

Our Ref: 4046-G-L031 Rev A

Date: 30th May 2023

Mr Matt Davis
Story Homes
Story House
Lords Way
Kingmoor Business Park
Carlisle
CA6 4SL



Head Office

Caledonian House, Tatton Street,
Knutsford, Cheshire, WA16 6AG

t: 01565 755557

www.id-geo.co.uk

Dear Mr Davis,

Phase 3B Bolt-on Edgehill Park & Former Phosphate Storage Area – Verification of Delineation & Excavation of Slag/Concrete Sub-base & Metal Contaminated Granular Made Ground

This letter report has been prepared in accordance with the following LPA and EA approved Remediation Strategy reports prepared on behalf of Story Homes:

- Remediation Strategy for land at Phase 3A Edgehill Park, Whitehaven reference 4046-G-R021 dated June 2021
- Remediation Strategy for land at Phase 3B Edgehill Park, Whitehaven reference 4046-G-R022 dated July 2021

Further investigation undertaken within the footprint of Plots 209-215 and the Phase 3b Bolt-on and zone formerly occupied by the Phosphorite Storage Area identified slag and concrete Sub-base Made Ground associated with a former site access road at TP1111 & TP111A and elevated arsenic and slightly elevated beryllium within Granular Made Ground at TP1108. These materials were considered unsuitable to remain within 600mm of the site surface in residential gardens. The findings are presented in IDG correspondence reference 4046-G-L028 Rev C dated 13th March 2023. IDG recommended that the Sub-base and Granular Made Ground be excavated and placed beneath hardstanding where it would be isolated from end-users. This document details the delineation, excavation and re-deposition of the Sub-base and Granular Made Ground in accordance with the above methodology. Details of each activity are presented below.

Slag & Concrete Sub-base

Slag and Concrete Sub-base was encountered in TP1111 & TP1111A beneath the rear garden and footprint of a proposed residential access at the rear of Plots 213-215 within Phase 3 of the development. Chemical analysis presented in correspondence reference 4046-G-L028 Rev C has not identified any contamination in the Slag & Concrete Sub-base Made Ground. However, the material was considered physically unsuitable to remain at shallow depth within rear gardens, although was considered suitable to be retained as sub-base beneath the shared residential access driveway.

Delineation and excavation was undertaken by RHI Ltd on the 8th March 2023 supervised by IDG. The Sub-base was excavated from depths of between 0.15m and 0.75m from an area of approximately 47m² depicted on Drawing reference 4046-G-D065 Rev C in Appendix A. Approximately 20m³ of Sub-base material was deposited directly into the excavation for the adjacent residential access drive. The extent and depth of the Sub-base excavation and the depth and extent of the access drive were surveyed by RHI Ltd. A copy of the survey is presented in Appendix A. A photographic record of the excavation and placement within the road cutting is provided in Appendix C.

Granular Made Ground

Granular Made Ground comprising red-brown and purple-brown coarse sandstone gravel and cobbles which contains elevated concentrations of arsenic and beryllium was encountered in TP1108.

Delineation and excavation of the Granular Made Ground was undertaken by RHI Ltd on the 8th and 9th of March by RHI Ltd supervised by IDG. The Granular Made Ground was excavated from the site surface to depths of between 0.35m and 0.7m from an area of approximately 350m² depicted on Drawing refence 4046-G-D065 Rev C. Approximately 200m³ of Granular Made Ground was placed upon visqueen at the location depicted on Drawing 4046-G-L065 Rev C, prior to placement in the adjacent residential access drive. The stockpiled material was placed into the access drive cutting on 9th and 10th March 2023 by RHI Ltd. The extent of the access road footprint was recorded by survey prior to and post placement.

Samples were obtained from the base of the excavation to demonstrate complete removal of the Granular Made Ground. Samples were dispatched to the chemical laboratory with a representative testing schedule including pH, arsenic & beryllium. The laboratory results have been compared with current S4UL and C4SL screening criteria for a residential with plant uptake screening criteria; The results are presented in Appendix B.

Contamination analysis presented in Table 1 in Appendix C demonstrates that arsenic and beryllium concentrations are below the relevant S4UL (2014) screening criteria and this confirms that the Granular Made Ground has been satisfactorily removed.

A photographic record of the excavation, stockpiling and placement into the access drive is provided in Appendix C.

Asbestos Delineation

Detailed discussion of the delineation & verification of the removal of asbestos fibre contaminated soil is presented in IDG correspondence 4046-G-D028 Rev C and is summarised here to confirm remediation of Phase 3B is complete and the site is considered to be suitable for residential redevelopment. As discussed in the correspondence, IDG attended site on 16th February 2023. Approximately 3m³ of Made Ground was excavated and placed upon visqueen and covered with visqueen to prevent any mobilisation of dust.

Samples TP1116-S1 – TP1116-S6 were obtained from the side walls and base of the Made Ground in the excavation. Laboratory screening did not detect any evidence of asbestos or asbestos fibres in any of the delineation samples.

Photographs of the delineation excavation and excavated soil stockpile are reproduced in Appendix C. The Waste Transfer Note presented in Appendix D confirms that the 8.6T stockpile was removed from site on 15th May 2023 by G & AM Lawson and disposed of to Port Clarence Landfill Site, off Huntsman Drive, Stockton on Tees TS12 1UE operated by Augean Limited.

Based upon satisfactory remediation activities described above we consider the site suitable for the proposed residential end use and that no further remediation will be required.

We trust the above finding and recommendations are of assistance. Please contact the undersigned if you have any questions.

Yours faithfully,

Nick Ward BSc. (Hons), FGS.

for and on behalf of

iD GEOENVIRONMENTAL LIMITED

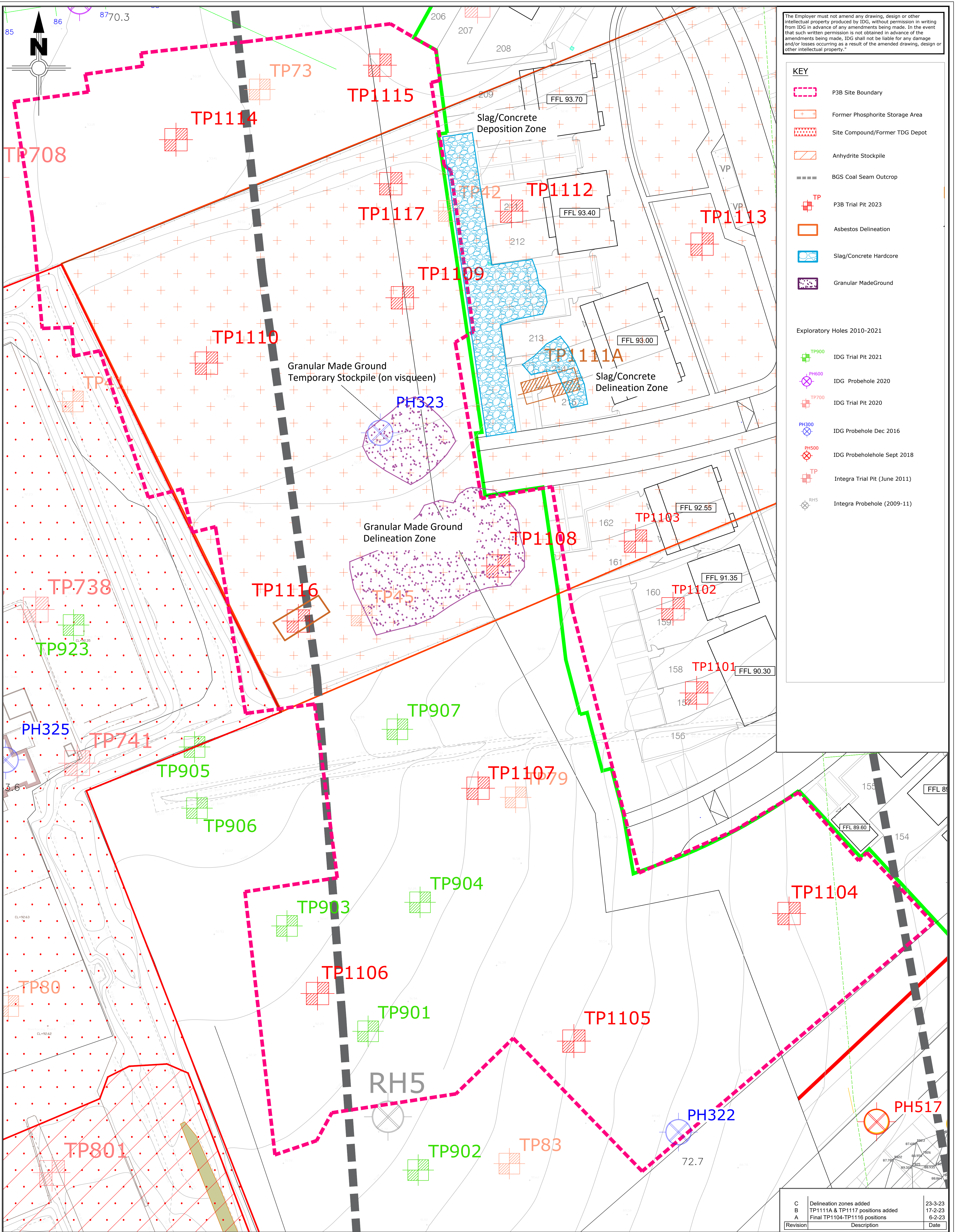
Encl: Appendix A: Drawing 4046-G-D065 Rev C
Appendix B: Contamination Analysis & Laboratory Test Results
Appendix C: Photo Appendix
Appendix D: Waste Transfer Note

Appendix A

The Employer must not amend any drawing, design or other intellectual property produced by IDG, without permission in writing from IDG in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, IDG shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or other intellectual property.

- KEY**
- P3B Site Boundary
 - Former Phosphorite Storage Area
 - Site Compound/Former TDG Depot
 - Anhydrite Stockpile
 - BGS Coal Seam Outcrop
 - TP
P3B Trial Pit 2023
 - Asbestos Delineation
 - Slag/Concrete Hardcore
 - Granular MadeGround

- Exploratory Holes 2010-2021**
- TP900
IDG Trial Pit 2021
 - PH600
IDG Probehole 2020
 - TP700
IDG Trial Pit 2020
 - PH300
IDG Probehole Dec 2016
 - PH500
IDG Probeholehole Sept 2018
 - TP
Integra Trial Pit (June 2011)
 - RH5
Integra Probehole (2009-11)



Revision	Description	Date
C	Delineation zones added	23-3-23
B	TP1111A & TP1117 positions added	17-2-23
A	Final TP1104-TP1116 positions	6-2-23

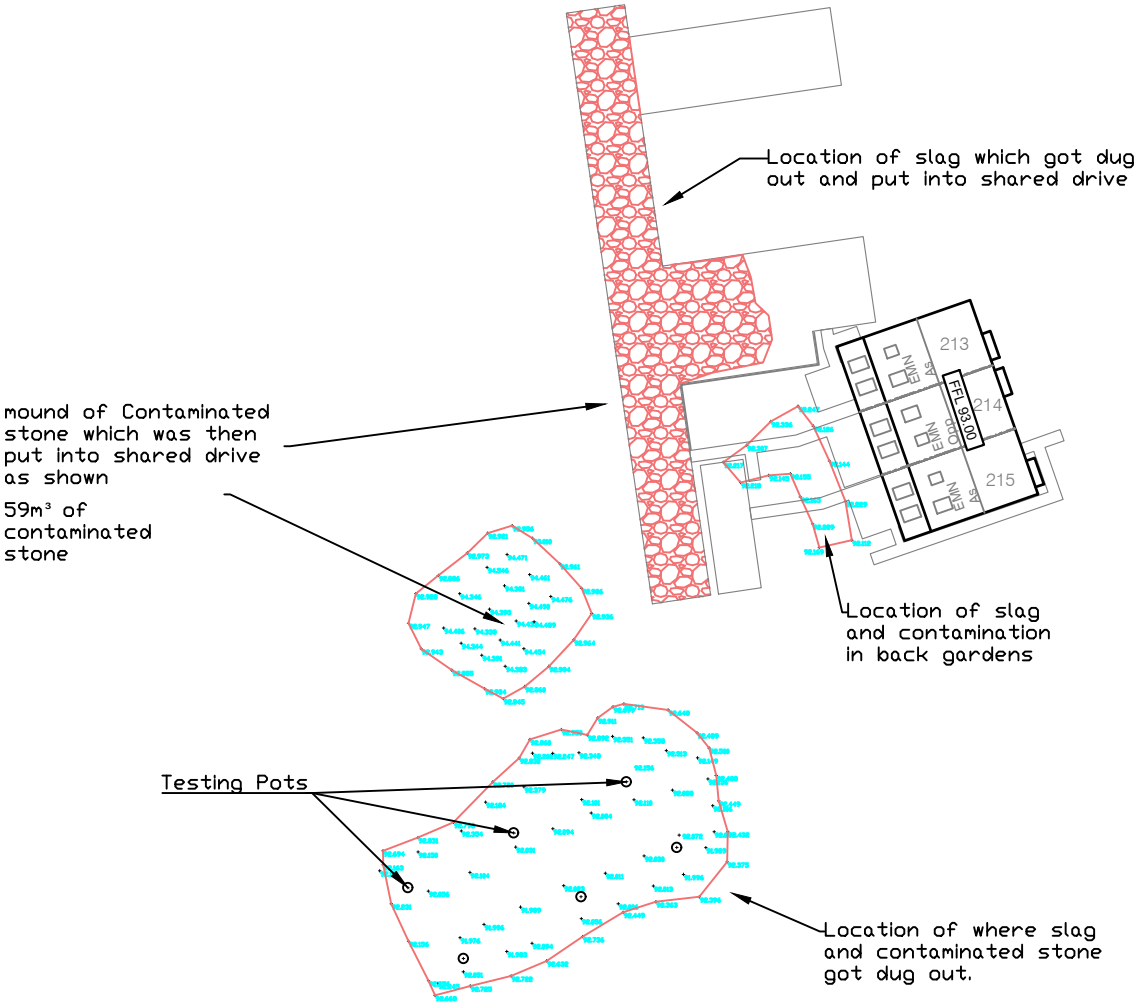
iGeo
ID GeoEnvironmental Limited

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CLIENT Story Homes	JOB TITLE Phase 3 Edgehill Park	DRAWING TITLE P3 Bolt-on EHP	KEY	STATUS	COMMENT
DRAWN BY NW		SIGNATURE		DATE 11-7-22	
APPROVED		SIGNATURE		DATE	
SCALE 1:250		DRG No. 4046-G-D065			

CONTAMINATED STONE



A	17.3.23	SURVEY	EL	N/A
Rev.	Date	Revision	By	Appd.



ELLIOTT LINFORD
 Tel: 07736875719
 Email: elliottlinford@rhi-construction.co.uk

Client	Story Homes
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Project	Edghill Park
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Title	CONTAMINATED STONE SHEET 1 OF 1
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DRAWING NUMBER EHD170323	SCALE at A1 DO NOT SCALE	
	DATE	17.3.23 REVISION
	DRAWN	EL
	CHECKED	N/A
		A

Appendix B

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 23/02328
Issue Number: 1
Date: 20 March, 2023

Client: iD GeoEnvironmental Ltd (Knutsford)
Caledonian House
Tatton Street
Knutsford
WA16 6AG

Project Manager: Nick Ward
Project Name: P3B Edgehill Park
Project Ref: 4046
Order No: N/A
Date Samples Received: 13/03/23
Date Instructions Received: 14/03/23
Date Analysis Completed: 20/03/23

Approved by:

Gemma Berrisford
Client Manager

Envirolab Job Number: 23/02328

Client Project Name: P3B Edgehill Park

Client Project Ref: 4046

Lab Sample ID	23/02328/1	23/02328/2	23/02328/3	23/02328/4	23/02328/5	23/02328/6		Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	ARS-01	ARS-02	ARS-03	ARS-04	ARS-05	ARS-06				
Depth to Top	0.40	0.70	0.70	0.50	0.40	0.40				
Depth To Bottom										
Date Sampled	09-Mar-23	09-Mar-23	09-Mar-23	09-Mar-23	09-Mar-23	09-Mar-23				
Sample Type	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES	Soil - ES				
Sample Matrix Code	6A	6A	6A	3	6A	6A				
% Stones >10mm _A	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1		% w/w	0.1	A-T-044
pH _D ^{M#}	7.82	7.55	7.50	7.65	7.61	7.54		pH	0.01	A-T-031s
Arsenic _D ^{M#}	9	9	4	10	10	7		mg/kg	1	A-T-024s
Barium _D	184	99	104	66	172	76		mg/kg	1	A-T-024s
Beryllium _D	1.4	1.5	1.5	1.0	1.2	0.8		mg/kg	0.5	A-T-024s
Vanadium _D ^{M#}	17	20	19	27	21	33		mg/kg	1	A-T-024s

REPORT NOTES

General

This report shall not be reproduced, except in full, without written approval from Envirolab.

The results reported herein relate only to the material supplied to the laboratory.

The residue of any samples contained within this report, and any received with the same delivery, will be disposed of six weeks after initial scheduling. For samples tested for Asbestos we will retain a portion of the dried sample for a minimum of six months after the initial Asbestos testing is completed.

Analytical results reflect the quality of the sample at the time of analysis only.

Opinions and interpretations expressed are outside the scope of our accreditation.

If results are in italic font they are associated with an AQC failure, these are not accredited and are unreliable.

A deviating samples report is appended and will indicate if samples or tests have been found to be deviating. Any test results affected may not be an accurate record of the concentration at the time of sampling and, as a result, may be invalid.

The Client Sample No, Client Sample ID, Depth to Top, Depth to Bottom and Date Sampled were all provided by the client.

Soil chemical analysis:

All results are reported as dry weight (<40°C).

For samples with Matrix Codes 1 - 6 natural stones, brick and concrete fragments >10mm and any extraneous material (visible glass, metal or twigs) are removed and excluded from the sample prior to analysis and reported results corrected to a whole sample basis. This is reported as '% stones >10mm'.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis and this supersedes any "A" subscripts

All analysis is performed on the sample as received for soil samples which are positive for asbestos or the client has informed asbestos may be present and/or if they are from outside the European Union and this supersedes any "D" subscripts.

TPH analysis of water by method A-T-007:

Free and visible oils are excluded from the sample used for analysis so that the reported result represents the dissolved phase only.

Electrical Conductivity of water by Method A-T-037:

Results greater than 12900µS/cm @ 25°C / 11550µS/cm @ 20°C fall outside the calibration range and as such are unaccredited.

Asbestos:

Asbestos in soil analysis is performed on a dried aliquot of the submitted sample and cannot guarantee to identify asbestos if only present in small numbers as discrete fibres/fragments in the original sample.

Stones etc. are not removed from the sample prior to analysis.

Quantification of asbestos is a 3 stage process including visual identification, hand picking and weighing and fibre counting by sedimentation/phase contrast optical microscopy if required. If asbestos is identified as being present but is not in a form that is suitable for analysis by hand picking and weighing (normally if the asbestos is present as free fibres) quantification by sedimentation is performed. Where ACMs are found a percentage asbestos is assigned to each with reference to 'HSG264, Asbestos: The survey guide' and the calculated asbestos content is expressed as a percentage of the dried soil sample aliquot used.

Predominant Matrix Codes:

1 = SAND, 2 = LOAM, 3 = CLAY, 4 = LOAM/SAND, 5 = SAND/CLAY, 6 = CLAY/LOAM, 7 = OTHER, 8 = Asbestos bulk ID sample, 9 = INCINERATOR ASH.

Samples with Matrix Code 7 & 8 are not predominantly a SAND/LOAM/CLAY mix and are not covered by our BSEN 17025 or MCERTS accreditations, with the exception of bulk asbestos which are BSEN 17025 accredited.

Secondary Matrix Codes:

A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal,

E = contains roots/twigs.

Key:

IS indicates Insufficient Sample for analysis.

US indicates Unsuitable Sample for analysis.

NDP indicates No Determination Possible.

NAD indicates No Asbestos Detected.

N/A indicates Not Applicable.

Superscript # indicates method accredited to ISO 17025.

Superscript "M" indicates method accredited to MCERTS.

Subscript "A" indicates analysis performed on the sample as received.

Subscript "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve

Subscript "A" indicates analysis has dependant options against results. Testing dependant on results appear in the comments area of your sample receipt.

EPH CWG results have humics mathematically subtracted through instrument calculation

TPH results "with Cleanup" indicates results cleaned up with Silica during extraction

EPH CWG GCxGC ID from TPH CWG

Where we have identified humic substances in any ID's from TPH CWG with Clean Up please note that the concentration of these

humic substances is not included in the quantified results and are included in the ID for information.

Please contact us if you need any further information.

Envirolab Deviating Samples Report

Units 7&8 Sandpits Business Park, Mottram Road, Hyde, SK14 3AR
Tel. 0161 368 4921 email. ask@envlab.co.uk

Client: iD GeoEnvironmental Ltd (Knutsford), Caledonian House, Tatton Street,
Knutsford, WA16 6AG

Project: P3B Edgehill Park

Clients Project No: 4046

Project No: 23/02328

Date Received: 14/03/2023 (am)

Cool Box Temperatures (°C): 6.3

NO DEVIATIONS IDENTIFIED

If, at any point before reaching the laboratory, the temperature of the samples has breached those set in published standards, e.g. BS-EN 5667-3, ISO 18400-102:2017, then the concentration of any affected analytes may differ from that at the time of sampling.

Envirolab Analysis Dates

Lab Sample ID	23/02328/1	23/02328/2	23/02328/3	23/02328/4	23/02328/5	23/02328/6
Client Sample No						
Client Sample ID/Depth	ARS-01 0.40m	ARS-02 0.70m	ARS-03 0.70m	ARS-04 0.50m	ARS-05 0.40m	ARS-06 0.40m
Date Sampled	09/03/23	09/03/23	09/03/23	09/03/23	09/03/23	09/03/23
A-T-024s	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023	17/03/2023
A-T-031s	20/03/2023	20/03/2023	20/03/2023	20/03/2023	20/03/2023	20/03/2023
A-T-044	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023	16/03/2023

The above dates are the analysis completion dates, please note that these are not necessarily the date that the analysis was weighed/extracted.

End of Report

Hole ID	Depth (m)	Material	Table 1 Inorganic Determinands: Concentrations in mg/kg unless otherwise stated. Critical Concentrations (GAC) are shown below																			
			TOC	SOM	pH	As	Ba	Be	Ca	Cd	Cr (III)	Cu	Pb	Hg	Ni	Se	Zn	V	S	SO ₄	SO ₄ (mg/l)	Asbestos
S4UL Residential with homegrown produce			%	%		37		1.7		11	910	2400	200*	40	130	250	3700	410				%
TP1104	0.30	Cohesive Made Ground	5.52	9.5	8.39	25				2.4	44	31	53	0.64	33	2	100					NAD
TP1104	1.30	Glacial Till			7.3																48	
TP1105	0.40	Glacial Till	1.75	3.0	7.47	10				2.6	28	19	16	<0.17	10	1	20					
TP1106	0.50	Glacial Till	1.75	3.0	6.24																	
TP1107	0.60	Glacial Till			8.75																70	
TP1108	0.25	Granular Made Ground	1.59	2.7	9.48	84	479	2.5		3.8	39	7	11	1.02	13	4	22	38				NAD
TP1108	0.40	Topsoil	4.93	8.5	6.73	16				1.6	35	26	51	<0.17	23	2	49					
TP1109	0.30	Granular Made Ground	3.85	6.6	7.87																	
TP1109	1.20	Glacial Till			7.56																186	
TP1110	0.40	Granular Made Ground	7.68	13.2	7.68	28	415	1.4	14300	2.1	30	37	44	<0.17	44	4	71	46	1610	3000	770	NAD
TP1110	1.00	Granular Made Ground	0.44	0.8	9.85	<5		1.4	252000	12	189	26	8	0.88	33	6	332	46	7570	19000	784	
TP1111	0.20	Hardcore Slag	0.44	0.8	11.27	8				0.9	17	7	6	2.24	9	6	25					
TP1112	0.40	Cohesive Made Ground	1.47	2.5	8.37	9	589	1.4		2.6	50	26	18	1.16	22	5	72	54				NAD
TP1113	0.30	Cohesive Made Ground	1.8	3.1	8.74	9				2	42	23	22	0.77	21	3	90					
TP1114	0.50	Glacial Till	0.95	1.6	8.11																	
TP1115	0.50	Glacial Till			8.84																141	
TP1116	0.20	Granular Made Ground	9.76	16.8	8.2	17	521	1		2	20	25	29	<0.17	27	4	57	27				0.022
TP1116	1.00	Glacial Till	1.38	2.4	7.36																	
TP1117	0.50	Cohesive Made Ground	0.38	0.7	7.4	11				1	35	27	49	<0.17	22	<1	51					NAD
TP1117	0.90	Granular Made Ground			8.28	4	99	2.1	293000	1.3	44	11	12	3.51	17	<1	45	48	2040	1900	81	
ARS-01	0.40	Glacial Till			7.82	9	184	1.4										17				
ARS-02	0.70	Glacial Till			7.55	9	99	1.5										20				
ARS-03	0.70	Glacial Till			7.5	4	104	1.5										19				
ARS-04	0.50	Glacial Till			7.65	10	66	1										27				
ARS-05	0.40	Glacial Till			7.61	10	172	1.2										21				
ARS-06	0.40	Glacial Till			7.54	7	76	0.8										33				

Key		Source of Critical Concentration	
BOLD	Determinand in excess of critical concentration		For source of Generic Assessment Criteria refer to Generic Notes 4 "Contamination Assessment" C4SL
-	Determinand not tested for		
<	Determinand concentration is below indicated "method" level of detection		
AND	Asbestos not detected		
			^s EA Contaminated Land Exposure Assessment (CLEA) 2009
			^{ss} SP1010: Development of C4SLs for Assessment of Land Affected by Contamination-Policy Companion Document, March 2014
			^x Land Quality Management (Rev. 2009)
#			^f CL:AIRE Generic Assessment Criteria 2009 based on a soil organic matter content of 2.5%. (see Generic Notes in Appendix A).
			[*] Tier 1 assessment criteria for chromium assumes Chromium III to be the Determinand
			[*] Chromium VI LQM. If land history indicates present otherwise Chromium III (3000)

Appendix C

Client	Story Homes Plc	Project No.	4046
Project	Edgehill Phase 3B Slag/Concrete Delineation	Date	31-01-2023 – 16-02-23
Photograph 1: Trial Pit TP1111 exposed re-concretised Slag/concrete sub-base.			
Photograph 2: Trial Pit TP1111A exposed extent of re-concretised Slag/concrete sub-base and underlying Glacial Till.			

Client	Story Homes Plc	Project No.	4046
Project	Edgehill Phase 3B Slag/Concrete Delineation	Date	08-03-23
Photograph 3: Excavation of Slag/concrete sub-base.			
Photograph 4: Slag/concrete being tracked in to access drive, parking & hardstanding footprint.			

Client	Story Homes Plc	Project No.	4046
Project	Edgehill Phase 3B Slag/Concrete Delineation	Date	08-03-23

Photograph 5:
Continuation of access drive footprint excavation to accommodate Granular Made Ground





Photograph 6:
Delineation & excavation of Granular Made Ground extended from TP1108. Note sample tubs at sampling locations.



Client	Story Homes Plc	Project No.	4046
Project	Edgehill Phase 3B Slag/Concrete Delineation	Date	09-03-23
Photograph 7: Stockpile of Granular Made Ground on visqueen.			
Photograph 8: Granular Made Ground being placed into access drive cutting.			

Client	Story Homes Plc	Project No.	4046
Project	Edgehill Phase 3B Slag/Concrete Delineation	Date	10-03-23
Photograph 9: Granular Made Ground removed from visqueen (right of excavator) and placed in access drive cutitng.			
Photograph 10: Granular Made Ground being rolled into access drive footprint.			

Client	Story Homes Plc	Project No.	4046
Project	Edgehill Phase 3B Asbestos Delineation	Date	15-02-2023
Photograph 11: Asbestos Delineation Pit excavated down 0.35m at position of TP1116 to expose underlying Glacial Till deposits.			
Photograph 12: Excavated Asbestos fibre containing Made Ground placed upon visqueen and sealed with back of excavator bucket..			

Client	Story Homes Plc	Project No.	4046
Project	Edgehill Phase 3 Plots 209-215 Trench TP1111 Rev A	Date	15-02-2023
Photograph 13: Made Ground stockpile covered with visqueen, weighted with soil to resist predicted high winds.			

Appendix D

