IAN FARMER ASSOCIATES

Geotechnical & Environmental Specialists

ST MODWEN HOMES LIMITED

SULLY SPORTS AND SOCIAL CLUB
GLAMORGAN CV64 5SD

FACTUAL GROUND INVESTIGATION REPORT

Contract: 21267

Date: October 2014

Ian Farmer Associates (1998) Limited
1 Fairfield Court, Seven Stars Industrial Estate
Wheler Road, Coventry, CV3 4LJ
Tel: 024 7630 3422
www.ianfarmer.co.uk

FACTUAL GROUND INVESTIGATION REPORT

Carried out at

SULLY SPORTS AND SOCIAL CLUB

GLAMORGAN CV64 5SD

Prepared for

ST MODWEN HOMES LIMITED
Sir Stanley Clarke House
7 Ridgeway
Quinton Business Park
Quinton
Birmingham
B32 1AF

Contract No: 21267

Date: October 2014

Issue	Date	Description / Revision Details	Prepared	Approved	Distribution
01	30/09/14	First Issue	JW	PB	PDF to Atkins
02	16/10/14	Final following Comments from Atkins	JW	PB	PDF to Atkins

Ian Farmer Associates (1998) Limited
1 Fairfield Court, Seven Stars Industrial Estate
Wheler Road, Coventry, CV3 4LJ
Tel: 024 7630 3422
www.ianfarmer.co.uk

EXECUTIVE SUMMARY

On the instructions of Atkins Limited, on behalf of St Modwen Homes Limited, an investigation was undertaken to determine ground conditions to enable foundation and road/hard standing design to be carried out, together with a geoenvironmental risk assessment and a review of gas emissions. It is understood that the proposed development comprises the redevelopment of the existing sports and social club to the eastern end of the site and a residential development of approximately 200 houses in the western half of the site.

The site is situated at Sully Sports and Social Club, approximately 12km to the south of the town centre of Cardiff and may be located by Landranger Grid Reference ST162678. The site is indicated to be underlain by the Mercia Mudstone Group, with at least a thin layer of hardstanding Made Ground at the surface.

Site work comprised the sinking of eleven window sample boreholes and the machine excavation of eleven trial pits. Gas and groundwater monitoring standpipes were installed in six of the boreholes and monitored during return visits to site.

Selected samples recovered from the exploratory holes were dispatched to the laboratory for geotechnical and geoenvironmental analysis.

CONTENTS

1.0 INTRODUCTION

1.1 On the instructions of Atkins Limited, on behalf of St Modwen Homes Limited, an investigation was undertaken to determine ground conditions to enable foundation and road/hard standing design to be carried out, together with a geoenvironmental risk assessment and a review of gas emissions.

1.2 It is understood that the proposed development comprises the redevelopment of the existing sports and leisure club to the eastern end of the site and a residential development of approximately 200 houses in the western half of the site.

1.3 It is recommended that a copy of this report be submitted to the relevant authorities to enable them to carry out their own site assessments and provide any comments.

1.4 This report has been prepared for the sole use of the Client for the purpose described and no extended duty of care to any third party is implied or offered. Third parties using any information contained within this report do so at their own risk.

1.5 The comments given in this report and the opinions expressed herein are based on the information received, the conditions encountered during site works, and on the results of tests made in the field and laboratory. However, there may be conditions prevailing at the site which have not been disclosed by the investigation and which have not been taken into account in the report.

1.6 The comments on groundwater conditions are based on observations made at the time the site work was carried out. It should be noted that groundwater levels vary owing to seasonal or other effects.

2.0 SITE SETTING

2.1 Site Location

2.1.1 The site is situated at Sully Sports and Social Club, approximately 12km to the south of the town centre of Cardiff and may be located by Landranger Grid Reference ST162678.

2.1.2 A site location plan is included in Appendix 1, Figure A1.1.

2.2 Site Description

2.2.1 The site is irregular in shape covering an area of approximately 14.6 hectares, and comprises of two clubhouses, a bowling green, tennis courts and football and rugby pitches.

2.2.2 At the time of the investigation the site was being prepared for sporting events.

2.2.3 The site was bounded to the north by South Road, to the east and west by residential development and to the south by Sully Bay.

2.2.4 The site sloped gently to the south and lay at an approximate altitude of 11-25mAOD.

2.2.5 From the beach at the southern end of the site, the geology was exposed and several minor faults were noted.

2.2.6 An exploratory hole location plan is given in Appendix 1, Drawing No.1215/2015/1.

2.3 Geological Setting

2.3.1 Details of the geology underlying the site have been obtained from BGS Sheet 263, ref. 5.1, and from information provided by Atkins.

2.3.2 The information indicates the site to be absent of any superficial deposits.

2.3.3 The site is underlain by the Mercia Mudstone Group, described as mainly red, less commonly green-grey, mudstones and subordinate siltstones, with halite-bearing units and thin beds of gypsum.

2.3.4 Three faults are noted running north-south and dipping at approximately 5° to the south.

2.3.5 Although not indicated as present on the site from the geological maps, Made Ground is known to exist on the site comprising at least a surface hardstanding of sub-base or asphalt.

3.0 SITE WORK

3.1 The site work was carried out on the 21st and 22nd July and the 31st July 2014. The locations of the exploratory holes have been stipulated by Atkins.

3.2 The site work has been carried out on the basis of the practices set out in BS 10175:2011, ref. 5.3, BS 5930:1999 ref. 5.4 and BS EN 1997-2:2007, ref 5.5. Additional references are noted within the table.

Exploratory Hole Type	Quantity	Hole Reference	Depths	Notes
Window sample boreholes	12	WS01 to WS09 WS11 to WS13	0.47m to 2.22m	7 re-drills were carried out due to refusal at shallow depths.
Trial pits – machine excavated	11	TP01 to TP11	0.35m to 2.10m	
Slotted standpipe installations	6	WS2B, WS5, WS6, WS9, WS11, WS12	0.3m to 2.20m	Installed into the Mercia Mudstone Group to monitor groundwater and gas levels, each with gas valve and flush cover fitted.

3.3 The positions of the above are shown on the exploratory hole location plan, Appendix 1, Drawing No.1215/2015/1.

3.4 The depths of the exploratory holes, descriptions of strata encountered and comments on groundwater conditions are given in the site work records in Appendix 2.

3.5 Photographic records of the trial pits are also given in Appendix 2.

3.6 Representative disturbed and 'undisturbed' samples were taken, ref.5.7, at the depths shown on the exploratory hole records and dispatched to the laboratory. Samples for environmental purposes were collected in appropriate containers and retained in cool boxes.

3.7 Standard (split-barrel and cone) penetration tests (SPT), ref.5.6, were carried out in the boreholes in the various strata to assess the relative density or consistency. The values of penetration resistance are given in the borehole records.

3.8 An approximate assessment of soil strengths was made by undertaking hand-held penetrometer / vane tests in the trial pits. The results of these tests are included in the trial pit records.

3.9 The coordinates and ground levels at the exploratory hole locations, reported on the records, were surveyed in by MSURV, based on OS National Grid.

3.10 Upon completion of the siteworks, the boreholes instrumented with standpipes were monitored at intervals specified by Atkins Ltd for groundwater and gas levels. The gas levels monitored were oxygen, carbon dioxide, methane, carbon monoxide and hydrogen sulphide. The flow rate of each borehole was also monitored. The results are given in Appendix 5.

4.0 LABORATORY TESTS

4.1 Geotechnical Testing

4.1.1 The suite of geotechnical analyses has been scheduled by Atkins.

4.1.2 All soil samples were prepared in accordance with BS1377: Part One: 1990 ref. 5.9 and representative sub-samples were taken for testing. The following tests were carried out:

- 10 No. Moisture contents
- 10 No. Plasticity indices
- 8 No. Particle size distributions by wet sieving
- 8 No. pH values
- 8 No. Water soluble sulphate contents

4.1.3 The results of the testing are given in Appendix 3, Test Report 21267/1, with the pH and sulphate results given in i2 Reports 14-58615 and 14-58667.

4.2 Chemical Testing

4.2.1 The suite of chemical analyses has been schedules by Atkins Ltd. The chemical analyses were carried out on 12 samples of soil.

- 12 No. Metals suites:
  - Arsenic, Cadmium, Chromium (total & hexavalent), Lead(total), Mercury(total), Selenium(total), Copper(total), Nickel(total), Zinc(total)
- 12 No. Cyanide contents – total
- 12 No. Phenols – total monohydric
- 12 No. pH values
- 4 No. Total petroleum hydrocarbons (TPH) – CWG bandings
- 4 No. Total petroleum hydrocarbons (TPH) – total C_{10}-C_{40}
- 12 No. Polycyclic aromatic hydrocarbons (PAH) – USEPA 16 suite
- 7 No. Asbestos screens and IDs
- 3 No. Asbestos quantifications
- 6 No. Soil Organic Material

4.2.2 Leachate analysis was also conducted on 4 samples prepared from soils. The nature of the analyses is detailed below:

- 4 No. Metals suites:
  - Arsenic, Cadmium, Calcium, Chromium (total & hexavalent), Copper(total), Iron, Lead(total), Mercury(total), Selenium(total), Magnesium, Manganese, Nickel(total), Potassium, Sodium, Zinc(total)
- 4 No. Cyanide contents – total
- 4 No. Phenols – total monohydric

- 4 No. Sulphate contents
- 4 No. pH values
- 4 No. Total petroleum hydrocarbons (TPH) – CWG bandings
- 4 No. Polycyclic aromatic hydrocarbons (PAH) – USEPA 16 suite
- 4 No. Chloride
- 4 No. Ammoniacal Nitrogen
- 4 No. Nitrate-Nitrogen
- 4 No. Chemical and Biochemical Oxygen Demand

4.2.3 The soil testing was carried out in accordance with the MCERTS performance standard, ref. 5.10, and the results are shown in Appendix 4, Test Reports 14-58422 and 14-59397.

5.0 REFERENCES

5.1 BGS Sheet No.263, '*Cardiff*', solid and drift edition, 1:50000 scale. British Geological Survey, 1989.

5.2 CLR 4, '*Sampling strategies for contaminated land*', Report by The Centre for Research into the Built Environment, the Nottingham Trent University, DoE, 1994

5.3 BS 10175: 2011 '*Investigation of potentially contaminated sites. Code of practice*', British Standards Institute, 2011

5.4 BS 5930:1999+A2:2010 '*Code of practice for site investigations*', British Standards Institute, 2010

5.5 BS EN 1997, Part 2:2007, '*Eurocode 7 – Geotechnical Design – Part 2, Ground Investigation and Design*' British Standards Institute, 2007

5.6 BS EN ISO 22476 – 3:2005, '*Geotechnical Investigation and Testing – Field Testing - Part 3: Standard Penetration Test*', British Standards Institute, 2005

5.7 BS EN ISO 22475-1:2006, '*Geotechnical Investigation and Testing – Sampling Methods and Groundwater Measurements*' *Part 1: Technical Principles for Execution*', British Standards Institute, 2006

5.8 BS EN ISO 14688 Part 1:2002 and Part 2:2004, '*Geotechnical Investigation and Testing – Identification and Classification of Soil*', British Standards Institute, 2004

5.9 BS 1377:1990, Part 9, '*Methods of Test for Soils for Civil Engineering Purposes*' British Standards Institute, 1990

5.10 MCERTS '*Performance Standard for Laboratories Undertaking Chemical Testing of Soil*' v3, Environment Agency, 2006.

5.11 C570 '*Engineering in Mercia Mudstone*', CIRIA, 2001

5.12 HSG 185, '*Health and Safety in Excavations*', Health and Safety Executive, 1999

For and on behalf of Ian Farmer Associates (1998) Limited

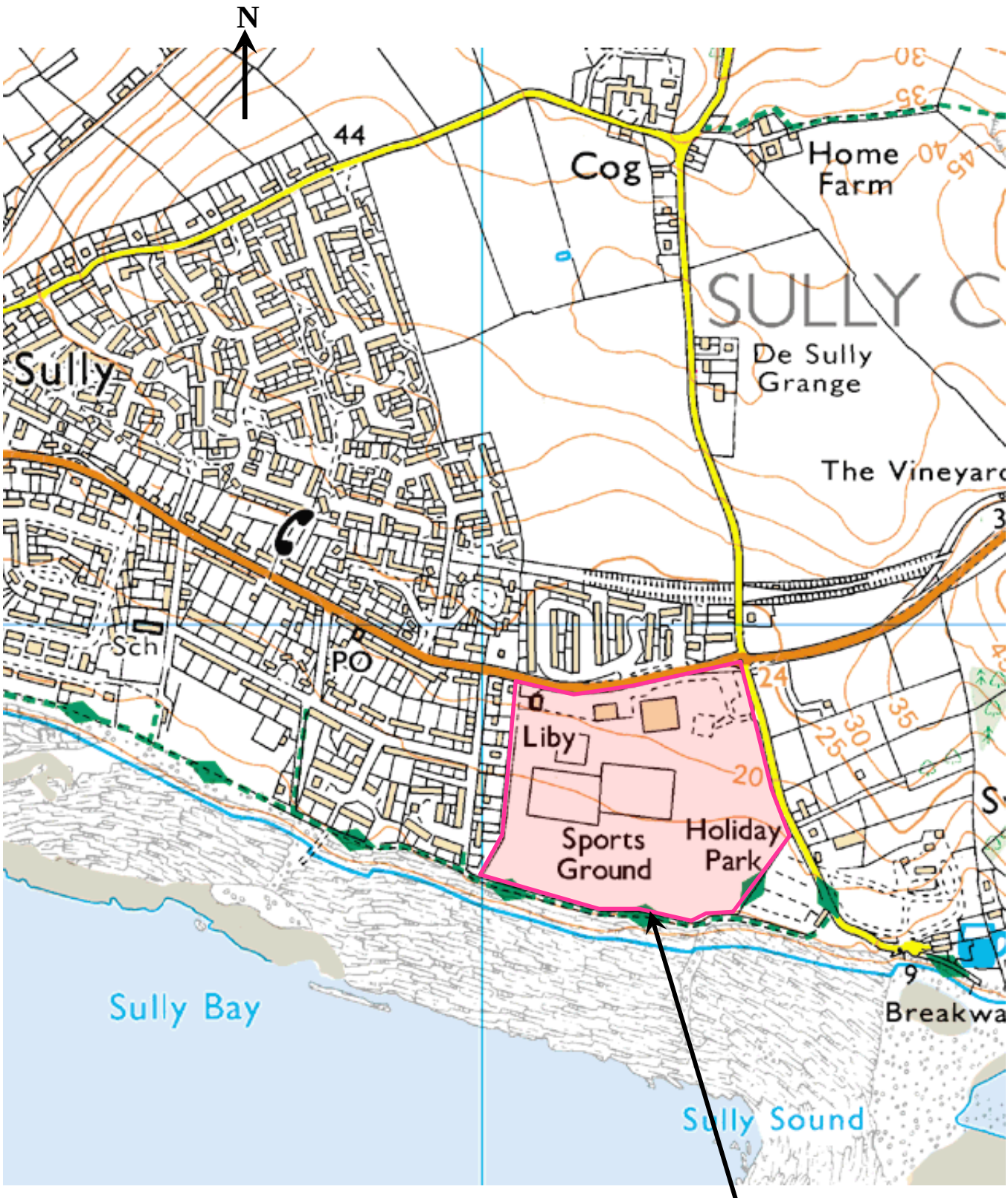
J,H.Walker
BSc(Hons)
Graduate Engineering Geologist

P.C.G Bailey
BEng(Hons) MSc ACSM FGS
Principal Engineering Geologist

APPENDIX 1

DRAWINGS

21267
Sully Sport & Social Club



Site Location Plan

Scale: NTS

Figure A1.1

316000E 316200E 316400E 316600E

B 4267 WINSFORD ROAD SOUTH ROAD 20.4m

CLEVEDON AVENUE Tulsa Goldcrest Lamorna Brockleigh

167800N 167600N

Library Posts Sports and Social Club Track Bowling Green Sports Ground

WS1 WS1A WS1B WS2 WS2A WS2B WS3 WS3A WS4 WS4A WS4B WS5 WS6 WS7 WS8 WS9 WS10 WS11 WS12 WS13

TP1 TP2 TP3 TP4 TP5 TP6 TP7 TP8 TP9 TP10 TP11

BEACH ROAD Treboeth Spinnyside Merville The Cherries Clandwr Silver Birch 16.2m LB TCB

Island View Caravan Park

Path (um)

N

0 20 40 60 80 100 150 200

MSURV your surveying solution
Rainsborough Barns
Charlton
Banbury, Oxon
OX17 3DT

client: Ian Farmer Associates

project: Sully
GI Locations

drawing no.	Drawn	Date	Scale
1215/2015/1A	JG	31/7/14	1:2000@A3

APPENDIX 2

SITE WORK

APPENDIX 2

GENERAL NOTES ON SITE WORKS

A2.1 SITE WORK

A2.1.1 General

Site work is carried out in general accordance with the guidelines given in BS EN 1997, 5.5 and BS 5930, ref 5.4, and BS 10175, ref.5.3.

A2.1.2 Trial Pits

Shallow trial pits are generally dug by mechanical excavator, however, in difficult access locations or adjacent to structures, such pits may be hand dug. Pits are best used where the ground will stand unsupported and generally, the maximum depth of machine dug pits is 4m to 5m. Where personnel are required to enter pits, it is essential that side support is provided. Entry by personnel into unsupported pits deeper than 1.2m is not allowed for health and safety reasons.

Trial pits allow the in-situ condition of the ground to be examined both laterally and vertically and also allow discontinuities to be recorded. The field record should give the orientation of the pit with details of which face was logged, assessment of stability of sides of pit and groundwater as well as the strata encountered. Photographs of the pit may also be taken.

In-situ testing, such as hand penetrometer, hand vane, Macintosh probe, or similar, can be undertaken in the sides or base of pits while both disturbed and undisturbed samples may be recovered.

It is generally advisable to backfill the pits as soon as possible, open pits should not be left unattended.

A2.1.3 Drive-in Window Sampler

The drive-in window sampler, ref 5.7, consists generally of a track mounted window sampler and a series of cylindrical sample tubes, generally varying in diameter from 98mm to 35mm. A cutting shoe is fitted to the bottom of each tube, while a window, representing about a quarter of the circumference, is cut along the length of the tube. Soil samples are extracted through the window of the tube.

The borehole is extended by using progressively smaller diameter tubes.

Alternatively, samples may be collected in plastic liners, known as *windowless sampling*.

A2.2 IN-SITU TESTS

A2.2.1 Standard Penetration Test

The Standard Penetration Test is carried out in accordance with the proposals recommended by BS EN ISO 22476-3 ref 5.6.

The standard penetration test, **SPT**, covers the determination of the resistance of soils to the penetration of a split barrel sampler. A 50mm diameter split barrel sampler is driven 450mm into the soil using a 63.5kg hammer with a 760mm drop. The penetration resistance is expressed as the number of blows required to obtain 300mm penetration below an initial seating drive of 150mm through any disturbed ground at the bottom of the borehole. The number of blows to achieve the standard penetration of 300mm is reported as the ‘N’ value.

The test is generally carried out in fine soils, however, it may also be carried out in coarse granular soils, weak rocks and glacial tills using the same procedure as for the SPT but with a 50mm diameter, 60° apex solid cone replacing the split spoon sampler, **CPT.**

When attempting the standard penetration test in very dense material or weathered rocks it may be necessary to terminate the test before completion to prevent damage to the equipment. In these circumstances it is important to distinguish how the blow count relates to the penetration of the sampler. This may be achieved in the following manner:

- Where the seating drive has been completed, the test drive is terminated if 50 blows are reached before the full penetration of 300mm is achieved. The penetration for 50 blows is recorded and an approximate N value obtained by linear extrapolation of the number of blows for the partial test drive.

- If the seating drive of 150mm is not achieved within the first 25 blows, the penetration after 25 blows is recorded and the test drive then commenced.

- For tests in soft rocks, the test drive should be terminated after 100 blows where the penetration of 300mm has not been achieved.

The N-value obtained from the Standard Penetration Test may be used to assess the relative density of sands and gravels with the general descriptions as follows:

Term	SPT N-Value : Blows/300mm Penetration
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	Over 50

A2.2.2 Hand Vane (HV)

The hand vane is intended to be used as a tool to provide a crude assessment of the shear strength of a particular soil.

The hand vane gives a direct reading of approximate shear strength, with three different diameter vanes for materials of increasing consistency. The vane measures the intact shear strength of only a small portion of the soil, and therefore readings in relation to the mass characteristics of the soil should be treated with caution, particularly where there is a proportion of granular material or where there is fissuring present.

A2.3 SAMPLES / TESTS

HV represents Hand Vane test with equivalent undrained shear strength in kPa.

B represents large bulk disturbed samples

D represents small disturbed sample

E represents environmental sample, consisting of amber jar, vial and plastic tub

W represents water sample

▽ represents water strike

▼ represents level to which water rose

A2.4 DESCRIPTION OF SOILS

A2.4.1 General

The procedures and principles given in BS EN ISO 14688 Parts 1 and 2, ref 5.8, supplemented by section 6 of BS 5930, ref. 5.4 have been used in the soil descriptions contained within this report.

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS1

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.75m	20.94	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316181 E 167883 N	21/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Kept grass over brown, sandy, gravelly, clayey TOPSOIL		
0.10	E1			20.79	0.15	Weak, cream grey SILTSTONE recovered as fine to coarse, angular to subangular gravel and cobbles. (Mercia Mudstone Group; Skerry)		
0.40	B1				(0.60)			
				20.19	0.75	Terminated at 0.75m		

Remarks
Pit was dry and stable
Pit was hand excavated
Pit was terminated due to impenetrable limestone layer

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS1

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS1A

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.20m	20.88	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316181 E 167878 N	21/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Kept grass over sandy, gravelly, clayey topsoil		
				20.73	0.15			
				20.68	(0.05) 0.20	Cream grey sandy, fine to coarse, angular to subrounded LIMESTONE gravel. (Mercia Mudstone Group; Skerry)		
						Terminated at 0.20m		

Remarks
Pit was dry and stable
Pit was hand excavated
Pit was terminated due to an impenetrable limestone layer

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS1A

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS1B

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.50m	19.95	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316172 E 167849 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	MADE GROUND: Kept grass over sandy, gravelly, clayey TOPSOIL		
				19.85	0.10			
					(0.40)	MADE GROUND: Cream brown, gravelly, medium sand. Gravel is fine to coarse, angular to subangular limestone, concrete and a bottle cap.		
0.40	B1							
0.40	E1							
				19.45	0.50			
						Terminated at 0.50m		

Remarks
Pit was dry and stable
Pit was hand excavated
Pit was terminated due to tough digging

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS1B

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS2

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.70m	18.90	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316087 E 167854 N	21/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	MADE GROUND: Rough vegetation over red brown, gravelly, silty, sandy, clayey TOPSOIL		
				18.75	0.15			
					(0.25)	MADE GROUND: Dark red brown, gravelly, medium to coarse sand with occasional subangular limestone cobbles. Gravel is fine to coarse, angular to subangular, brick and limestone.		
0.30	B1			18.50	0.40			
0.30	E1				(0.30)	MADE GROUND: Dark red brown, clayey gravelly sandy silt. Gravel is fine to coarse, angular to subangular brick, coal, limestone, sandstone and clinker.		
						Concrete at base		
				18.20	0.70	Terminated at 0.70m		

Remarks
Pit was terminated due to concrete obstruction.
Pit was dry and stable.
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS2

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS2A

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.72m	18.94	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316086 E 167855 N	21/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	MADE GROUND: Rough vegetation over red brown, gravelly, silty, sandy, clayey TOPSOIL		
				18.79	0.15	MADE GROUND: Red brown, gravelly, silty, medium to coarse sand with occasional angular to subangular limestone cobbles. Gravel is fine to coarse, angular to subangular brick and limestone.		
					(0.25)			
				18.54	0.40	MADE GROUND: Soft to firm, red brown gravelly silty sandy clay. Gravel is fine to coarse, angular to subrounded clinker, limestone and brick.		
					(0.32)			
0.70	B1			18.22	0.72	Concrete at base		
0.70	E1					Terminated at 0.72m		

Remarks
Pit was hand excavated
Pit was terminated due to concrete.
Pit was dry and stable

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS2A

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS2B

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 1.20m	18.77	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316105 E 167855 N	21/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					(0.15)	MADE GROUND: Rough grass over red brown, gravelly, silty, sandy, clayey TOPSOIL			
				18.62	0.15	MADE GROUND: Black gravelly, sand sized ash with cobble size clay pockets. Gravel is fine to medium, subangular to subrounded clinker, slag and brick.			
					(0.25)				
0.35 0.35	B1 E1			18.37	0.40 (0.10)	MADE GROUND: Soft, red brown, gravelly silty clay. Gravel is fine to coarse, angular to subangular clinker, slag and limestone.			
				18.27	0.50	Soft, partially weathered, red brown, friable slightly gravelly, silty CLAY. Gravel is fine to medium, angular to subangular siltstone and limestone. (Mercia Mudstone Group; Grade IVa)			
					(0.50)				
0.80 0.80	B2 E2								
				17.77	1.00	Soft, partially weathered, red brown, very friable clayey, silty GRAVEL. Gravel is fine to medium, angular to subangular mudstone and siltstone. (Mercia Mudstone Group; Grade IVa)			
1.20-1.49 1.20-1.49	SPT 52/135 D1		4,15/27,25		(0.49)	Below 1.00m: Very friable (Mercia Mudstone Group; Grade III)			
				17.28	1.49	Complete at 1.49m			

Remarks
Pit was dry and stable
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS2B

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS3

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.60m	16.53	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316069 E 167788 N	21/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				16.43	(0.10) 0.10	MADE GROUND: Rough vegetation over red brown, sandy, gravelly, clayey TOPSOIL		
0.35 0.35	B1 E1				(0.50)	MADE GROUND: Dark brown, clayey, gravelly, silty fine to medium sand with occasional angular to subangular limestone cobbles. Gravel is fine to coarse, angular to subrounded limestone, clinker, sandstone and brick.		
				15.93	0.60	Terminated at 0.60m		

Remarks
Pit was dry and stable
Pit was hand excavated
Pit was terminated due to impenetrable limestone layer

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS3

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS3A

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.40m	15.52	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316072 E 167768 N	21/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	MADE GROUND: Rough vegetation over red brown, sandy, gravelly, clayey TOPSOIL		
				15.42	0.10			
					(0.30)	MADE GROUND: Dark brown, clayey, silty, gravelly, fine to medium sand. Gravel is fine to coarse, angular to subangular brick, sandstone and limestone.		
				15.12	0.40			
						Terminated at 0.40m		

Remarks
Pit was dry and stable
Pit was hand excavated
Pit was terminated due to limestone layer

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS3A

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS4

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.30m	21.49	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316257 E 167826 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	MADE GROUND: Kept grass over red brown, sandy, gravelly, clayey TOPSOIL.		
				21.39	0.10			
					(0.20)	MADE GROUND: Red brown, silty, gravelly, medium sand. Gravel is fine to coarse, angular to subangular limestone. Concrete at base		
				21.19	0.30			
						Terminated at 0.30m		

Remarks
Pit was dry and stable
Pit was hand excavated
Pit was terminated due to concrete layer

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS4

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS4A

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.20m	19.83	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316258 E 167821 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				19.76	(0.07) 0.07	MADE GROUND: Kept grass over red brown, sandy, gravelly, clayey TOPSOIL.		
					(0.13)			
				19.63	0.20	MADE GROUND: Hessian membrane over coarse, angular limestone gravel (soakaway)		
						Terminated at 0.20m		

Remarks
Pit was dry
Pit was hand excavated
Pit was terminated due to drainage pit.

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS4A

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS4B

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.30m	19.73	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316256 E 167819 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	Kept grass over red brown, sandy, gravelly, clayey TOPSOIL.		
				19.63	0.10			
					(0.20)	Firm, partially weathered, red brown,silty, gravelly CLAY. Gravel is fine to coarse, angular to subangular limestone. (Mercia Mudstone Group: Grade IVb)		
0.30	B1			19.43	0.30			
0.30	E1				(0.20)	Stiff, partially weathered, red brown, gravelly, sandy CLAY. Gravel is fine to medium, angular to subangular mudstone, siltstone and limestone. (Mercia Mudstone Group; Grade IVa)		
0.50-0.59	SPT 25*/30 50/60		25/50	19.23	0.50			
0.50-0.59	D1			19.14	(0.09) 0.59	Weak, cream brown, slightly weathered, medium LIMESTONE. (Mercia Mudstone Group; Skerry)		
						Complete at 0.59m		

Remarks
Pit was dry and stable
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS4B

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS5

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 1.00m	14.76	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316135 E 167689 N	21/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
					(0.25)	Rough grass over red brown, sandy, gravelly, clayey TOPSOIL			
				14.51	0.25				
					(0.35)	Firm, partially weathered, red brown, clayey, sandy, gravelly SILT. Gravel is fine to medium, angular to subangular mudstone and siltstone. (Mercia Mudstone Group; Grade IVa)			
0.50	B1			14.16	0.60				
0.50	E1								
0.70	B2					Weak, partially weathered, cream and red brown gravelly silty fine sand with occasional subangular limestone and SILTSTONE cobbles. Gravel is fine to coarse, angular to subangular siltstone, limestone and mudstone. (Mercia Mudstone Group; Grade III)			
0.70	E2								
					(0.75)				
1.00-1.36	SPT 50/205		7,18/19,16,15			Below 1.00m: Very dense			
				13.41	1.35				
1.35	D1.00					Complete at 1.35m			

Remarks
Pit was dry and stable
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS5

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS6

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 1.20m	15.72	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316247 E 167693 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
				15.62	(0.10) 0.10	Rough vegetation over red brown, gravelly sandy TOPSOIL			
0.50	B1					Soft, fully weathered, red brown, silty CLAY. (Mercia Mudstone Group; Grade IVb)			
0.50	E1				(0.90)				
				14.72	1.00	Firm, partially weathered, red brown, slightly gravelly, silty CLAY. Gravel is fine to medium, angular to subangular, clayey sand and siltstone. (Mercia Mudstone Group; Grade IVa)			
1.20-1.65	SPT N=31		12,9/6,5,7,13						
1.20-1.65	D1				(0.65)				
1.20-2.00	L1								
				14.07	1.65	Red brown, very weak, partially weathered, gravelly clayey sandy SILT. Gravel is fine, subangular to subrounded mudstone and siltstone. (Mercia Mudstone Group; Grade IVa)			
					(0.55)				
2.00-2.22	SPT 18*/115 50/100		16,2/25,25			Below 2.00m: Gypsum			
2.00-2.22	D2								
				13.52	2.20	Complete at 2.22m			

Remarks
Pit was dry and stable
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS6

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS7

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.80m	20.42	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316447 E 167797 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	Grass over red brown, sandy, gravelly, clayey TOPSOIL		
				20.32	0.10			
					(0.20)	Firm, fully weathered, red brown, gravelly silty CLAY. Rare gravel is fine to medium, subangular mudstone and siltstone. (Mercia Mudstone Group; Grade IVb)		
0.20	B1			20.12	0.30			
0.20	E1					Firm, partially weathered, red brown, very gravelly silty CLAY. Gravel is fine to coarse, subangular siltstone, mudstone and limestone. (Mercia Mudstone Group; Grade III)		
					(0.73)			
0.80-1.03	SPT 25*/75 50/150		25/25,25					
0.80-1.03	D1							
				19.39	1.03			
						Complete at 1.03m		

Remarks
Pit was dry and stable
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS7

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS8

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.83m	18.60	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316338 E 167758 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	Kept grass over red brown, gravelly clayey TOPSOIL		
				18.50	0.10			
0.20	B1					Firm, partially weathered, red brown gravelly sandy SILT. Gravel is fine to coarse subangular to subrounded limestone and mudstone. Frequent rootlets present. (Mercia Mudstone Group; Grade IVa)		
0.20	E1							
					(0.73)			
0.80-0.83	SPT 25*/15 50/10		25/50	17.77	0.83			
0.80-0.83	D1					Complete at 0.83m		

Remarks
Pit was dry and stable
Pit was hand excavated
Pit was terminated due to tough digging

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS8

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS9

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 1.00m	11.80	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316422 E 167589 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
				11.70	(0.10) 0.10	Rough vegetation over red brown, gravelly, sandy, silty TOPSOIL			
0.20	B1				(0.20)	Firm, fully weathered, red brown, gravelly silty CLAY. Gravel is fine to medium, subangular mudstone and limestone. (Mercia Mudstone Group; Grade IVb)			
0.20	E1			11.50	0.30				
						Firm, partially weathered, red brown, gravelly silty CLAY. Gravel is fine to coarse, angular to subangular mudstone and siltstone. (Mercia Mudstone Group; Grade IVa)			
					(0.92)				
1.00-1.23	SPT 25*/115 50/110		17,8/18,32						
1.00-1.23	D1								
				10.58	1.22	Complete at 1.23m			

Remarks
Pit was dry and stable
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS9

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS11

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 1.00m	12.39	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316150 E 167588 N	21/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
				12.29	(0.10) 0.10	Rough grass over red brown, sandy, gravelly clayey TOPSOIL			
						Red brown, partially weathered, gravelly sandy clayey SILT. Gravel is fine to coarse, angular to subangular siltstone. (Mercia Mudstone Group; Grade IVa)			
0.70 0.70	B1 E1				(1.30)				
1.00-1.36 1.00-1.40	SPT 50/205 D1		6,10/12,11,27			Below 1.00m: Fine to coarse, angular to subangular limestone gravel.			
				10.99	1.40	Complete at 1.40m			

Remarks
Pit was dry and stable
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS11

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS12

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 1.00m	11.47	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316044 E 167596 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
				11.37	(0.10) 0.10	Rough vegetation over red brown, sandy, gravelly clayey TOPSOIL			
0.40	B1				(0.40)	Firm, fully weathered, red brown, silty CLAY with frequent rootlets. (Mercia Mudstone Group; Grade IVb)			
0.40	E1								
0.50-1.00	L1			10.97	0.50				
					(0.50)	Red brown, partially weathered, gravelly silty CLAY. Gravel is fine to medium, angular to subangular mudstone and limestone. (Mercia Mudstone Group; Grade IVa)			
1.00-1.12	SPT 25*/40 50/75		25/50	10.47	1.00				
					(0.12)	Cream brown very weak LIMESTONE. (Mercia Mudstone Group; Skerry)			
1.00-1.09	D1			10.35	1.12				
						Complete at 1.12m			

Remarks
Pit was dry and stable
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS12

IAN FARMER ASSOCIATES

Site	Number
Sully Sports and Social Club Ground	WS13

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Window Sampler	Pit to 0.47m	17.49	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316165 E 167770 N	22/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.10)	Kept grass over red brown, sandy, gravelly, clayey TOPSOIL		
				17.39	0.10			
0.20 0.20 0.30-0.47	B1 E1 SPT(C) 25*/120 50/45		8,17/50		(0.37)	Red brown, fully weathered, gravelly silty CLAY. Rare gravel is fine to medium, subangular limestone. Frequent rootlets. (Mercia Mudstone Group; Grade IVb) Below 0.30m: 100mm thick layer of gypsum		
				17.02	0.47	Complete at 0.47m		

Remarks
Pit was dry and stable
Pit was hand excavated

Scale (approx)	Logged By
1:20	JW

Figure No. 21267.WS13

IAN FARMER ASSOCIATES

Site	Borehole Number
Sully Sports and Social Club Ground	WS2B

Installation Type	Dimensions	Client	Job Number
Single Installation	Internal Diameter of Tube [A] = 35 mm	St. Modwen Developments Ltd	21267

Location	Ground Level (mOD)	Engineer	Sheet
316104.7 E 167854.6 N	18.77	Atkins	1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			18.27	0.50	Bentonite Seal
			17.57	1.20	Slotted Standpipe
			17.28	1.49	Bentonite Seal

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
					5 min	10 min	15 min	20 min	

Groundwater Observations During Drilling

Date	Start of Shift					End of Shift				
	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Standpipe

Date	Instrument [A]			Remarks
	Time	Depth (m)	Level (mOD)	

Remarks
Installed with cap, valve and flush cover.

IAN FARMER ASSOCIATES

Site	Borehole Number
Sully Sports and Social Club Ground	WS5

Installation Type	Dimensions	Client	Job Number
Single Installation	Internal Diameter of Tube [A] = 35 mm	St. Modwen Developments Ltd	21267

Location	Ground Level (mOD)	Engineer	Sheet
316135.2 E 167688.9 N	14.76	Atkins	1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			14.16	0.60	Bentonite Seal
			13.66	1.10	Slotted Standpipe
			13.41	1.35	Bentonite Seal

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
					5 min	10 min	15 min	20 min	

Groundwater Observations During Drilling

Date	Start of Shift					End of Shift				
	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Standpipe

Date	Instrument [A]			Remarks
	Time	Depth (m)	Level (mOD)	

Remarks
Installed with cap, valve and flush cover.

IAN FARMER ASSOCIATES

Site	Borehole Number
Sully Sports and Social Club Ground	WS6

Installation Type	Dimensions	Client	Job Number
Single Installation	Internal Diameter of Tube [A] = 35 mm	St. Modwen Developments Ltd	21267

Location	Ground Level (mOD)	Engineer	Sheet
316246.8 E 167692.8 N	15.72	Atkins	1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			14.52	1.20	Bentonite Seal
			13.52	2.20	Slotted Standpipe

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
					5 min	10 min	15 min	20 min	

Groundwater Observations During Drilling

Date	Start of Shift					End of Shift				
	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Standpipe

Date	Instrument [A]			Remarks
	Time	Depth (m)	Level (mOD)	

Remarks
Installed with cap, valve and flush cover.

IAN FARMER ASSOCIATES

Site	Borehole Number
Sully Sports and Social Club Ground	WS9

Installation Type	Dimensions	Client	Job Number
Single Installation	Internal Diameter of Tube [A] = 35 mm	St. Modwen Developments Ltd	21267

Location	Ground Level (mOD)	Engineer	Sheet
316422 E 167589.3 N	11.80	Atkins	1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			11.30	0.50	Bentonite Seal
			10.80	1.00	Slotted Standpipe
			10.60	1.20	Bentonite Seal

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
					5 min	10 min	15 min	20 min	

Groundwater Observations During Drilling

Date	Start of Shift					End of Shift				
	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Standpipe

Date	Instrument [A]			Remarks
	Time	Depth (m)	Level (mOD)	

Remarks
Installed with cap, valve and flush cover.

IAN FARMER ASSOCIATES

Site	Borehole Number
Sully Sports and Social Club Ground	WS11

Installation Type	Dimensions	Client	Job Number
Single Installation	Internal Diameter of Tube [A] = 35 mm	St. Modwen Developments Ltd	21267

Location	Ground Level (mOD)	Engineer	Sheet
316150 E 167588.2 N	12.39	Atkins	1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			11.99	0.40	Bentonite Seal
			10.99	1.40	Slotted Standpipe

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
					5 min	10 min	15 min	20 min	

Groundwater Observations During Drilling

Date	Start of Shift					End of Shift				
	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Standpipe

Date	Instrument [A]			Remarks
	Time	Depth (m)	Level (mOD)	

Remarks
Installed with cap, valve and flush cover.

IAN FARMER ASSOCIATES

Site	Borehole Number
Sully Sports and Social Club Ground	WS12

Installation Type	Dimensions	Client	Job Number
Single Installation	Internal Diameter of Tube [A] = 35 mm	St. Modwen Developments Ltd	21267

Location	Ground Level (mOD)	Engineer	Sheet
316043.9 E 167595.9 N	11.47	Atkins	1/1

Legend	Water	Instr (A)	Level (mOD)	Depth (m)	Description
			11.17	0.30	Bentonite Seal
			10.47	1.00	Slotted Standpipe

Groundwater Strikes During Drilling

Date	Time	Depth Struck (m)	Casing Depth (m)	Inflow Rate	Readings				Depth Sealed (m)
					5 min	10 min	15 min	20 min	

Groundwater Observations During Drilling

Date	Start of Shift					End of Shift				
	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)	Time	Depth Hole (m)	Casing Depth (m)	Water Depth (m)	Water Level (mOD)

Instrument Groundwater Observations

Inst. [A] Type : Standpipe

Date	Instrument [A]			Remarks
	Time	Depth (m)	Level (mOD)	

Remarks
Installed with cap, valve and flush cover.

IAN FARMER ASSOCIATES

Standard Penetration Test Results

Site : Sully Sports and Social Club Ground

Client : St. Modwen Developments Ltd

Engineer : Atkins

Job Number 21267

Sheet 1 / 1

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
WS11	1.00	1.15	1.36	SPT	6	10	12	11	27		50/205mm	
WS12	1.00	1.04	1.12	SPT	25		50				25*/40mm 50/75mm	
WS13	0.30	0.42	0.47	CPT	8	17	50				25*/120mm 50/45mm	
WS2B	1.20	1.35	1.49	SPT	4	15	27	25			52/135mm	
WS4B	0.50	0.53	0.59	SPT	25		50				25*/30mm 50/60mm	
WS5	1.00	1.15	1.36	SPT	7	18	19	16	15		50/205mm	
WS6	1.20	1.35	1.65	SPT	12	9	6	5	7	13	N=31	
WS6	2.00	2.12	2.22	SPT	16	2	25	25			18*/115mm 50/100mm	
WS7	0.80	0.88	1.03	SPT	25		25	25			25*/75mm 50/150mm	
WS8	0.80	0.82	0.83	SPT	25		50				25*/15mm 50/10mm	
WS9	1.00	1.12	1.23	SPT	17	8	18	32			25*/115mm 50/110mm	

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP01

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.70m x 2.50m	18.54	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316115 E 167852 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND: Grass over red brown, gravelly, silty, sandy, clayey TOPSOIL with frequent roots and rootlets.		
				18.34	0.20			
					(0.10)	MADE GROUND: Grey, clayey, sandy gravel. Gravel is fine to coarse, angular to subangular ash, brick, limestone and mudstone.		
0.25	E1			18.24	0.30			
0.40	MHV		>120, 70, 106			Red brown, partially weathered, extremely weak to weak MUDSTONE recovered as clayey gravelly cobbles with frequent boulders. (Mercia Mudstone Group; Grade II)		
0.60	B1							
0.60	E2							
					(1.30)	Below 0.90m: Gravelly. Gravel is coarse mudstone with some cobbles.		
1.00	D1							
				16.94	1.60			
1.60	B2					Complete at 1.60m		

Plan

Remarks

Terminated due to tough digging
Pit was dry and stable

Scale (approx)	Logged By	Figure No.
1:25	HP	21267.TP01

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP02

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.65m x 2.50m	19.94	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316158 E 167851 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.15)	Grass over red brown, sandy gravelly clayey TOPSOIL with rootlets		
				19.79	0.15			
0.30	D1					Red brown, partially weathered, weak, friable MUDSTONE recovered as clayey, sandy, gravelly angular to subangular cobbles with occasional boulders of mudstone. Mudstone gravel contained fine gypsum veins. (Mercia Mudstone Group; Grade II)		
0.30	E1				(0.55)			
0.70	B1			19.24	0.70	Complete at 0.70m		

Plan

Remarks

Pit was dry and stable
Terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	HP	21267.TP02

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP03

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.65m x 5.00m	16.06	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316074 E 167780 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				15.96	(0.10) 0.10	MADE GROUND: Grass over red brown, sandy gravelly clayey TOPSOIL		
0.15	E1					MADE GROUND: Firm, dark brown, sandy silty gravelly clay with some limestone boulders. Gravel is fine to coarse, angular to subangular limestone, brick, ash and plastic. Below 0.30m: Red brown, with occasional glass and geotextile.		
0.40	B1				(0.50)			
				15.46	0.60	Red brown, partially weathered, very weak MUDSTONE recovered as slightly clayey, gravelly cobbles with frequent boulders of mudstone. (Mercia Mudstone Group; Grade II)		
					(0.30)			
0.90	D1			15.16	0.90	Complete at 0.90m		
0.90	E2							

Plan

Remarks

Pit was dry and stable
Pit was terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	JW	21267.TP03

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP04

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.70m x 2.00m	14.78	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316153 E 167678 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Grass over red brown, gravelly, clayey, sandy TOPSOIL		
0.20	E1			14.58	0.20	Stiff, red brown, silty, slightly gravelly CLAY. Gravel is fine to medium, subangular to subrounded very weak, grey green siltstone. (Mercia Mudstone Group; Grade IVb)		
					(0.30)			
0.50	D1			14.28	0.50	Green grey weak SILTSTONE recovered as fine to coarse gravel and cobbles. (Mercia Mudstone Group; Skerry)		
					(0.30)			
				13.98	0.80	Red brown, partially weathered, very weak MUDSTONE recovered as fine to coarse gravel. (Mercia Mudstone Group; Grade III)		
					(0.50)			
1.10	B1							
				13.48	1.30	Green grey, weak SILTSTONE recovered as fine to coarse gravel and cobbles. (Mercia Mudstone Group; Skerry)		
					(0.20)			
1.50	E2			13.28	1.50	Red brown, very weak SILTSTONE recovered as gravel and cobbles with occasional cobble size pockets of soft gravelly clay. Gravel is fine to medium, angular to subangular weak siltstone. (Mercia Mudstone Group; Skerry)		
					(0.60)			
2.00	B2							
				12.68	2.10	Complete at 2.10m		

Plan

Remarks

Pit was dry and stable
Pit was terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	JW	21267.TP04

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP05

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.60m x 2.50m	12.30	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316130 E 167591 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.18)	Grass over red brown, sandy gravelly clay TOPSOIL.		
0.10	E1			12.12	0.18	Firm, fully weathered, friable, red brown, sandy, silty, gravelly CLAY. (Mercia Mudstone Group; Grade IVb)		
0.40	B1				(0.52)	Below 0.30m: Frequent mudstone and siltstone cobbles.		
				11.60	0.70	Red brown, partially weathered, weak, highly weathered MUDSTONE recovered as slightly clayey cobbley, fine to coarse mudstone gravel. (Mercia Mudstone Group; Grade III)		
0.80	E2							
1.00	D1				(0.60)	Below 1.00m: Frequent cobble size mudstone lithorelicts		
				11.00	1.30			
1.30	D2			10.95	1.35	Weak SILTSTONE recovered as light grey gravelly cobbles and frequent boulders. (Mercia Mudstone Group; Skerry)		
						Complete at 1.35m		

Plan

Remarks

Pit was dry and stable
Pit was terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	JW	21267.TP05

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP06

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.70m x 2.50m	16.04	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316291 E 167690 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Rough grass over red brown, gravelly sandy TOPSOIL.		
0.30	MHV		>120, >120, 102	15.74	0.30	Stiff, partially weathered, red brown, gravelly silty CLAY. Gravel is fine to medium, angular to subangular weak mudstone. Frequent rootlets present. (Mercia Mudstone Group; Grade IVa)		
0.55	B1				(0.40)			
0.55	E1			15.34	0.70	Below 0.60m: Occasional fine to coarse, angular to subangular siltstone gravel.		
0.80	D1				(0.30)	Dark red brown, partially weathered, very weak, clayey MUDSTONE recovered as fine to coarse gravel and cobbles. Occasional weak siltstone gravel. (Mercia Mudstone Group; Grade III)		
1.20	B2			15.04	1.00	Blue grey weak SILTSTONE recovered as silty cobbles size. (Mercia Mudstone Group; Skerry)		
					(0.70)			
1.70	D2			14.34	1.70	Complete at 1.70m		

Plan

Remarks

Pit was dry and stable
Slight collapse at 0.75m on northern face
Pit was terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	JW	21267.TP06

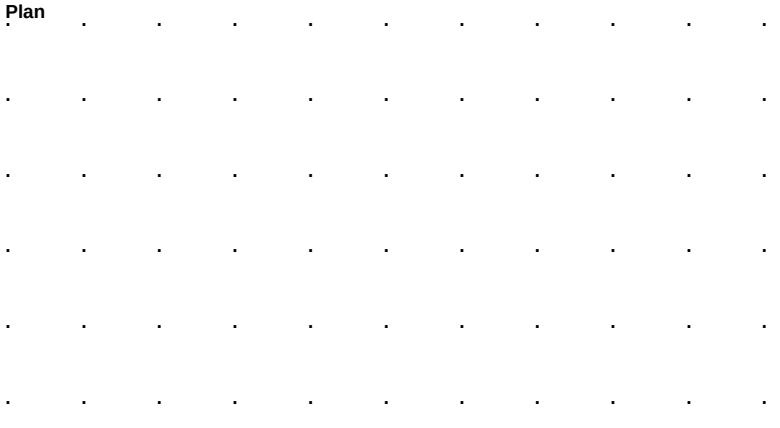
IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP07

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.65m x 2.50m	20.04	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316286 E 167816 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Grass over red brown, sandy, gravelly, clayey TOPSOIL		
				19.84	0.20			
					(0.15)	Red brown, partially weathered, extremely weak to very weak MUDSTONE recovered as clayey gravelly cobbles with frequent boulders of mudstone with gypsum veins (Mercia Mudstone Group; Grade II)		
0.30	B1			19.69	0.35			
0.30	E1					Complete at 0.35m		

Plan



Remarks

Pit was dry and stable
Pit was terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	HP	21267.TP07

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP08

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.65m x 2.80m	17.94	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316462 E 167725 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05	E1			17.84	(0.10) 0.10	Grass over red brown, sandy, gravelly, clayey TOPSOIL		
0.40	B1				(0.50)	Firm, red brown, friable slightly sandy, silty CLAY with frequent rootlets. (Mercia Mudstone Group; Grade IVb)		
0.40	E2							
0.70	D1			17.34	0.60	Red brown, mottled grey, partially weathered, very weak to weak, MUDSTONE recovered as clayey gravelly cobbles with frequent boulders of mudstone. Gravel is coarse, subangular, weak siltstone and mudstone. (Mercia Mudstone Group; Grade II)		
				17.29	0.65	Weak SILTSTONE recovered as light grey, mottled brown, gravelly cobbles and boulders. (Mercia Mudstone Group; Skerry)		
				17.24	0.70	Complete at 0.70m		

Plan

Remarks

Pit was dry and stable
Pit was terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	HP	21267.TP08

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP09

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.65m x 2.50m	18.13	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316176 E 167792 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05	E1				(0.30)	Grass over red brown, sandy, gravelly, clayey TOPSOIL		
0.40	B1			17.83	0.30	Red brown mottled grey partially weathered, weak MUDSTONE recovered as clayey, gravelly cobbles with frequent boulders of mudstone. Occasional gravel is coarse, subangular weak siltstone. (Mercia Mudstone Group; Grade II)		
0.40	E2				(0.35)			
				17.48	0.65	Weak, pale grey SILTSTONE recovered as fine to coarse, gravelly cobbles and boulders. (Mercia Mudstone Group; Skerry)		
				17.43	0.70	Complete at 0.70m		

Plan

Remarks

Pit was dry and stable
Pit was terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	HP	21267.TP09

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP10

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.65m x 2.50m	11.90	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316337 E 167560 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.05	E1				(0.18)	Rough grass over red brown gravelly sandy silty TOPSOIL		
				11.72	0.18	Firm to stiff, red brown, mottled grey slightly sandy, slightly gravelly CLAY. Gravel is fine to coarse, angular to subangular mudstone and siltstone. (Mercia Mudstone Group; Grade IVa)		
					(0.32)			
				11.40	0.50	Red brown, mottled grey, sandy, very gravelly clayey, COBBLES of mudstone. Gravel is fine to coarse, angular to subanugular mudstone and siltstone. (Mercia Mudstone Group; Grade III)		
					(0.20)			
0.70	B1			11.20	0.70			
0.70	E2					Weak, partially weathered, red brown MUDSTONE recovered as silty, sandy, fine to coarse gravel and cobbles of mudstone. (Mercia Mudstone Group; Grade II)		
					(0.40)			
1.10	D1			10.80	1.10	Complete at 1.10m		

Plan

Remarks

Pit was dry and stable
Pit was terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	HP	21267.TP10

IAN FARMER ASSOCIATES

Site	Trial Pit Number
Sully Sports and Social Club Ground	TP11

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Trial Pit	0.65m x 2.70m	20.92	St. Modwen Developments Ltd	21267
	Location	**Dates**	**Engineer**	**Sheet**
	316393 E 167871 N	31/07/2014	Atkins	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.18)	MADE GROUND: Grass over red brown, sandy gravelly clayey TOPSOIL		
				20.74	0.18			
					(0.22)	MADE GROUND: Firm to stiff, red brown, slightly sandy gravelly clay. Gravel is fine to coarse, angular to subangular mudstone, occasional clinker and brick fragments.		
0.30	D1							
0.30	E1			20.52	0.40			
0.50	B1					Partially weathered, weak MUDSTONE recovered as red brown, gravelly COBBLES and frequent boulders (blocky) (Mercia Mudstone Group; Grade II)		
0.50	E2							
					(1.00)			
1.40	D2			19.52	1.40	At 1.30m: Occasional cobble sized mudstone with gypsum veins Below 1.40m: Clay pocket in the west side.		
						Complete at 1.40m		

Plan

Remarks

Pit was dry and stable
Pit was terminated due to tough digging

Scale (approx)	Logged By	Figure No.
1:25	HP	21267.TP11

APPENDIX 3

LABORATORY TESTS

APPENDIX 3

GENERAL NOTES ON LABORATORY TESTS

A3.1 ACCREDITATION

A3.1.1 The geotechnical analyses were carried out as detailed below:

Test	British Standard Reference	Notes
Moisture Content	BS 1377: Part 2: Clause 3.2	For comparison with Atterberg limits (if required) the measured moisture content would have to be corrected to give the equivalent moisture content of the fraction passing the 425 micron sieve.
Atterberg Limits	BS 1377: Part 2: Clause 4.3 and Clause 5	The samples were prepared in accordance with Clause 4.2.
Particle Size Distribution	BS 1377: Part 2: Clause 9.2	Samples prepared in accordance with Clause 7.3 and 7.4.5.

The results of these tests are shown in Appendix 3.

A3.1.2 Subcontracted results are presented directly on headed paper from the subcontracting laboratory.

IAN FARMER ASSOCIATES

Unit 4 Faraday Close, Pattinson North Industrial Estate, Washington, Tyne & Wear, NE38 8QJ.
Tel. 0191 4828500 Fax. 0191 4828520 Email. washington@ianfarmer.co.uk Internet.www.ianfarmer.co.uk

Ian Farmer Associates (1998) Ltd
1 Fairfield Court,
Seven Stars Ind Est,
Wheler Road,
CV3 4LJ

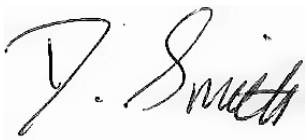
F.A.O. Roy Smith

TEST REPORT - 21267/1

Site :	Sully Sports Ground
Job Number :	21267
Originating Client :	St. Modwen Developments Ltd
Originating Reference :	21267
Date Sampled :	Not Given
Date Scheduled :	08.08.2014
Date Testing Started :	19/08/14
Date Testing Finished :	31/08/14

Remarks :

- First Report for above Job Number
- Samples will be disposed of 28 days after the report is issued unless otherwise agreed
- This report may contain results from tests which are not included within the scope of the UKAS accreditation. Please see final sheet for details.

Authorised By:  Daniel Smith

Position : Laboratory Supervisor Date : 31/08/14

IAN FARMER ASSOCIATES

Laboratory Test Report - 21267/1

Site : Sully Sports Ground

Client : St. Modwen Developments Ltd

Job Number 21267

DETERMINATION OF MOISTURE CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY AND LIQUIDITY INDEX

Borehole/ Trial Pit	Depth (m)	Sample	Natural / Sieved	Natural Moisture Content %	Sample Passing 425µm Sieve		Liquid Limit %	Plastic Limit %	Plasticity Index %	Liquidity Index	Class	Description / Remarks
					Percentage %	Moisture Content %						
TP01	1.00	D1	Natural	22	71	29	41	21	20	0.40	CI	Brown gravelly sandy silty CLAY
TP03	0.40	B1	Natural	25	100	25	51	39	12	-1.17	MH	Brown gravelly sandy SILT / CLAY
TP05	1.00	D1	Natural	9.9	27	23	35	15	20	0.40	CL/CI	Brown sandy gravellly CLAY
TP06	0.55	B1	Natural	13	100	13	44	22	22	-0.41	CI	Brown sandy gravelly organic CLAY
TP07	0.30	B1	Natural	32	22	128	43	27	16	6.31	MI	Brown silty clayey sandy gravelly COBBLES
TP08	0.40	B1	Natural	12	100	12	38	20	18	-0.44	CI	Brown sandy gravelly CLAY
TP09	0.40	B1	Natural	12	88	13	49	27	22	-0.64	CI	Brown sandy silty clayey GRAVEL includes cobbles
TP10	0.70	B1	Natural	12	100	12	26	21	5	-1.80	ML	Brown sandy silty clayey GRAVEL includes cobbles
TP11	0.30	D1	Natural	14	100	14	41	22	19	-0.42	CI	Brown silty organic gravelly CLAY
WS12	0.40	B1	Natural	16	100	16	35	27	8	-1.38	ML/MI	Brown sandy SILT / CLAY

Method of Preparation : BS 1377:PART 1:1990:7.4 Preparation of samples for classification tests BS 1377:PART 2:1990:4.2 & 5.2 Sample preparations

Method of Test : BS 1377:PART 2:1990:3.2 Determination of moisture content 4.3 Determination of the liquid limit 5.3 Determination of the plastic limit and plasticity index

IAN FARMER ASSOCIATES

Laboratory Test Report - 21267/1

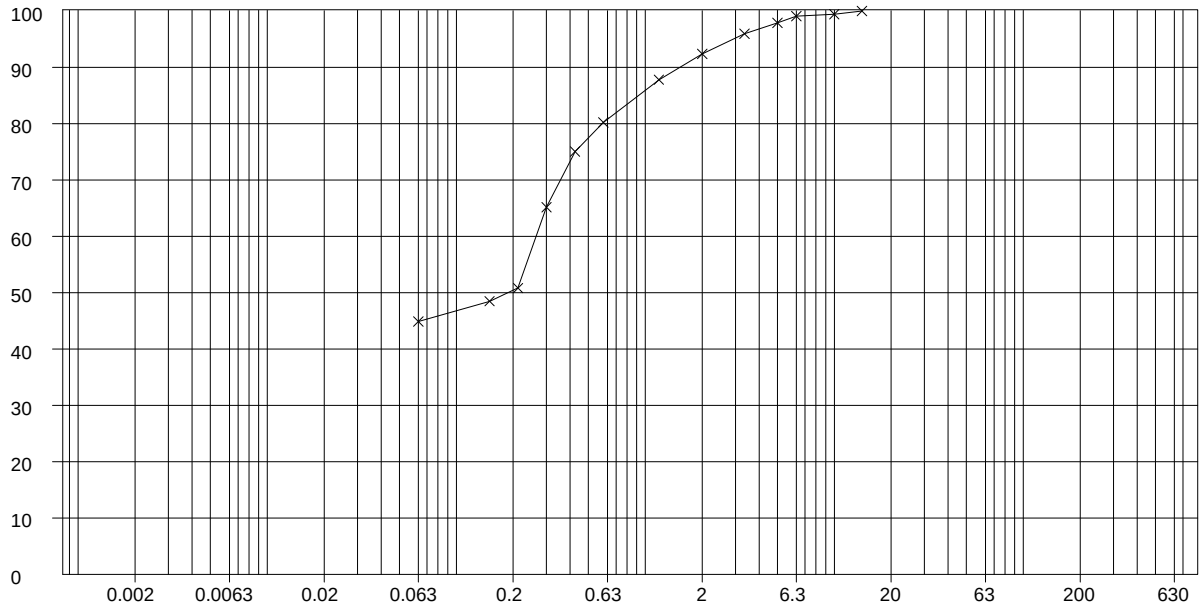
Site : Sully Sports Ground

Client : St. Modwen Developments Ltd

Job Number 21267

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
TP03	0.40	B1	N/A	Brown gravelly sandy SILT / CLAY



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	100
20 mm	100
14 mm	100
10 mm	99
6.3 mm	99
5 mm	98
3.35 mm	96
2 mm	92
1.18 mm	88
600 µm	80
425 µm	75
300 µm	65
212 µm	51
150 µm	48
63 µm	45

Grading Analysis	
D85	964.8 µm
D60	268.2 µm
D10	-
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	0%
Gravel	8%
Sand	47%
Silt/Clay	45%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

IAN FARMER ASSOCIATES

Laboratory Test Report - 21267/1

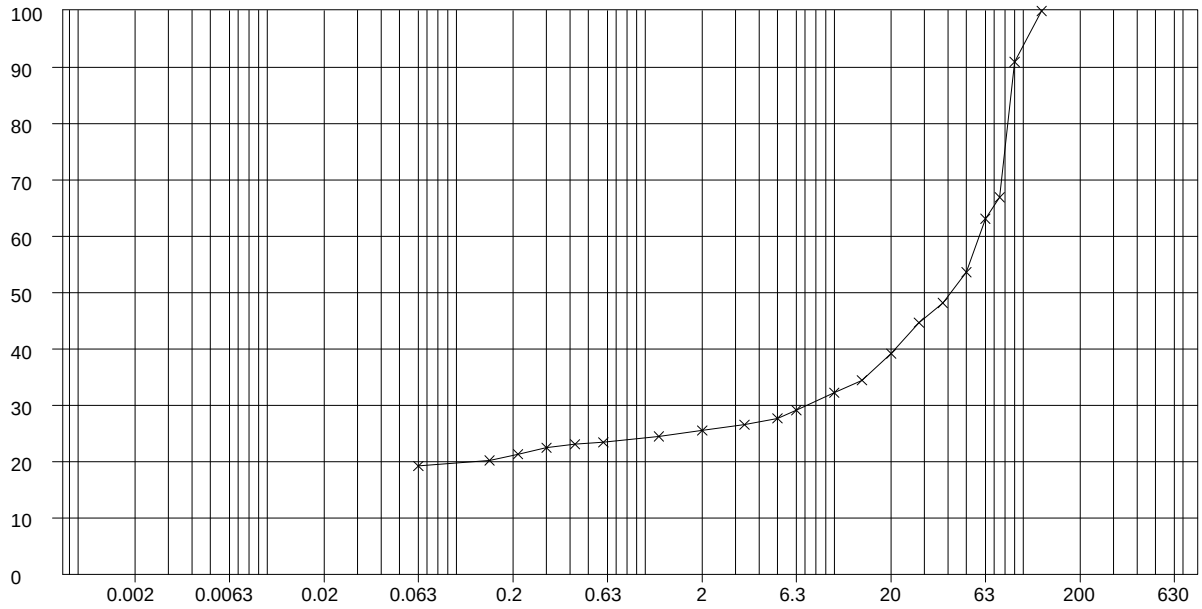
Site : Sully Sports Ground

Client : St. Modwen Developments Ltd

Job Number 21267

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
TP04	2.00	B2	N/A	Brown sandy silty clayey GRAVEL includes cobbles



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	91
75 mm	67
63 mm	63
50 mm	54
37.5 mm	48
28 mm	45
20 mm	39
14 mm	34
10 mm	32
6.3 mm	29
5 mm	28
3.35 mm	27
2 mm	26
1.18 mm	24
600 µm	23
425 µm	23
300 µm	22
212 µm	21
150 µm	20
63 µm	19

Grading Analysis	
D85	86.3 mm
D60	58.7 mm
D10	-
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	39%
Gravel	36%
Sand	6%
Silt/Clay	19%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

IAN FARMER ASSOCIATES

Laboratory Test Report - 21267/1

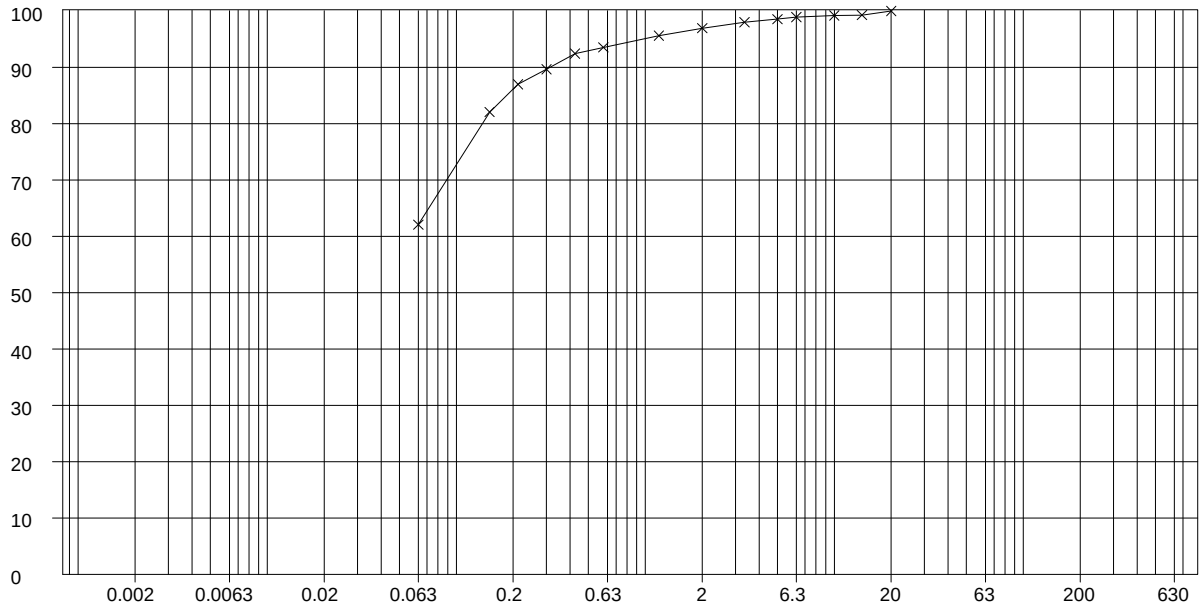
Site : Sully Sports Ground

Client : St. Modwen Developments Ltd

Job Number 21267

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
TP05	0.40	B1	N/A	Brown gravelly sandy SILT / CLAY



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Grading Analysis	
D85	186.7 µm
D60	-
D10	-
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	0%
Gravel	3%
Sand	35%
Silt/Clay	62%

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	100
20 mm	100
14 mm	99
10 mm	99
6.3 mm	99
5 mm	99
3.35 mm	98
2 mm	97
1.18 mm	96
600 µm	94
425 µm	92
300 µm	90
212 µm	87
150 µm	82
63 µm	62

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

IAN FARMER ASSOCIATES

Laboratory Test Report - 21267/1

Site : Sully Sports Ground

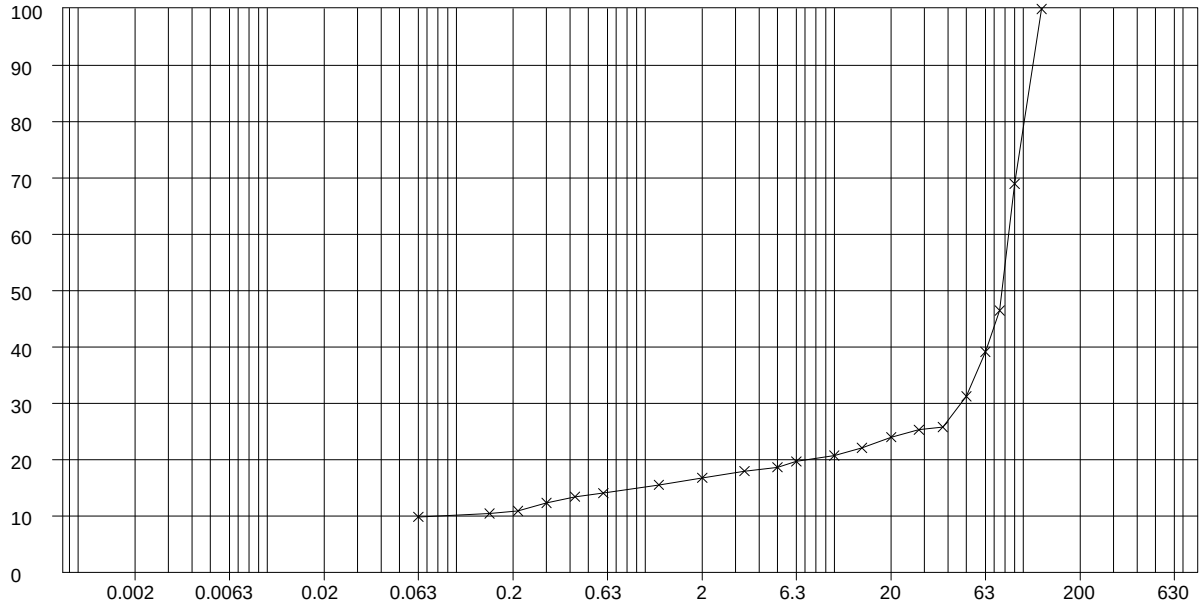
Client : St. Modwen Developments Ltd

Job Number 21267

Page 6 / 11

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
TP07	0.30	B1	N/A	Brown silty clayey sandy gravelly COBBLES



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Grading Analysis	
D85	108.1 mm
D60	84.0 mm
D10	84.0 µm
Uniformity Coefficient	1000.1

Particle Proportions	
Cobbles + Boulders	63%
Gravel	21%
Sand	7%
Silt/Clay	9%

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	69
75 mm	46
63 mm	39
50 mm	31
37.5 mm	26
28 mm	25
20 mm	24
14 mm	22
10 mm	21
6.3 mm	20
5 mm	19
3.35 mm	18
2 mm	17
1.18 mm	16
600 µm	14
425 µm	13
300 µm	12
212 µm	11
150 µm	10
63 µm	10

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

IAN FARMER ASSOCIATES

Laboratory Test Report - 21267/1

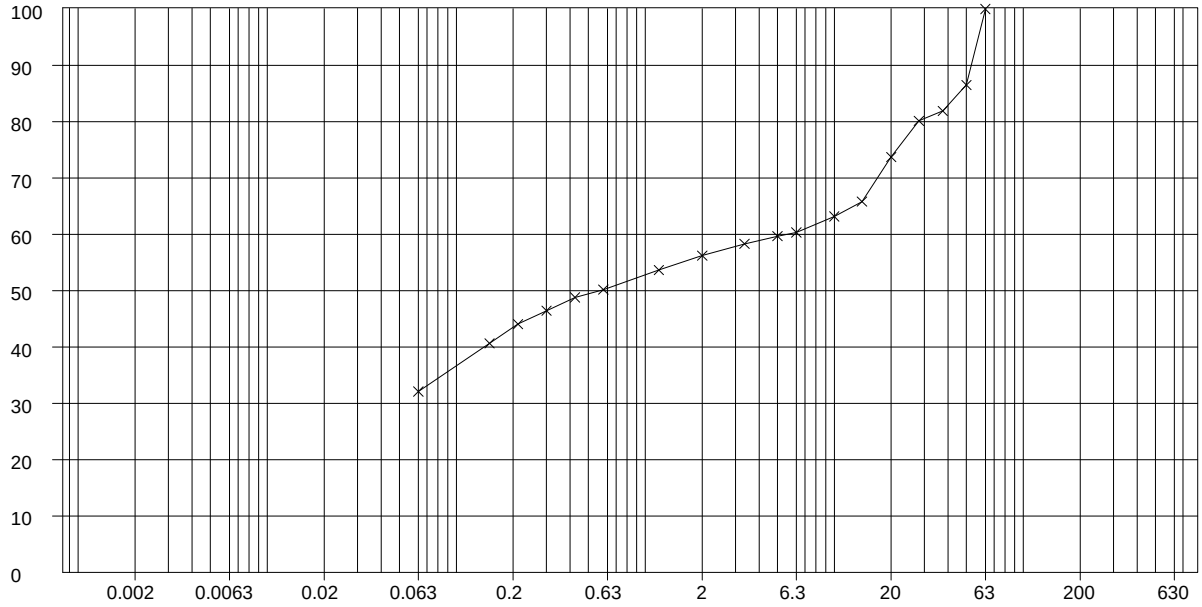
Site : Sully Sports Ground

Client : St. Modwen Developments Ltd

Job Number 21267

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
TP09	0.40	B1	N/A	Brown sandy silty clayey GRAVEL includes cobbles



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	87
37.5 mm	82
28 mm	80
20 mm	74
14 mm	66
10 mm	63
6.3 mm	60
5 mm	60
3.35 mm	58
2 mm	56
1.18 mm	54
600 µm	50
425 µm	49
300 µm	46
212 µm	44
150 µm	41
63 µm	32

Grading Analysis	
D85	45.9 mm
D60	5.6 mm
D10	-
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	3%
Gravel	41%
Sand	24%
Silt/Clay	32%

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

IAN FARMER ASSOCIATES

Laboratory Test Report - 21267/1

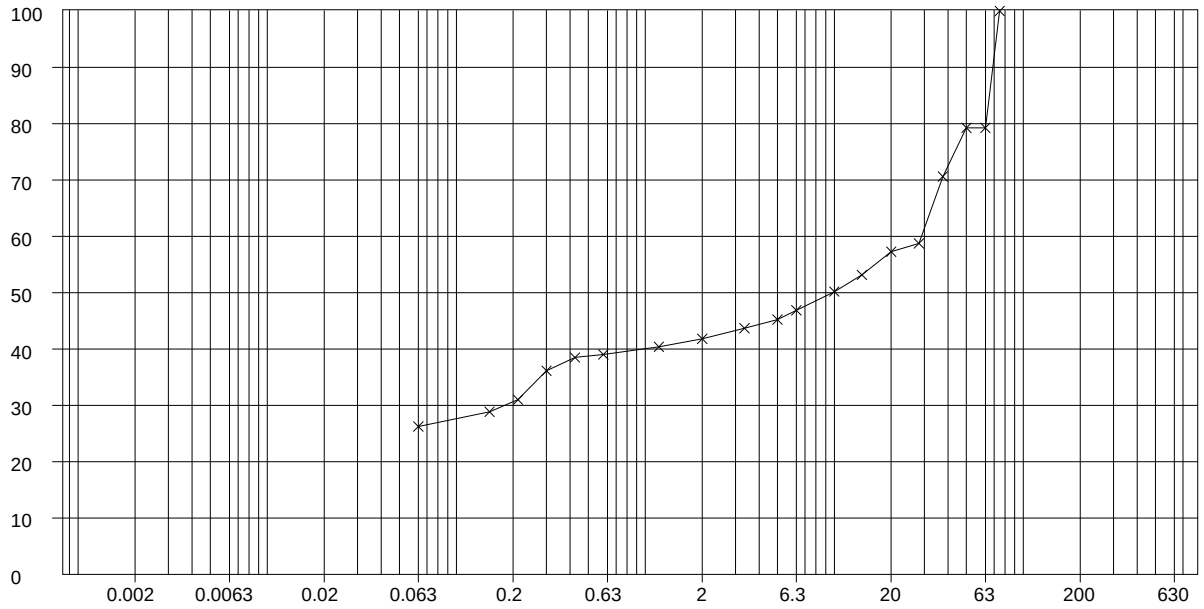
Site : Sully Sports Ground

Client : St. Modwen Developments Ltd

Job Number 21267

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
TP10	0.70	B1	N/A	Brown sandy silty clayey GRAVEL includes cobbles



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Grading Analysis	
D85	66.3 mm
D60	29.0 mm
D10	-
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	21%
Gravel	37%
Sand	16%
Silt/Clay	26%

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	79
50 mm	79
37.5 mm	71
28 mm	59
20 mm	57
14 mm	53
10 mm	50
6.3 mm	47
5 mm	45
3.35 mm	44
2 mm	42
1.18 mm	40
600 µm	39
425 µm	39
300 µm	36
212 µm	31
150 µm	29
63 µm	26

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

IAN FARMER ASSOCIATES

Laboratory Test Report - 21267/1

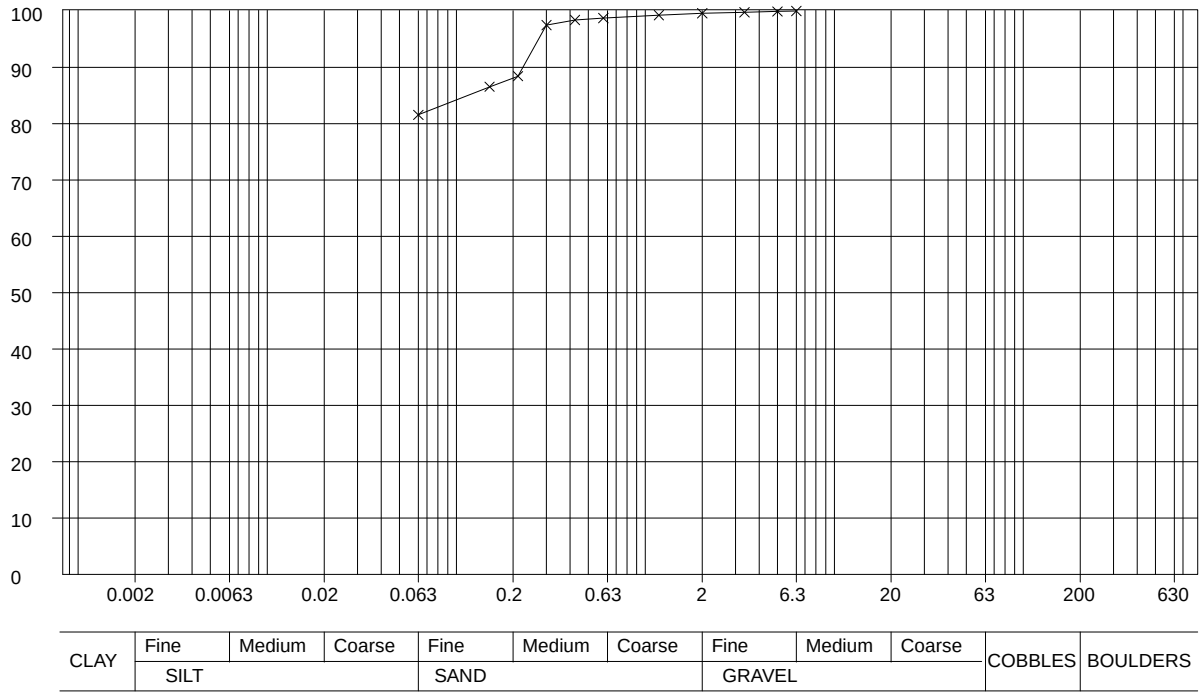
Site : Sully Sports Ground

Client : St. Modwen Developments Ltd

Job Number 21267

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
WS12	0.40	B1	N/A	Brown sandy SILT / CLAY



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Grading Analysis	
D85	122.8 µm
D60	-
D10	-
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	0%
Gravel	0%
Sand	18%
Silt/Clay	82%

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	100
20 mm	100
14 mm	100
10 mm	100
6.3 mm	100
5 mm	100
3.35 mm	100
2 mm	100
1.18 mm	99
600 µm	99
425 µm	98
300 µm	98
212 µm	88
150 µm	87
63 µm	82

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

IAN FARMER ASSOCIATES

Laboratory Test Report - 21267/1

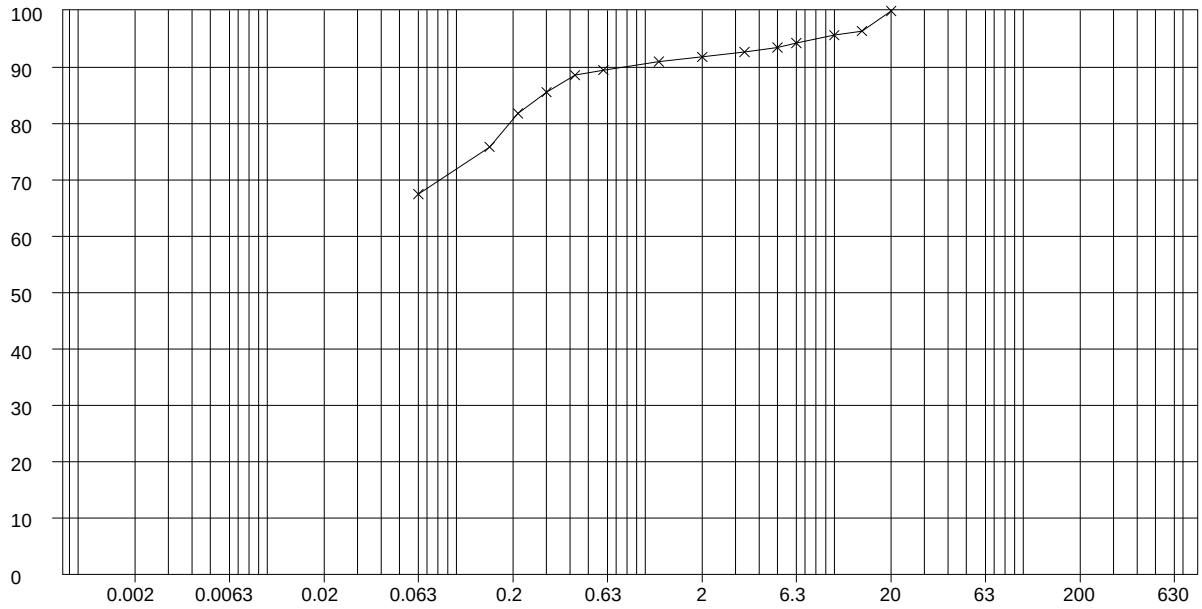
Site : Sully Sports Ground

Client : St. Modwen Developments Ltd

Job Number 21267

DETERMINATION OF PARTICLE SIZE DISTRIBUTION

Borehole / Trial Pit	Depth (m)	Sample	Pipette/ Hydrometer	Description
WS8	0.20	B1	N/A	Brown gravelly sandy SILT / CLAY



CLAY	Fine	Medium	Coarse	Fine	Medium	Coarse	Fine	Medium	Coarse	COBBLES	BOULDERS
	SILT			SAND			GRAVEL				

Grading Analysis	
D85	286.0 µm
D60	-
D10	-
Uniformity Coefficient	-

Particle Proportions	
Cobbles + Boulders	0%
Gravel	8%
Sand	24%
Silt/Clay	68%

Sieve / Particle Size	% Passing
200 mm	100
150 mm	100
125 mm	100
90 mm	100
75 mm	100
63 mm	100
50 mm	100
37.5 mm	100
28 mm	100
20 mm	100
14 mm	96
10 mm	96
6.3 mm	94
5 mm	94
3.35 mm	93
2 mm	92
1.18 mm	91
600 µm	90
425 µm	89
300 µm	86
212 µm	82
150 µm	76
63 µm	68

Method of Preparation : BS 1377:PART 1:1990:7.3 Initial preparation 7.4.5 Particle size tests

Preparation Details : Sample washed with no dispersant used, Oven Dried at 105 - 110℃

Method of Test : BS 1377:PART 2:1990:9 Determination of particle size distribution

Remarks :

Test Report : **21267/1**

Site : Sully Sports Ground
Job Number : 21267
Originating Client : St. Modwen Developments Ltd

All opinions and interpretations contained within this report are outside of our Scope of Accreditation.

The following tests contained within this report are not UKAS Accredited.

Date of Issued : 31/08/14

Anthony Owen
Ian Farmer Associates
Unit 1 Fairfield Court
Wheler Rd
Seven Stars Industrial Estate
Coventry
CV3 4LJ

t: 02476 303 422

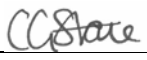
e: anthony.owen@ianfarmer

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 14-58615

Project / Site name:	Sully	**Samples received on:**	04/08/2014
Your job number:	21267	**Samples instructed on:**	15/08/2014
Your order number:	29695	**Analysis completed by:**	19/08/2014
Report Issue Number:	1	**Report issued on:**	19/08/2014
Samples Analysed:	4 soil samples		

Signed: 

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Signed: 

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 14-58615

Project / Site name: Sully
Your Order No: 29695

Lab Sample Number				363709	363710	363711	363712	
Sample Reference				TP02	TP07	WS13	WS9	
Sample Number				D1	B1	B1	B1	
Depth (m)				0.30	0.30	0.20	0.20	
Date Sampled				31/07/2014	31/07/2014	22/07/2014	22/07/2014	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	43	39	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	3.7	5.2	5.4	4.8	
Total mass of sample received	kg	0.001	NONE	0.89	1.2	1.0	1.1	
General Inorganics								
pH	pH Units	N/A	MCERTS	7.1	7.6	7.4	7.2	
Water Soluble Sulphate (Soil Equivalent)	g/l	0.0025	MCERTS	0.012	0.012	0.026	0.017	
Water Soluble Sulphate as SO_4 (2:1)	mg/kg	2.5	MCERTS	12	12	26	17	
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0062	0.0061	0.013	0.0087	

Analytical Report Number : 14-58615

Project / Site name: Sully

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
363709	TP02	D1	0.30	Brown clay and sand with vegetation and stones.
363710	TP07	B1	0.30	Brown clay and sand with vegetation and stones.
363711	WS13	B1	0.20	Brown topsoil and clay with vegetation.
363712	WS9	B1	0.20	Brown clay and sand with vegetation.

Analytical Report Number : 14-58615

Project / Site name: Sully

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by extraction with water followed by ICP-OES. Results reported corrected for extraction ratio (soil equivalent) as g/l and mg/kg; and upon the 2:1 leachate (g/l)	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Anthony Owen
Ian Farmer Associates
Unit 1 Fairfield Court
Wheler Rd
Seven Stars Industrial Estate
Coventry
CV3 4LJ

t: 02476 303 422

e: anthony.owen@ianfarmer

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 14-58667

Project / Site name:	Sully	**Samples received on:**	18/08/2014
Your job number:	21267	**Samples instructed on:**	18/08/2014
Your order number:	29695	**Analysis completed by:**	20/08/2014
Report Issue Number:	1	**Report issued on:**	20/08/2014
Samples Analysed:	4 soil samples		

Signed:

Thurstan Plummer
Organics Technical Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 14-58667

Project / Site name: Sully
Your Order No: 29695

Lab Sample Number				364072	364073	364074	364075	
Sample Reference				TP04	TP11	WS12	WS6	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.50	1.40	1.00	2.00	
Date Sampled				31/07/2014	31/07/2014	22/07/2014	22/07/2014	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	41	29	36	13	
Moisture Content	%	N/A	NONE	9.5	13	3.1	8.4	
Total mass of sample received	kg	0.001	NONE	0.87	0.52	0.25	0.37	
General Inorganics								
pH	pH Units	N/A	MCERTS	7.8	8.6	8.9	9.0	
Water Soluble Sulphate (Soil Equivalent)	g/l	0.0025	MCERTS	0.017	0.020	0.020	0.046	
Water Soluble Sulphate as SO_4 (2:1)	mg/kg	2.5	MCERTS	17	20	20	46	
Water Soluble Sulphate (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0085	0.010	0.0098	0.023	

Analytical Report Number : 14-58667

Project / Site name: Sully

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content

of a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
364072	TP04	None Supplied	0.50	Brown clay with stones and vegetation.
364073	TP11	None Supplied	1.40	Brown clay with stones and vegetation.
364074	WS12	None Supplied	1.00	Light grey sandy gravel with vegetation and stones.
364075	WS6	None Supplied	2.00	Brown sandy topsoil with stones and vegetation.

Analytical Report Number : 14-58667

Project / Site name: Sully

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by extraction with water followed by ICP-OES. Results reported corrected for extraction ratio (soil equivalent) as g/l and mg/kg; and upon the 2:1 leachate (g/l)	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

APPENDIX 4

GEOENVIRONMENTAL TESTS

APPENDIX 4

GENERAL NOTES ON GEOENVIRONMENTAL TESTS

A4.1 ACCREDITATION

A4.1.1 Testing has been carried out to either UKAS or MCERTS accreditation, as specified in the results tables.

A4.1.2 The unique reference for each sample is as stated on the relevant engineering log. Each sample is logged on a chain of custody, and can be traced from exploratory hole to laboratory. The date of soil samples taken is as per the date shown on the engineering log.

A4.1.3 Subcontracted results are presented directly on headed paper from the subcontracting laboratory.

Jessica Walker
Ian Farmer Associates
Unit 1 Fairfield Court
Wheler Rd
Seven Stars Industrial Estate
Coventry
CV3 4LJ

t: 02476 303 422

e: jessica.walker@ianfarmer.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 14-58422

Replaces Analytical Report Number : 14-58422, issue no. 1

Project / Site name:	Sully	**Samples received on:**	04/08/2014
Your job number:	21267	**Samples instructed on:**	11/08/2014
Your order number:	29691	**Analysis completed by:**	10/09/2014
Report Issue Number:	2	**Report issued on:**	10/09/2014
Samples Analysed:	4 leachate samples - 12 soil samples		

Signed:

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Signed:

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 14-58422

Project / Site name: Sully

Your Order No: 29691

Lab Sample Number				362607	362608	362609	362610	362611
Sample Reference				TP01	TP01	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.60	0.20	0.90	1.50
Date Sampled				31/07/2014	31/07/2014	31/07/2014	31/07/2014	31/07/2014
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	7.1	14	9.3	9.9	8.5
Total mass of sample received	kg	0.001	NONE	0.35	0.42	0.41	0.38	0.47
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	Amosite	-	Amosite	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Detected	-	Detected	-	-
Asbestos Quantification	%	0.001	NONE	< 0.001	-	< 0.001	-	-
General Inorganics								
pH	pH Units	N/A	MCERTS	7.3	7.5	7.5	7.6	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Organic Matter	%	0.1	MCERTS	4.7	-	3.6	-	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.98	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.68	< 0.10	< 0.10
Phenanthrene	mg/kg	0.1	MCERTS	0.60	< 0.10	5.8	< 0.10	< 0.10
Anthracene	mg/kg	0.1	MCERTS	0.13	< 0.10	1.1	< 0.10	< 0.10
Fluoranthene	mg/kg	0.1	MCERTS	1.4	< 0.10	6.8	0.54	< 0.10
Pyrene	mg/kg	0.1	MCERTS	1.1	< 0.10	5.0	0.39	< 0.10
Benzo(a)anthracene	mg/kg	0.1	MCERTS	0.77	< 0.10	3.4	0.21	< 0.10
Chrysene	mg/kg	0.05	MCERTS	1.0	< 0.05	3.6	0.36	< 0.05
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	1.1	< 0.10	3.6	0.37	< 0.10
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	0.54	< 0.10	2.2	0.15	< 0.10
Benzo(a)pyrene	mg/kg	0.1	MCERTS	0.82	< 0.10	3.0	0.24	< 0.10
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	0.61	< 0.10	2.0	< 0.10	< 0.10
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	0.36	< 0.10	< 0.10
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.62	< 0.05	2.2	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	8.76	< 1.60	40.7	2.26	< 1.60
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	10	12	10	15	5.9
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.3	1.2	0.8	1.1	0.4
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.5	2.2	1.4	5.8	< 0.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	30	46	32	68	14
Copper (aqua regia extractable)	mg/kg	1	MCERTS	44	25	39	27	13
Lead (aqua regia extractable)	mg/kg	1	MCERTS	79	94	100	210	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	34	26	22	24	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	180	270	190	400	74

Analytical Report Number: 14-58422

Project / Site name: Sully

Your Order No: 29691

Lab Sample Number				362607	362608	362609	362610	362611
Sample Reference				TP01	TP01	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	0.60	0.20	0.90	1.50
Date Sampled				31/07/2014	31/07/2014	31/07/2014	31/07/2014	31/07/2014
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Toluene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
o-xylene	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
Petroleum Hydrocarbons								
TPH1 (C10 - C40)	mg/kg	10	MCERTS	17	-	130	-	-
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	< 2.0	-	-
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	-	< 8.0	-	-
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	-	19	-	-
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	-	19	-	-
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	< 0.1	-	< 0.1	-	-
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	-	< 1.0	-	-
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	-	4.4	-	-
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	-	28	-	-
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	12	-	66	-	-
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	12	-	98	-	-

Analytical Report Number: 14-58422

Project / Site name: Sully

Your Order No: 29691

Lab Sample Number				362612	362613	362614	362615	362616
Sample Reference				TP05	TP09	TP11	TP11	WS3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.10	0.30	0.50	0.40
Date Sampled				31/07/2014	31/07/2014	31/07/2014	31/07/2014	21/07/2014
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	N/A	NONE	12	9.8	8.9	10	11
Total mass of sample received	kg	0.001	NONE	0.38	0.33	0.39	0.34	0.39
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	Chrysotile
Asbestos in Soil	Type	N/A	ISO 17025	-	-	Not-detected	-	Detected
Asbestos Quantification	%	0.001	NONE	-	-	-	-	< 0.001
General Inorganics								
pH	pH Units	N/A	MCERTS	7.6	6.9	7.0	7.1	7.0
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	< 1
Organic Matter	%	0.1	MCERTS	2.2	5.8	-	-	-
Total Phenols								
Total Phenols (monohydric)	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.24
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	3.7
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.94
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	6.3
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	5.3
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	3.1
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	3.0
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	3.2
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	2.0
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	2.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	1.7
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10	< 0.10	< 0.10	0.31
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	2.0
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60	< 1.60	< 1.60	34.7
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	15	13	11	7.8	15
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.8	1.4	1.1	1.3	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.4	4.5	2.7	2.2	4.1
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	44	30	31	51
Copper (aqua regia extractable)	mg/kg	1	MCERTS	39	28	30	19	37
Lead (aqua regia extractable)	mg/kg	1	MCERTS	64	170	95	64	170
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	21	28	27	41	26
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	170	430	250	300	320

Analytical Report Number: 14-58422

Project / Site name: Sully

Your Order No: 29691

Lab Sample Number				362612	362613	362614	362615	362616
Sample Reference				TP05	TP09	TP11	TP11	WS3
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.10	0.30	0.50	0.40
Date Sampled				31/07/2014	31/07/2014	31/07/2014	31/07/2014	21/07/2014
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
Petroleum Hydrocarbons								
TPH1 (C10 - C40)	mg/kg	10	MCERTS	-	-	< 10	-	350
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-	< 8.0	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-	< 8.0	-	49
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	< 10	-	49
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-	< 0.1	-	< 0.1
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-	< 1.0	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-	< 2.0	-	3.0
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-	< 10	-	45
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-	< 10	-	240
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-	< 10	-	290

Analytical Report Number: 14-58422

Project / Site name: Sully

Your Order No: 29691

Lab Sample Number				362617	362618			
Sample Reference				WS6	WS12			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.40			
Date Sampled				22/07/2014	22/07/2014			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1			
Moisture Content	%	N/A	NONE	11	10			
Total mass of sample received	kg	0.001	NONE	0.39	0.45			
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-			
Asbestos in Soil	Type	N/A	ISO 17025	-	-			
Asbestos Quantification	%	0.001	NONE	-	-			
General Inorganics								
pH	pH Units	N/A	MCERTS	7.3	7.2			
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1			
Organic Matter	%	0.1	MCERTS	1.6	< 0.1			
Total Phenols								
Total Phenols (monohydric)	mg/kg	2	MCERTS	< 2.0	< 2.0			
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Acenaphthylene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Acenaphthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Fluorene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Phenanthrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(a)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Benzo(b)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(k)fluoranthene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(a)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Indeno(1,2,3-cd)pyrene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Dibenz(a,h)anthracene	mg/kg	0.1	MCERTS	< 0.10	< 0.10			
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05			
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	1.6	MCERTS	< 1.60	< 1.60			
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	13	6.6			
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.9	1.0			
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	1.2	0.2			
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	34			
Copper (aqua regia extractable)	mg/kg	1	MCERTS	33	20			
Lead (aqua regia extractable)	mg/kg	1	MCERTS	57	24			
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3			
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	26	31			
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0			
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	160	120			

Analytical Report Number: 14-58422

Project / Site name: Sully

Your Order No: 29691

Lab Sample Number				362617	362618			
Sample Reference				WS6	WS12			
Sample Number				None Supplied	None Supplied			
Depth (m)				0.50	0.40			
Date Sampled				22/07/2014	22/07/2014			
Time Taken				None Supplied	None Supplied			
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/kg	1	MCERTS	-	-			
Toluene	µg/kg	1	MCERTS	-	-			
Ethylbenzene	µg/kg	1	MCERTS	-	-			
p & m-xylene	µg/kg	1	MCERTS	-	-			
o-xylene	µg/kg	1	MCERTS	-	-			
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-			

Petroleum Hydrocarbons

TPH1 (C10 - C40)	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	-	-			
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.1	MCERTS	-	-			
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	-	-			
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	-	-			
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	-	-			
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	-	-			

Analytical Report Number: 14-58422
Project / Site name: Sully
Your Order No: 29691

Certificate of Analysis - Asbestos Quantification

Methods:

Qualitative Analysis (*UKAS accredited)

The samples were analysed qualitatively for asbestos by polarising light and dispersion staining as described by the Health and Safety Executive in HSG 248.

Quantitative Analysis

The analysis was carried out using our documented in-house method based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248. Our method includes initial examination of the entire representative sample, sieving into four (4) different fractions viz: (+16mm; +8mm (coarse); +2mm (medium); and -2mm (fine fraction), detailed analysis of entire coarse, medium and fine fractions and Quantification by hand picking and weighing. Sieve fraction of soil greater than 16mm is considered as Bulk sample and reported separately, asbestos content (if any) is not included in the final Quantitative analysis. The limit of detection of this method is around 0.0001 % with a limit of quantification of 0.001 %.

Sample Number	Sample ID	Sample Depth (m)	Sample Weight (g)	Asbestos Containing Material Types Detected (ACM)	PLM Results (*)	Asbestos by hand picking/weighing (%)	Total % Asbestos in Sample
362607	TP01	0.30	68	Loose Fibres	**Amosite**	< 0.001	**< 0.001**
362609	TP03	0.20	90	Loose Fibres	**Amosite**	< 0.001	**< 0.001**
362616	WS3	0.40	67	Loose Fibres	**Chrysotile**	< 0.001	**< 0.001**

Opinions and interpretations expressed herein are outside the scope of UKAS accreditation

Analytical Report Number: 14-58422

Project / Site name: Sully

Your Order No: 29691

Lab Sample Number				362619	362620	362621	362622	
Sample Reference				TP01	TP03	TP11	WS3	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.30	0.20	0.30	0.40	
Date Sampled				31/07/2014	31/07/2014	31/07/2014	21/07/2014	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
General Inorganics								
pH	pH Units	N/A	ISO 17025	7.2	7.1	7.2	7.1	
Total Cyanide	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Sulphate as SO_4	µg/l	100	ISO 17025	1430	5870	1960	1670	
Chloride	mg/l	4	NONE	< 4.0	< 4.0	< 4.0	< 4.0	
Ammoniacal Nitrogen as N	µg/l	15	NONE	< 15	< 15	< 15	< 15	
Nitrate as N	mg/l	0.25	NONE	0.6	0.7	0.3	1.8	
Chemical Oxygen Demand (Total)	mg/l	2	ISO 17025	25	26	15	20	
Total Phenols								
Total Phenols (monohydric)	µg/l	10	ISO 17025	< 10	< 10	< 10	< 10	
Speciated PAHs								
Naphthalene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Acenaphthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Fluorene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Phenanthrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Chrysene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(b)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(k)fluoranthene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(a)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Indeno(1,2,3-cd)pyrene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Dibenz(a,h)anthracene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Benzo(ghi)perylene	µg/l	0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	
Total PAH								
Total EPA-16 PAHs	µg/l	0.2	NONE	< 0.2	< 0.2	< 0.2	< 0.2	
Heavy Metals / Metalloids								
Arsenic (dissolved)	µg/l	1.1	ISO 17025	1.8	5.2	< 1.1	< 1.1	
Cadmium (dissolved)	µg/l	0.08	ISO 17025	< 0.08	< 0.08	< 0.08	< 0.08	
Chromium (dissolved)	µg/l	0.4	ISO 17025	3.7	2.0	1.5	11	
Copper (dissolved)	µg/l	0.7	ISO 17025	5.9	11	5.4	4.1	
Iron (dissolved)	mg/l	0.004	ISO 17025	1.6	0.79	0.87	1.9	
Lead (dissolved)	µg/l	1	ISO 17025	4.3	4.4	< 1.0	10	
Manganese (dissolved)	µg/l	0.06	ISO 17025	18	5.2	7.9	23	
Mercury (dissolved)	µg/l	0.5	ISO 17025	< 0.5	< 0.5	< 0.5	< 0.5	
Nickel (dissolved)	µg/l	0.3	ISO 17025	2.8	1.8	1.4	2.9	
Zinc (dissolved)	µg/l	0.4	ISO 17025	16	7.8	10	49	
Calcium (dissolved)	mg/l	0.012	ISO 17025	16	15	4.1	15	
Magnesium (dissolved)	mg/l	0.005	ISO 17025	1.8	1.5	0.71	1.7	
Potassium (dissolved)	mg/l	0.025	ISO 17025	4.4	8.6	0.84	3.8	
Sodium (dissolved)	mg/l	0.01	ISO 17025	2.3	2.8	2.6	2.2	

Analytical Report Number: 14-58422

Project / Site name: Sully

Your Order No: 29691

Lab Sample Number				362619	362620	362621	362622	
Sample Reference				TP01	TP03	TP11	WS3	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.30	0.20	0.30	0.40	
Date Sampled				31/07/2014	31/07/2014	31/07/2014	21/07/2014	
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	
Analytical Parameter (Leachate Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics								
Benzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	µg/l	1	NONE	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
Petroleum Hydrocarbons								
TPH-CWG - Aliphatic >C5 - C6	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C6 - C8	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C5 - C7	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C7 - C8	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C8 - C10	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C10 - C12	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C12 - C16	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C16 - C21	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >C21 - C35	µg/l	10	NONE	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (C5 - C35)	µg/l	10	NONE	< 10	< 10	< 10	< 10	

Analytical Report Number : 14-58422

Project / Site name: Sully

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and topsoil/loam soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 2 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
362607	TP01	None Supplied	0.30	Brown topsoil and clay with gravel and vegetation.
362608	TP01	None Supplied	0.60	Brown clay and topsoil with gravel and vegetation.
362609	TP03	None Supplied	0.20	Brown topsoil and clay with gravel and vegetation.
362610	TP03	None Supplied	0.90	Brown clay and topsoil with gravel and vegetation.
362611	TP04	None Supplied	1.50	Brown topsoil and clay with gravel and vegetation.
362612	TP05	None Supplied	0.10	Brown topsoil and clay with gravel and vegetation.
362613	TP09	None Supplied	0.10	Brown topsoil and clay with gravel and vegetation.
362614	TP11	None Supplied	0.30	Brown topsoil and clay with gravel and vegetation.
362615	TP11	None Supplied	0.50	Brown clay and topsoil with gravel and vegetation.
362616	WS3	None Supplied	0.40	Brown topsoil and clay with gravel and vegetation.
362617	WS6	None Supplied	0.50	Brown topsoil and clay with gravel and vegetation.
362618	WS12	None Supplied	0.40	Brown topsoil and clay with gravel and vegetation.

Analytical Report Number : 14-58422

Project / Site name: Sully

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Ammoniacal Nitrogen as N in leachate	Determination of Ammonium/Ammonia/Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	NONE
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Asbestos Quantification	The analysis was carried out using our documented in-house method based on HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248	HSE Contract Research Report No: 83/1996: Development and Validation of an analytical method to determine the amount of asbestos in soils and loose aggregates (Davies et al, 1996) and HSG 248	A006-UK	D	NONE
BTEX and MTBE in leachates	Determination of BTEX and MTBE in leachates by headspace GC-MS.	In-house method based on USEPA8260	L017-UK	W	NONE
BTEX and MTBE in soil	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073S-PL	W	MCERTS
Chemical Oxygen Demand in Leachate (Total)	Determination of total COD in leachate by oxidation with acidified potassium dichromate at 150¦C.Reduced chromate ions assayed colorimetrically.	HACH DR/890 Colorimeter Procedures Manual (48470-22) (Ref 0170.2)	L065-PL	W	ISO 17025
Chloride in leachate	Determination of chloride in leachate by titration against silver nitrate.	In-house method	L024-PL	W	NONE
Metals by ICP-OES in leachate	Determination of metals in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L019-UK/PL	W	NONE
Monohydric phenols in leachate	Determination of phenols in leachate by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	ISO 17025
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Nitrate as N in leachate	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton & Polish Standard Method PN-82/C-04579.08	L078-PL	W	NONE
Organic matter in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L023-PL	D	MCERTS
pH in leachate	Determination of pH in leachate by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	ISO 17025
pH in soil	Determination of pH in soil by addition of water followed by electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L005-PL	W	MCERTS

Analytical Report Number : 14-58422

Project / Site name: Sully

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Speciated EPA-16 PAHs in leachate	Determination of PAH compounds in leachate by extraction in dichloromethane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L070-PL	W	NONE
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Stones not passing through a 10 mm sieve is determined gravimetrically and reported as a percentage of the dry weight. Sample results are not corrected for the stone content of the sample.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphate in leachates	Determination of sulphate in leachate by acidification followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L039-PL	W	ISO 17025
Total cyanide in leachate	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	ISO 17025
TPH1 (Soil)	Determination of dichloromethane/hexane extractable hydrocarbons in soil by GC-MS.	In-house method	L064-PL	D	MCERTS
TPHCWG (Leachates)	Determination of dichloromethane extractable hydrocarbons in leachate by GC-MS.	In-house method	L070-PL	W	NONE
TPHCWG (Soil)	Determination of pentane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method	L076-PL	W	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Jessica Walker
Ian Farmer Associates
Unit 1 Fairfield Court
Wheler Rd
Seven Stars Industrial Estate
Coventry
CV3 4LJ

t: 02476 303 422

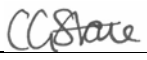
e: jessica.walker@ianfarmer.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 14-59397

Project / Site name:	Sully	**Samples received on:**	04/08/2014
Your job number:	21267	**Samples instructed on:**	03/09/2014
Your order number:	29745	**Analysis completed by:**	11/09/2014
Report Issue Number:	1	**Report issued on:**	11/09/2014
Samples Analysed:	3 soil samples		

Signed: 

Dr Claire Stone
Quality Manager
For & on behalf of i2 Analytical Ltd.

Signed: 

Rexona Rahman
Reporting Manager
For & on behalf of i2 Analytical Ltd.

Other office located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Analytical Report Number: 14-59397

Project / Site name: Sully
Your Order No: 29745

Lab Sample Number				369107	369108	369109		
Sample Reference				WS1B	WS2	WS2B		
Sample Number				None Supplied	None Supplied	None Supplied		
Depth (m)				0.40	0.30	0.35		
Date Sampled				22/07/2014	21/07/2014	21/07/2014		
Time Taken				None Supplied	None Supplied	None Supplied		
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected		

Analytical Report Number : 14-59397

Project / Site name: Sully

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

APPENDIX 5

GAS AND GROUNDWATER

IAN FARMER ASSOCIATES
Geotechnical & Environmental Specialists

GAS AND GROUNDWATER MONITORING RESULTS

Contract Name :	**Sully**
Contract No :	**21267**
Date :	**31/07/2014**

Background Readings:								
	O_2% v/v :	20.5	**CO_2% v/v :**	0.0	**CH_4% v/v :**	0.0	**Weather Conditions :**	100% Cloud, dry, warm - 20ºC
	H_2S ppm :	0	**CO ppm :**	0	**Pressure Trend :**	Falling	**Ground Conditions :**	Dry

Location	**Time**	**Atmospheric Pressure (mb)**	**O_2(% v/v)**		**CO_2 (% v/v)**		**CH_4 (% v/v)**		**H_2S (ppm)**	**CO (ppm)**	**Gas Flow Rate (l/hr)**		**Depth to LNAPL**	**Water Depth**	**Depth to DNAPL**	**Total Depth**
			Low	**Steady**	**High**	**Steady**	**High**	**Steady**	**Peak**	**Peak**	**Peak**	**Steady**	**(mbgl)**	**(mbgl)**	**(mbgl)**	**(mbgl)**
WS2	13.32	1012	18.9	18.9	2.3	2.2	0.1	0.1	0	0	0.0	0.0	-	DRY	-	1.19
WS5	13.26	1012	19.9	19.9	0.9	0.9	0.1	0.1	0	0	0.0	0.0	-	DRY	-	1.23
WS6	12.50	1013	20.2	20.2	0.7	0.7	0.4	0.3	0	1	0.0	0.0	-	DRY	-	2.24
WS9	13.00	1013	19.9	19.9	0.9	0.9	0.0	0.0	0	7	0.0	0.0	-	DRY	-	1.21
WS11	13.09	1013	19.8	20.0	0.4	0.4	14.9	9.8	0	0	0.0	0.0	-	DRY	-	1.31
WS12	13.18	1013	20.1	20.1	0.4	0.3	0.7	0.2	0	1	0.0	0.0	-	DRY	-	1.01

Remarks :

IAN FARMER ASSOCIATES
Geotechnical & Environmental Specialists

GAS AND GROUNDWATER MONITORING RESULTS

Contract Name :	**Sully**
Contract No :	**21267**
Date :	**07/08/2014**

Background Readings:								
	O_2% v/v :	20.9	**CO_2% v/v :**	0.0	**CH_4% v/v :**	0.0	**Weather Conditions :**	Warm, dry, 5% cloud, sunny, low wind, 20ºC
	H_2S ppm :	0	**CO ppm :**	0	**Pressure Trend :**	Falling	**Ground Conditions :**	Dry

Location	**Time**	**Atmospheric Pressure (mb)**	**O_2(% v/v)**		**CO_2 (% v/v)**		**CH_4 (% v/v)**		**H_2S (ppm)**	**CO (ppm)**	**Gas Flow Rate (l/hr)**		**Depth to LNAPL**	**Water Depth**	**Depth to DNAPL**	**Total Depth**
			Low	**Steady**	**High**	**Steady**	**High**	**Steady**	**Peak**	**Peak**	**Peak**	**Steady**	**(mbgl)**	**(mbgl)**	**(mbgl)**	**(mbgl)**
WS2	10.10	1015	19.0	19.0	2.3	2.3	0.0	0.0	0	0	0.0	0.0	-	Dry	-	1.21
WS5	10.25	1015	20.4	20.4	0.5	0.5	0.0	0.0	0	0	0.0	0.0	-	Dry	-	1.24
WS6	11.07	1012	20.6	20.6	0.7	0.7	0.0	0.0	0	0	0.0	0.0	-	Dry	-	2.26
WS9	11.30	1012	19.7	19.7	1.0	1.0	0.0	0.0	0	0	0.0	0.0	-	Dry	-	1.23
WS11	11.05	1012	19.8	19.9	0.8	0.8	0.0	0.0	0	0	0.2	0.0	-	Dry	-	1.31
WS12	11.00	1012	Unable to locate due to cut grass covering position													

Remarks :

IAN FARMER ASSOCIATES
Geotechnical & Environmental Specialists

GAS AND GROUNDWATER MONITORING RESULTS

Contract Name :	**Sully**
Contract No :	**21267**
Date :	**21/08/2014**

Background Readings:								
O_2% v/v :	20.9	**CO_2% v/v :**	0.0	**CH_4% v/v :**	0.0	**Weather Conditions :**	Frequent heavy showers, 13ºC	
H_2S ppm :	0	**CO ppm :**	0	**Pressure Trend :**	Falling	**Ground Conditions :**	Wet	

Location	**Time**	**Atmospheric Pressure (mb)**	**O_2(% v/v)**		**CO_2 (% v/v)**		**CH_4 (% v/v)**		**H_2S (ppm)**	**CO (ppm)**	**Gas Flow Rate (l/hr)**		**Depth to LNAPL**	**Water Depth**	**Depth to DNAPL**	**Total Depth**
			Low	**Steady**	**High**	**Steady**	**High**	**Steady**	**Peak**	**Peak**	**Peak**	**Steady**	**(mbgl)**	**(mbgl)**	**(mbgl)**	**(mbgl)**
WS2	10.45	1014	15.3	15.3	3.9	3.8	0.0	0.0	0	0	0.1	0.1	-	DRY	-	1.18
WS5	11.37	1014	20.0	20.0	1.2	1.1	0.0	0.0	0	0	0.0	0.0	-	DRY	-	1.20
WS6	11.30	1014	20.1	20.2	1.5	1.5	0.0	0.0	0	0	0.0	0.0	-	DRY	-	1.22
WS9	11.20	1014	18.1	18.3	2.8	2.7	0.0	0.0	0	0	0.0	0.0	-	DRY	-	1.22
WS11	11.05	1014	17.5	17.6	1.9	1.9	0.0	0.0	0	0	0.0	0.0	-	DRY	-	1.27
WS12	11.55	1014	19.0	19.1	1.3	1.3	0.0	0.0	0	0	0.1	0.1	-	DRY	-	0.48

Remarks :

IAN FARMER ASSOCIATES
Geotechnical & Environmental Specialists

GAS AND GROUNDWATER MONITORING RESULTS

Contract Name :	**Sully**
Contract No :	**21267**
Date :	**10/09/2014**

Background Readings:								
O_2% v/v :	20.7	**CO_2% v/v :**	0.0	**CH_4% v/v :**	0.0	**Weather Conditions :**	Fine, dry, slight wind, warm - 25ºC	
H_2S ppm :	0	**CO ppm :**	0	**Pressure Trend :**	Rising	**Ground Conditions :**	Dry	

Location	**Time**	**Atmospheric Pressure (mb)**	**O_2(% v/v)**		**CO_2 (% v/v)**		**CH_4 (% v/v)**		**H_2S (ppm)**	**CO (ppm)**	**Gas Flow Rate (l/hr)**		**Depth to LNAPL**	**Water Depth**	**Depth to DNAPL**	**Total Depth**
			Low	**Steady**	**High**	**Steady**	**High**	**Steady**	**Peak**	**Peak**	**Peak**	**Steady**	**(mbgl)**	**(mbgl)**	**(mbgl)**	**(mbgl)**
WS2	-	1022	20.1	20.1	0.1	0.1	0.0	0.0	0	0	0.0	0.0	-	DRY	-	1.16
WS5	-	1022	20.2	20.2	0.0	0.0	0.0	0.0	0	0	0.0	0.0	-	DRY	-	1.20
WS6	-	1022	21.0	21.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	-	DRY	-	2.24
WS9	-	1022	19.8	19.8	0.0	0.0	0.0	0.0	0	0	0.0	0.0	-	DRY	-	1.20
WS11	-	1022	20.1	20.1	0.1	0.1	0.0	0.0	0	0	0.0	0.0	-	DRY	-	1.42
WS12	-	1022	20.1	20.1	0.0	0.0	0.0	0.0	0	0	0.0	0.0	-	DRY	-	1.00

Remarks :