

Mr Nigel Kay,
Seabreeze Lodge,
Nethertown,
Egremont
CA22 2UH

Date: 11.08.2022

Project No: GEO2022-5470

Project Title: Former Goods Yard, Dalzell Street, Moor Row – Factual Ground Investigation Report

Dear Nigel,

Geo Environmental Engineering Ltd (GEO) were commissioned to carry out a preliminary ground investigation on land at the former Goods Yard at Dalzell Street in Moor Row, Cumbria. The purpose of the investigation was to provide a preliminary assessment of the ground conditions and potential infiltration rate.

GEO attended the site on the 5th August 2022 to undertake the fieldworks. This comprised 16 No. Trial pits (TP01 to TP14) which were excavated to depths of between 1.20m and 3.00m bgl.

Soil Infiltration tests were completed in trial pits TP02 and TP03. The pits were excavated to depths of c.1.55m below ground level (bgl). The ground comprised suspected alluvial deposits comprising sandy gravelly clays and very silty sandy gravel. Both pits were recorded as dry on completion, however, standing water was recorded at c.1.45m bgl after 1 hour. Both pits were partially filled with water from IBC containers. The water level was monitored over c.5 hours (300 minutes) and during this time, the water level dropped between 2cm (TP02) and 9cm (TP03). The fall in water level was not sufficient to determine a meaningful infiltration value.

Considering the ground conditions, the groundwater ingress and the results of the infiltration tests, the ground in the vicinity of TP02/TP03 is not considered suitable for soakaway drainage and an alternative solution should be sought.

The remaining trial pits across the main part of the site encountered topsoil and/or made ground to depths of between 0.22m and 1.40m bgl. The made ground comprised a mixture of concrete or asphalt overlying a granular sub base and mixed gravel of fused slag, ash, clinker, aggregate, brick, concrete and occasional metal.

Possible made ground was encountered to a depth of c.2.40m bgl in trial pit TP05 which was located in the field to the north of the former goods yard. The materials appeared natural but possibly reworked with cobbles of suspected clinker and asphalt between 1.90m and 2.40m bgl. This appeared very localised. Additional trial pits TP05A, TP05B and TP13 were located in the vicinity of but encountered natural drift deposits only.

The natural drift deposits varied from east to west. Across the central and eastern part of the site, the natural drift typically comprised firm to stiff, stiff and very stiff dark brown very gravelly clay. However, across the western parts, silty sandy gravel and cobbles deposits were encountered.

If the Client plans to proceed with development of the site, additional ground investigations works would be prudent and samples should be recovered for both geotechnical and chemical tests to aid design and determine any risks to human health.

“Without Site Investigation Ground is a Hazard”

Site Investigation Steering Group (SISG), 1993

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 vary from those identified during 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 site works or development on site.

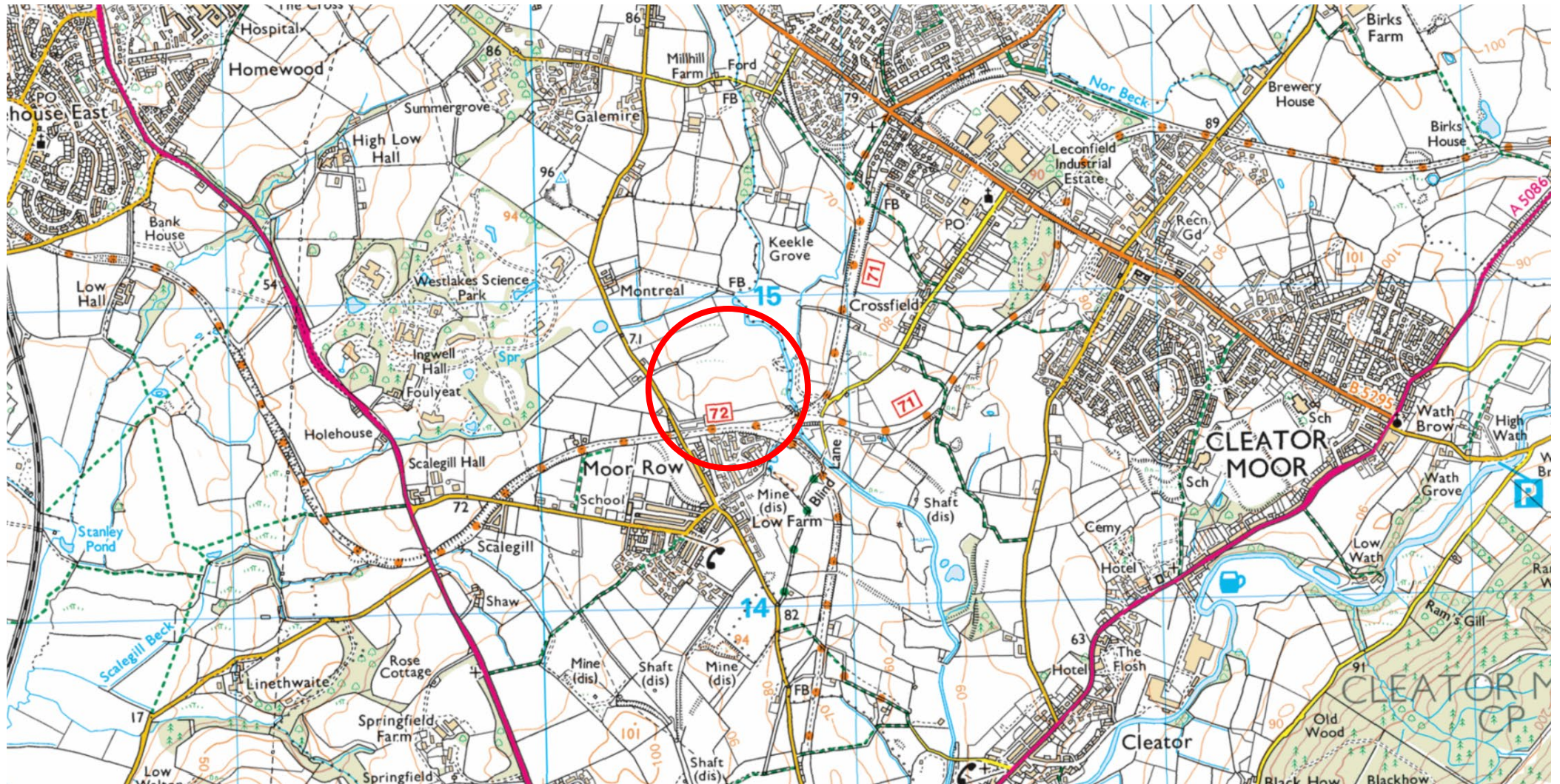
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If there are any queries, please do not hesitate to contact Geo-Environmental Engineering Ltd.

Yours Faithfully

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James Brock *BSc (Hons), MSc*
Associate - Geo Environmental Engineering Ltd
Tel: 01900 826 027, Mob: 07557 446 043

GEO2022-5470: Former Goods Yard, Dalzell Street, Moor Row – Site Location



Website: www.geoenvironmentalengineering.com

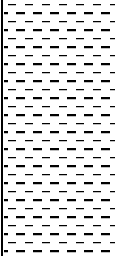
Email: info@geoenvironmentalengineering.com

Telephone: 07883 440 186

GEO2022-5470: Former Goods Yard, Dalzell Street, Moor Row – Exploratory Hole Location Plan

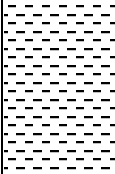
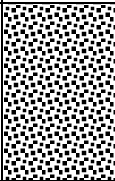


GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP01

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.24	TOPSOIL: Dark grey brown sandy gravelly LOAM.		
0.24	1.10	Soft to firm brown silty very sandy gravelly CLAY with lenses of very clayey gravelly sand.		
1.10	1.20	Dark grey brown very silty sandy fine to coarse sub-rounded to sub-angular GRAVEL.		
		End of trial hole at 1.20m due to field drain at 1.10m bgl. Groundwater ingress from field drain. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock Site Works Date: 05/08/2022 Plant: Tracked 360 Excavator			Log Notes: HSV = Hand Shear Vane (kN/m ²) LP = Limited Penetration (HSV/CBR) B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub	



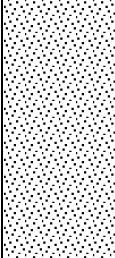
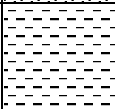
GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP02

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.27	TOPSOIL: Dark grey brown sandy gravelly LOAM.		
0.27	0.90	Soft to firm brown silty very sandy gravelly CLAY with lenses of very clayey gravelly sand.		
0.90	1.55	Dark grey brown very silty sandy fine to coarse sub-rounded to sub-angular GRAVEL with occasional cobbles and lenses of firm very sandy gravelly clay and clayey sand.		
		End of trial hole at 1.55m. Soil Infiltration Test completed. Dry on completion. Standing groundwater at 1.45m bgl after 1 hour. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock Site Works Date: 05/08/2022 Plant: Tracked 360 Excavator			Log Notes: HSV = Hand Shear Vane (kN/m ²) LP = Limited Penetration (HSV/CBR) B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub	



Soil Infiltration Test – TP02	
Duration (mins)	Water Level (m bgl)
0	0.63
16	0.63
120	0.64
300	0.65

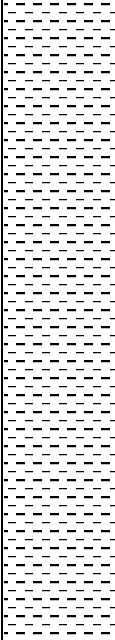
GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP03

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.30	TOPSOIL: Dark grey brown sandy gravelly LOAM.		
0.30	1.20	Brown clayey very gravelly SAND with occasional sub-rounded to sub-angular cobbles and boulders.		
1.20	1.55	Stiff dark grey sandy very gravelly CLAY with lenses of sub-rounded gravel and occasional cobbles.		
		End of trial hole at 1.55m. Soil Infiltration Test completed. Dry on completion. Standing groundwater at 1.46m bgl after 1 hour. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock Site Works Date: 05/08/2022 Plant: Tracked 360 Excavator			Log Notes: HSV = Hand Shear Vane (kN/m ²) LP = Limited Penetration (HSV/CBR) B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub	



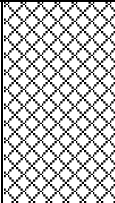
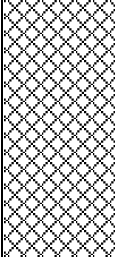
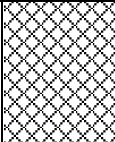
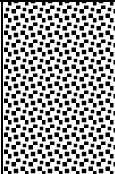
Soil Infiltration Test – TP03	
Duration (mins)	Water Level (m bgl)
0	0.58
90	0.60
150	0.63
300	0.67

GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP04

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.22	TOPSOIL: Dark grey brown sandy gravelly LOAM.		
0.22	2.40	Firm to stiff dark brown mottled grey slightly sandy very gravelly CLAY. Occasional cobbles and boulders. Stiff from 0.60m bgl. Dark grey brown from 1.20m bgl.		
		End of trial hole at 2.40m. Dry on completion. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock Site Works Date: 05/08/2022 Plant: Tracked 360 Excavator			Log Notes: HSV = Hand Shear Vane (kN/m ²) LP = Limited Penetration (HSV/CBR) B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub	



GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP05

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.27	TOPSOIL: Dark grey brown sandy gravelly LOAM.		
0.27	1.00	POSSIBLE MADE GROUND: Firm to stiff possibly reworked grey brown sandy very gravelly CLAY with frequent lenses of very sandy fine to coarse gravel. Occasional cobbles and boulders.		
1.00	1.90	POSSIBLE MADE GROUND: Firm possibly reworked dark grey brown silty very sandy gravelly CLAY with frequent bands of gravel and sand.		
1.90	2.40	SUSPECTED MADE GROUND: Brown silty gravelly SAND with localised pocket of black shale and cobbles of possible clinker and asphalt?		
2.40	3.00	Dark grey very sandy fine to coarse sub-rounded GRAVEL.		
		End of trial hole at 3.00m. Dry on completion. Trial hole backfilled with arisings on completion.		

Engineer: J.Brock

Site Works Date: 05/08/2022

Plant: Tracked 360 Excavator

Log Notes:

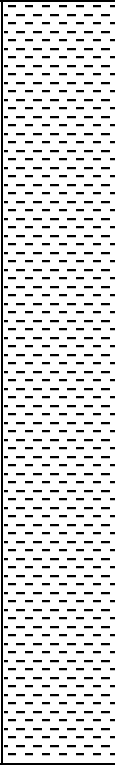
HSV = Hand Shear Vane (kN/m²)

LP = Limited Penetration (HSV/CBR)

B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub



GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP05A

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.32	TOPSOIL: Dark grey brown sandy gravelly LOAM.		
0.32	2.90	Firm to stiff brown, becoming stiff dark brown sandy very gravelly CLAY with occasional sub-rounded cobbles and boulders. Becoming very stiff from 1.90m bgl. Occasional iron-stained cobbles.		
		End of trial hole at 2.90m. Groundwater ingress at 1.20m bgl. Trial hole backfilled with arisings on completion.		

Engineer: J.Brock

Site Works Date: 05/08/2022

Plant: Tracked 360 Excavator

Log Notes:

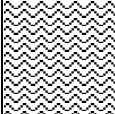
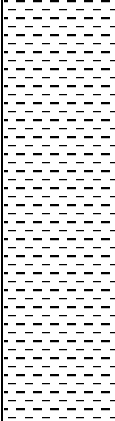
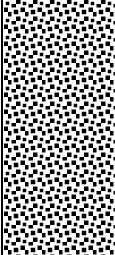
HSV = Hand Shear Vane (kN/m²)

LP = Limited Penetration (HSV/CBR)

B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub



GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP05B

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.38	TOPSOIL: Dark grey brown sandy gravelly LOAM.		
0.38	1.90	Firm to stiff, becoming stiff dark brown sandy very gravelly CLAY with occasional sub-rounded cobbles and boulders. Becoming very stiff and dark grey brown with many cobbles from 1.30m bgl.		
1.90	2.80	Dark grey brown slightly silty very sandy fine to coarse sub-rounded GRAVEL and COBBLES.		
		End of trial hole at 2.80m. Dry on completion. Trial hole backfilled with arisings on completion.		

Engineer: J.Brock

Site Works Date: 05/08/2022

Plant: Tracked 360 Excavator

Log Notes:

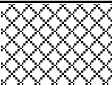
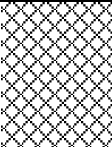
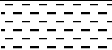
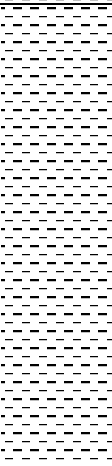
HSV = Hand Shear Vane (kN/m²)

LP = Limited Penetration (HSV/CBR)

B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub



GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP06

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.30	MADE GROUND: Grey angular GRAVEL of aggregate.		
0.30	0.80	MADE GROUND: Black sandy angular GRAVEL of clinker, ash and shale.		
0.80	1.00	MADE GROUND: Light brown firm reworked gravelly CLAY with occasional ash and clinker.		
1.00	1.20	Firm to stiff brown sandy very gravelly CLAY.		
1.20	2.80	Firm to stiff dark brown sandy very gravelly CLAY with occasional lenses of clayey sandy gravel.		
		End of trial hole at 2.80m. Dry on completion. Trial hole backfilled with arisings on completion.		

Engineer: J.Brock

Site Works Date: 05/08/2022

Plant: Tracked 360 Excavator

Log Notes:

HSV = Hand Shear Vane (kN/m²)

LP = Limited Penetration (HSV/CBR)

B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub



GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP07

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.11	MADE GROUND: ASPHALT.		
0.11	0.18	MADE GROUND: Grey angular GRAVEL of aggregate (sub-base).		
0.18	0.32	MADE GROUND: Grey and black angular GRAVEL of fused slag with occasional clinker and ash.		
0.32	1.10	MADE GROUND: Dark grey silty very sandy GRAVEL of ash, clinker, shale and aggregate. Occasional timber railway sleepers and metal pipes.		
1.10	2.40	Stiff dark brown slightly sandy very gravelly CLAY with many cobbles and occasional boulders. Occasional lenses of gravel and cobbles.		
		End of trial hole at 2.40m. Dry on completion. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock		Log Notes:		
Site Works Date: 05/08/2022		HSV = Hand Shear Vane (kN/m ²)		
Plant: Tracked 360 Excavator		LP = Limited Penetration (HSV/CBR)		
		B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub		



GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP08

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.13	MADE GROUND: ASPHALT.		
0.13	0.20	MADE GROUND: Grey angular GRAVEL of aggregate (sub-base). Geotextile at base.		
0.20	0.38	MADE GROUND: Grey angular GRAVEL of fused slag.		
0.38	1.30	MADE GROUND: Dark brown firm reworked gravelly CLAY and angular GRAVEL of brick and aggregate. Old drain at 0.90m to 1.20m bgl.		
1.30	2.20	Stiff to very stiff dark grey brown slightly sandy very gravelly CLAY with many cobbles and occasional boulders.		
		End of trial hole at 2.20m. Dry on completion. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock		Log Notes:		
Site Works Date: 05/08/2022		HSV = Hand Shear Vane (kN/m ²)		
Plant: Tracked 360 Excavator		LP = Limited Penetration (HSV/CBR)		
		B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub		



GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP09

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.27	MADE GROUND: Dark grey loamy soil with occasional gravel of aggregate and slag.		
0.27	0.40	MADE GROUND: Grey angular GRAVEL of fused slag.		
0.40	0.90	MADE GROUND: Dark grey silty very sandy GRAVEL of clinker, ash and aggregate. Groundwater ingress from base of made ground.		
0.90	2.30	Stiff to very stiff dark grey brown slightly sandy very gravelly CLAY with many cobbles and occasional boulders.		
		End of trial hole at 2.30m. Dry on completion. Trial hole backfilled with arisings on completion.		

Engineer: J.Brock

Site Works Date: 05/08/2022

Plant: Tracked 360 Excavator

Log Notes:

HSV = Hand Shear Vane (kN/m²)

LP = Limited Penetration (HSV/CBR)

B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub



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GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP10

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.12	MADE GROUND: CONCRETE.		
0.12	0.34	MADE GROUND: Grey angular GRAVEL of aggregate (sub-base).		
0.34	0.57	MADE GROUND: Black silty sandy fine to coarse angular GRAVEL of clinker and ash. Occasional timber railway sleepers.		
0.57	0.80	MADE GROUND: Brown fine to medium sub-rounded GRAVEL of aggregate.		
0.80	1.80	Stiff to very stiff dark grey brown slightly sandy very gravelly CLAY with many cobbles and occasional boulders.		
		End of trial hole at 1.80m. Dry on completion. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock		Log Notes:		
Site Works Date: 05/08/2022		HSV = Hand Shear Vane (kN/m ²)		
Plant: Tracked 360 Excavator		LP = Limited Penetration (HSV/CBR)		
		B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub		



GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP11

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.10	MADE GROUND: Loamy gravelly soil.		
0.10	1.10	MADE GROUND: Dark grey, brown and black angular GRAVEL of ash, brick aggregate and clinker.		
1.10	2.80	Brown silty very sandy fine to coarse sub-rounded GRAVEL and COBBLES of mixed lithology. Occasional boulders and lenses of grey sand. Groundwater ingress from 2.40m bgl.		
		End of trial hole at 2.80m. Dry on completion. Trial hole backfilled with arisings on completion.		

Engineer: J.Brock

Site Works Date: 05/08/2022

Plant: Tracked 360 Excavator

Log Notes:

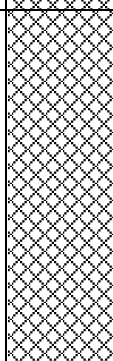
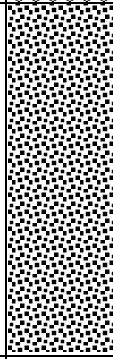
HSV = Hand Shear Vane (kN/m²)

LP = Limited Penetration (HSV/CBR)

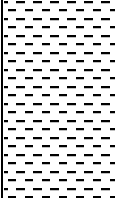
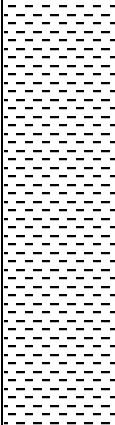
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GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP12

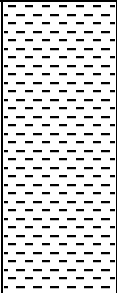
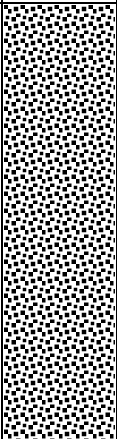
Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.20	MADE GROUND: Loamy gravelly soil with occasional angular GRAVEL of aggregate.		
0.20	1.40	MADE GROUND: Dark grey and black angular GRAVEL, COBBLES and occasional boulders of ash, clinker, slate, brick and occasional metal.		
1.40	2.60	Brown silty very sandy fine to coarse sub-rounded GRAVEL and COBBLES of mixed lithology. Occasional boulders and lenses of grey sand.		
		End of trial hole at 2.60m. Dry on completion. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock Site Works Date: 05/08/2022 Plant: Tracked 360 Excavator			Log Notes: HSV = Hand Shear Vane (kN/m ²) LP = Limited Penetration (HSV/CBR) B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub	
No Photo				

GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP13

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.32	TOPSOIL: Dark grey brown sandy gravelly LOAM.		
0.32	1.00	Firm to stiff brown mottled grey very gravelly CLAY.		
1.00	2.50	Stiff dark brown very gravelly CLAY with occasional cobbles and boulders.		
		End of trial hole at 2.50m. Dry on completion. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock Site Works Date: 05/08/2022 Plant: Tracked 360 Excavator			Log Notes: HSV = Hand Shear Vane (kN/m ²) LP = Limited Penetration (HSV/CBR) B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub	



GEO2021-5470: Former Goods Yard, Dalzell Street, Moor Row – TP14

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.33	TOPSOIL: Dark grey brown sandy gravelly LOAM.		
0.33	1.30	Firm to stiff brown mottled grey very gravelly CLAY. Becoming stiff with depth.		
1.30	2.80	Brown silty sandy fine to coarse sub-rounded to sub-angular GRAVEL and COBBLES with occasional boulders.		
		End of trial hole at 2.80m. Dry on completion. Trial hole backfilled with arisings on completion.		

Engineer: J.Brock

Site Works Date: 05/08/2022

Plant: Tracked 360 Excavator

Log Notes:

HSV = Hand Shear Vane (kN/m²)

LP = Limited Penetration (HSV/CBR)

B = Bulk Bag, J = Amber Glass Jar, T = Plastic Tub





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