

Sampling Log Sheet

Project No.	SY17199	Site	765 Orange Grove Road, Gunnedah NSW		Samplers	David Pritchard	Malinda Facey	
Sheet No.	1 of 2	Date	26/10/2017			Cathy Lestrangle		
Time	Sample ID		Location ID		Matrix	Sample Depth	Sample Size	Storage
1:00PM	SY17199 – 01A		Pit 1			0.1m		
1:10PM	SY17199 – 01B		Pit 1			0.5m		
Notes / Photos	Conditions are fine and sunny, slightly windy. Soil logs will be taken for each soil pit documenting the soil profile							
1:25PM	SY17199 – 02A		Pit 2			0.1m		
1:40PM	SY17199 – 02B		Pit 2			0.5m		
Notes / Photos								
1:50PM	SY17199 – 03A		Pit 3			0.1m		
1:59PM	SY17199 – 03B		Pit 3			0.3m		
2:08PM	SY17199 – 03C		Pit 3			0.5 - 0.6m		
Notes / Photos								
2:15PM	SY17199 – 04A		Pit 4			0.2m		
2:25PM	SY17199 – 04B		Pit 4			0.5m		
Notes / Photos								

Sampling Log Sheet

Project No.	SY17199	Site	765 Orange Grove Road, Gunnedah NSW		Samplers	Adam Bishop		
Sheet No.	2 of 2	Date	26/10/2017			Cathy Lestrangle		
Time	Sample ID	Location ID		Matrix	Sample Depth	Sample Size	Storage	
2:30PM	SY17199 – 05A		Pit 5		0.2m			
2:50PM	SY17199 – 05B		Pit 5		0.5m			
Notes / Photos								
2:57PM	SY17199 – 06A		Pit 6		0.2m			
3:10PM	SY17199 – 06B		Pit 6		0.5m			
Notes / Photos								
Notes / Photos								
Notes / Photos								

Soil Profile Log

Project Name:	Gunnedah Solar Farm - EIS			Borehole No:	SY17199 - 1
Project No:	SY17199	Date:	26/10/2017	GPS Coord:	150° 21' 11" E
Location:	Pit 1	Logged by:	CL	Zone:	30° 57' 20" S
Maximum Depth:	500mm	Method:	Test Pit	Angle:	90 degrees

Soil Profile Log

Project Name:	Gunnedah Solar Farm - EIS		
Project No:	SY17199	Date:	26/10/2017
Location:	Pit 2	Logged by:	CL
		Borehole No:	SY17199 - 2
		GPS Coord:	150° 20' 56" E
		Zone:	30° 56' 48" S

Maximum Depth:	500mm
Method:	Test Pit
Angle:	90 degrees

DEPTH (m)	DESCRIPTION (Horizon, Field Texture, Structure, Colour, Mottling, Coarse frags)	GRAIN SIZE	PLASTICITY	DENSITY	CONSISTENCY	MOISTURE	GROUNDWATER	SAMPLES	ODOUR	FORMATION / COMMENTS
0.0	Surface soil					D	N/A		No	No roots Friable
0.1	Well structured yellow brown Clayey loam	M				SM	N/A	2A Surface Soil		Relatively uniform soil
0.2										Well drained
0.3										Next to irrigated crops (chickpeas)
0.4										Irrigation infrastructure present nearby
0.5	Dark yellow Brown Clay Loam	M				SM	N/A	2B	No	
0.6										
0.7										
0.8										
0.9										
1	Test pit terminated at 0.5m, layer continues									

FIELD TEXTURE	PLASTICITY	DENSITY	CONSISTENCY	MOISTURE	GROUNDWATER	PID
S	Sand	VL	VS	D	↓	Measurements in (ppm)
LS	Loamy sand	L	S	SM	↔	
CS	Clayey sand	MD	F	M	↑	
SL	Sandy loam	D	St	W	↑	
L	Loam	VD	VSt	Wet		
SCL	Sandy clay loam		H			
CL	Clay loam	GRAIN SIZE				
LC	Light clay	F				
MC	Medium clay	M				
HC	Heavy clay	C				

Soil Profile Log

Project Name:Gunnedah Solar Farm - EIS

Project No:SY17199

Location:Pit 3

Borehole No:SY17199 - 3

Date:26/10/2017

Logged by:CL

GPS Coord:150° 21' 14" E

Zone:30° 56' 24" S

Maximum Depth:500mm

Method:Test Pit

Angle:90 degrees

DEPTH (m)	DESCRIPTION (Horizon, Field Texture, Structure, Colour, Mottling, Coarse frags)	GRAIN SIZE	PLASTICITY	DENSITY	CONSISTENCY			MOISTURE	SAMPLES	ODOUR	FORMATION / COMMENTS
					VS	Very Soft	D	GROUNDWATER			
0.0	A1	F	M	L	S	SM	N/A		3A	No	Pit is next to a wheat field
0.1	A2										
0.2											
0.3	B					D	N/A		3B	No	A few roots present friable
0.4											
0.5											
0.6									3C	No	
0.7											
0.8											
0.9											
1											

S

LS

CS

SL

L

SCL

CL

LC

MC

HC

Sand

Loamy sand

Clayey sand

Sandy loam

Loam

Sandy clay/loam

Clay loam

Light clay

Medium clay

Heavy clay

L

M

H

L

M

H

F

M

C

Low

Medium

High

Dense

Very Dense

GRAIN SIZE

Fine

Medium

Coarse

VL

L

MD

D

VD

VS

S

F

St

VSt

H

Very Loose

Loose

Moderately Dense

Dense

Very Dense

Very Soft

Soft

Firm

Stiff

Very Stiff

Hard

D

SM

M

W

Dry

Slightly moist

Moist

Wet

GROUNDWATER

Measurements in (ppm)

Soil Profile Log

Project Name: Gunnedah Solar Farm - EIS		Borehole No: SY17199 - 4	
Project No: SY17199	Date: 26/10/2017	GPS Coord: 150° 21' 6" E	
Location: Pit 4	Logged by: CL	Zone: 30° 55' 60" S	

Maximum Depth: 500mm		Method: Test Pit		Angle: 90 degrees	
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DEPTH (m)	DESCRIPTION (Horizon, Field Texture, Structure, Colour, Mottling, Coarse frags)	GRAIN SIZE	PLASTICITY	DENSITY	CONSISTENCY	MOISTURE	SAMPLES	ODOUR	FORMATION / COMMENTS
0.0									
0.1									
0.2	Loamy clay with a bit of sand Powdery grey brown soil					SM	N/A	No	Pit is next to cotton fields evidence of cotton on soil surface Some roots between 0.1m and 0.3m
0.3									
0.4									
0.5	Light Clay					SM	N/A	No	
0.6	Test pit terminated at 0.5m, layer continues								
0.7									
0.8									
0.9									
1									

FIELD TEXTURE	PLASTICITY	DENSITY	CONSISTENCY	MOISTURE	GROUNDWATER	PID
S Sand	L Low	VL Very Loose	VS Very Soft	D Dry	↓	Measurements in (ppm)
LS Loamy sand	M Medium	L Loose	S Soft	SM Slightly moist	↓	
CS Clayey sand	H High	MD Moderately Dense	F Firm	M Moist	↓	
SL Sandy loam		D Dense	St Stiff	W Wet	↓	
L Loam		VD Very Dense	VSt Very Stiff			
SCL Sandy clay/loam			H Hard			
CL Clay loam		GRAIN SIZE				
LC Light clay		F Fine				
MC Medium clay		M Medium				
HC Heavy clay		C Coarse				

Soil Profile Log

Project Name: Gunnedah Solar Farm - EIS		Borehole No: SY17199 - 5	
Project No: SY17199		GPS Coord: 150° 21' 26" E	
Location: Pit 5		Date: 26/10/2017	
Logged by: CL		Zone: 30° 55' 36" S	

Maximum Depth: 500mm		Method: Test Pit		Angle: 90 degrees	
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DEPTH (m)	DESCRIPTION (Horizon, Field Texture, Structure, Colour, Mottling, Coarse frags)	GRAIN SIZE	PLASTICITY	DENSITY	CONSISTENCY	MOISTURE	SAMPLES	ODOUR	FORMATION / COMMENTS
0.0	Surface Soil					D	N/A		Pit is next to cotton field evidence of rills nearby
0.1	Dark Brown Clay soils		H	D	SM	N/A	5A	No	
0.2									Soil is relatively uniform
0.3									
0.4									
0.5	Test pit terminated at 0.5m, layer continues		H	D	SM	N/A	5B	No	
0.6									
0.7									
0.8									
0.9									
1									

FIELD TEXTURE	PLASTICITY	DENSITY	CONSISTENCY	MOISTURE	GROUNDWATER	PID
S Sand	L Low	VL Very Loose	VS Very Soft	D Dry	↓	Measurements in (ppm)
LS Loamy sand	M Medium	L Loose	S Soft	SM Slightly moist	↓	
CS Clayey sand	H High	MD Moderately Dense	F Firm	M Moist	↓	
SL Sandy loam		D Dense	St Stiff	W Wet	↓	
L Loam		VD Very Dense	VSt Very Stiff			
SCL Sandy clay/loam			H Hard			
CL Clay loam		GRAIN SIZE				
LC Light clay		F Fine				
MC Medium clay		M Medium				
HC Heavy clay		C Coarse				

Soil Profile Log

Project Name:	Gunnadah Solar Farm - EIS			Borehole No:	SY17199 - 6
Project No:	SY17199	Date:	26/10/2017	GPS Coord:	150° 20' 13" E
Location:	Pit 6	Logged by:	CL	Zone:	30° 55' 55" S

Maximum Depth:	500mm
Method:	Test Pit
Angle:	90 degrees

DEPTH (m)	DESCRIPTION (Horizon, Field Texture, Structure, Colour, Mottling, Coarse frags)	GRAIN SIZE	PLASTICITY	DENSITY	CONSISTENCY	MOISTURE	GROUNDWATER	SAMPLES	ODOUR	FORMATION / COMMENTS
0.0	Surface Soil					D	N/A			
0.1	Yellow brown clay loam					D	N/A	6A	No	Relatively uniform
0.2										
0.3	Dark yellow brown clay loam							6B	No	
0.4										
0.5		H	D			SM	N/A	5B	No	
0.6										
0.7										
0.8										
0.9										
1.0	Test pit terminated at 0.5m, layer continues									

FIELD TEXTURE	PLASTICITY	DENSITY	CONSISTENCY	MOISTURE	GROUNDWATER	PID
S	Sand	VL	VS	D	↓	Measurements in (ppm)
LS	Loamy sand	L	S	SM	↔	
CS	Clayey sand	MD	F	M	↑	
SL	Sandy loam	D	St	W	↑	
L	Loam	VD	VSt			
SCL	Sandy clay loam		H			
CL	Clay loam	GRAIN SIZE				
LC	Light clay	F				
MC	Medium clay	M				
HC	Heavy clay	C				



Department of Primary Industries

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Report No. **WN180445**

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WEST CHATSWOOD NSW 1515

Soil Analysis Report

13 Sample(s) received on 8/12/17 . Tested as per the following methods.

Method	Method Description
S201	Soil pH in 1:5 water or 1:5 CaCl ₂ suspension
S202	Soil Electrical Conductivity
S266	Available Sulfur by KCl ₄₀ extraction
S260	Bray's Extractable Phosphorus by FLA
S236	Organic Carbon by Walkley & Black
M630	Total Carbon and/or Total Nitrogen by Dumas Combustion
S273	Gillman & Sumpter Exchangeable Cations

Notes: Site: Gunnedah

Results relate only to the items tested.

- When required, samples air dried at 40°C 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 15/12/17



Accredited for compliance with ISO/IEC 17025 – Testing
Accreditation No. 14173



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

Laboratory No. Client's ID	Units	Limit of Reporting	1 1A	2 1B	3 2A	4 2B	5 3A	6 3B	7 3C	8 4A
Cropping Analysis										
pH (Water)	pH units	0.04	6.0	6.1	6.5	6.9	6.2	6.3	6.6	7.2
pH (CaCl ₂)	pH units	0.04	5.2	5.4	5.6	-	5.4	-	-	-
Electrical Conductivity	dS/m	0.0010	0.12	0.16	0.062	0.063	0.063	0.054	0.037	0.094
Sulfur (KCl ₄₀)	mg/kg	2.0	7.2	9.1	4.6	-	2.8	-	-	-
Bray Phosphorus	mg/kg	0.060	320	460	140	-	40	-	-	-
Organic Carbon	%	0.050	1.3	1.5	0.77	-	0.74	-	-	-
Total Nitrogen	%	0.020	0.16	0.18	0.090	-	0.091	-	-	-
Exchangeable Cations										
Aluminium	cmol(+) /kg	0.10	<0.1	<0.1	<0.1	-	<0.1	-	-	-
Calcium	cmol(+) /kg	0.030	15	16	9.0	-	9.4	-	-	-
Potassium	cmol(+) /kg	0.010	1.6	1.3	0.74	-	1.1	-	-	-
Magnesium	cmol(+) /kg	0.0070	6.9	7.4	5.1	-	4.2	-	-	-
Sodium	cmol(+) /kg	0.030	0.10	0.13	0.26	-	0.048	-	-	-
CEC (effective)	cmol(+) /kg	0.20	23	25	15	-	15	-	-	-
Calcium/Magnesium			2.2	2.1	1.8	-	2.2	-	-	-
Percent Aluminium Saturation	% of ECEC		N/A	N/A	N/A	-	N/A	-	-	-
Exchangeable Calcium	% of ECEC		63	64	60	-	64	-	-	-
Exchangeable Potassium	% of ECEC		6.7	5.4	4.9	-	7.4	-	-	-
Exchangeable Magnesium	% of ECEC		29	30	34	-	28	-	-	-
Exchangeable Sodium	% of ECEC		0.45	0.54	1.7	-	0.33	-	-	-
Percentage										

Laboratory No. Client's ID	Units	Limit of Reporting	9 4B	10 5A	11 5B	12 6A	13 6B
Cropping Analysis							
pH (Water)	pH units	0.04	8.3	7.8	7.9	6.2	7.1
pH (CaCl ₂)	pH units	0.04	-	6.9	6.9	5.7	-
Electrical Conductivity	dS/m	0.0010	0.17	0.12	0.10	0.11	0.057
Sulfur (KCl ₄₀)	mg/kg	2.0	-	7.2	5.8	4.7	-
Bray Phosphorus	mg/kg	0.060	-	9.9	16	73	-
Organic Carbon	%	0.050	-	0.74	0.75	0.93	-
Total Nitrogen	%	0.020	-	0.090	0.081	0.10	-
Exchangeable Cations							
Aluminium	cmol(+)/kg	0.10	-	<0.1	<0.1	<0.1	-
Calcium	cmol(+)/kg	0.030	-	19	18	11	-
Potassium	cmol(+)/kg	0.010	-	1.2	1.1	1.2	-
Magnesium	cmol(+)/kg	0.0070	-	9.9	10	3.9	-
Sodium	cmol(+)/kg	0.030	-	0.58	0.71	0.067	-
CEC (effective)	cmol(+)/kg	0.20	-	30	30	16	-
Calcium/Magnesium			-	1.9	1.8	2.7	-
Percent Aluminium Saturation	% of ECEC		-	N/A	N/A	N/A	-
Exchangeable Calcium	% of ECEC		-	61	61	67	-
Exchangeable Potassium	% of ECEC		-	3.8	3.6	7.6	-
Exchangeable Magnesium	% of ECEC		-	33	33	25	-
Exchangeable Sodium	% of ECEC		-	1.9	2.3	0.43	-
Percentage							