

SMK Consultants
Project Number: 24-80
25-3-2024

Site Classification Report
7 Harry Sullivan Avenue
Moree NSW 2400

SMK

CONSULTANTS

surveying – irrigation – environmental - engineering

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Site Classification Report

Client:

Cumboogle Farming & Dunedin Pastoral Co.

Site Location:

7 Harry Sullivan Avenue,
Moree 2400

Project Number: 24-80

Date: 25-3-2024

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1.0 Introduction

At the request of Bill Ferguson of Cumboogle Farming & Dunedin Pastoral Co., a site investigation was carried out at 7 Harry Sullivan Avenue, Moree on the 23rd of February 2024. The purpose of the site investigation is to provide sufficient information to enable a site classification to be made, and to collect information on the presence and depth of fill material, natural soil profile, bearing strength and soil reactivity where required for footing design. This has been completed in accordance with the following Australian Standards

- AS1726 – 1993, Geotechnical Site Investigations
- AS1289 – Testing of Soils for Engineering Purposes
- AS2870 – 2011, Residential Slab and Footings

2.0 Site Investigation

2.1 SITE DESCRIPTION

The following conditions were encountered on site at the time of investigation:

- Embankments – Nil
- Existing Buildings – Nil
- Ground Cover – Grass/Weeds
- Groundwater Table – Not encountered at time of investigation.
- Proposed Buildings/Structures – Sheds
- Slope – Site would be considered a flat site; survey was provided separately.
- Trees – Nil
- Underground services – SMK was not supplied with this.
- Waterways – Nil

2.2 FIELD INVESTIGATION

Two test bores were excavated and logged to depths shown on the bore logs in Appendix 2. Bores were positioned to provide a representation of the soil profile across the proposed build site. Soil horizons encountered were varied between bore holes. A heavy clay material being prominent throughout 0-3m in TB1 and in TB2 a heavy clay material 0-1m increasing to silty sand with gravel 1-3m with clay increasing with depth from 2-3m. Bearing capacity is considered to be adequate as per AS2870. Dynamic Cone Penetrometer testing was conducted at each test bore and results can be found in Appendix 5. Allowable bearing capacity was >100Kpa throughout the full depth of investigation. DCP test was terminated once clay became too stiff.

2.3 LABORATORY TESTING

Soil samples from the one TB1 were sent to the NATA laboratory of 'East West Enviroag' in Tamworth to assess the soil properties, primarily shrink-swell characteristics. Details of the laboratory test results are contained in Appendix 4.

3.0 Site Classification

Site classification is based on the characteristic surface movement value, or y_s . This value is derived from the surrounding sites and represents the soil's potential to shrink/swell due to changes in the soil moisture content during normal climatic conditions. The samples had an estimated $y_s = 145\text{mm}$.

In accordance with AS2870 – 2011 (Section 2) the site classification is “P” (E-D) – site is classed as a problem site due to the lot being lifted above natural surface with uncontrolled fill when constructed, technical specification of this pad/fill under AS3798 is unknown.

It is the responsibility of the building designer to provide footings appropriate to the site classification and/or ensure appropriate rectification/remediation of the site is undertaken prior to construction.

The site classification provided is based on the site conditions existing at the time of the investigation. This does not allow for subsequent earthworks which may change the soil profile. Cut/fill earthworks, import of fill material or soil conditions different to those found in investigation encountered during construction may require re-appraisal of the site.

4.0 Recommendations

4.1 SITE WORKS AND DRAINAGE

Any Earthworks carried out should be compacted and tested in accordance with the requirements of AS3798-1996, Guidelines on earthworks for commercial and residential developments. Finished surface levels around the buildings shall be such as to ensure adequate drainage and to direct storm water away from the footings.

4.2 RESTRICTIONS ON TREES AND SHRUBS

Trees and Shrubs allowed to grow in the vicinity of footings on reactive sites can cause damage due to drying of the clay at substantial distances from the trunk of the plant. This report did not take into account the effect of any trees when calculating characteristic surface movement. If trees are going to be placed on site the characteristic surface movement may change, affecting the site classification.

4.3 POST CONSTRUCTION RECOMMENDATIONS

The owner/occupier should take note of the details found in the CSIRO Building Technology File BTF 18 – Foundation Maintenance and Footing Performance: A Home Owner's Guide. This publication is available from CSIRO PUBLISHING, PO Box 1139, Collingwood, Vic 3066. Freecall 1800-645051.

Note that the site classification supplied assumes that adequate site maintenance is carried out by the owner/occupier.

5.0 Report Limitations

This report has been prepared in accordance with generally accepted soil testing and foundation assessment practices for the exclusive use of the client or their engineer for design purposes relating to the proposed construction on site. It may not contain information sufficient for other purposes or parties. This report should be used as a whole document and should only be reproduced in full.

We wish to thank you for engaging our services for this work. Please do not hesitate to contact us if further assistance is required.

Name: Mark Carrigan
BEng (Civil)

Date: 25-3-2024

Appendix 1
DEFINITION OF SITE CLASSES
AS2870-2011 (section 2)

Class	Foundation
A	Most sand and rock sites with little or no ground movement from moisture changes
S	Slightly reactive clay sites, which may experience only slight ground movement from moisture changes
M	Moderately reactive clay or silt sites, which may experience moderate ground movement from moisture changes
H1	Highly reactive clay sites, which may experience high ground movement from moisture changes
H2	Highly reactive clay sites, which may experience very high ground movement from moisture changes
E	Extremely reactive sites, which may experience extreme ground movement from moisture changes
P	Sites which include soft soils, mine subsidence, landslip, collapse activity, coastal erosion, abnormal moisture changes or conditions that cannot be classified.

For classes M, H1, H2, and E, further classification may be required, based on the depth of the expected moisture change. For sites with deep-seated moisture changes characteristic of dry climates and corresponding to a design depth of suction change (H_s) equal to or greater than 3m, the classification shall be M-D, H1-D, H2-D or E-D as appropriate.

Appendix 2

BORE LOGS

Test Bore 1 (Western Bore)

Depth (mm)	Classification	Description
0-1000	Heavy Clay	Black/brown in colour, dry, stiff, clay dominant material, high plasticity with minimal to no sand
1000-2000	Heavy Clay	Black/brown in colour, dry, stiff, clay dominant material, high plasticity with minimal to no sand
2000-3000	Heavy Clay	Brown/brown in colour, dry, stiff, clay dominant material, high plasticity with minimal to no sand

End of Test Pit at 3000mm

Test Bore 2 (Eastern Bore)

Depth (mm)	Classification	Description
0-1000	Heavy Clay	Brown in colour, dry, stiff, clay dominant material, high plasticity with minimal to no sand
1000-2000	Silty Sand	Progressing to a yellow brown silty sand with gravel stone, minimal clay content
2000-3000	Heavy Clay/Silty Sand	Yellow/brown silty sand with gravel stone, clay content increasing with depth

End of Test Pit at 3000mm

Appendix 3 TEST PIT LOCATIONS



Appendix 4
LABORATORY TEST RESULTS FOR SHRINK SWELL CHARACTERISTICS

Material Test Report

Report Number: GSNS-TAM-23-035-6
Issue Number: 1
Date Issued: 12/03/2024
Client: SMK CONSULTANTS
PO BOX 774, MOREE NSW 2400
Contact: MARK CARRIGAN
Project Number: GSNS-TAM-23-035
Project Name: Site Investigation
Project Location: Various Locations
Client Reference: 24-84-A
Work Request: 644
Dates Tested: 01/03/2024 - 04/03/2024
Location: 24-84-A



Part of the Geotechnical Services Group

Geotechnical Services (NSW) Pty Ltd
82 Plain Street Tamworth NSW 2340
Phone: (07) 4128 3213
Email: matt.c@eastwestonline.com.au

Matt Coleman (Geotechnical Lab Supervisor)

Shrink Swell Index AS 1289 7.1.1 & 2.1.1					
Sample Number	T644A	T644B	T644C		
Date Sampled	23/02/2024	23/02/2024	23/02/2024		
Date Tested	04/03/2024	04/03/2024	04/03/2024		
Material Source	**	**	**		
Sample Location	24-84-1M (1.00m)	24-84-2M (2.00m)	24-84-3M (3.00m)		
Inert Material Estimate (%)	0	0	0		
Pocket Penetrometer before (kPa)	460	380	460		
Pocket Penetrometer after (kPa)	190	270	290		
Shrinkage Moisture Content (%)	23.3	21.0	24.9		
Shrinkage (%)	5.8	5.0	7.0		
Swell Moisture Content Before (%)	24.9	20.5	24.8		
Swell Moisture Content After (%)	28.7	26.2	29.7		
Swell (%)	3.3	4.2	3.9		
Shrink Swell Index Iss (%)	4.2	3.9	5.0		
Visual Description	CLAY	CLAY	CLAY		
Cracking	SC	SC	SC		
Crumbling	No	No	No		
Remarks	Sample Remoulded	Sample Remoulded	Sample Remoulded		

Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.

Cracking Terminology: UC Uncracked, SC Slightly Cracked, MC Moderately Cracked, HC Highly Cracked, FR Fragmented.

NATA Accreditation does not cover the performance of pocket penetrometer readings.

Material Test Report



Part of the Geotechnical Services Group

Report Number: GSNS-TAM-23-035-7
Issue Number: 1
Date Issued: 12/03/2024
Client: SMK CONSULTANTS
PO BOX 774, MOREE NSW 2400
Contact: MARK CARRIGAN
Project Number: GSNS-TAM-23-035
Project Name: Site Investigation
Project Location: Various Locations
Client Reference: 24-84-B
Work Request: 645
Dates Tested: 01/03/2024 - 04/03/2024
Location: 24-84-B

Geotechnical Services (NSW) Pty Ltd
82 Plain Street Tamworth NSW 2340
Phone: (07) 4128 3213
Email: matt.c@eastwestonline.com.au



Accredited for compliance with ISO/IEC 17025 - Testing

Approved Signatory: Matt Coleman
Geotechnical Lab Supervisor
NATA Accredited Laboratory Number: 12360

Shrink Swell Index AS 1289 7.1.1 & 2.1.1

Sample Number	T645A	T645B	T645C		
Date Sampled	23/02/2024	23/02/2024	23/02/2024		
Date Tested	04/03/2024	04/03/2024	04/03/2024		
Material Source	**	**	**		
Sample Location	24-84-1M (1.00m)	24-84-2M (2.00m)	24-84-3M (3.00m)		
Inert Material Estimate (%)	0	25	0		
Pocket Penetrometer before (kPa)	400	420	160		
Pocket Penetrometer after (kPa)	250	280	150		
Shrinkage Moisture Content (%)	23.2	12.7	26.3		
Shrinkage (%)	5.9	0.8	7.4		
Swell Moisture Content Before (%)	23.7	11.5	26.5		
Swell Moisture Content After (%)	27.1	13.7	29.2		
Swell (%)	4.6	0.6	1.0		
Shrink Swell Index Iss (%)	4.6	0.6	4.4		
Visual Description	CLAY	Sandy Gravelly CLAY	CLAY		
Cracking	SC	MC	SC		
Crumbling	No	No	No		
Remarks	Sample Remoulded	Sample Remoulded	Sample Remoulded		

Shrink Swell Index (Iss) reported as the percentage vertical strain per pF change in suction.

Cracking Terminology: UC Uncracked, SC Slightly Cracked, MC Moderately Cracked, HC Highly Cracked, FR Fragmented.

NATA Accreditation does not cover the performance of pocket penetrometer readings.

Appendix 5
DYNAMIC CONE PENETROMETER TEST RESULTS

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SURVEYING - IRRIGATION - ENVIRONMENTAL - ENGINEERING

DYNAMIC CONE PENETROMETER TEST AS1289.6.3.2

REPORT NUMBER:	24-80
DATE:	25/02/2024
LOCATION:	7 Harry Sullivan Avenue, Moree
CLIENT:	Bill Ferguson

	BH1
START DEPTH	100mm
DEPTH RANGE	BLOWS #
0-100mm	3
100-200mm	9
200-300mm	11
300-400mm	20
400-500mm	27
500-600mm	30
600-700mm	30
700-800mm	30
800-900mm	-
900-1000mm	-
1000-1100mm	-
1100-1200mm	-
1200-1300mm	-
1300-1400mm	-
1400-1500mm	-
SOIL TYPE:	CLAY/LOAM
MOISTURE CONDITION:	DRY
GROUND WATER DEPTH:	-
EASTING:	776409
NORTHING:	6734544

BH2
100mm
BLOWS #
5
8
9
19
25
30
30
30
30
-
-
-
-
-
-
CLAY/LOAM
DRY
-
776346
6734542