

Troy Melhuish
RG Parkins & Partners Ltd
Meadowside
Shap Road
Kendal, Cumbria, LA9 6NY

Date: 06.08.2024
Project No: GEO2024-6310
Project: Griffin Close, Frizington
Report Title: Soil Infiltration Tests

Dear Troy,

Geo Environmental Engineering Ltd (GEO) were commissioned by the Consultant, RG Parkins & Partners Ltd, on behalf of the Client, Home Group to carry out soil infiltration tests to aid the drainage design for the proposed residential development.

It is understood that the Client plans to redevelop the land for residential end use. A proposed site layout plan has been provided and a copy is included. The plan indicates c.17 No. plots with private gardens, parking access road, general soft landscaping and other associated infrastructure.

Previous Investigation

GEO have previously completed a Desk Top Study and a Ground Investigation on the site, details of which are included below:

- Desk Top Study (Preliminary Environmental Risk Assessment), ref: 2022-5436, dated: 17.08.2022
- Ground Investigation Report, ref: 2023-5696, dated: 03.02.2023

It is recommended that the previous reports are read in conjunction with this report.

The previous investigation encountered variable made ground associated with the former development (care home) and possible coal mine workings. The made ground was typically between 0.40m and 2.70m deep and comprised clay fill with gravel of clinker, coal, sandstone and brick with pockets of gravel. The made ground was typically underlain by firm to stiff or stiff light brown and grey, silty sandy gravelly clay. Rare lenses of sand were occasionally noted. Possible heavily weathered bedrock comprising stiff to very stiff clay with gravel of angular mudstone was also noted.

Supplementary Mining Investigation

A Supplementary Mining Investigation comprising trenches, probing and rotary drilling was undertaken concurrently with the soil infiltration tests. A separate mining report will be issued.

Soil Infiltration Tests

The soil infiltration tests were completed on the 30th July 2024. The works comprised two trial pits (SA01 and SA02) to depths of between 2.00m and c.2.20m bgl. The trial pits encountered made ground to depths of between c.1.00m and c.1.70m bgl respectively. This comprised clayey gravel of dolomite, brick, timber and concrete in SA01 and reworked gravelly clay with brick, concrete and sandstone in SA02.

“Without Site Investigation Ground is a Hazard”

Site Investigation Steering Group (SISG), 1993

Trial Pit SA01 was recorded as dry on completion, however, SA02 encountered perched water ingress from the base of the made ground. However, the water ingress ceased quickly.

Both trial pits were partially filled with water from a mobile bowser and the water level was recorded frequently over a duration of c.5 hours.

During the tests, the water in both trial pits dropped 4cm and 1cm respectively. The results suggest that the natural soils are practically impermeable (as would be expected given the presence of clay deposits) and the tests are considered as a fail.

Conclusion and Recommendations

Based on the ground conditions encountered during this and the previous investigations, and the results of the soil infiltration tests, the ground beneath the site is not considered suitable for soakaways and an alternative drainage solution should be sought.

General Comments

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.

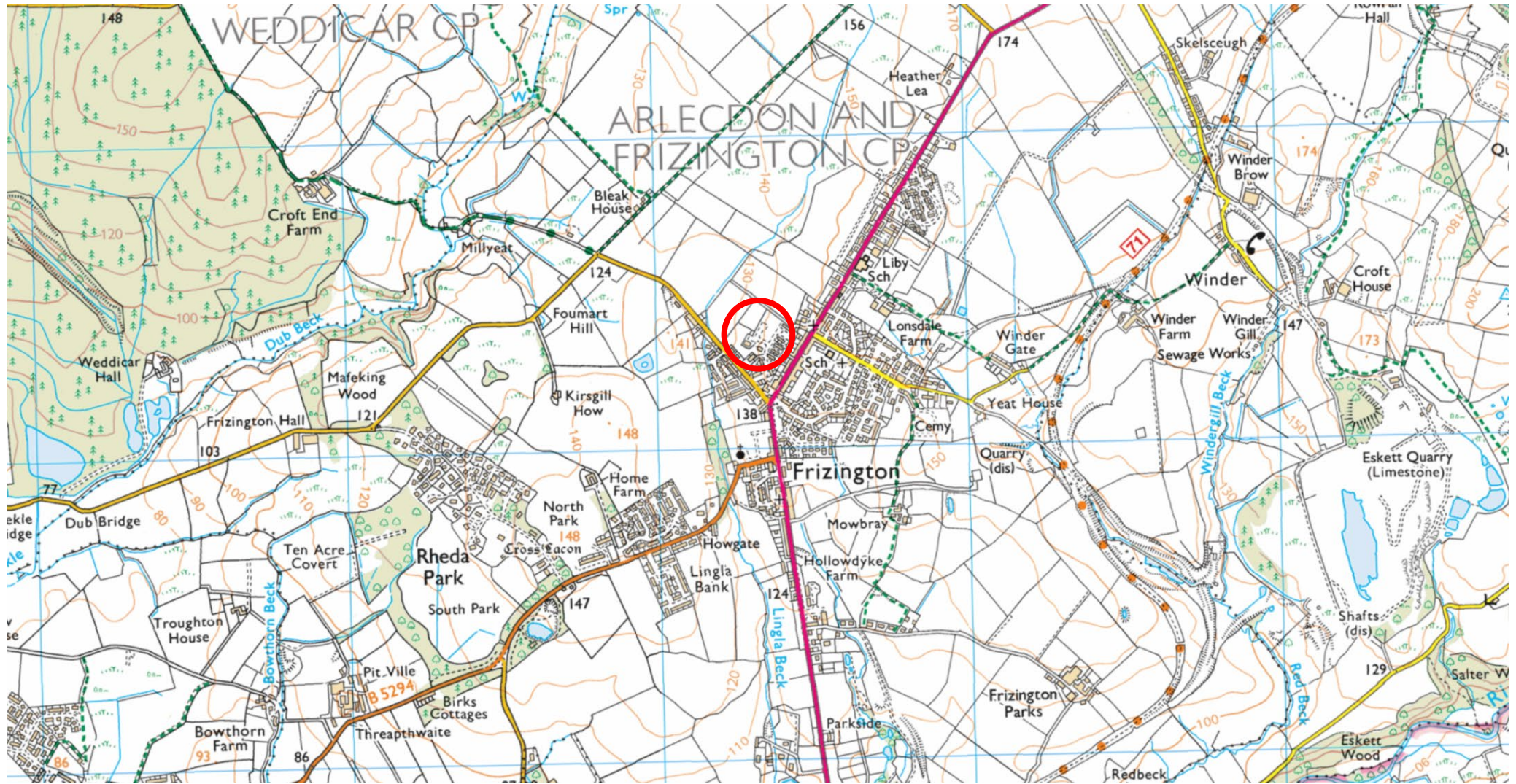
Yours Faithfully

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James Brock *BSc (Hons), MSc*
Associate - Geo Environmental Engineering Ltd

“Without Site Investigation Ground is a Hazard”

Site Investigation Steering Group (SISG), 1993

GEO2024-6310: Griffin Close, Frizington – Site Location



Website: www.geoenvironmentalengineering.com

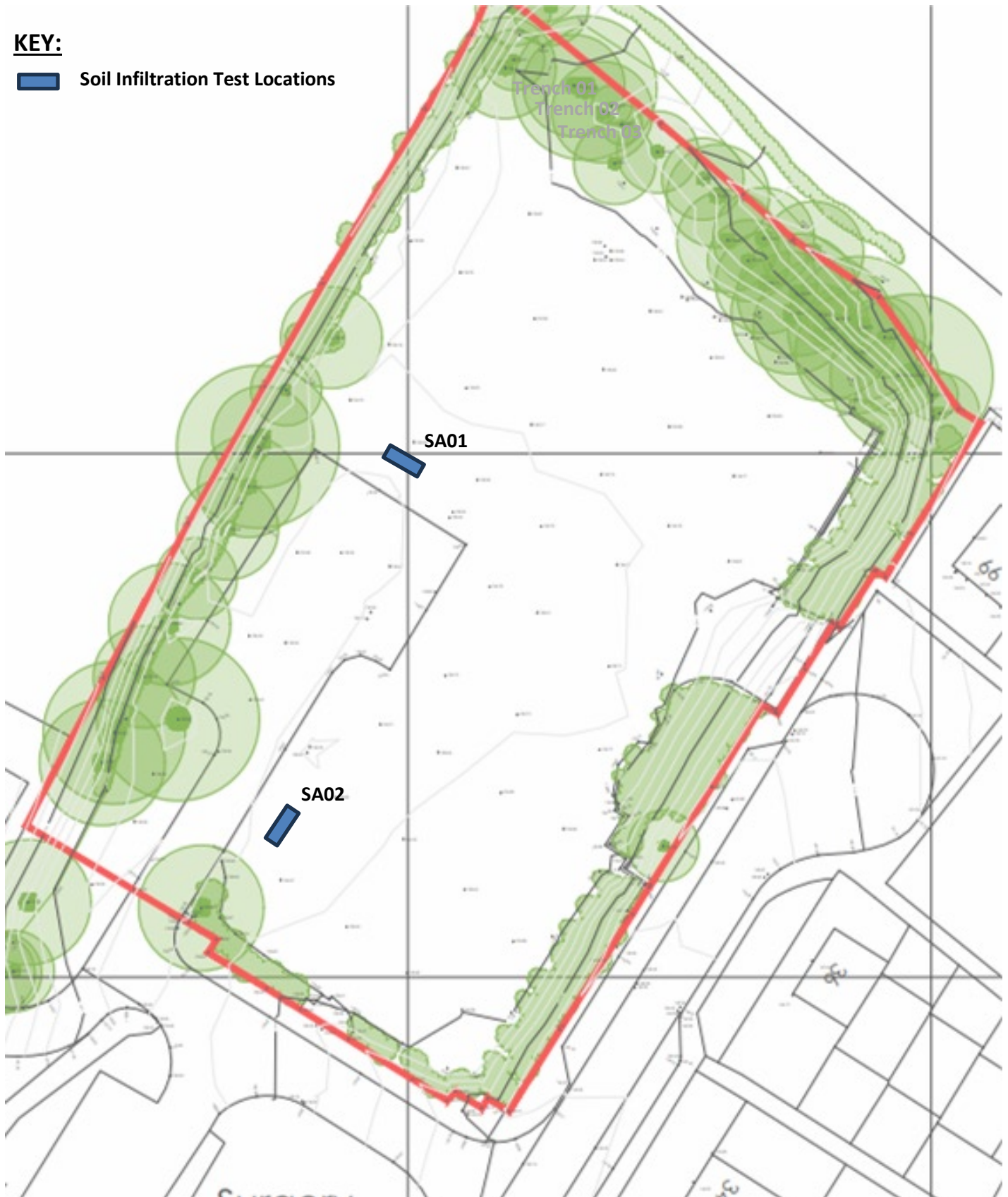
Email: info@geoenvironmentalengineering.com

Telephone: 07883 440 186

GEO2024-6310: Griffin Close, Frizington - Exploratory Hole Location Plan

KEY:

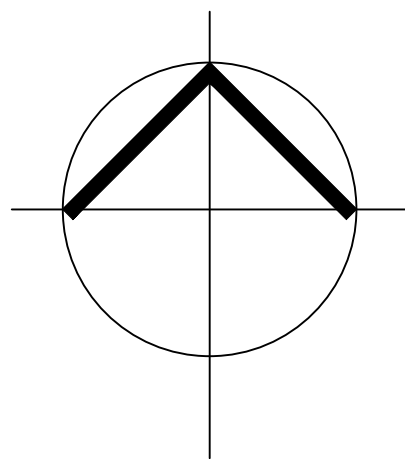
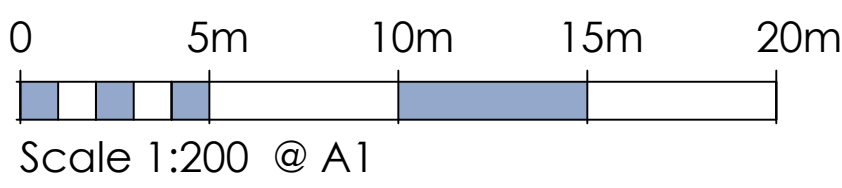
 Soil Infiltration Test Locations





Proposed Site Plan

Griffin Close, Frizington



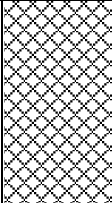
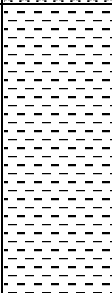
Rev	Rev.	Date	Description	Status	Revised by
	3	06/22	Developed Design	For Comment	

ARCHITECTS
PLUS

Project
Residential Development
Griffin Close, Frizington
Client
Thomas Armstrong (Construction) Ltd

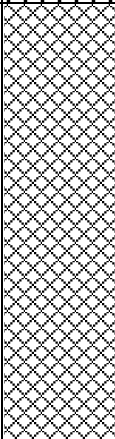
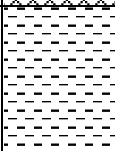
Drawing	Proposed Site Plan
Drawn by	BG
Date	06/22
Scale @ A1	1:200
Computer file	P01
Drawing Number	22031-02
Revision	

GEO2024-6310: Griffin Close, Frizington, Cumbria – SA01

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.26	TOPSOIL: Dark brown sandy gravelly LOAM.		
0.26	1.00	MADE GROUND: Grey very silty/clayey fine to coarse angular GRAVEL of dolomite, brick, timber and concrete.		
1.00	2.00	Stiff dark brown gravelly CLAY.		
		End of trial hole at 2.00m – Soil Infiltration Test Completed. Trial hole remained dry on completion. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock Site Works Date: 30/07/2024 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	



GEO2024-6310: Griffin Close, Frizington, Cumbria – SA02

Depth From (m)	Depth To (m)	Strata Description	Legend	Testing / Samples
0.00	0.22	TOPSOIL: Dark brown sandy gravelly LOAM.		
0.22	1.70	MADE GROUND: Soft to firm dark brown very gravelly clay with much brick, concrete, sandstone.		
1.70	2.20	Stiff dark brown gravelly CLAY.		
		End of trial hole at 2.20m – Soil Infiltration Test Completed. Perched groundwater ingress from base of made ground. Trial hole backfilled with arisings on completion.		
Engineer: J.Brock Site Works Date: 30/07/2024 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	



GEO2024-6310: Griffin Close, Frizington – Soil Infiltration Test Results

SA01 – Soil Infiltration Test Results	
Duration (mins)	Water Level (m bgl)
0	1.25
10	1.25
20	1.25
30	1.26
60	1.29
90	1.29
120	1.29
150	1.29
195	1.29
305	1.29

SA02 – Soil Infiltration Test Results	
Duration (mins)	Water Level (m bgl)
0	1.70
10	1.70
20	1.70
30	1.70
60	1.70
90	1.71
120	1.71
150	1.71
195	1.71
305	1.71



GEO Environmental Engineering Ltd

Geotechnical and Environmental
Consultants
&
Drilling Experts

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