

E JONES AND SON LTD

PLAS POWER ESTATE, COEDPOETH, WREXHAM
GEOLOGICAL AND GEOTECHNICAL INVESTIGATION REPORT

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1. INTRODUCTION

1.1 Terms of Reference

- 1.1.1 In June 2015 e-geo Solutions Ltd were commissioned by E Jones & Son Ltd to undertake a geological and geotechnical investigation at a proposed development site known as Plas Power Estate near Coedpoeth, Wrexham.
- 1.1.2 The objective of the investigation was to obtain and assess information on the geological and geotechnical characteristics of the ground at the site to establish any potential ground instability and estimate ground permeability and suitability for soakaways
- 1.1.3 This report presents the findings of the site investigation, detailing the particular geological characteristics and gives recommendations potential ground permeability for soakaway design.
- 1.1.4 The report has been prepared for the sole use of the Client, for the purposes described and no extended duty of care applies to other parties. The comments given, and opinions expressed, in this report are based on the information gathered at the time of the investigation, however there may be other information and data which becomes available at a later date which has an impact on the overall conclusions.
- 1.1.5 The copyright of this report and its contents prepared by e-geo Solutions Ltd is solely owned by e-geo Solutions Ltd. Neither this report nor contents prepared by e-geo Solutions Ltd may be reproduced, published or adapted without the express written approval of e-geo Solutions Ltd.

2. THE SITE

2.1 Site Location

- 2.1.1 The site is situated off the A525 between Coedpoeth and is shown on Figure 1. The site and area of investigation is shown on an aerial photograph as Figure 2.

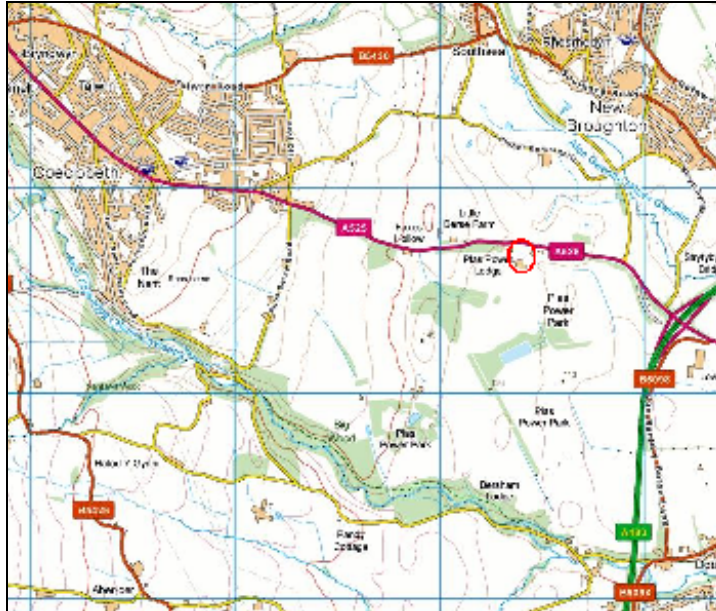


Figure 1 – Site Location

2.2 Present Use and Topography

- 2.2.1 The site is presently derelict land within and around a former farm yard. The site comprises undeveloped open ground, areas of concrete (former farm yard) and a series of stone and brick buildings (former farm buildings).



Figure 2 – Site Aerial Photograph

2.3 **Site History**

- 2.3.1 The only known use of the site has been as a farm yard, however an examination of old Ordnance Survey maps indicates that land immediately to the south and southeast was formerly a colliery and opencast pit.

3. GEOLOGY AND GROUND STABILITY

3.1 Published Geology

- 3.1.1 Information from the British Geological Survey Map (extract in Figure 3) indicates that drift deposits below the site comprise sand and gravel in the northern part and glacial till (Boulder Clay) comprising silts and clay with varying proportions of sand and gravel in the southern part of the site.

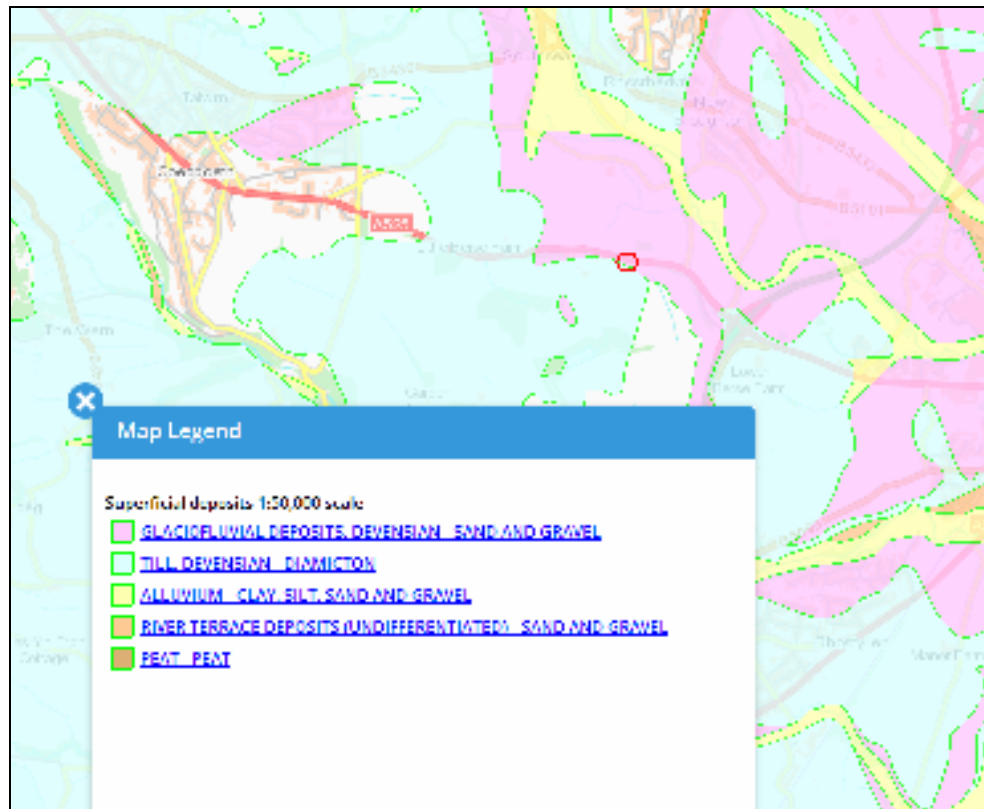


Figure 3 – Site Geology (Superficial)

4. GROUND INVESTIGATION

4.1 Scope of Work – Exploratory Holes

4.1.1 A ground investigation was commissioned specifically to examine the ground conditions at the site and estimate ground permeability. The works were carried out by e-geo Solutions Ltd with the field work element undertaken on 28th October 2015. The investigation was designed, supervised and administered by e-geo Solutions Ltd and undertaken in accordance with BS5930 Code of Practice for Site Investigations (Amendment 1).

4.1.2 The main scope of work involved:

- Excavation of 7 trial holes to examine ground conditions with a JCB type excavator. (Trial Pit locations are shown on Figure 4)
- Detailed examination of the exposed soils by an experienced geotechnical engineer
- Undertaking in-situ soil strength tests with a hand held shear vane (where possible)



Figure 4 – Trial Pit Location Plan

5. GROUND CONDITIONS

5.1 General

- 5.1.1 A summary of the findings of the trial pits are presented below. Details of the ground strata and depths are presented on the trial pit records in Appendix 1.

5.2 Stratigraphy

- 5.2.1 The general stratigraphic sequence encountered at the site was:

Stratum	Description	Depth to base m	Thickness (average) m
Topsoil	Dark brown sandy silty Topsoil	0.30	0.30
SAND and GRAVEL (TP1,TP2,TP3)	Loose light brown and light orange brown fine to coarse SAND and GRAVEL with many subrounded cobbles. Gravel is subrounded to rounded quartz, sandstone	0.65 to 1.60	1.00
CLAY (TP1,TP2,TP3, TP7)	Firm becoming stiff light brown to light grey brown slightly gravely sandy silty CLAY with some cobbles. Gravel is fine to coarse angular sandstone	2.40+	1.35+
SAND (TP4)	Loose dry dark brown silty fine SAND	2.60+	
MADE GROUND (TP5)	See TP 5 record various strata	2.90+	

5.3 Groundwater

- 5.3.1 No groundwater was encountered in any of the trial pits.

6. DEVELOPMENT CONSIDERATIONS

6.1 Surface-water Soakaways

- 6.1.1 The clay strata found from depths of 1.00m below the sand and gravel and at depths that soakaways would be required would not provide suitable permeability for soakaway construction.
- 6.1.2 The sand encountered in TP4 is fine grained and unlikely to provide suitable permeability for soakaway construction.
- 6.1.3 The made ground found in TP5, TP6 is a clay and unlikely to provide suitable permeability for soakaway construction.

Appendix 1 - Trial Pit Records

TRIAL PIT RECORD

Trial Pit No: **TP1**

Date : 28/10/15
 Excavator : JCB Excavator
 Pit size : 2.00 x 0.60m Depth : 2.40m
 Site: Plas Power Estate
 e0760
 Elev (m aOD):

TRIAL PIT RECORD						SAMPLE RECORD			
Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	Type B U D W	Depth (m)	Number	
TP1	0.00	0.30	0.30	Dark brown sandy TOPSOIL with some rootlets to 5mm					
	0.30	1.60	1.30	Loose light brown and light orange brown fine to coarse SAND and GRAVEL with many subrounded cobbles. Gravel is subrounded to rounded quartz, sandstone	0.5				
					1.0				
					1.5				
	1.60	2.40+	0.80+	Firm becoming stiff light brown to light grey brown slightly gravely sandy silty CLAY with some cobbles. Gravel is fine to coarse angular sandstone	2.0				
		2.40			2.5				
				Base of pit at 2.40m					

Remarks
 Sidewalls : Pit sides stable and vertical
 Groundwater : damp from 1.50m
 In-situ testing : None
 Contaminants : None observed
 Services : None



TRIAL PIT RECORD

Trial Pit No: **TP2**

Date : 28/10/15
 Excavator : JCB Excavator
 Pit size : 2.00 x 0.60m Depth : 2.00m

Site: Plas Power Estate
 e0760
 Elev (m aOD):

TRIAL PIT RECORD						SAMPLE RECORD			
Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	Type B U D W	Depth (m)	Number	
TP2	0.00	0.30	0.30	Light grey brown to light brown fine to coarse SAND and GRAVEL with black ash (Made Ground)					
	0.30	0.65	0.35	Loose light brown and light orange brown fine to coarse SAND and GRAVEL with many subrounded cobbles. Gravel is subrounded to rounded quartz, sandstone	0.5				
	0.65	2.00+	1.35+	Firm becoming stiff light brown to light grey brown slightly gravely sandy silty CLAY with some cobbles. Gravel is fine to coarse angular sandstone	1.0				
					1.5				
					2.0				
					2.5				
		2.00		Base of pit at 2.00m					

Remarks

Sidewalls :	Pit sides stable and vertical
Groundwater :	damp from 1.50m
In-situ testing :	None
Contaminants :	None observed
Services :	Cable 1.10m from concrete slab, 0.40 deep



TRIAL PIT RECORD

Trial Pit No: **TP3**

Date : 28/10/15
 Excavator : JCB Excavator
 Pit size : 2.00 x 0.60m Depth : 2.20m

Site: Plas Power Estate
 e0760
 Elev (m aOD):

TRIAL PIT RECORD						SAMPLE RECORD			
Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	Type B U D W	Depth (m)	Number	
TP3	0.00	0.30	0.30	Dark brown sandy TOPSOIL with cobbles and brick (Made Ground)	0.5				
	0.30	0.90	0.60	Cobbles and boulders of sandstone and some brick in brown silty fine sand (Wall and floor slab) (Made Ground)					
	0.90	1.60	0.70	Loose light brown and light orange brown fine to coarse SAND and GRAVEL with many subrounded cobbles. Gravel is subrounded to rounded quartz, sandstone	1.0				
	1.60	2.20=	0.60+		1.5				
				Firm becoming stiff light brown to light grey brown slightly gravely sandy silty CLAY with some cobbles. Gravel is fine to coarse angular sandstone	2.0				
	2.20				2.5				
			Base of pit at 2.20m						

Remarks

Sidewalls :	Pit sides stable and vertical
Groundwater :	None
In-situ testing :	None
Contaminants :	None observed
Services :	None



TRIAL PIT RECORD

Trial Pit No: **TP4**

Date : 28/10/15
 Excavator : JCB Excavator
 Pit size : 2.00 x 0.60m Depth : 2.60m

Site: Plas Power Estate
 e0760
 Elev (m aOD):

TRIAL PIT RECORD						SAMPLE RECORD			
Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	Type B U D W	Depth (m)	Number	
TP4	0.00	0.20	0.20	Dark brown sandy TOPSOIL	0.5				
	0.20	0.40	0.20	Light brown silty medium SAND with some gravell of burnt shale					
	0.40	1.30	0.90	Loose dry dark brown silty fine SAND					
					1.0				
	1.30	2.60+	1.30+	Loose dry light orange brown fine SAND	1.5				
					2.0				
					2.5				
		2.60		Base of pit at 2.60m					

Remarks

Sidewalls :	Pit sides stable and vertical
Groundwater :	None
In-situ testing :	None
Contaminants :	None observed
Services :	None



TRIAL PIT RECORD

Trial Pit No: **TP5**

Date : 28/10/15
 Excavator : JCB Excavator
 Pit size : 2.00 x 0.60m Depth : 2.90m
 Site: Plas Power Estate
 e0760
 Elev (m aOD):

TRIAL PIT RECORD						SAMPLE RECORD			
Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	Type B U D W	Depth (m)	Number	
TP5	0.00	0.70	0.70	Loose dark brown fine to coarse SAND and GRAVEL with brick, slate, mortar and brick cobbles (Made Ground)	0.5				
	0.70	1.30	0.60	Loose light brown and light orange brown fine to coarse SAND and GRAVEL with many subrounded cobbles. Gravel is subrounded to rounded quartz, sandstone (Made Ground)	1.0				
	1.30	2.60	1.3	Soft to firm light brown to light grey brown slightly gravely sandy silty CLAY with some cobbles. Gravel is fine to coarse angular sandstone and some brick gravel (Made Ground)	1.5				
					2.0				
					2.5				
	2.60	2.90+	0.3	Soft dark grey sandy SILT with some coal gravel (Made Ground)					

Remarks
 Sidewalls : Pit sides stable and vertical
 Groundwater : None
 In-situ testing : None
 Contaminants : None observed
 Services : None



TRIAL PIT RECORD

Trial Pit No: **TP6**

Date : 28/10/15
 Excavator : JCB Excavator
 Pit size : 2.00 x 0.60m Depth : 2.00m

Site: Plas Power Estate
 e0760
 Elev (m aOD):

TRIAL PIT RECORD						SAMPLE RECORD			
Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	Type B U D W	Depth (m)	Number	
TP6	0.00	0.10	0.10	Concrete					
	0.10	0.70	0.60	Mass concrete brick and sandstone cobbles and boulders in a soft grey clay and coarse gravel sub-base (Made Ground) (Brick wall in side of pit)	0.5				
	0.70	2.00	1.30	Soft to firm light brown to light grey brown slightly gravely sandy silty CLAY with some cobbles. Gravel is fine to coarse angular sandstone and some brick gravel (Made Ground)	1.0				
					1.5				
					2.0				
					2.5				
		2.00		Base of pit at 2.00m					

Remarks

Sidewalls :	Pit sides stable and vertical
Groundwater :	None
In-situ testing :	None
Contaminants :	None observed
Services :	None



TRIAL PIT RECORD

Trial Pit No: **TP7**

Date : 28/10/15
 Excavator : JCB Excavator
 Pit size : 2.00 x 0.60m Depth : 2.00m

Site: Plas Power Estate
 e0760
 Elev (m aOD):

TRIAL PIT RECORD						SAMPLE RECORD			
Pit No	Depth From (m)	Depth To (m)	Interval (m)	Strata Description	Depth	Type B U D W	Depth (m)	Number	
TP7	0.00	0.70	0.70	Cobbles of limestone in a light brown sandy silt (Made Ground)	0.5				
	0.70	2.00	1.30	Soft to firm light brown to light orange brown slightly gravely sandy silty CLAY with some cobbles. Gravel is fine to coarse angular sandstone and siltstone	1.0 1.5 2.0				
		2.00		Base of pit at 2.00m	2.5				

Remarks
 Sidewalls : Pit sides stable and vertical
 Groundwater : None
 In-situ testing : None
 Contaminants : None observed
 Services : None

