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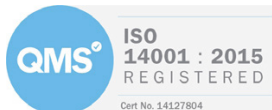


PHASE 4 VALIDATION REPORT

job number	date
site address	
written by	checked by
issued by	



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Rogers Geotechnical Services Ltd
Offices 1 & 2 Barncliffe Business Park, Near Bank, Shelley, Huddersfield, HD8 8LU
☎ 01484 604354 Company No. 5130864

<ENVIRONMENTAL> <GEOTECHNICAL>

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Phase 4: Validation Report of Remediation

Location: **Leymoor Road**
Golcar, Huddersfield, West Yorkshire HD7 4QF

For: **Kyle Harris**

Consultants: **Acumen Designers & Architects Ltd**

Report No. **C1481/24/E/6249**

Report date: **May 2024**

For and on behalf of **Rogers Geotechnical Services Ltd**

Rob Palmer MSc FGS ACIEH
Engineering Director

Tobias Merry MSci (Hons), FGS
Graduate Geo-environmental Engineer

1. Introduction

The land associated with 414 Leymoor Road has now been developed by the construction of three terraced residential properties. In order to fully discharge a planning condition relating to land contamination, a verification report has been produced to demonstrate that the required depth of cover has been achieved in garden areas and that contamination levels of the soils used in the formation of the cover system are acceptable.

In accordance with your instructions we have undertaken testing of the imported material to validate that this is now suitable, and confirm that the pathway for contamination is broken. The following describes the work undertaken, presents the data obtained and discusses the findings in association with the proposed development.

This report has been produced on the understanding that a Remediation Statement has been submitted and agreed with the local planning authority.

2. Review of the Proposed Remediation Strategy

2.1 Summary of Contamination Risks

A Phase 2 Geo-environmental investigation was undertaken by Rogers Geotechnical Services in May 2021 (ref C1481/21/E/2348). This report concludes that the site can be classified as generally contaminated by PAHs and therefore remediation would be required.

2.2 Proposed Remediation Strategy

As part of the part of a planning consent the below remedial measures have been submitted to Kirklees Council. The general layout of the site can be found within Appendix 1. In addition, the following should also be noted.

Garden areas shall include a clean cover system including a capping layer of 500mm of inert material, which will put the contaminated ground out of the end users' dig range. At the base of this layer, a granular capillary break of 100mm of free draining granular soil shall be placed in order to prevent mobile contamination rising upward. This expedient will also provide a suitable root barrier to isolate the plants from the underlying contaminated ground.

2.3 Source of Material

For cover and containment systems, verification will normally depend upon the provision of defensible measurements, observations and records. The following table provides information in regards to the source and characteristics of the material used within the remediation process.

Table 1: Validation Sampling and Testing			
Type of Material	Source of Material	Volume of imported Material	No. Samples Required
Topsoil	Ron Smith – Turf and Topsoil Supplies 263 Whitehall Rd, Leeds LS12 6ER	40m ³	3
Capillary Break (Type 1 Limestone)	TM Haulage & Excavation Ltd North Dean Business Park, Halifax HX4 8LR	16m ³	1

3. Limitations

The recommendations made and opinions expressed in this report are based on the ground conditions revealed by the site works, together with an assessment of the site and of the laboratory test results. Whilst opinions may be expressed relating to sub-soil conditions in parts of the site not investigated, these are for guidance only and no liability can be accepted for their accuracy.

This report has been prepared in accordance with our understanding of current best practice. However, new information or legislation, or changes to best practice may necessitate revision of the report after the date of issue.

4. Site Visit – Sample Collection

An initial site visit was completed by RGS on the 27th March 2024. At that time, soils had been imported on to site with stockpiles present in the rear gardens. Appendix 2 of this report contains the photographs taken at the time of the site visit. Samples of the stockpiles were collected employing hand digging techniques. Samples were taken for chemical testing. The chemical test specimens were retained in the appropriate air tight containers within cool boxes for onward transition to the laboratory.

5. Imported Soils – Strata Type

At the time of the visit, soils had been imported and stockpiled. Two distinct materials were present; a topsoil comprising of dark brown organic silty sand and a type 1 material comprising of cream clayey sandy limestone gravel. It should be noted that a membrane had also been placed across the entirety of the rear garden area.

6. Laboratory Testing - Environmental

A suite of testing was conducted on samples from across the site and the following regime was undertaken.

Virgin Quarried Material Suite

- Standard metals/metalloids As, Cd, Cr, CrVI, Cu, Hg, Ni, Pb, Se, V, Zn
- Free CN-
- Organic content (Soil Organic Matter)

Greenfield Soil Suite

- Standard metals/metalloids As, Cd, Cr, CrVI, Cu, Hg, Ni, Pb, Se, V, Zn
- Free CN-, PAH (16 USEPA)
- Asbestos Screen
- Organic content (Soil Organic Matter)

This testing was undertaken by i2 Analytical Ltd and the results of all of the chemical testing are presented in Appendix 3 of this report.

7. Discussion of Ground Conditions - Environmental

The site has been developed by the construction of residential housing, with hard-standing and soft landscaped areas. Consequently, the site may be classified as residential with plant uptake.

7.1 Discussion of Test Results

The results of the chemical testing undertaken on soil samples obtained during this investigation have been compared to the ATRISK soil screening values (SSVs) as compiled by WS Atkins plc. These values have been derived in such a way as to adhere to the principles within the revised CLEA model and include the most current release of the SGVs. A list of subscribers is provided within the website¹ and these include many local authorities.

A comparison of the results of the testing, together with the data given above, can be found within Appendix 4. These results indicate the following:

Table 2: Summary of Contamination Results

Location	Material	Contaminants found to be exceeding SSVs (Residential with Plant Uptake)
Stockpile 1	Topsoil	None
Stockpile 2	Topsoil	None
Stockpile 3	Topsoil	PAHs (indeno(1,2,3-c,d)pyrene, benzo(g,h,i)perylene
Crush	Type 1 – Limestone	None

Concentrations of cadmium, chromium, selenium, cyanide (free) and limited PAHs were below the detection limits for the tests. Detectable levels of all other contaminants were recorded, but these fell below the associated Atrisk Soil Screening Values. In addition, the asbestos screen found no asbestos detected.

It should be appreciated that the soil screening values for PAHs and TPHs (where appropriate) represents vapour saturation limits. The inhalation of vapour pathway contributes less than 10% of total exposure, which is unlikely to significantly affect the combined assessment criterion². In view of this, the ATRISK soil SSVs notes that the users may wish to consider using a combined assessment criterion if free product is not observed, the values for which are also provided on the summary of contamination analysis. It is therefore considered that the criteria for no free product should be adopted for the PAHs and TPHs at this site. The results of the contaminants found to exceed these screening values are tabulated below:

¹ <http://www.atrisksoil.co.uk/pages/general/subscribers.asp>

² Ref: ATRISK soil, SSVs derived using CLEA v1.071 for 1% SOM, Residential with home grown produce land use, 23.06.17.

Table 3: Summary of Areas Contaminated by PAHs & TPHs

Location	Material	Contaminants found to be exceeding SSVs (Residential with Plant Uptake)
Stockpile 1	Topsoil	None
Stockpile 2	Topsoil	None
Stockpile 3	Topsoil	None
Crush	Type 1 – Limestone	None

On the basis of the above the material tested may be considered as uncontaminated and suitable for the site end-use.

8. Discussion of Ground Conditions – Validation Requirements

8.1 Validation of Clean Cover

It is concluded that the imported material being placed as a capping at the site has been obtained from a single supplier and comprises topsoil (brown organic silty sand). This material will prove suitable as a growing medium and is compliant with BS3883 (2007) and is free from obvious contamination (i.e. visual or olfactory evidence) and unsuitable material (i.e. whole bricks, brick ties, timber or glass).

Further to the photographic records supplied by the client (refer to Appendix 5), it is considered that garden and soft landscaping areas at the site have been filled with in excess of 0.5m of topsoil suitable for the site use. Moreover, as observed from the upper surface, a membrane and 0.1m of granular material, forming a capillary break, underlies the topsoil.

As a consequence, it is apparent that 0.6m of clean cover has been placed above the made ground within the garden areas around the properties at the site. Therefore, the made ground and the contamination within it have been enclosed, put beyond end-users dig range and capped by a capillary break which will inhibit the down migration of root growth. As a consequence, it is considered that the risk to garden plants, end-users from dermal contact with the soil and end-users and neighbours from the inhalation of dust, ingestion of soil or dust and the ingestion of contaminated fruit and vegetables is mitigated and may be considered as low.

On the basis of the information provided above it is concluded that a sufficient thickness of clean cover has been placed within the soft landscaped areas. It is considered that the end users will be protected from ingestion or dermal contact with contaminated soil. No further action is required.

8.2 Validation of Hardstanding

Hardstanding has now been placed on the driveways at the front of the properties. Photographic evidence of the finished paving can be found within Appendix 5 of this report.

It is determined that all hard standing has been suitably placed and will protect the end users from ingestion or dermal contact with contaminated soil. No further action is required.

9. Conclusion

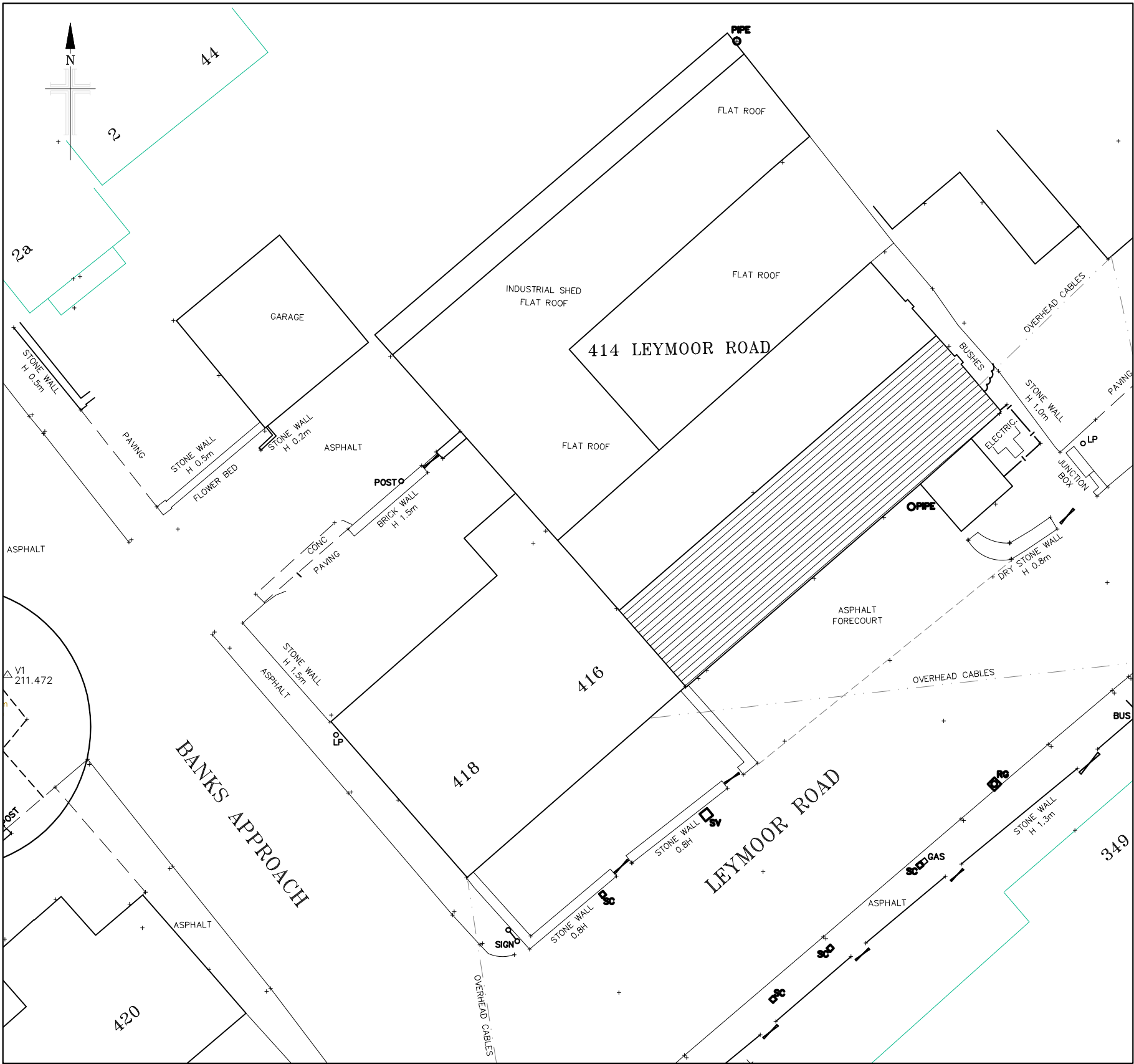
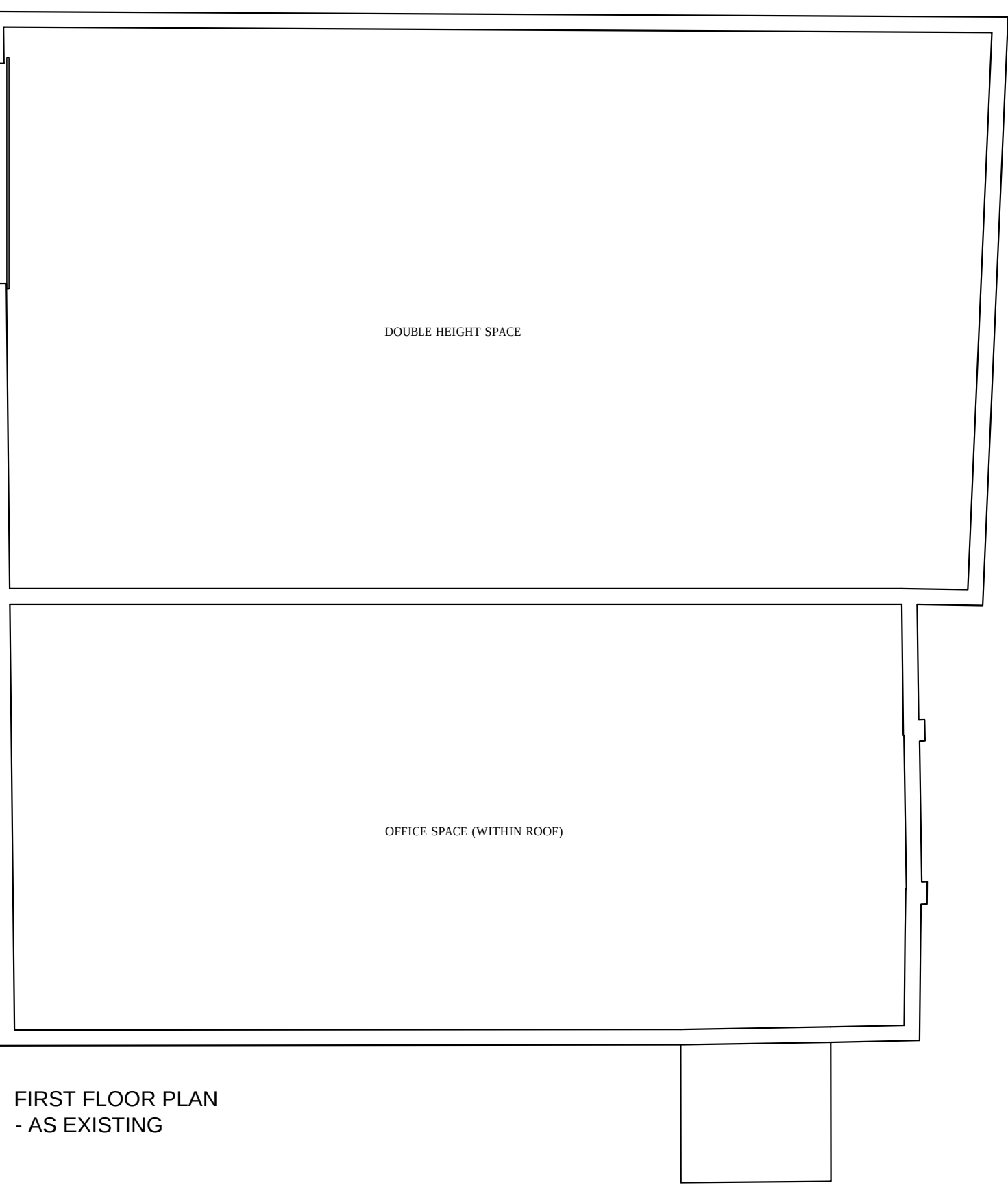
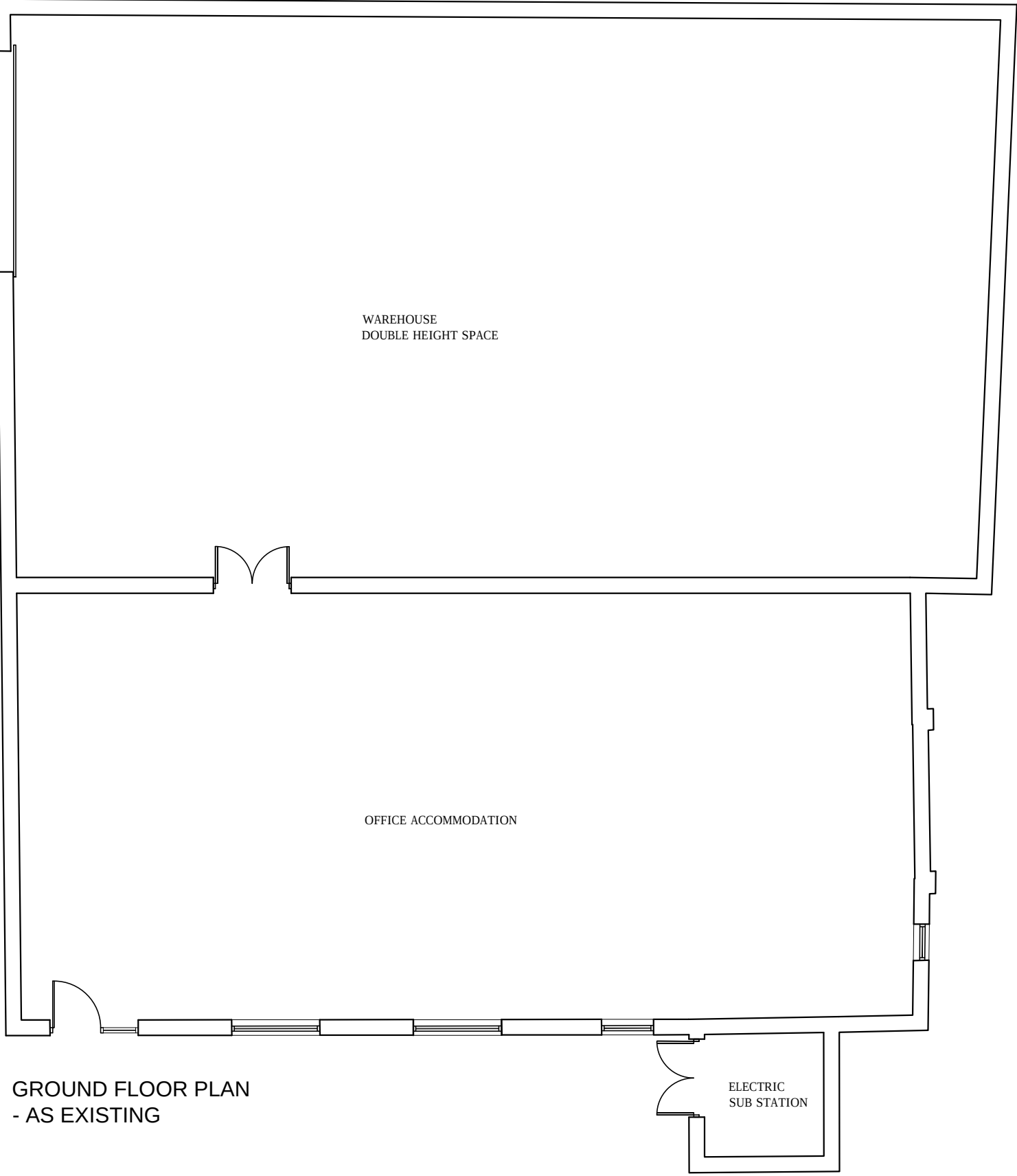
Further to the photographic records, the excavations at the validation positions and the chemical testing, it is considered that all areas of the site have been suitably capped in order to protect end users from contamination at the site and no further action is required.

10. References

- Department for Environment, Food and Rural Affairs and the Environment Agency (2009) DEFRA Science Report – Final SC050021/SR2, *Human Health toxicological assessment of contaminants in soil*. Environment Agency, Bristol.
- Department for Environment, Food and Rural Affairs and the Environment Agency (2009) DEFRA Science Report – SC050021/SR3, *Updated technical background to the CLEA model*. Environment Agency, Bristol.
- WS Atkins plc, 2011, Soil Screening Values, Derived using CLEA v1.04 and January 2009 Guidance: SSVs derived using CLEA v1.04 for 6% SOM, Residential with home grown produce land use.
- YALPAG *Technical Guidance for Developers, Landowners and Consultants – Verification Requirements for Cover Systems V3.3* Appendix 1a, October 2016.

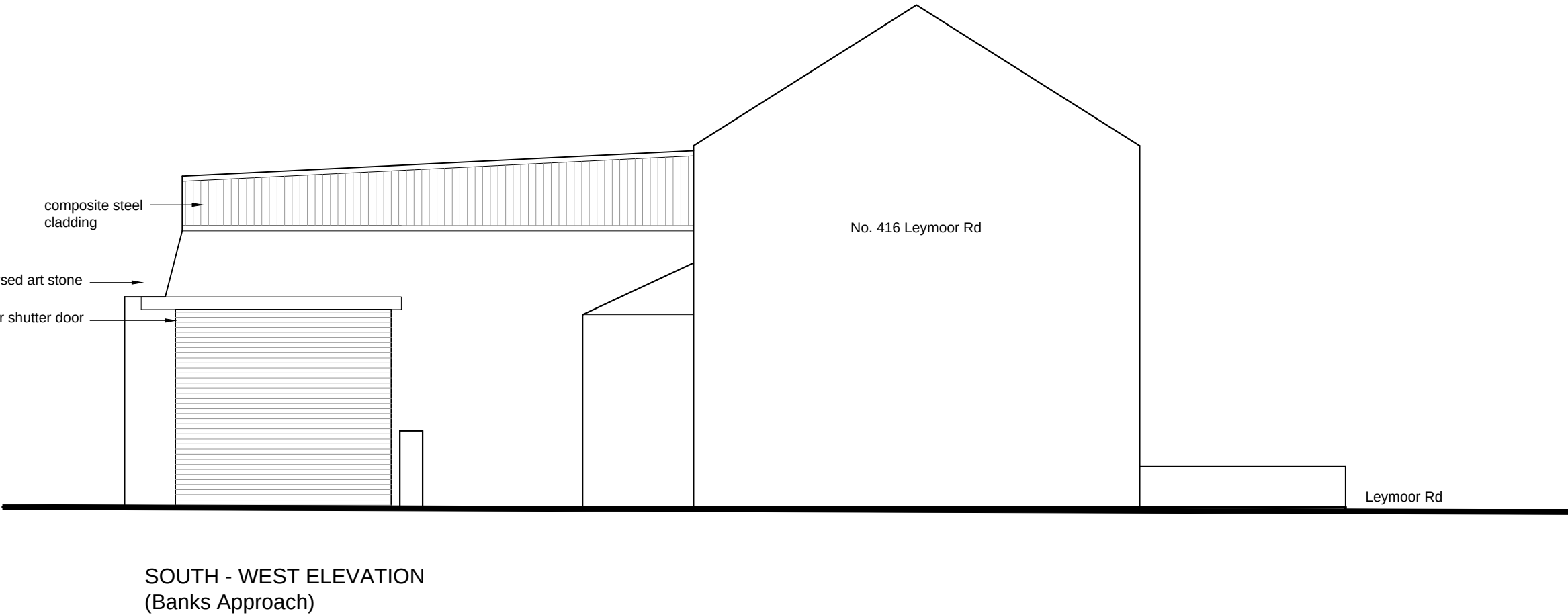
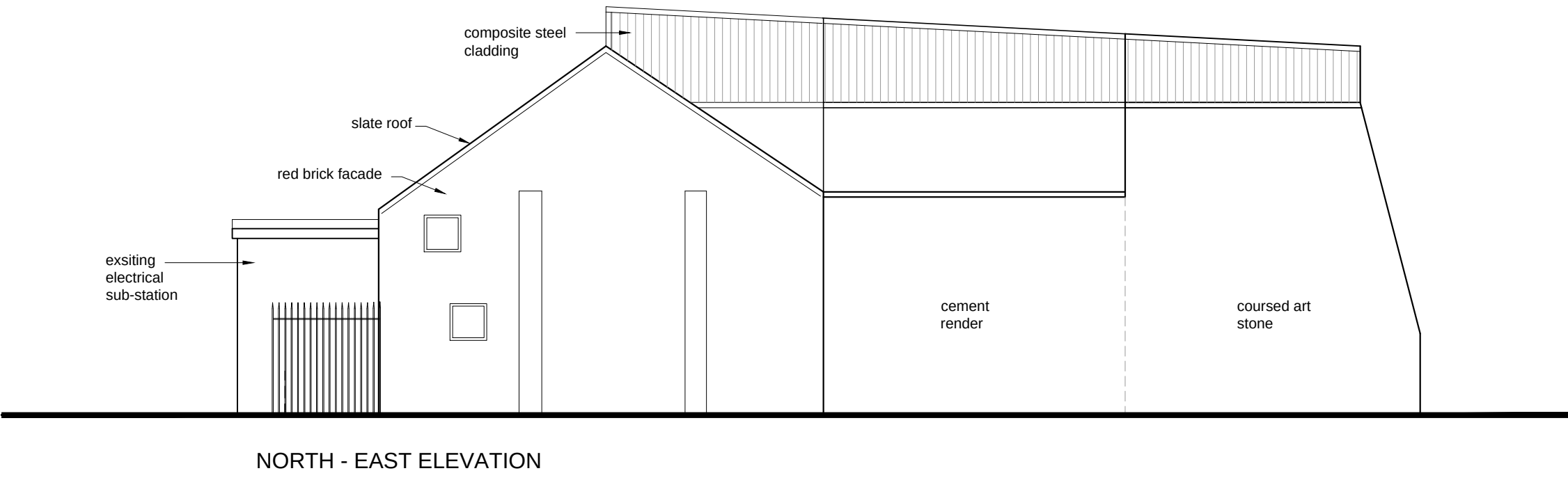
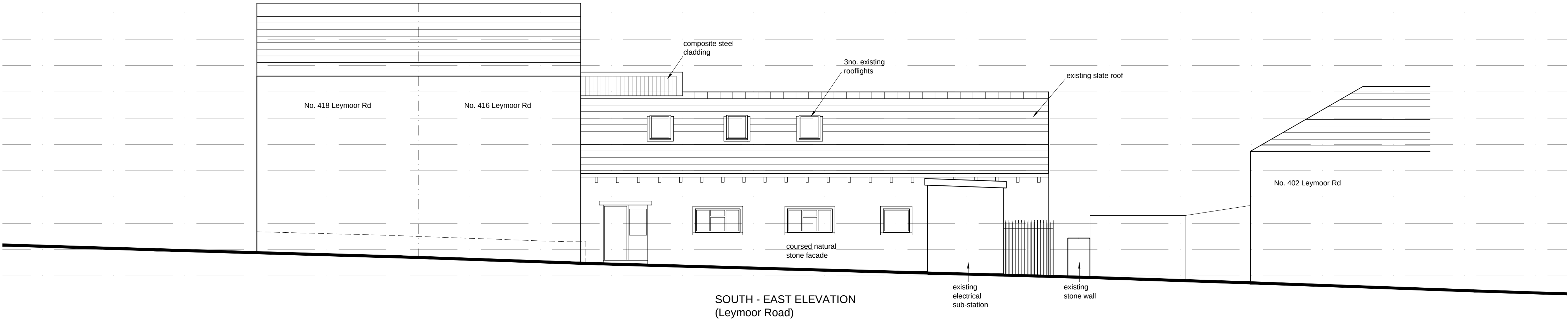
Appendix 1

Site Plan



Only figured dimensions should be used.
Scaled dimensions should be checked and the Architect.
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PLANNING



Revision:

acumen
designers & architects Ltd

t: 01484 546000
www.acumenarchitects.co.uk

Client:

MR. K. HARRIS

Job title:

PROPOSED REDEVELOPMENT
414 LEYMOOR ROAD
GOLCAR
HUDDERSFIELD

Drawing title:

EXISTING FLOOR PLANS,
ELEVATIONS, SITE PLAN &
LOCATION PLAN

Drawn:

SH

Date:

Sept 2013

Checked:

JC

Scale:

1:100 @ A1

Drawing number:

2185 - 01

Only figured dimensions should be used.

Scaled dimensions should be checked with the Architect.

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PLANNING

Rev A:

Red line amended to join Banks Approach.

JF 25.01.18

Revision:

LOCATION PLAN



designers & architects

acumenarchitects.co.uk

01484 546000

Headrow House, Old Leeds Road, Huddersfield, HD1 1SG

CLIENT:

MR K. HARRIS

JOB TITLE:

PROPOSED DEVELOPMENT
414 LEYMOOR RD.
GOLCAR, HUDDERSFIELD

DRAWING TITLE:

LOCATION PLAN

DRAWN BY: JF

DATE: MAY '17

CHECKED BY: HG

SCALE: 1:1250 @ A4

DRAWING NUMBER:

2185 - LOC A

Appendix 2

RGS Site Visit - Photographs



Photo 1: RGS Site Visit 27.03.24. Type 1—Limestone



Photo 2: RGS Site Visit 27.03.24. Membrane placed and lapping at the sides.



Photo 3: RGS Site Visit 27.03.24. Topsoil stockpile. Membrane and stone already being placed.



Rogers Geotechnical Services Ltd

Offices 1 & 2, Barncliffe Business Park,
Near Bank, Shelley,
Huddersfield,

Job No:

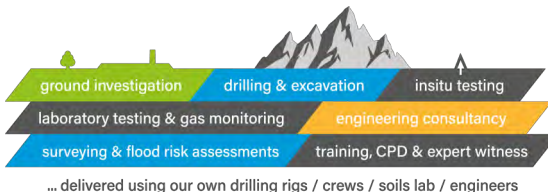
C1481/24/E/6249

Site:

Leymoor Road
Golcar

Client:

Kyle Harris



Appendix 3

Laboratory Testing

Rogers Geotechnical Services Ltd
Offices 1&2 Barncliffe Business Pk
Near Bank, Shelley
Huddersfield
West Yorkshire
HD8 8LU

t: 01484 604354

e: harry.letch@rogersgeotech.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

Analytical Report Number : 24-011470

Project / Site name:	Leymoor Road, Golcar	Samples received on:	27/03/2024
Your job number:	C1481-24-E-6249	Samples instructed on/ Analysis started on:	27/03/2024
Your order number:	PO-2942	Analysis completed by:	04/04/2024
Report Issue Number:	1	Report issued on:	05/04/2024
Samples Analysed:	4 soil samples		



Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-011470
Project / Site name: Leymoor Road, Golcar

Lab Sample Number				157583	157584	157585	157586
Sample Reference				Stockpile 1	Stockpile 2	Stockpile 3	Crush
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.00	0.00	0.00	0.00
Date Sampled				27/03/2024	27/03/2024	27/03/2024	27/03/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Limit of detection	Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	65.5
Moisture Content	%	0.01	NONE	11	11	11	12
Total mass of sample received	kg	0.1	NONE	0.9	0.8	0.9	0.8

Asbestos

Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	DSA	DSA	DSA	DSA

General Inorganics

pH (L099)	pH Units	N/A	MCERTS	7.1	7	7.6	9.2
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Water Soluble Sulphate as SO ₄ 16hr extraction (2:1)	mg/kg	2.5	MCERTS	39	40	74	48
Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	19.6	20.1	36.8	23.8
Organic Matter (automated)	%	0.1	MCERTS	1.3	1.1	1.6	0.4

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.1	0.05	0.11	0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.13	0.09	0.21	0.1
Pyrene	mg/kg	0.05	MCERTS	0.11	0.08	0.2	0.09
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.06	0.05	0.11	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.1	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.07	0.08	0.14	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	< 0.05	< 0.05	0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.07	< 0.05	0.12	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.07	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.09	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	< 0.80	< 0.80	1.2	< 0.80
-----------------------------	-------	-----	-----------	--------	--------	-----	--------

Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	5.7	5.7	6.3	4.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	8.3	8.2	10	3.3
Copper (aqua regia extractable)	mg/kg	1	MCERTS	9.4	12	20	5.1
Lead (aqua regia extractable)	mg/kg	1	MCERTS	22	20	130	26
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.5	6.6	7.8	2.2
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	11	11	13	3.2
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	48	48	76	21

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 24-011470

Project / Site name: Leymoor Road, Golcar

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
157583	Stockpile 1	None Supplied	0	Brown loam and sand
157584	Stockpile 2	None Supplied	0	Brown loam and sand
157585	Stockpile 3	None Supplied	0	Brown loam and sand
157586	Crush	None Supplied	0	Brown sand with stones

Analytical Report Number : 24-011470
Project / Site name: Leymoor Road, Golcar

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Asbestos identification in Soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques	In-house method based on HSG 248, 2021	A001B	D	ISO 17025
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight	In-house method based on British Standard Methods and MCERTS requirements.	L019B	D	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil	L038B	D	MCERTS
Sulphate, water soluble, in soil (16hr extraction)	Sulphate, water soluble, in soil (16hr extraction)	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazine followed by colorimetry	In-house method	L080	W	MCERTS
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L080	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

For method numbers ending in 'UK' or 'A' analysis have been carried out in our laboratory in the United Kingdom (Watford).

For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).

For method numbers ending in 'PL' or 'B' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30°C.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Appendix 4

Screening Values Summary



Rogers Geotechnical Services: Soil Screening Values Comparison Sheet



Rogers Geotechnical Services Ltd: Soil Screening Value (SSV) Comparison Sheet															
Job Number	C1481/24/E			A = WS Atkins PLC, Atrisk Soil Screening Values. A+ = Values updated June 2017. A* = Atrisk's SSV is lower than I2's detectable limit for this compound. B = health criterion values, which are available from toxicological reviews published in the C4SL project methodology report. C = Category 4 Screening Levels (C4SLs) based on 6% soil organic matter. D = Value provided is based on Methyl Mercury. Should elemental mercury be observed or a source be known then a limit of 102 should be used. KEY Exceeds SSV Exceeds 2017, Below 2015 Below limit of detection (LOD) 											
Job Name	Leymoor Road (First Import)														
Date	29.04.24														
Client	Kyle Harris			Sample Location	Stockpile 1	Stockpile 2	Stockpile 3	Crush							
				Depth Top	0	0	0	0							
				Depth Base											
Determinand	Units	Ref	LOD	Residential With Plant Uptake 1%											
				Atrisk 2015 (No Free Product)	Atrisk 2017										
Cadmium	mg/kg	C	0.2		22.1	< 0.2	< 0.2	< 0.2	< 0.2						
Chromium (Hexavalent)	mg/kg	B/C	1.8	20.5	3.62	< 1.8	< 1.8	< 1.8	< 1.8						
Copper	mg/kg	A+	1.0		4730	9.4	12	20	5.1						
Mercury	mg/kg	A/D	0.3		8.81	< 0.3	< 0.3	< 0.3	< 0.3						
Nickel	mg/kg	A+	1.0		136	6.5	6.6	7.8	2.2						
Lead	mg/kg	C	1.0		200	22	20	130	26						
Zinc	mg/kg	A+	1.0		20000	48	48	76	21						
Vanadium	mg/kg	A+	1.0		136	11	11	13	3.2						
Arsenic	mg/kg	C	1.0		37	5.7	5.7	6.3	4.7						
Selenium	mg/kg	A	1.0		375	< 1.0	< 1.0	< 1.0	< 1.0						
Cyanide (Free)	mg/kg	A	1.0		34	< 1.0	< 1.0	< 1.0	< 1.0						
Naphthalene	mg/kg	A+	0.05		0.829	< 0.05	< 0.05	< 0.05	< 0.05						
Acenaphthylene	mg/kg		0.05			< 0.05	< 0.05	< 0.05	< 0.05						
Acenaphthene	mg/kg	A+	0.05	608	157	< 0.05	< 0.05	< 0.05	< 0.05						
Fluorene	mg/kg	A+	0.05		735	< 0.05	< 0.05	< 0.05	< 0.05						
Phenanthrene	mg/kg		0.05			0.1	0.05	0.11	0.05						
Anthracene	mg/kg	A+	0.05		10200	< 0.05	< 0.05	< 0.05	< 0.05						
Fluoranthene	mg/kg	A+	0.05		983	0.13	0.09	0.21	0.1						
Pyrene	mg/kg	A+	0.05		668	0.11	0.08	0.2	0.09						
Benzo[a]anthracene	mg/kg	A	0.05	4.52	1.71	0.06	0.05	0.11	< 0.05						
Chrysene	mg/kg	A	0.05	585	0.44	< 0.05	< 0.05	0.1	< 0.05						
Benzo[b]fluoranthene	mg/kg	A	0.05	7.72	1.22	0.07	0.08	0.14	< 0.05						
Benzo[k]fluoranthene	mg/kg	A	0.05	84.4	0.686	< 0.05	< 0.05	0.05	< 0.05						
Benzo[a]pyrene	mg/kg	B/C	0.05	4.95	1.51	0.07	< 0.05	0.12	< 0.05						
Indeno(1,2,3-c,d)Pyrene	mg/kg	A*	0.05	7.31	0.0614	< 0.05	< 0.05	0.07	< 0.05						
Dibenz(a,h)Anthracene	mg/kg	A	0.05	0.838	0.00393	< 0.05	< 0.05	< 0.05	< 0.05						
Benzo[g,h,i]perylene	mg/kg	A	0.05	96.2	0.0187	< 0.05	< 0.05	0.09	< 0.05						
Total Of 16 PAH's	mg/kg		0.8												
Aliphatic TPH >C5-C6	mg/kg	A+	0.02		42.7										
Aliphatic TPH >C6-C8	mg/kg	A+	0.02		99.3										
Aliphatic TPH >C8-C10	mg/kg	A+	0.05		13.9										
Aliphatic TPH >C10-C12	mg/kg	A+	1.0	81.7	49.9										
Aliphatic TPH >C12-C16	mg/kg	A+	2.0	385	20.9										
Aliphatic TPH >C16-C21	mg/kg	A+	8.0		210000										
Aliphatic TPH >C21-C35	mg/kg	A+	8.0		210000										
Aliphatic TPH >C35-C44	mg/kg		10.0												
Total Aliphatic Hydrocarbons	mg/kg		10.0												



Rogers Geotechnical Services: Soil Screening Values Comparison Sheet



Rogers Geotechnical Services Ltd: Soil Screening Value (SSV) Comparison Sheet													
Job Number	C1481/24/E			A = WS Atkins PLC, Atrisk Soil Screening Values. A* = Values updated June 2017. A* = Atrisk's SSV is lower than I2's detectable limit for this compound. B = health criterion values, which are available from toxicological reviews published in the C4SL project methodology report. C = Category 4 Screening Levels (C4SLs) based on 6% soil organic matter. D = Value provided is based on Methyl Mercury. Should elemental mercury be observed or a source be known then a limit of 102 should be used. KEY Exceeds SSV Exceeds 2017, Below 2015 Below limit of detection (LOD)									
Job Name	Leymoor Road (First Import)												
Date	29.04.24			Sample Location	Stockpile 1	Stockpile 2	Stockpile 3	Crush					
Client	Kyle Harris			Depth Top	0	0	0	0					
				Depth Base									
Determinand	Units	Ref	LOD	Residential With Plant Uptake 1%									
Aromatic TPH >C5-C7	mg/kg	A+	0.01		0.137								
Aromatic TPH >C7-C8	mg/kg	A+	0.01		113								
Aromatic TPH >C8-C10	mg/kg	A+	0.05		20.5								
Aromatic TPH >C10-C12	mg/kg	A+	1.0		70								
Aromatic TPH >C12-C16	mg/kg	A+	2.0	165	155								
Aromatic TPH >C16-C21	mg/kg	A+	10.0		319								
Aromatic TPH >C21-C35	mg/kg	A+	10.0		1120								
Aromatic TPH >C35-C44	mg/kg		10.0										
Total Aromatic Hydrocarbons	mg/kg		10.0										
Total Petroleum Hydrocarbons	mg/kg		10.0										
pH			N/A			7.1	7	7.6	9.2				
Sulphate (2:1 Water Soluble) as SO4	mg/l		0.00125			19.6	20.1	36.8	23.8				
ACM Type			N/A										
Asbestos Identification	%					Not-detected	Not-detected	Not-detected	Not-detected				
ACM Detection Stage			N/A										
Moisture	%		0.01			11	11	11	12				
Soil Colour			N/A										
Other Material			N/A										
Soil Texture			N/A										
Sulphate (Total)	%		0.005										
Organic Matter	%		0.1			1.3	1.1	1.6	0.4				

Appendix 5

Client Photographs



Photo 1: Client Photograph 17.04.24. Placement of topsoil above membrane and stone.



Photo 2: Client Photograph 17.04.24. 500mm of topsoil above capillary break.



Rogers Geotechnical Services Ltd

Offices 1 & 2, Barncliffe Business Park,
Near Bank, Shelley,
Huddersfield,

Job No:

C1481/24/E/6249

Site:

Leymoor Road
Golcar

Client:

Kyle Harris

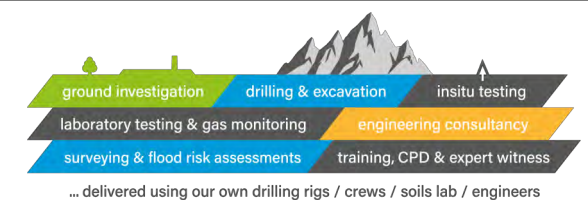




Photo 3: Client Photograph 17.04.24. Initial placement of topsoil above membrane and stone.



Photo 4: Client Photograph 17.04.24. Initial placement of topsoil above membrane and stone.



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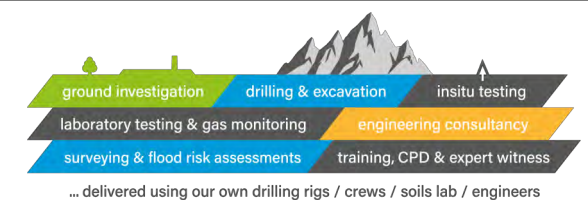




Photo 5: RGS Site Visit 01.05.24. Topsoil placed across all garden areas.



Photo 6: RGS Site Visit 01.05.24. Sufficient hard-standing placed at the front.

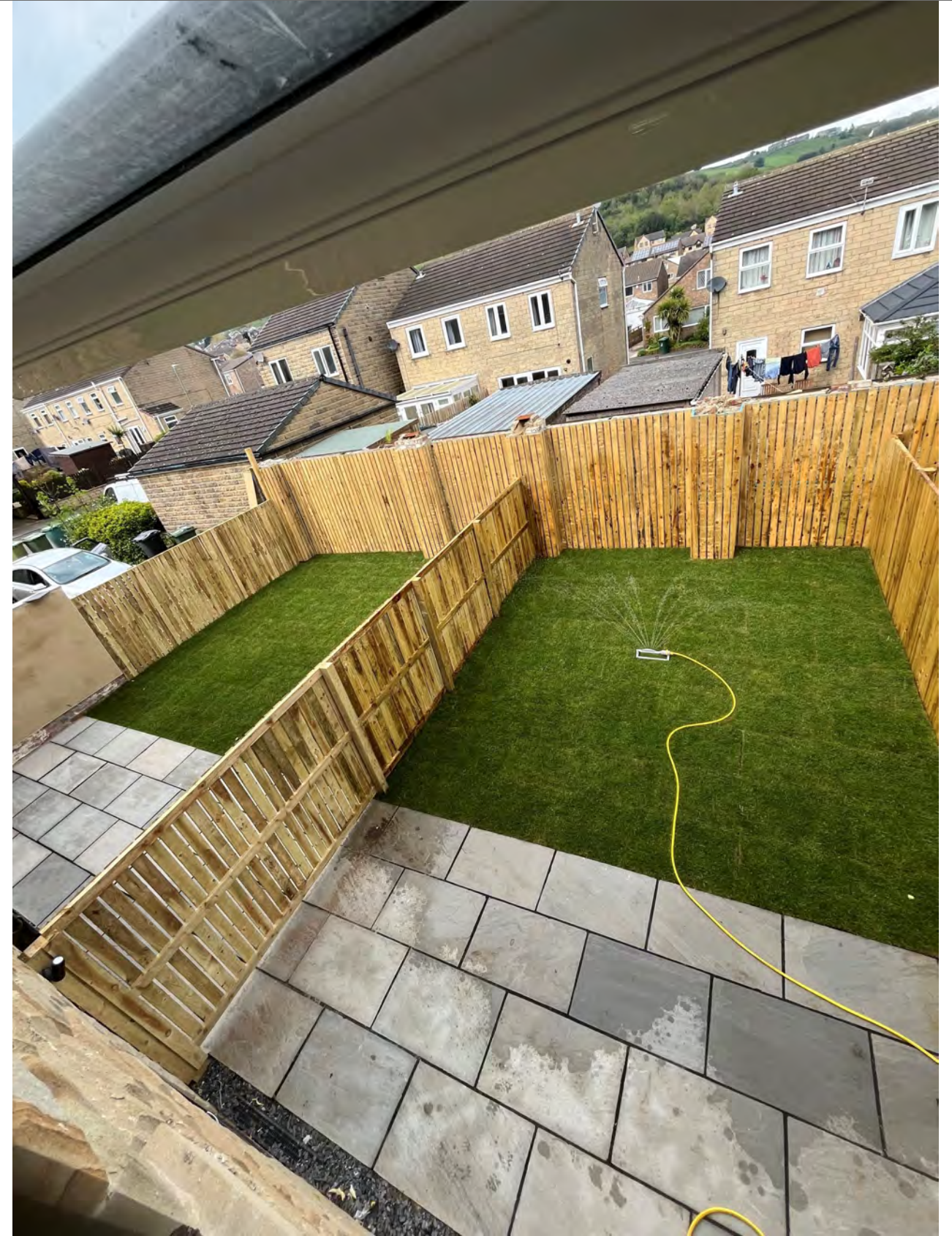


Photo 7: Client Photograph 09.05.24. Turf now placed.



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