4
7
6
1
M7
8
9
M6

LEGEND

June Field Points
October Field Points
BSAL Assessment Area

Soil Types

Dermosol
Sodosol
Kurosol

0 100 200 300 400 m

Scale: 1:10,000
GDA 1994 MGA Zone 56

31/10/2016
630.11678

H:\Projects-SLR\630-Srv\NTL\630-NTL\630.11810 Mandalong LW22-24A BSAL\06 SLR Data\01 Drafting\Figures\ArcGIS\SLR630.11810_BSAL_F05_SoilTypes_LW22_23_02.mxd

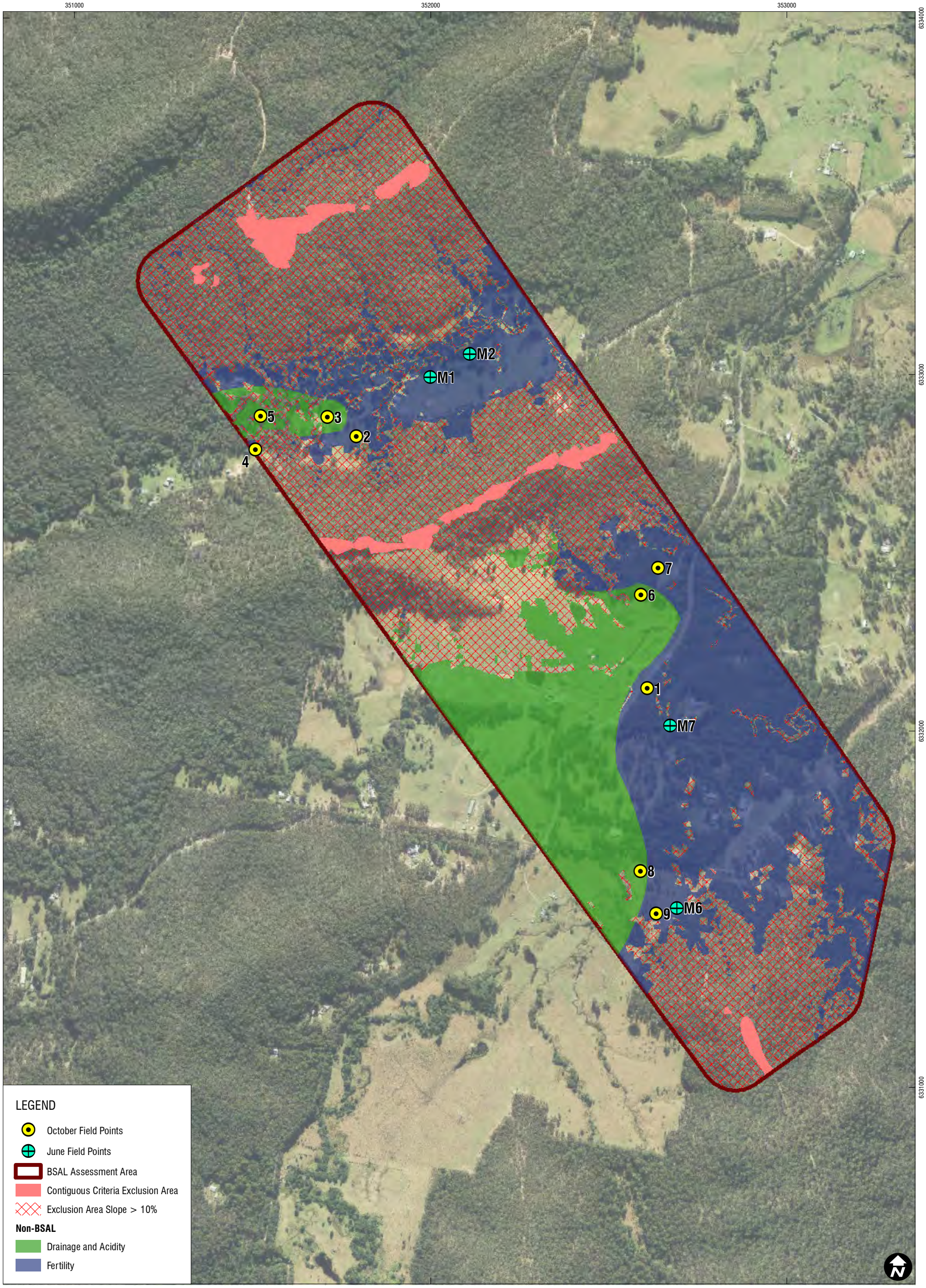
Sheet Size : A3

SLR

www.slrconsultingaustralia.com.au PH: 61 2 4037 3200

Soil Types

FIGURE 5



H:\Projects\SLR\630-SrvNTL\630-NTL\630.11810 Mandalong LW22-24A BSAL\06 SLR Data\01 Drafting\Figures\ArcGIS\SLR\630.11810_BSAL_F06_BSALMap_LW22_23_02.mxd

Scale: 1:10,000
GDA 1994 MGA Zone 56

01/11/2016
630.11810

Sheet Size : A3

SLR

www.slrconsultingaustralia.com.au PH: 61 2 4037 3200

BSAL Map

FIGURE 6