

PRELIMINARY CONSULTATION WITH EA
+ SOIL TEST RESULTS

RE: Proposed Slurry Lagoon - Higher Greenhead Farm

MJ Monk, Jackie
To: John Metcalfe

You forwarded this message on 21/02/2024 19:07.

From: Monk, Jackie
Sent: 16 October 2023 17:23

To: John Metcalfe

Subject: RE: Proposed Slurry Lagoon - Higher Greenhead Farm

Hi John

I've had a response from our Groundwater Team as follows:

"This site is not high risk but neither is it without risk. Therefore, I think we would be justified in requiring the farmer to submit construction quality assurance (CQA) documentation for approval before any slurry is placed in a lagoon constructed on this site. Given the nature of the surroundings, I do not think this conclusion would be altered in response to any possible amendment to the proposed location.

The justification for making this request is as follows: The farm is located in an area underlain by Carboniferous limestone (a 'Secondary A' aquifer), within which groundwater flow is predominantly through fractures (and therefore can be very fast with little or no scope for attenuation of pollutant concentrations). In addition, the presence of superficial deposits is patchy and, where present, thicknesses may be minimal. Furthermore, the National Soil Survey of England and Wales has classified local soils as being loam over limestone (i.e. again allowing little scope for attenuation). That being the case we cannot discount the possibility of any point source pollution at this location finding its way into the Swanside Beck (i.e. approximately 600m to the SE and 45m below the elevation of the site)".

I'm not sure what they mean by CQA documentation in respect of EBSLs - I've asked for further clarification.

I think you should just go ahead as planned with trial pits and see what's there. If it does confirm that 'superficial deposits' (boulder clay) are patchy and/or minimal thickness, then we may have to look at importing clay for lining. The above is only a desk study.

Advice on trial pits

The farmer should organise the completion of trial pits to indicate the suitability and depth of the material on site and provide us with the results from these.

Four trial pits should be excavated to the perimeter of the proposed lagoon, one at each corner outside the footprint of the lagoon area, if these are of consistent clay of similar depth and colour then a middle trial pit should not be dug as this could breach the liner.

They must be excavated to at least 1m beneath the lowest level of the lagoon to assess if there is a minimum of 1m of clay beneath the base.

Request a plan with locations, pit dimensions, weather, date, photos to the base ideally with a tape measure down and a basic log of the strata eg topsoil 0-30cm, red brown clay 0.3-1.0m with sand lens on west side 0.5m wide by 0.2 high between 0.8 and 1.0m and note any boulders and water seepage. If the trial pits clearly show 1m of good clay below the base level of the proposed lagoon, and they are not below groundwater level then the farmer/agent can proceed with organising bulk sampling.

Many thanks

Jackie Monk
TARA Project Officer

Environment Agency | Lutra House, Walton Summit Business Park, Preston PR5 8BX

Reply Reply All Forward

Wed 21/02/2024

RE: Proposed Slurry Lagoon - Higher Greenhead Farm

 Morik, Jackie
To: John Metcalfe

 You forwarded this message on 21/02/2024 19:07.

Hi John,

I've run it all by the Groundwater team and their conclusion as follows:

"we are content to accept this result. Although the material is actually only 25% clay, the permeability test (presumably undertaken in accordance with the relevant British &/or International Standard) implies that it is suitable for use as a lining material. Although the photos show it does look quite sandy (the analysis indicates 38% sand or gravel), I agree it does look to be free from stones. In addition, it looks quite stiff (dense). This is consistent with the clay being of glacial origin"

So no need to import any lining material!

Next step is to submit construction plan - again, just make sure it's a contractor who is familiar with C759 - (Livestock manure and silage storage infrastructure for agriculture Part 1 Selection Guide and Part 2 Design and construction) and SSAFO Regs and will be able to guarantee they have followed construction guidance as laid down in this document. Take photos and keep records all the way through the process.

Regards

Jackie Morik
TARA Project Officer

Environment Agency | Lutra House, Walton Summit Business Park, Preston PR5 8BX

Working days: Monday to Thursday

Working to reduce the environmental impact of farming



 Reply  Reply All  Forward 

Wed 21/02/2024 16:



1367



ALLIED EXPLORATION AND GEOTECHNICS t/a IGNE

LABORATORY REPORT CERTIFICATE

Contract Title: Higher Greenhead Farm

**Contract
Number:**

SLS1406

Client Address: Mr Edward Thornborough
Higher Greenhead Farm
Gisburn Road
Sawley
Nr. Clitheroe
BB7 4LQ

We certify that Laboratory testing was carried out on samples from the above contract in accordance with techniques outlined in BS 1377: 1990, BS EN ISO 17892:2014 or other appropriate standards as quoted. The sample was received on 23rd January 2023 and the following results, given on the attached enclosures, were obtained.

The tests carried out are indicated in the attached table showing the enclosure number and the total number of pages.

For and on behalf of Allied Exploration & Geotechnics Limited t/a Igne

☐

Nick Vater (Director)

☒

Michelle Selkirk (Laboratory Manager)

☐

Graeme Scaife (Assistant Laboratory Manager)

Signed

Date: 30 January 2024

Tests marked not UKAS accredited in this certificate are not included in the UKAS accreditation schedule for our laboratory. Any opinions and interpretations expressed herein are outside the scope of the laboratory's UKAS accreditation. The results reported relate to samples received in the laboratory only. This report should not be reproduced except in full without the written approval of the laboratory.

Please note the material was derived from samples taken outside the control of the laboratory.

ALLIED EXPLORATION AND GEOTECHNICS t/a IGNE

LABORATORY REPORT CERTIFICATE

ENCLOSURES

Enclosure Number	Description	UKAS Accredited	Reference	No. of Pages
0	Laboratory Report Certificate	N/A		3
1	Sample Description Sheets	N/A		1
2	Particle Size Distribution Sieving	Yes	BS EN ISO 17892-4:2016	1
2	Particle Size Distribution Sedimentation	No	BS EN ISO 17892-4:2016	1
3	Determination of Permeability – Triaxial Cell Method	No	BS 1377 Part 6 1990	1

ALLIED EXPLORATION AND GEOTECHNICS t/a IGNE

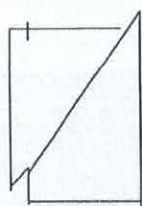
LABORATORY REPORT CERTIFICATE

ABBREVIATIONS

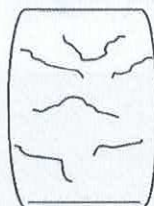
B	Large disturbed (bulk) sample	OED	One Dimensional Consolidation
CBR	California Bearing Ratio	PCH	Permeability Constant Head
CDT	Consolidated Drained Triaxial	PD	Particle Density
CP2	Dry Density/Moisture Content 2.5kg	PFH	Permeability Falling Head
CP4	Dry Density/Moisture Content 4.5kg	PI	Atterberg Limits
CPV	Dry Density/Moisture Content vibrating	PL	Point Load
CUT	Consolidated Undrained Triaxial	PSD	Particle Size Distribution (sieve)
D	Small disturbed (jar) sample	PTXL	Permeability in Triaxial Cell
ES	Environmental sample	R	Remoulded
GC	Geochemical Testing	SB	Shear Box
HSV	Hand Shear Vane	SED	Sedimentation by Pipette
IS	Insufficient sample for test	U	Undisturbed sample
L	Liner sample	US	Unsuitable sample for test
M	Multi-stage testing	UUT	Undrained Unconsolidated Triaxial
MC	Moisture Content		
MCV	Moisture Content Value		

Typical Mode of Failure for Triaxial Testing

Brittle (BR)



Compound (C)

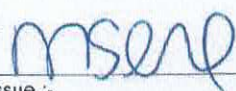


Plastic (P)



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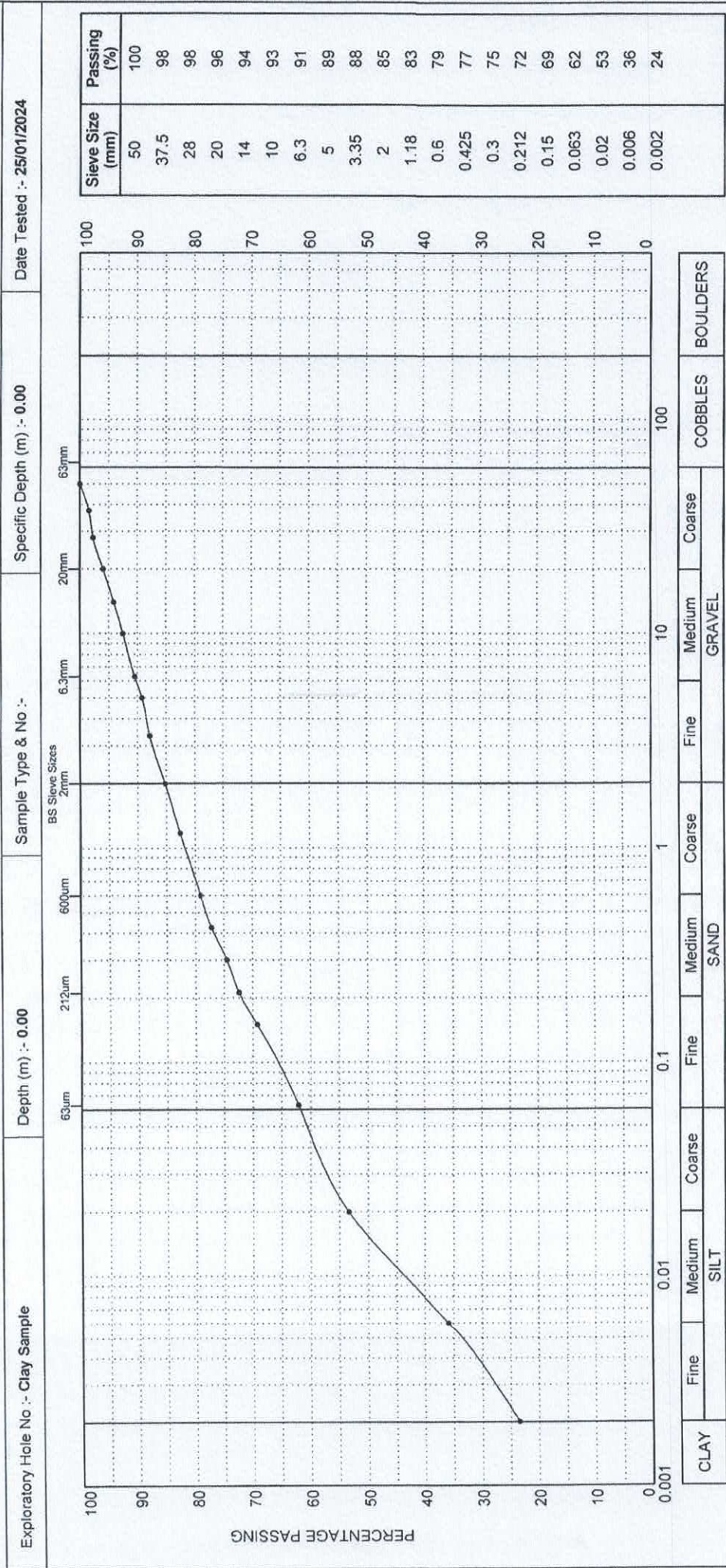
Unit 25 Stella Gill Industrial Estate, Pulton Fell, Chester-le-Street, Co. Durham, DH2 2RG - Tel: 0191 387 4700

LABORATORY SAMPLE DESCRIPTION SHEET			
Exploratory Hole No.	Sample Depth (m) ID	Description	Laboratory Tests/Remarks
Clay Sample	0.00	Brown slightly sandy slightly gravelly CLAY.	PSD SED PTXL
Contract Title :- Higher Greenhead arm		Client :- Mr Edward Thornborough	
	Signed :- 	Name :- 	Page 1 of 1
	Date of issue :- 30/01/2024	Certificate No :- SD/SLS1406/1	Contract No. :- SLS1406
			

ALLIED EXPLORATION & GEOTECHNICS LIMITED t/a IGNE

Unit 25 Shella Gill Industrial Estate, Pelton Fall, Chester-le-Street, Co. Durham, DH2 2RG • Tel: 0191 387 4700

PARTICLE SIZE DISTRIBUTION
BS EN ISO 17892-4 : 2016 : Part 4



For description of sample please refer to the Laboratory Sample Description Sheet

ign	Date of issue :- 30/01/2024	Certificate No :- PSD/SLS1406/Clay Sample/0.00	Signed :- [Redacted]	Name :- [Redacted]	Page 1 of 1
	Client :- Mr Edward Thornborough	Contract Title :-	Contract No :- SLS1406	Contract No :- SLS1406	Contract No :- SLS1406



**ALLIED EXPLORATION & GEOTECHNICS t/a IGNE**

Unit 25 Stella Gill Industrial Estate , Pelton Fell
 Chester-le-Street , Co Durham DH2 2RG
 a UKAS TESTING Laboratory No.1367

DETERMINATION OF PERMEABILITY IN TRIAXIAL CELL

BS 1377 Part 6 1990

SITE: Higher Greenhead Farm**JOB No:** SLS1406**CLIENT:** Mr Edward Thornborough**Type of specimen:** Undisturbed**Sample No:** Clay Sample**Depth (m):** 0.00**Specific Depth (m):** n/a

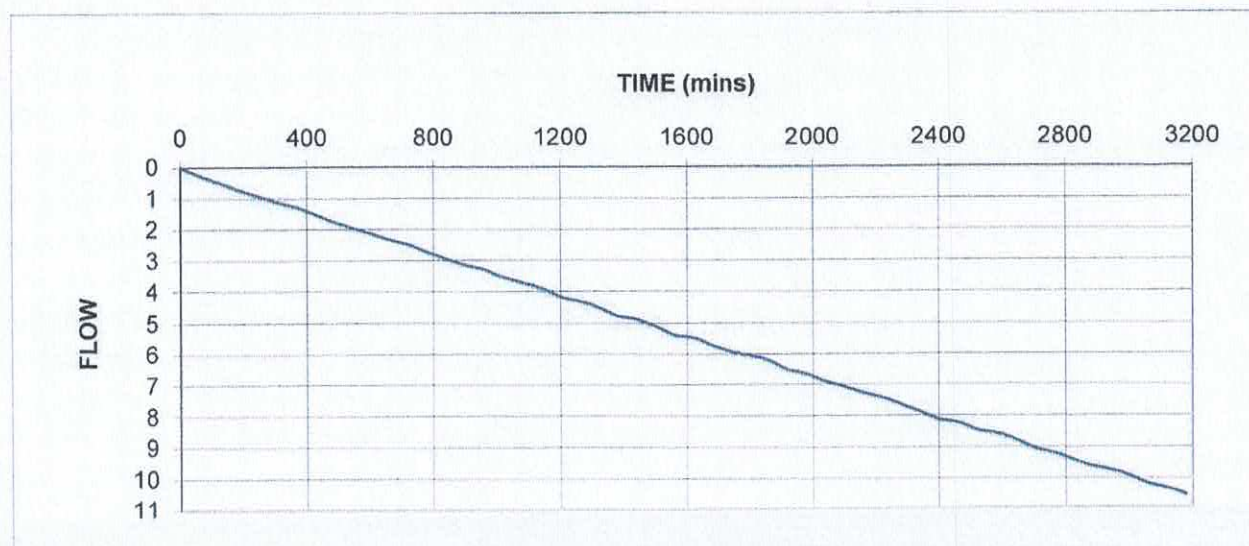
For sample description please refer to sample description sheet.

SPECIMEN DETAILS:

		INITIAL	FINAL
Length	mm	120.8	119.0
Diameter	mm	105.2	104.1
Moisture Content	%	25	25
Wet Density	Mg/m ³	1.94	2.00
Dry Density	Mg/m ³	1.55	1.60

DEGREE OF SATURATION: % 99.9**PERMEABILITY :**

Cell Pressure	kPa	350
Top Back Pressure	kPa	300
Base Back Pressure	kPa	330
Mean Effective Stress	kPa	35
Mean Flow Rate	ml/min	0.003314
Permeability	m/sec	2.50xE-10

**DATE TESTED:** 26/01/2024**DATE OF ISSUE:** 30/01/2024**APPROVED BY:**
NAME:

M Selkirk

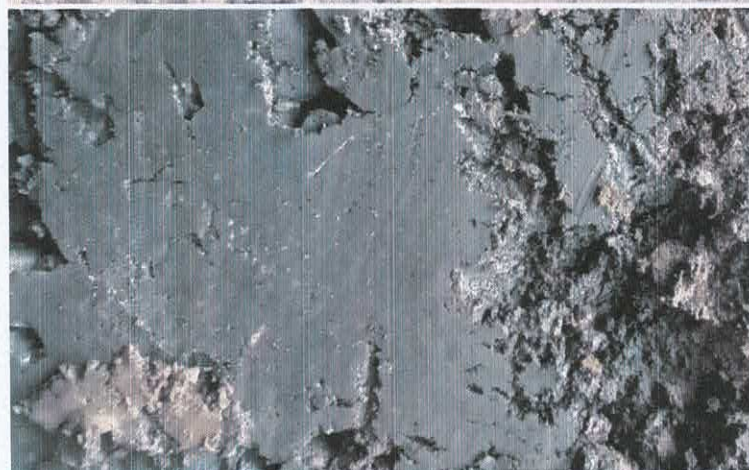
Higher Greenhead – Test Holes



Hole 1



Hole 2



Hole 3



Hole 4

