

Mr Pete Woolaghan
Pallaflat Farm,
Bigrigg,
Egremont,
Cumbria,
CA22 2TX

Date: 21.02.2023

Project No: GEO2022-5651

Project Title: Land at Pallaflat Farm, Bigrigg, Cumbria – Soil Infiltration Test Report

Geo Environmental Engineering Ltd (GEO) were commissioned by Mr Pete Woolaghan to carry out soil infiltration tests for the proposed residential workshop/store within the grounds of their residential dwelling at Pallaflat Farm, Bigrigg, Cumbria as indicated on the site location plan.

The site is greenfield (extended gardens and paddock) and forms the corner of the extensive grounds associated with an existing and long-established residential plot. The proposal is a domestic workshop/store for the storage of groundskeeping equipment and implements.

The surrounding land slopes downwards from the proposed workshop locations and comprises a paddock with surrounding fields. No other structures are located within an influencing distance of the proposed workshop.

Published geological plans indicate the site to be within an area of solid outcrop comprising the St Bees Sandstone with the Brockram Breccia to the immediate east. An area of glacial till (sandy gravelly clay) is also indicated to the immediate east.

The site works were completed on the 9th February 2023. This comprised 3 No. trial pits (TP01 to TP03) excavated to depths of between c.1.50m and c.1.80m bgl. A copy of the exploratory hole location plan and the trial pit logs are attached.

The trial pits typically encountered topsoil overlying slightly sandy slightly gravelly clay with occasional cobbles. However, the materials were notably coarser within TP03, described as very sandy and very gravelly. All the trial pits remained stable and dry, with no water ingress noted.

Soil Infiltration tests were completed at all the trial pits. This involved partially filling the pits with water and monitoring the water levels until the water had drained sufficiently to calculate a soil infiltration rate. A summary of the results is below:

- TP01, SAT01 = 0.46m to 1.60m – Water Drained only 0.04m (40mm) in a 4-hour monitoring period – insufficient drop to determine a soil infiltration rate – Test determined as a FAIL.
- TP02, SAT01 = 0.46m to 1.50m – Water Drained only 0.05m (50mm) in a 4-hour monitoring period – insufficient drop to determine a soil infiltration rate – Test determined as a FAIL.
- TP03, SAT01 = 0.46m to 1.80m – Water Drained 75% to 25% effective depth in 110 minutes = Soil Infiltration Rate 1.8E-05 m/s.

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Site Investigation Steering Group (SISG), 1993

- TP03, SAT02 = 0.48m to 1.80m – Water Drained 75% to 25% effective depth in 130 minutes
= Soil Infiltration Rate 1.5E-05 m/s.
- TP03, SAT03 = 0.49m to 1.80m – Water Drained 75% to 25% effective depth in 135 minutes
= Soil Infiltration Rate 1.5E-05 m/s.

The results suggest that whilst TP01 and 02 experienced negligible permeability, the coarser materials at TP03 did exhibit greater permeability suggesting good drainage characteristics and a medium permeability classification. Therefore, the results of the tests should be passed to a Civil Engineer to determine an appropriate drainage design (e.g. targeted soakaway at TP03).

Consideration must be made for variations to occur in the ground conditions between the exploratory hole locations for which GEO holds no responsibility. It is therefore recommended that a “watching brief” be applied to ensure that if ground conditions appear to vary from those identified within this investigation, then advice should be sought from a suitably qualified and experienced Geo-Environmental Engineer.

The recommendations and opinions expressed in this report are based on the ground conditions observed. Consequently, GEO takes no responsibility for conditions that have not been revealed or which occur between them.

The conclusions and recommendations presented within this report are considered reasonable based on the available information. However, these cannot be guaranteed to gain regulatory approval. Therefore, the report should be passed to the appropriate regulatory authorities and/ or other key stakeholders, including warranty providers in order to seek their approval of the findings prior to undertaking any development works on site.

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If there are any queries, please do not hesitate to contact Geo-Environmental Engineering Ltd.

Yours Faithfully

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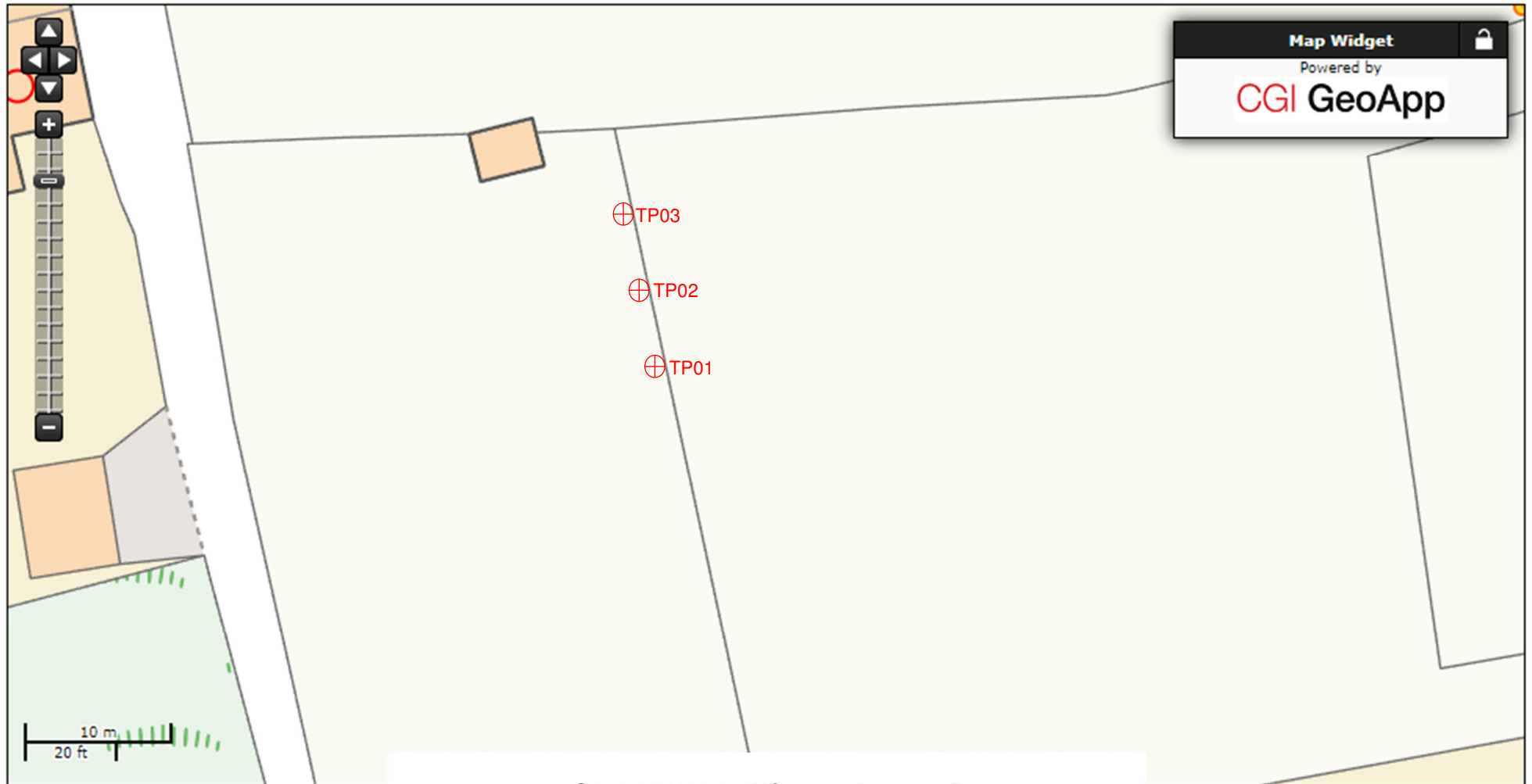
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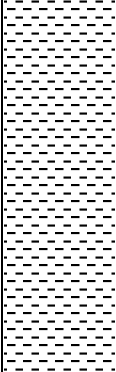
GEO2022-5651: Land at Pallaflat Farm – Site Location Plan (Not to Scale)




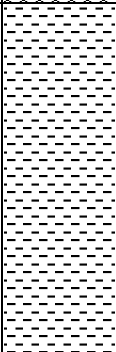
GEO2022-5651: Land at Pallaflat Farm – Trial Pit Location Plan (Approximate Locations – Not to Scale)




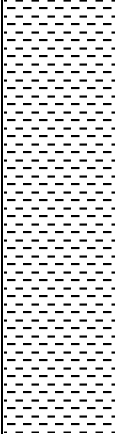
GEO2022-5651: Land at Pallafat Farm – TP01

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.36	GRASS over TOPSOIL: Red brown sandy clayey LOAM with rootlets.		
0.36	1.60	Firm red brown slightly sandy slightly gravelly CLAY with occasional cobbles.		
<p>End of trial hole at 1.60m. BRE365 Soakaway Test completed from c.0.46m. Trial hole remained open and dry on completion. Trial hole backfilled with arisings on completion.</p>				
<p>Engineer: C.Evans Site Works Date: 09/02/2023 Plant: Tracked 360 Excavator and Tractor with Bowser Trial Pit Dimensions: 0.33m (W) x 2.20m (L) x 1.60m (D)</p>			<p>Log Notes: HSV = Hand Shear Vane (kN/m²) LP = Limited Penetration (HSV/CBR) B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub</p>	
<p>TP01, SAT01 = 0.46m to 1.60m – Water Drained only 0.04m (40mm) in a 4-hour monitoring period – insufficient drop to determine a soil infiltration rate – Test determined as a FAIL.</p>				

GEO2022-5651: Land at Pallafat Farm – TP02

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.34	GRASS over TOPSOIL: Red brown sandy clayey LOAM with rootlets.		
0.34	1.50	Firm red brown slightly sandy slightly gravelly CLAY with occasional cobbles.		
<p>End of trial hole at 1.50m. BRE365 Soakaway Test completed from c.0.46m. Trial hole remained open and dry on completion. Trial hole backfilled with arisings on completion.</p>				
<p>Engineer: C.Evans Site Works Date: 09/02/2023 Plant: Tracked 360 Excavator and Tractor with Bowser Trial Pit Dimensions: 0.33m (W) x 2.20m (L) x 1.50m (D)</p>			<p>Log Notes: HSV = Hand Shear Vane (kN/m²) LP = Limited Penetration (HSV/CBR) B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub</p>	
<p>TP02, SAT01 = 0.46m to 1.50m – Water Drained only 0.05m (50mm) in a 4-hour monitoring period – insufficient drop to determine a soil infiltration rate – Test determined as a FAIL.</p>				

GEO2022-5651: Land at Pallafiat Farm – TP03

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.35	GRASS over TOPSOIL: Light brown sandy clayey LOAM with rootlets.		
0.35	1.80	Firm red brown very sandy very gravelly CLAY with occasional cobbles.		
<p>End of trial hole at 1.80m. BRE365 Soakaway Test completed from c.0.46m, c.0.48m and c.0.49m. Trial hole remained open and dry on completion. Trial hole backfilled with arisings on completion.</p>				
<p>Engineer: C.Evans Site Works Date: 09/02/2023 Plant: Tracked 360 Excavator and Tractor with Bowser Trial Pit Dimensions: 0.33m (W) x 2.20m (L) x 1.50m (D)</p>			<p>Log Notes: HSV = Hand Shear Vane (kN/m²) LP = Limited Penetration (HSV/CBR) B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub</p>	
<p>TP03, SAT01 = 0.46m to 1.80m – Water Drained 75% to 25% effective depth in 110 minutes = Soil Infiltration Rate 1.8E-05 m/s</p> <p>TP03, SAT02 = 0.48m to 1.80m – Water Drained 75% to 25% effective depth in 130 minutes = Soil Infiltration Rate 1.5E-05 m/s</p> <p>TP03, SAT03 = 0.49m to 1.80m – Water Drained 75% to 25% effective depth in 135 minutes = Soil Infiltration Rate 1.5E-05 m/s</p>				

GEO2022-5651: Land at Pallaflat Farm – Site Photographs



Looking West





End of Report

“Without Site Investigation Ground is a Hazard”

Site Investigation Steering Group (SISG), 1993

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