



GEO-ENVIRONMENTAL CONSULTING ENGINEERS

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LAND TO THE NORTH OF RHALLT LANE, WELSHPOOL

Site Investigation & Ground Assessment



Report Ref: BEK-20771-2

October 2020





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Project Quality Assurance Information Sheet

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Report Title	Site Investigation & Ground Assessment
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Report No	BEK-20771-2
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LAND TO THE NORTH OF RHALLT LANE, WELSHPOOL

Site Investigation & Ground Assessment

PROJECT NO: 20771
REPORT REF: BEK-20771-2
DATE: October 2020

REVISION STATUS / HISTORY

Rev	Date	Issue / Comment	Prepared	Checked

GENERAL REPORT LIMITATIONS

BEK Enviro Limited (BEK) has prepared this report for the sole use of the client, showing reasonable skill and care, for the intended purposes as stated in the agreement under which this work was completed. The report may not be relied upon by any other party without the express agreement of the client and BEK. No other warranty, expressed or implied, is made as to the professional advice included in this report.

Where any data supplied by the client or from other sources have been used, it has been assumed that the information is correct. No responsibility can be accepted by BEK for inaccuracies in the data supplied by any other party. The conclusions and recommendations in this report are based on the assumption that all relevant information has been supplied by those bodies from whom it was requested.

No part of this report may be copied or duplicated without the express permission of BEK and the party for whom it was prepared. Where field investigations have been carried out, these have been restricted to a level of detail required to achieve the stated objectives of the work.

Unless explicitly agreed otherwise, in writing, this report has been prepared under BEK's limited standard Terms and Conditions as included within our proposal to the Client.

The report needs to be considered in the light of the BEK proposal and associated limitations of scope. The report needs to be read in full and isolated sections cannot be used without full reference to other elements of the report and any previous works referenced within the report.

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1. INTRODUCTION

1.1 Appointment

1.1.1 BEK Enviro Limited (BEK) has been commissioned by Euro Garages Limited to carry out a site investigation for the proposed commercial development at the site located to the north of Rhallt Lane, Welshpool (hereafter known as 'the site') to quantify the potential risks from contamination and ground gas and to provide factual geotechnical information to allow foundation design to be carried out.

1.2 Background Information

1.2.1 The site comprises an irregular shaped plot of approximately 1400 m². The site forms a traffic island which is overlain by dead grasses and tree stumps with the site being recently cleared of trees which is surrounded by a barbed wire fence connected by wooden fence posts.

1.2.2 The site is bordered by a minor road to the north, the footpath belonging to Rhallt Lane to the south, a large residential property to the north-east and a major roundabout to the east.

1.2.2 The site location and site layout are presented on BEK Drawing No 20771-1 and BEK Drawing No 20771-2, respectively. Copies of these drawing are presented in Appendix D.

1.3 Proposed Development

1.3.1 It is proposed to construct a drive through coffee shop associated access/exit and car parking at the site. The proposed development can be seen on REV-A Associates Drawing entitled 'Retail A1 Drive Thru Option' dated 16 September 2019, Drawing Number 'SHR17056-REVA-SE-A-035', a copy of which is presented in Appendix D.

1.4 Objective & Scope of Work

1.4.1 The objective of the site investigation is to provide indicative information on the ground conditions to facilitate a quantitative risk assessment for contamination and to provide factual geotechnical information.

1.4.2 The site investigation was undertaken by BEK during March 2020 in accordance with the recommendations detailed in the Preliminary Risk Assessment (PRA) prepared by BEK (Report Ref: BEK-20771-1, dated October 2020) and with consideration to site conditions. The PRA should be read in conjunction with this report.

1.5 Limitations

- 1.5.1 The conclusions and recommendations presented in this report are the result of our professional interpretation of the information currently available. BEK reserve the right to amend the conclusions and recommendations if further information becomes available.
- 1.5.2 However, it should be noted that much of the information has been derived from reports written by others and BEK takes no responsibility for the accuracy of that information. Notwithstanding the above, the reports reviewed have all been written by professional environmental consultants with a duty of care to provide relevant and accurate information.
- 1.5.3 The comments given in this report and the opinions expressed are based on review of reports provided to BEK, ground conditions encountered during site works and on the results of tests made in the field and in the laboratory. However, there may be conditions pertaining to the site that have not been disclosed by the investigations and therefore could not be taken into account.

2. PRELIMINARY RISK ASSESSMENT

2.0.1 This section provides an overview of the findings and recommendations presented in the PRA.

2.1 Site Location & History

Site Location

2.1.1 The site is located to the north of Rhallt Lane and to the west of the A483. The site is approximately 2.4 km north-east of Welshpool and some 10.5 km south of Four Crosses.

2.1.2 The site comprises an irregular shaped plot of approximately 1400 m². The site forms a traffic island which is overlain by dead grasses and tree stumps with the site being recently cleared of trees which is surrounded by a barbed wire fence connected by wooden fence posts. The site is bordered by a minor road to the north, the footpath belonging to Rhallt Lane to the south, a large residential property to the north-east and a major roundabout to the east.

2.1.3 The site location and site layout are presented on BEK Drawing No 20771-1 and BEK Drawing No 20771-2, respectively. Copies of these drawing are presented in Appendix D.

Site History

2.1.3 The earliest available maps dating from 1885 show the site to be vacant. There is a road immediately north of the site and another road and a crossroad lies 10 m east. By 1971 the road to the north of the site is marked Rhallt Lane and the road to the east is marked A483.

2.1.4 The 1995 maps show no significant changes to the site. Rhallt Lane and the A483 have changed configuration with the site now appearing to form part of a traffic island with Rhallt Lane running immediately south and a roundabout/A483 located to the east.

2.1.5 Subsequent maps/information suggest no change to present day.

2.2 Environmental Setting

Geology

Made Ground

2.2.1 According to the GeolInsight report there is no made ground overlying the site.

Superficial Geology

- 2.2.2 The published geology suggests that the site is overlain with 'Glaciofluvial Fan Deposits'. These generally comprise 'Sand and gravel, locally with lenses of silt, clay or organic material.'

Bedrock

- 2.2.3 The underlying solid geology comprises of the Nantglyn Flags Formation in the western section of the site (mudstone, siltstone and sandstone) and the Forden Mudstone Formation in the east and central parts of the site (mudstone).

Linear Features

- 2.2.4 According to the Enviro & Geo Insight Report a 'fault, inferred' runs north to south through the centre of the site.

Mining & Ground Stability

- 2.2.5 The information provided by Groundsure indicates that the site is located within an area which is unlikely to have been affected by Coal Mining.
- 2.2.6 However, non-coal mining activities (Vein Mineral) have been carried out on site. However, these are noted to be 'localised small scale underground mining' and the 'potential for difficult ground conditions are unlikely or localised and are at a level where they need not be considered'.
- 2.2.7 In addition to the above, the Enviro & Geo Insight Report provides hazard ratings associated with ground subsidence at the site, as summarised below:

Shrink-Swell Clay:	Very Low
Landslides:	Low
Ground Dissolution of Soluble Rocks:	Negligible
Compressible Deposits:	Negligible
Collapsible Deposits:	Very Low
Running Sands:	Very Low

- 4.2.4 It can be seen from the above that the site is unlikely to be affected by natural ground instability.

Hydrogeology

- 4.2.5 The underlying superficial deposits are classified by the Environment Agency as a 'Secondary A Aquifer' which are assigned as 'permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some case forming an important source of base flow to rivers.'
- 4.2.6 The underlying bedrock is classified as a 'Secondary B Aquifer' which are noted to represent 'predominantly lower permeability layers which may store/yield limited amounts of groundwater due to localise features such as fissures, thin permeable horizons and weathering.'
- 4.2.7 The Enviro & Geo Insight Report indicates the site is not located within groundwater source protection zone.
- 4.2.8 There are no groundwater abstractions located within 250 m of the site.

Hydrology

- 4.2.9 There are no surface water features located on site. The Montgomery Canal runs south-west to north of the site some 27 m north-west of the site and is noted to contain water all year round.

Contaminated Land & Landfill Activities

- 4.2.10 There are no current or historic landfill, waste sites or waste exemption sites located within 250 m of the site.

Radon

- 2.2.19 Groundsure reports that estimated between 1% and 3% of properties are affected by radon, therefore no radon protection measures are required in new builds at the site.

2.3 Preliminary Conceptual Model

- 2.3.1 This section identifies the potential contaminants of concern, sources, pathways and receptors that may be associated with the site based on its known history and current condition and with respect to the redevelopment of the site for residential use. The preliminary conceptual model is summarised in the following table.

Link	Source	Hazard	Transport Mechanism	Pathway	Medium of Exposure	Receptor	Risk Summary*
1	Contaminated soils	Direct contact /ingestion of soil or dust	Direct contact with contaminated soil	Dermal contact/ingestion of soil at surface	Soil	Humans (on-site/off-site), domestic pets	Low
2	Contaminated soils	Particulate inhalation	Wind blown particulates	Inhalation of particulates	Air	Humans (on-site/off-site), domestic pets	Low
3	Contaminated Soils	Inhalation of Ground Gas	Degradation of contaminants generating ground gas through unsaturated zone to soil leading to inhalation	Inhalation of Gases	Air	Humans (on-site/off-site, domestic pets)	Low
4	Contaminated Soils	Inhalation of Vapours	Volatilisation of Organic Compounds and migration to property	Inhalation of Vapours	Air	Humans (on-site/off-site, domestic pets)	Low
5	Contaminated Soils	Damage to structure/services	Direct contact of contaminants with building structures/services	Direct contact	Soil/Water	Flora, Services, concrete	Low
7	Contaminated Soils	Degradation of perched water quality	Dissolution or suspension of contaminants into perched waters and migration to off-site receptors	Dissolution or Suspension	Water	Perched Waters, Montgomery Canal (also an ecological receptor)	Low
8	Contaminated Soils	Pollution of underlying groundwater	Dissolution or suspension of contaminants into groundwaters (Superficial Aquifer within Head deposits and Bedrock Aquifer)	Dissolution or Suspension	Water	Groundwaters	Low

Table 2: Preliminary Conceptual Model

*Relative Risk Screening and Prioritisation for further Investigation & or Assessment

High	Higher probability of occurrence and identification of primary sources of contamination with respect to most sensitive receptors.
Medium	Pollutant linkage generally dependent on the presence of other primary pollutant linkages and/or where pollutant linkage generally associated with less sensitive receptors.
Low	Lower probability of occurrence such as based on requirement for significant migration pathway or where pollutant linkage requires the presence of source contaminants at concentration likely to be much higher than other identified pollutant linkages.



Site Investigation & Ground Assessment
Land to the North of Rhallt Lane, Welshpool
Report Ref BEK-20771-2, October 2020

3. SITE INVESTIGATION

3.1 General

3.1.1 This section provides a summary of the site investigation works undertaken by BEK during October 2020.

3.1.2 The site investigation has been designed to provide indicative information for the ground conditions across the site with respect to the quantitative assessment of the potential risks associated with contamination and to carry out geotechnical testing to support foundation design.

3.1.3 Five exploratory locations were set out by the site engineer and the exploratory locations are illustrated on BEK Drawing No 20771-3, a copy of which is presented in Appendix D.

3.2 Window Sample Boreholes

3.2.1 Five window sample boreholes were drilled using a window sample borehole rig to a maximum depth of 5.45 m. The borehole locations were set out by the site engineer in order to establish representative conditions at the site. In-situ testing (SPTs) were carried out in each of the boreholes.

3.2.2 The ground conditions were recorded by an engineer from BEK and samples were recovered for chemical testing. Copies of the borehole records are presented in Appendix A.

3.2.3 The window sample borehole locations are illustrated on BEK Drawing No 20683-3 presented in Appendix D.

3.3 Trial Pit

3.3.1 One trial pit was excavated using a JCB 8104 excavator to a maximum depth of 2 m with the sides trimmed square. The trial pit was excavated to facilitate a soakaway test to BRE365.

3.3.2 The findings of the soakaway test are presented in a separate letter report dated 23 October 2020 (Ref: BEK/20771/201023/EG).

3.4 Laboratory Testing

Soil Chemical Testing

3.3.1 Following a review of the ground conditions encountered, BEK selected 6 samples for chemical testing.

3.3.2 Chemical laboratory testing was undertaken by Envirolab, a UKAS accredited laboratory. All testing was undertaken to MCERTS standard (where available). The following samples were submitted for chemical analysis:

Arsenic (Total), Cadmium (Total), Copper (Total), Lead (Total), Nickel (Total), Zinc (Total), Chromium (Total), Selenium (Total), Mercury (Total), Boron (Soluble), Hexavalent Chromium, Cyanide (Total), pH, 16 EPA Poly-Aromatic Hydrocarbons (PAH), Total Phenols, Total Sulphate, Sulphate 2:1 extract, Soil Organic Matter, Speciated Total Petroleum Hydrocarbons.

Furthermore, all samples were tested for an Asbestos Screen.

3.3.3 In addition, two samples were also tested for Waste Acceptance Criteria (WAC).

3.3.4 Copies of the chemical test results are provided within Appendix B.

Geotechnical Testing

3.3.5 Geotechnical testing was carried out on a bulk sample by the UKAS accredited laboratory of TestConsult.

3.3.6 One sample was tested for Plasticity Index testing and natural Moisture Content.

3.3.7 Copies of the geotechnical test results are presented in Appendix C.

3.4 Ground Conditions

3.4.1 The site investigation encountered roots and leaves at the surface of each exploratory location. The strata underlying the surface covering of leaves generally consists of clayey sand and gravel that varies in depth from 0.9 m to 1.5 m. This strata is underlain by stiff sandy clay at all locations to the base of each borehole.

3.4.2 The bedrock geology was not encountered in any of the boreholes drilled on site.

3.4.3 There was no visual or olfactory evidence of contamination identified within any of the boreholes.

3.4.4 Groundwater was not encountered during the site investigation.

3.5 In-Situ Testing

3.5.1 Standard Penetration Tests (SPTs) were carried out every 1 m in natural strata during drilling. The results are summarised in Table 3 below and presented on the borehole logs (Appendix A).

Depth (m)	WS1	WS3	WS4	WS5
1.7 - 2.15	-	>50	-	-
2 - 2.45	44	-	26	11
3 - 3.45	27	-	25	18
4 - 4.45	30	-	41	31
5 - 5.45	42	-	40	44

Table 3: Summary of SPT 'N' Values

4. QUANTITATIVE RISK ASSESSMENT

4.1 Potentially Significant Pollutant Linkages

4.1.1 Potentially significant pollutant linkages have been identified within the preliminary conceptual model developed by BEK. These risks include:

- (i) Human Health - risks associated with contamination in site soils: risk via ingestion (soil and/or water), inhalation (dust, gas or vapour) or direct contact.
- (ii) Controlled waters - risks associated with contamination from site soils leading to lateral migration within perched waters to off-site receptors
- (ii) Services and property - risks associated contamination affecting service pipes and concrete.

4.2 Risk Assessment: Human Health Risks from Exposure to Contaminated Soil

4.2.1 The risks to human health have been assessed by inspection of shallow soils for the presence of elevated contaminants based on the expected contaminant findings detailed in the conceptual model and completion of a quantitative risk assessment.

4.2.2 The soil contamination concentrations have initially been compared to a range of generic assessment criteria that have been prepared to allow the assessment of contamination relative to uncontaminated and/or background levels.

4.2.3 These include the use of the Land Quality Management and Chartered Institute of Environmental Health assessment criteria (S4ULs), the Category 4 Screening Levels (C4SLs).

4.2.4 These assessment criteria have been derived using the CLEA model and fully justified input parameters. The contamination assessment has been undertaken using assessment criteria derived for commercial use.

4.2.5 The following table summarises the chemical test results for the samples tested and lists the relevant assessment criteria and the samples with a concentration in excess of the assessment criteria. Note that only determinands with a concentration above the laboratory limit of detection are presented in the table below:

Determinands	Range of Concentrations (mg/kg)	Assessment Criteria (mg/kg)	Samples Fail
Arsenic	<1 - 7	640 ¹	---
Cadmium	<0.5 – 0.7	190 ¹	---
Copper	11 - 28	68000 ¹	---
Chromium	20 - 35	8600 ¹	---
Lead	7 - 26	2300 ²	---
Mercury	<0.17 – 0.18	1100 ¹	---
Nickel	18 - 51	980 ¹	---
Zinc	67 - 120	730000 ¹	---
Acenaphthene	<0.01 – 0.08	84000 ¹	---
Anthracene	<0.02 – 0.08	520000 ¹	---
Benzo(a)anthracene	<0.04 – 0.34	170 ¹	---
Benzo(a)pyrene	<0.04 – 0.31	35 ²	---
Benzo(b)fluoranthene	<0.05 – 0.42	44 ¹	---
Benzo(ghi)perylene	<0.05 – 0.26	3900 ¹	---
Benzo(k)fluoranthene	<0.07 – 0.09	1200 ¹	---
Chrysene	<0.06 – 0.89	350 ¹	---
Dibenzo(ah)anthracene	<0.04 – 0.09	3.5 ¹	---
Fluoranthene	<0.08 – 0.58	23000 ¹	---
Fluorene	<0.01 – 0.06	63000 ¹	---
Indeno(123-cd)pyrene	<0.03 – 0.17	500 ¹	---
Phenanthrene	<0.03 – 0.64	22000 ¹	---
Pyrene	<0.07 – 0.69	54000 ¹	---
Aliphatic Hydrocarbons C16-C21	<1 - 26	1600000 ¹	---
Aliphatic Hydrocarbons C21-C35	6 - 2610	1600000 ¹	---
Aromatic Hydrocarbons C12-C16	<1 - 25	36000 ¹	---
Aromatic Hydrocarbons C16-C21	<1 - 135	28000 ¹	---
Aromatic Hydrocarbons C21-C35	<1 - 2660	28000 ¹	---
Asbestos ID	No Asbestos Detected		---

Table 3: Summary of Contamination Assessment

1 CIEH/LQM Derived Assessment Criteria (S4ULs based on 1 % SOM)

2 Category 4 Screening Levels

N.A.D No Asbestos Detected

- 4.2.6 It can be seen from the table that there are no elevated concentrations above the assessment criteria.
- 4.2.7 Furthermore, none of the samples tested positive for the presence of asbestos.
- 4.3 Risk Assessment: Human Health Risks from Exposure to Ground Gas
- 4.3.1 Potential risks associated with ground gas were identified in the PRA. The potential source of gas was made ground on site or organic rich natural strata.

4.3.2 However, ground conditions encountered on the site do not represent a potentially significant source of ground gas and associated risks are not considered further.

4.4 Risk Assessment: Controlled Waters

4.4.1 Potential risks to controlled waters have been identified in the PRA.

4.4.2 However, based on ground conditions encountered and the fact that no elevated concentrations of contaminants of concern were identified and perched water was absent, the potential risks to controlled waters are considered to be very low/negligible and not considered further.

4.5 Risk Assessment: Buildings

4.5.1 Risks to buildings include the assessment of the aggressive nature of the shallow ground with respect to concrete, the risks to the degradation of water pipes and flora due to contamination.

Risk to Concrete

4.5.2 To assess the potential risks to concrete, BEK has compared the previous site investigation data to assessment criteria presented in the BRE Special Digest 1: Concrete in Aggressive Ground.

4.5.3 The sulphate concentrations (water soluble 2:1) in the shallow ground for the samples recovered during the site investigation ranged from <0.01 to 0.05 g/l. These were considered to fall within the concrete classification DS-1 AC-1.

Risks to Services

4.5.4 Potable water supply pipes can be at risk from degradation if the shallow ground consists of specific organic contamination. Guidance published by UKWIR includes a methodology for the site investigation and risk assessment to determine pipe specification.

4.5.5 For brownfield sites, site investigation may be required along the intended route of the water pipeline and samples recovered from specific depths and tested for specific contaminants of concern.

4.5.6 On the basis of the ground conditions encountered, risks to water supply pipelines are considered to be very low, however it is recommended that consultation is undertaken with the water service supplier to confirm this.

- 4.6 Risk Assessment: Conclusions
 - 4.6.1 The site investigation sand and gravel (with rare brick inclusion) to depths of between 0.9 and 1.5 m bgl overlying stiff sandy clay.
 - 4.6.2 Representative samples recovered from site investigation have been tested for a wide range of contaminants of concern outlined within the PRA and based on observations made during the site investigation.
 - 4.6.3 The chemical test results have been compared to relevant generic assessment criteria to identify potential contaminants of concern.
 - 4.6.4 Based on the contamination assessment herein and with respect to the redevelopment of the site for commercial use, no contaminants of concern have been identified.
 - 4.6.5 Risks from ground gas are considered to be negligible.
 - 4.6.6 Potential risks to the service pipes are considered to be low but advice should be sought from the water supply provider.
 - 4.6.7 Risks to concrete are considered to be low and concrete classification of DS-1 AC1 will be suitable.
 - 4.6.8 There are no potentially significant risks to groundwater and no potentially significant risks from ground gas.

5. CONCLUSIONS & RECOMMENDATIONS

- 5.1 This report provides an assessment of the ground conditions based on the assessment of available site investigation information and quantifies the potential risks associated with contamination with consideration to the proposed change of use to commercial.

Contamination Assessment

- 5.2 Representative samples recovered from site investigation have been tested for a wide range of contaminants of concern and the results have been assessed as part of a quantitative risk assessment using appropriate assessment criteria derived for commercial use.
- 5.3 Based on the results of the contamination risk assessment and with consideration to the environmental setting and the proposed redevelopment of the site, no risks associated with ground contamination or ground gas have been identified.

Recommendations

- 5.4 The following works are recommended based on the available information:
- (i) All groundworkers should remain vigilant during ground excavations for the presence (or suspected presence) of contamination. Should suspected contamination be identified then work should cease and specialist advice sought.
 - (ii) Any material removed from the site should be disposed of in accordance with appropriate legislation and regulations, including Duty of Care Regulations.
 - (iii) Although risks to water pipes are considered to be negligible, consideration should be given to the requirements of the water supply provider. They may require the UKWIR risk assessment to be completed to confirm that PE pipes will be suitable.

Waste Soils

- 5.5 Any waste soils generated during the redevelopment should be removed from site under an appropriate Duty of Care with consignment notes retained on site. If it is the intention of the developer to retain soils on site then this should be managed through exemption for Permitting (if appropriate) or through the preparation of a Material Management Plan as part of compliance with the Definition of Waste:Code of Practice (DoW:CoP).

APPENDIX A

Borehole Records



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PROJECT NUMBER 20771 PROJECT NAME Land to the North of Rhallt Lane CLIENT Euro Garages Ltd	DATE Saturday 3rd October 2020 DRILLING METHOD Window Sample Borehole BOREHOLE NO WS1 SHEET 1/4
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COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
-------------------	--------------------	------------------------------------

COMMENTS Borehole Dry.

DEPTH (m)	DIAMETER (m)	DIAMETER (m)	FLUID RECORD	WATER	GEOLOGICAL LOG	Material Description	ADDITIONAL OBSERVATIONS	DEPTH (m)
0.5	0.3	D=0.3 m				Roots/leaves overlying black fine to coarse sand and gravel		0.5
1	1.0	D=1.0 m				Stiff brown sandy silty clay with rare fine to medium gravel		1
1.5						Stiff grey sandy clay		1.5
2	2 - 2.45	SPT (C) N=44	9,10/11,10,11,12					2
2.5								2.5
3	3 - 3.45	SPT (C) N=27	11,9/10,4,6,7					3
3.5								3.5
4	4 - 4.45	SPT (C) N=30	4,5/6,7,8,9					4
4.5								4.5
5	5 - 5.45	SPT (C) N=42	9,10/11,11,9,11					5
5.5						Termination Depth at: 5.45 m		5.5
6								6
6.5								6.5



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PROJECT NUMBER 20771	DATE Saturday 3rd October 2020
PROJECT NAME Land to the North of Rhallt Lane	DRILLING METHOD Window Sample Borehole
CLIENT Euro Garages Ltd	BOREHOLE NO WS3
	SHEET 2/4

COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
-------------------	--------------------	------------------------------------

COMMENTS Borehole Dry.

						Material Description			
0.5	0.5	D=0.5 m			Rootlets/leaves		0.5		
					Light brown/cream fine to coarse clayey sand with frequent fine to coarse gravel and rare rootlets (possibly re-worked)				
1					Stiff grey very dry sandy clay		1		
1.5	1.7	D=1.7 m					1.5		
2	1.7 - 2.15	B=2.0m	50 for no movement				2		
2.5					Termination Depth at: 5.45 m		2.5		
3							3		
3.5							3.5		
4							4		
4.5							4.5		
5							5		
5.5							5.5		
6							6		
6.5							6.5		



GEO-ENVIRONMENTAL CONSULTANTS

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PROJECT NUMBER 20771 PROJECT NAME Land to the North of Rhalt Lane CLIENT Euro Garages Ltd	DATE Saturday 3rd October 2020 DRILLING METHOD Window Sample Borehole BOREHOLE NO WS4 SHEET 3/4
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COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
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COMMENTS Borehole Dry.

DEPTH (m)	DEPTH (m)	DEPTH (m)	DEPTH (m)	DEPTH (m)	DEPTH (m)	Material Description	DEPTH (m)
0.5	1.0	D=1.0 m				Rootlets/leaves Dense cream/grey/light brown fine to coarse clayey sand with gravel and rare rootlets(possibly re-worked)	0.5
1.5						Stiff brown dry sandy clay	1.5
2.0	2.0- 2.45	SPT (C) N=26	6,5/6,5,7,8				2.0
2.5							2.5
3.0	3 - 3.45	SPT (C) N=25	8,7/6,7,6,6				3.0
3.5							3.5
4.0	4 - 4.45	SPT (C) N=41	8,9/10,11,11,9				4.0
4.5							4.5
5.0	5 - 5.45	SPT (C) N=40	9,9/9,10,11,10				5.0
5.5						Termination Depth at: 5.45 m	5.5
6.0							6.0
6.5							6.5



GEO-ENVIRONMENTAL CONSULTANTS

GEO-ENVIRONMENTAL CONSULTING ENGINEERS

PROJECT NUMBER 20771 PROJECT NAME Land to the North of Rhallt Lane CLIENT Euro Garages Ltd	DATE Saturday 3rd October 2020 DRILLING METHOD Window Sample Borehole BOREHOLE NO WS5 SHEET 4/4
---	--

COMPLETION	CASING uPVC	SCREEN uPVC Factory Slotted
-------------------	--------------------	------------------------------------

COMMENTS Borehole Dry.

DEPTH (m)	DEPTH (m)	DEPTH (m)	DEPTH (m)	DEPTH (m)	DEPTH (m)	DEPTH (m)	DEPTH (m)
0.5	0.5	D=0.5 m			Rootlets/leaves Brown clayey sand with rare fine to medium gravel of brick fragments (topsoil)		0.5
1.5					Firm to stiff brown silty sandy clay		1.5
2.0	2.0- 2.45	SPT (C) N=11	2,2/2,3,3,3				2.0
3.0	3 - 3.45	SPT (C) N=18	3,3/4,4,5,5				3.0
4.0	4 - 4.45	SPT (C) N=31	6,6/7,7,8,9				4.0
5.0	5 - 5.45	SPT (C) N=44	7,8/9,10,12,13				5.0
5.5					Termination Depth at: 5.45 m		5.5
6.0							6.0
6.5							6.5

APPENDIX B

Chemical Test Results

FINAL ANALYTICAL TEST REPORT

Envirolab Job Number: 20/08549
Issue Number: 1
Date: 16 October, 2020

Client: BEK Enviro Ltd
Suite One
No 3 Mitton Road Business Park
Mitton Road
Whalley
Lancashire
BB7 9YE

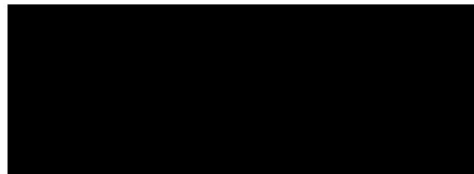
Project Manager: Mick Buckley
Project Name: Land to the North of Rhallt Lane, Welshpool
Project Ref: Not specified
Order No: 6891/20771/J
Date Samples Received: 08/10/20
Date Instructions Received: 08/10/20
Date Analysis Completed: 16/10/20

Prepared by:



Melanie Marshall
Laboratory Coordinator

Approved by:



Richard Wong
Client Manager

Envirolab Job Number: 20/08549

Client Project Name: Land to the North of Rhallt Lane,
Welshpool

Client Project Ref: Not specified

Lab Sample ID	20/08549/1	20/08549/2	20/08549/3	20/08549/4	20/08549/5	20/08549/6	20/08549/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS1	WS1	WS3	WS4	WS5	WS4	WS5			
Depth to Top	0.30	1.00	0.50	3.00	2.00	1.00	0.50			
Depth To Bottom										
Date Sampled	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20			
Sample Type	Solid	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	7	4A	4A	6A	5A	4A	4A			
% Stones >10mm _A	<0.1	11.7	5.3	<0.1	<0.1	12.4	8.7	% w/w	0.1	A-T-044
pH _D ^{M#}	9.04	8.01	7.55	7.43	7.13	-	8.03	pH	0.01	A-T-031s
Sulphate (water sol 2:1) _D ^{M#}	<0.01	<0.01	<0.01	0.02	0.05	-	0.02	g/l	0.01	A-T-026s
Sulphate (acid soluble) _D ^{M#}	<200	<200	<200	<200	370	-	370	mg/kg	200	A-T-028s
Cyanide (total) _A ^{M#}	<1	<1	<1	<1	<1	-	<1	mg/kg	1	A-T-042sTCN
Phenols - Total by HPLC _A	<0.2	<0.2	<0.2	<0.2	<0.2	-	<0.2	mg/kg	0.2	A-T-050s
Organic matter _D ^{M#}	4.1	0.4	0.8	0.3	0.8	-	3.8	% w/w	0.1	A-T-032 OM
Arsenic _D ^{M#}	<1	5	7	7	2	-	5	mg/kg	1	A-T-024s
Boron (water soluble) _D	<1.0	<1.0	<1.0	<1.0	<1.0	-	<1.0	mg/kg	1	A-T-027s
Cadmium _D ^{M#}	<0.5	0.6	0.7	0.6	0.7	-	0.7	mg/kg	0.5	A-T-024s
Copper _D ^{M#}	13	26	25	28	11	-	26	mg/kg	1	A-T-024s
Chromium _D ^{M#}	20	28	33	31	35	-	29	mg/kg	1	A-T-024s
Chromium (hexavalent) _D	<1	<1	<1	<1	<1	-	<1	mg/kg	1	A-T-040s
Lead _D ^{M#}	7	17	26	16	16	-	37	mg/kg	1	A-T-024s
Mercury _D	<0.17	0.18	<0.17	<0.17	<0.17	-	0.23	mg/kg	0.17	A-T-024s
Nickel _D ^{M#}	18	44	44	51	41	-	32	mg/kg	1	A-T-024s
Selenium _D ^{M#}	<1	<1	<1	1	1	-	<1	mg/kg	1	A-T-024s
Zinc _D ^{M#}	67	92	105	93	120	-	105	mg/kg	5	A-T-024s

Envirolab Job Number: 20/08549

Client Project Name: Land to the North of Rhallt Lane,
Welshpool

Client Project Ref: Not specified

Lab Sample ID	20/08549/1	20/08549/2	20/08549/3	20/08549/4	20/08549/5	20/08549/6	20/08549/7	Units	Limit of Detection	Method ref			
Client Sample No													
Client Sample ID	WS1	WS1	WS3	WS4	WS5	WS4	WS5						
Depth to Top	0.30	1.00	0.50	3.00	2.00	1.00	0.50						
Depth To Bottom													
Date Sampled	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20						
Sample Type	Solid	Soil	Soil	Soil	Soil	Soil	Soil						
Sample Matrix Code	7	4A	4A	6A	5A	4A	4A						
Asbestos in Soil (inc. matrix) ^													
Asbestos in soil [#]	NAD	NAD	NAD	NAD	NAD	-	NAD			A-T-045			
Asbestos ACM - Suitable for Water Absorption Test? _D	N/A	N/A	N/A	N/A	N/A	-	N/A			A-T-045			

Envirolab Job Number: 20/08549

Client Project Name: Land to the North of Rhallt Lane,
Welshpool

Client Project Ref: Not specified

Lab Sample ID	20/08549/1	20/08549/2	20/08549/3	20/08549/4	20/08549/5	20/08549/6	20/08549/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS1	WS1	WS3	WS4	WS5	WS4	WS5			
Depth to Top	0.30	1.00	0.50	3.00	2.00	1.00	0.50			
Depth To Bottom										
Date Sampled	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20			
Sample Type	Solid	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	7	4A	4A	6A	5A	4A	4A			
PAH-16MS										
Acenaphthene _A ^{M#}	0.08	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-019s
Acenaphthylene _A ^{M#}	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-019s
Anthracene _A ^{M#}	0.08	<0.02	<0.02	<0.02	<0.02	-	0.02	mg/kg	0.02	A-T-019s
Benzo(a)anthracene _A ^{M#}	0.34	<0.04	0.06	<0.04	<0.04	-	0.19	mg/kg	0.04	A-T-019s
Benzo(a)pyrene _A ^{M#}	0.31	<0.04	0.08	<0.04	<0.04	-	0.26	mg/kg	0.04	A-T-019s
Benzo(b)fluoranthene _A ^{M#}	0.42	0.06	0.10	<0.05	<0.05	-	0.32	mg/kg	0.05	A-T-019s
Benzo(ghi)perylene _A ^{M#}	0.26	<0.05	0.06	<0.05	<0.05	-	0.23	mg/kg	0.05	A-T-019s
Benzo(k)fluoranthene _A ^{M#}	0.09	<0.07	<0.07	<0.07	<0.07	-	0.11	mg/kg	0.07	A-T-019s
Chrysene _A ^{M#}	0.89	0.12	0.07	<0.06	<0.06	-	0.21	mg/kg	0.06	A-T-019s
Dibenzo(ah)anthracene _A ^{M#}	0.09	<0.04	<0.04	<0.04	<0.04	-	<0.04	mg/kg	0.04	A-T-019s
Fluoranthene _A ^{M#}	0.58	<0.08	<0.08	<0.08	<0.08	-	0.34	mg/kg	0.08	A-T-019s
Fluorene _A ^{M#}	0.06	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-019s
Indeno(123-cd)pyrene _A ^{M#}	0.17	<0.03	0.07	<0.03	<0.03	-	0.24	mg/kg	0.03	A-T-019s
Naphthalene _A ^{M#}	0.04	<0.03	<0.03	<0.03	<0.03	-	<0.03	mg/kg	0.03	A-T-019s
Phenanthrene _A ^{M#}	0.64	0.05	<0.03	<0.03	<0.03	-	0.05	mg/kg	0.03	A-T-019s
Pyrene _A ^{M#}	0.69	<0.07	0.08	<0.07	<0.07	-	0.33	mg/kg	0.07	A-T-019s
Total PAH-16MS _A ^{M#}	4.74	0.23	0.52	<0.08	<0.08	-	2.30	mg/kg	0.01	A-T-019s

Envirolab Job Number: 20/08549

Client Project Name: Land to the North of Rhallt Lane,
Welshpool

Client Project Ref: Not specified

Lab Sample ID	20/08549/1	20/08549/2	20/08549/3	20/08549/4	20/08549/5	20/08549/6	20/08549/7	Units	Limit of Detection	Method ref
Client Sample No										
Client Sample ID	WS1	WS1	WS3	WS4	WS5	WS4	WS5			
Depth to Top	0.30	1.00	0.50	3.00	2.00	1.00	0.50			
Depth To Bottom										
Date Sampled	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20	03-Oct-20			
Sample Type	Solid	Soil	Soil	Soil	Soil	Soil	Soil			
Sample Matrix Code	7	4A	4A	6A	5A	4A	4A			
TPH CWG										
Ali >C5-C6 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
Ali >C6-C8 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
Ali >C8-C10 _A	<10	<1	<1	<1	<1	-	<1	mg/kg	1	A-T-055s
Ali >C10-C12 _A ^{M#}	<10	<1	<1	<1	<1	-	<1	mg/kg	1	A-T-055s
Ali >C12-C16 _A ^{M#}	<10	<1	<1	<1	<1	-	<1	mg/kg	1	A-T-055s
Ali >C16-C21 _A ^{M#}	26	2	<1	<1	<1	-	<1	mg/kg	1	A-T-055s
Ali >C21-C35 _A ^{M#}	2610	161	6	<1	<1	-	22	mg/kg	1	A-T-055s
Total Aliphatics _A	2640	163	6	<1	<1	-	22	mg/kg	1	A-T-055s
Aro >C5-C7 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
Aro >C7-C8 _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
Aro >C8-C10 _A	<10	2	<1	<1	<1	-	<1	mg/kg	1	A-T-055s
Aro >C10-C12 _A	<10	<1	<1	<1	<1	-	<1	mg/kg	1	A-T-055s
Aro >C12-C16 _A	25	2	4	<1	<1	-	2	mg/kg	1	A-T-055s
Aro >C16-C21 _A ^{M#}	135	9	28	<1	<1	-	4	mg/kg	1	A-T-055s
Aro >C21-C35 _A ^{M#}	2660	185	112	2	<1	-	42	mg/kg	1	A-T-055s
Total Aromatics _A	2830	198	144	2	<1	-	48	mg/kg	1	A-T-055s
TPH (Ali & Aro >C5-C35) _A	5460	361	150	2	<1	-	71	mg/kg	1	A-T-055s
BTEX - Benzene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - Toluene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - Ethyl Benzene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - m & p Xylene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
BTEX - o Xylene _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s
MTBE _A [#]	<0.01	<0.01	<0.01	<0.01	<0.01	-	<0.01	mg/kg	0.01	A-T-022s

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.

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

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:	BEK Enviro Ltd, Suite One , No 3 Mitton Road Business Park , Mitton Road , Whalley , Lancashire , BB7 9YE	Project No:	20/08549
Project:	Land to the North of Rhallt Lane, Welshpool	Date Received:	08/10/2020 (am)
Clients Project No:		Cool Box Temperatures (°C):	13.1

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.

Final Test Report

Envirolab Job Number: 20/08549
Issue Number: 1
Date: 16-Oct-20

Client: BEK Enviro Ltd
Suite One
No 3 Mitton Road Business Park
Mitton Road
Whalley
Lancashire, BB7 9YE

Project Manager: Mick Buckley
Project Name: Land to the North of Rhallt Lane, Welshpool
Project Ref: Not specified
Order No: 6891/20771/J

Date Samples Received: 8-Oct-20
Date Instructions Received: 8-Oct-20
Date Analysis Completed: 16-Oct-20

Notes - Soil analysis

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

For samples with Matrix Codes 1 - 6 natural stones >10mm are removed or excluded from the sample prior to analysis and reported results corrected to a whole sample basis.

For samples with Matrix Code 7 the whole sample is dried and crushed prior to analysis.

Notes - General

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

Subscript "A" indicates analysis performed on the sample as received. "D" indicates analysis performed on the dried sample, crushed to pass a 2mm sieve, unless asbestos is found to be present in which case all analysis is performed on the sample as received.

All analysis is performed on the dried and crushed sample for samples with Matrix Code 7 and this supercedes any "A" subscripts.

All analysis is performed on the sample as received for soil samples from outside the European Union and this supercedes any "D" subscripts

For complex, multi-compound analysis, quality control results do not always fall within chart limits for every compound and we have criteria for reporting in these situations.

If results are in italic font they are associated with such quality control failures and may be 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

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

Secondary Matrix Codes: A = contains stones, B = contains construction rubble, C = contains visible hydrocarbons, D = contains glass/metal, E = contains roots/twigs.

IS indicates Insufficient sample for analysis, NDP indicates No Determination Possible and NAD indicates No Asbestos Detected.

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.

Please contact us if you need any further information.

Prepared by:

Approved by:


Melanie Marshall
Laboratory Coordinator


Richard Wong
Client Manager

Sample Details					Landfill Waste Acceptance Criteria Limits			
Lab Sample ID	Method	ISO17025	MCERTS	20/08549/6	Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill	
Client Sample Number								
Client Sample ID				WS4				
Depth to Top				1				
Depth to Bottom								
Date Sampled				03/10/2020				
Sample Type				Soil				
Sample Matrix Code				4A				
Solid Waste Analysis								
pH (pH Units) _D	A-T-031	N	N		-	>6	-	
ANC to pH 4 (mol/kg) _D	A-T-ANC	N	N		-	to be evaluated	to be evaluated	
ANC to pH 6 (mol/kg) _D	A-T-ANC	N	N		-	to be evaluated	to be evaluated	
Loss on Ignition (%) _D	A-T-030	N	N		-	-	10	
Total Organic Carbon (%) _D	A-T-032	N	N	3.26	3	5	6	
PAH Sum of 17 (mg/kg) _A	A-T-019	N	N	3.36	100	-	-	
Mineral Oil (mg/kg) _A	A-T-007	N	N	10	500	-	-	
Sum of 7 PCBs (mg/kg) _A	A-T-004	N	N	<0.007	1	-	-	
Sum of BTEX (mg/kg) _A	A-T-022	N	N	<0.01	6	-	-	
Eluate Analysis				10:1 mg/l	10:1 mg/kg	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)		
Arsenic	A-T-025	N	N	<0.001	<0.01	0.5	2	25
Barium	A-T-025	N	N	0.011	0.110	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.01	0.04	1	5
Chromium	A-T-025	N	N	<0.001	<0.01	0.5	10	70
Copper	A-T-025	N	N	0.004	0.040	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.005	0.01	0.2	2
Molybdenum	A-T-025	N	N	0.001	0.010	0.5	10	30
Nickel	A-T-025	N	N	<0.001	<0.01	0.4	10	40
Lead	A-T-025	N	N	0.002	0.020	0.5	10	50
Antimony	A-T-025	N	N	<0.001	<0.01	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.01	0.1	0.5	7
Zinc	A-T-025	N	N	0.004	0.040	4	50	200
Chloride	A-T-026	N	N	<1.00	<10	800	15000	25000
Fluoride	A-T-026	N	N	0.2	2.0	10	150	500
Sulphate as SO ₄	A-T-026	N	N	<1.00	<10	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	41	410	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<0.2	<200	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	7.7				
Conductivity (µS/cm)	A-T-037	N	N	83				
Mass Sample (kg)				0.188				
Dry Matter (%)	A-T-044	N	N	92.9				
Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation								

Landfill WAC analysis must not be used for hazardous waste classification purposes. This analysis is only applicable for landfill acceptance and does not give any indication as to whether a waste may be hazardous or non-hazardous.

Sample Details					Landfill Waste Acceptance Criteria Limits			
Lab Sample ID	Method	ISO17025	MCERTS	20/08549/7				
Client Sample Number					Inert Waste Landfill	Stable Non-reactive Hazardous Waste in Non-Hazardous Landfill	Hazardous Waste Landfill	
Client Sample ID				WS5				
Depth to Top				0.5				
Depth to Bottom								
Date Sampled				03/10/2020				
Sample Type				Soil				
Sample Matrix Code				4A				
Solid Waste Analysis								
pH (pH Units) _D	A-T-031	N	N	8.03	-	>6	-	
ANC to pH 4 (mol/kg) _D	A-T-ANC	N	N		-	to be evaluated	to be evaluated	
ANC to pH 6 (mol/kg) _D	A-T-ANC	N	N		-	to be evaluated	to be evaluated	
Loss on Ignition (%) _D	A-T-030	N	N		-	-	10	
Total Organic Carbon (%) _D	A-T-032	N	N	2.22	3	5	6	
PAH Sum of 17 (mg/kg) _A	A-T-019	N	N	2.35	100	-	-	
Mineral Oil (mg/kg) _A	A-T-007	N	N	20	500	-	-	
Sum of 7 PCBs (mg/kg) _A	A-T-004	N	N	<0.007	1	-	-	
Sum of BTEX (mg/kg) _A	A-T-022	N	N	<0.01	6	-	-	
Eluate Analysis					10:1	10:1	Limit values for compliance leaching test using BS EN 12457-2 at L/S 10 l/kg (mg/kg)	
				mg/l	mg/kg			
Arsenic	A-T-025	N	N	0.002	0.020	0.5	2	25
Barium	A-T-025	N	N	0.031	0.310	20	100	300
Cadmium	A-T-025	N	N	<0.001	<0.01	0.04	1	5
Chromium	A-T-025	N	N	<0.001	<0.01	0.5	10	70
Copper	A-T-025	N	N	0.005	0.050	2	50	100
Mercury	A-T-025	N	N	<0.0005	<0.005	0.01	0.2	2
Molybdenum	A-T-025	N	N	<0.001	<0.01	0.5	10	30
Nickel	A-T-025	N	N	<0.001	<0.01	0.4	10	40
Lead	A-T-025	N	N	0.004	0.040	0.5	10	50
Antimony	A-T-025	N	N	0.001	0.010	0.06	0.7	5
Selenium	A-T-025	N	N	<0.001	<0.01	0.1	0.5	7
Zinc	A-T-025	N	N	0.006	0.060	4	50	200
Chloride	A-T-026	N	N	<1.00	<10	800	15000	25000
Fluoride	A-T-026	N	N	0.7	7.0	10	150	500
Sulphate as SO ₄	A-T-026	N	N	6	59	1000	20000	50000
Total Dissolved Solids	A-T-035	N	N	59	590	4000	60000	100000
Phenol Index	A-T-050	N	N	<0.01	<0.1	1	-	-
Dissolved Organic Carbon	A-T-032	N	N	<0.2	<200	500	800	1000
Leach Test Information								
pH (pH Units)	A-T-031	N	N	7.7				
Conductivity (µS/cm)	A-T-037	N	N	118				
Mass Sample (kg)				0.211				
Dry Matter (%)	A-T-044	N	N	82.9				
Stated acceptance limits are for guidance only and Envirolab cannot be held responsible for any discrepancies with current legislation								

APPENDIX C

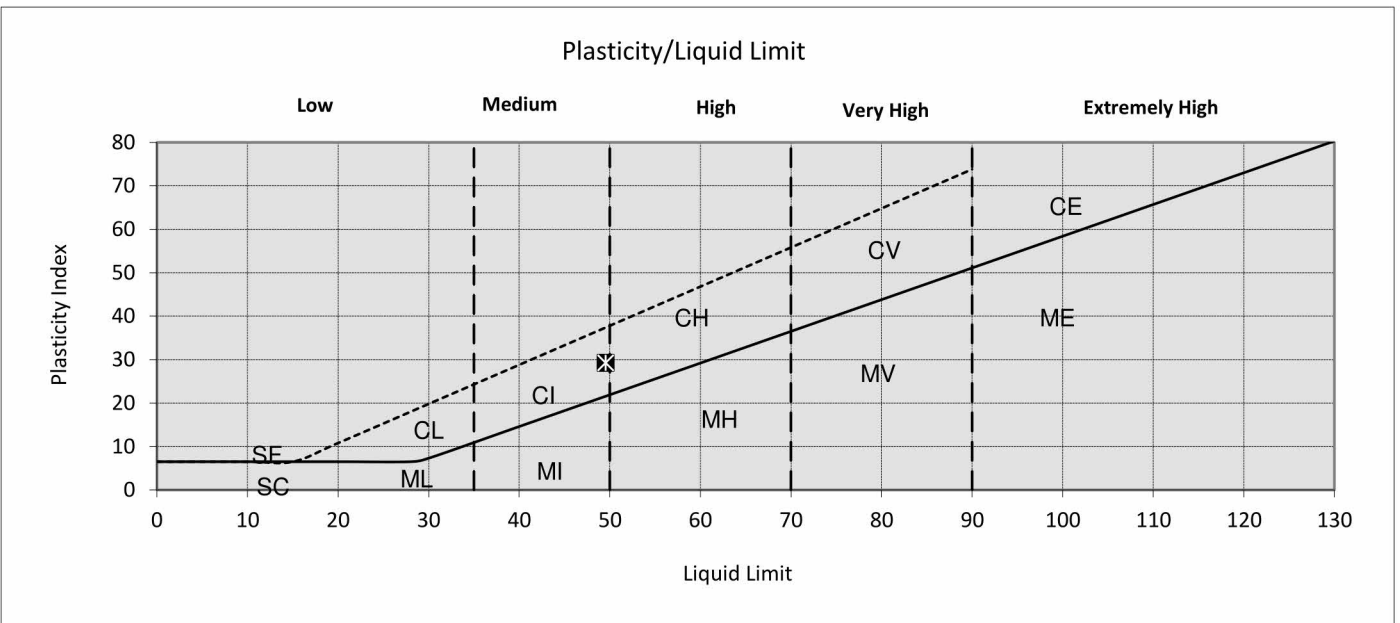
Geotechnical Test Results



LABORATORY TEST REPORT
LIQUID & PLASTIC LIMIT TESTS BS 1377: Part 2: 1990 CI 4.4.5.3

Site Ref.:	Welshpool	Job No.:	34790
Client:	Bek Enviro Ltd	Lab Ref No.:	34790/62
Originator:	Michael Buckley	Sample Ref.:	WS3 (2 m)
		Date Received:	14/10/2020
		Date Tested:	19/10/2020
		Date Reported:	20/10/2020

Sampling Certificate	Yes
Sampled By	Client
Sample Type	Bulk
Sample Preparation Method	As Received
MATERIAL	Brown mottled CLAY
Retained 425 micron (%)	15.0
Natural Moisture Content (%)	27
Liquid Limit (single point)(%)	50
Plastic Limit (%)	20
Plasticity Index	29

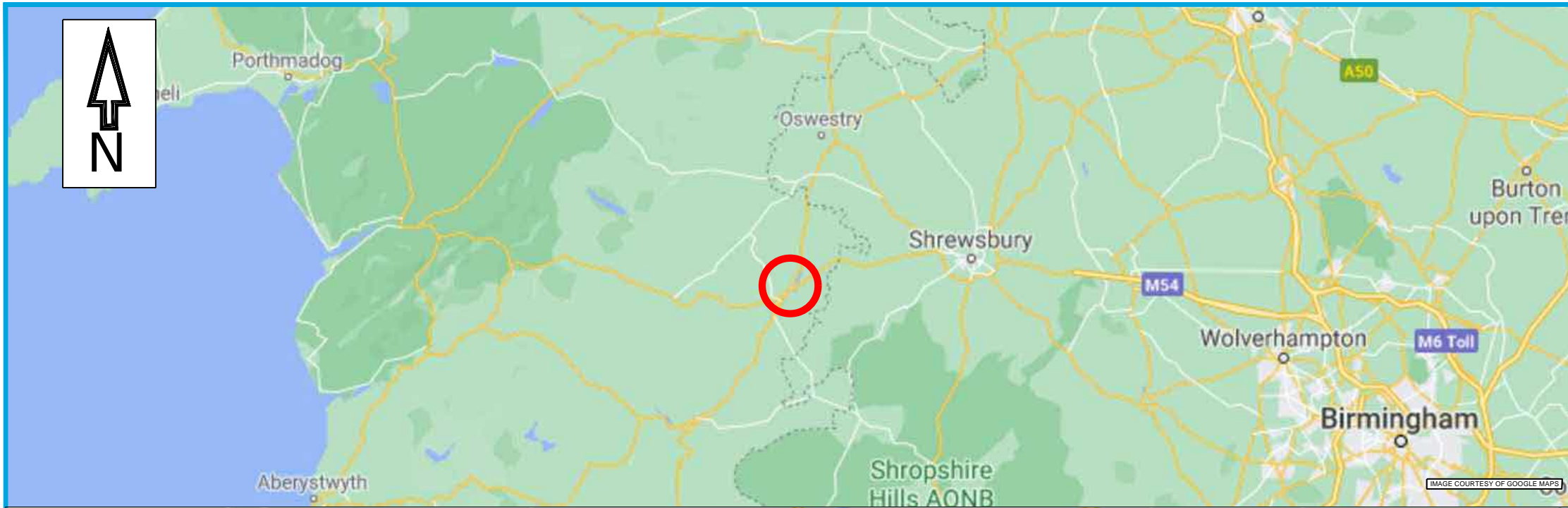
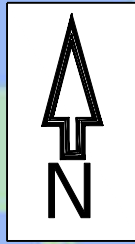


Approved Signature
 James Fisher Testing Services Ltd
 Karl Monks, Lab and Insitu Manager




APPENDIX D

Drawings



LEGEND

 SITE LOCATION

REV	DESCRIPTION	DATE	BY



GEO-ENVIRONMENTAL CONSULTING ENGINEERS
 Suite One, No 3 Mitton Road Business Park, Mitton Road,
 Whalley, Lancashire BB7 9YE
 Tel: 01254 377622 Mob: 07906753583
 Email: mbuckley@bekenviro.co.uk
 Web: www.bekenviro.co.uk

CLIENT.



JOB TITLE.

LAND TO THE NORTH OF RHALLT LANE, WELSHPOOL

DRAWING TITLE.


SITE LOCATION PLAN

SCALE @ A3. NTS	DRAWN BY. D.E.	APPROVED BY. M.B.	DATE. 08/ 10/ 20
DRAWING No. 20771-1			REV. -



IMAGE COURTESY OF GOOGLE EARTH

LEGEND

 SITE FOOTPRINT

REV	DESCRIPTION	DATE	BY



GEO-ENVIRONMENTAL CONSULTING ENGINEERS
 Suite One, No 3 Mitton Road Business Park, Mitton Road,
 Whalley, Lancashire BB7 9YE
 Tel: 01254 377622 Mob: 07906753583
 Email: mbuckley@bekenviro.co.uk
 Web: www.bekenviro.co.uk

CLIENT.



JOB TITLE.

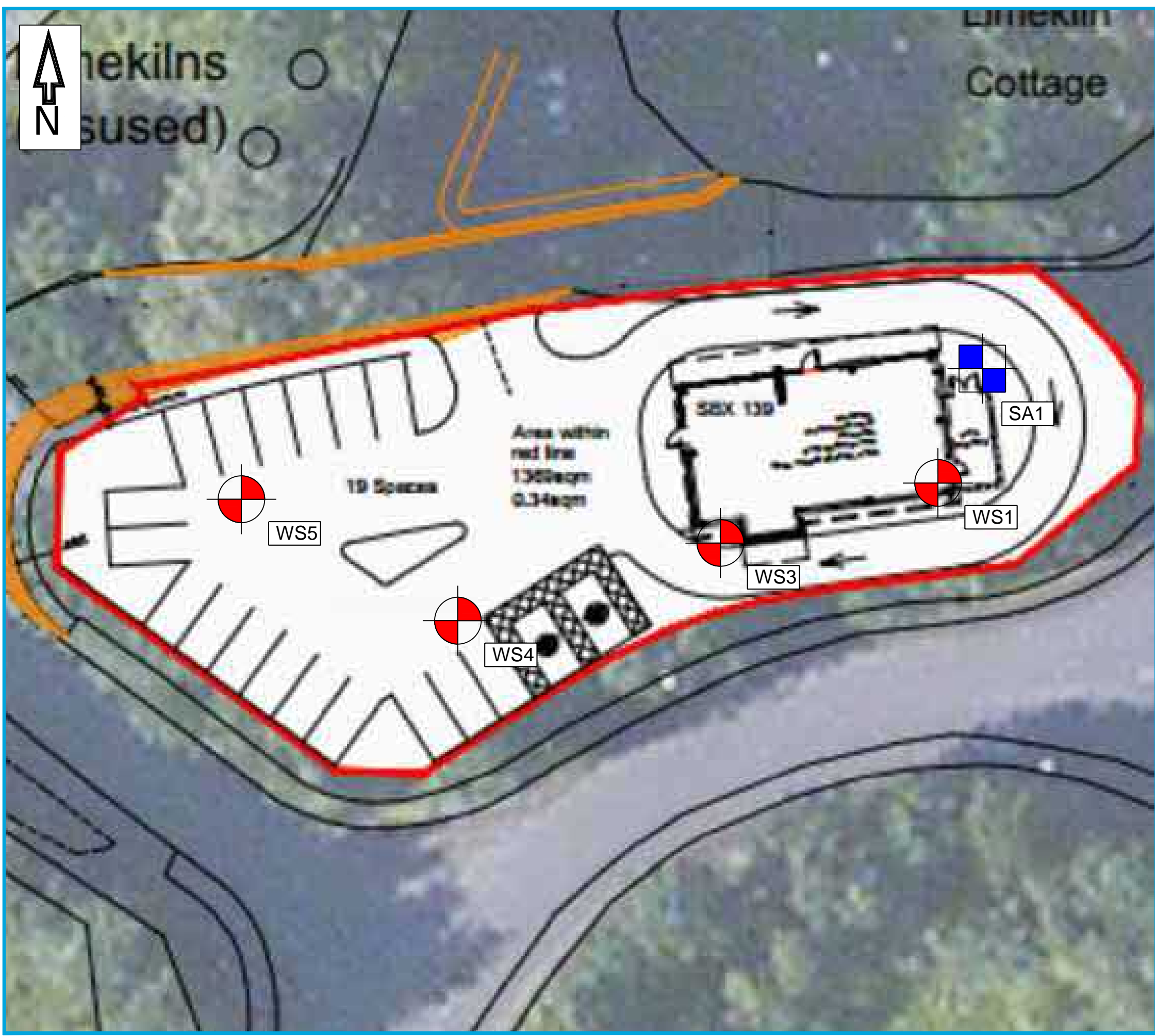
LAND TO THE NORTH OF
RHALLT LANE, WELSHPOOL

DRAWING TITLE.




SITE LAYOUT PLAN

SCALE © A3. NTS	DRAWN BY. D.E.	APPROVED BY. M.B.	DATE. 08/ 10/ 20
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DRAWING No. 20771-2	REV. -
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LEGEND

-  SITE BOUNDARY
-  BEK WINDOW SAMPLE BOREHOLE
-  INFILTRATION TEST LOCATION

REV	DESCRIPTION	DATE	BY



Suite One, No 3 Mitton Road Business Park, Mitton Road,
Whalley, Lancashire BB7 9YE
Tel: 01254 377622 Mob: 07906753583
Email: mbuckley@bekenviro.co.uk
Web: www.bekenviro.co.uk

CLIENT.



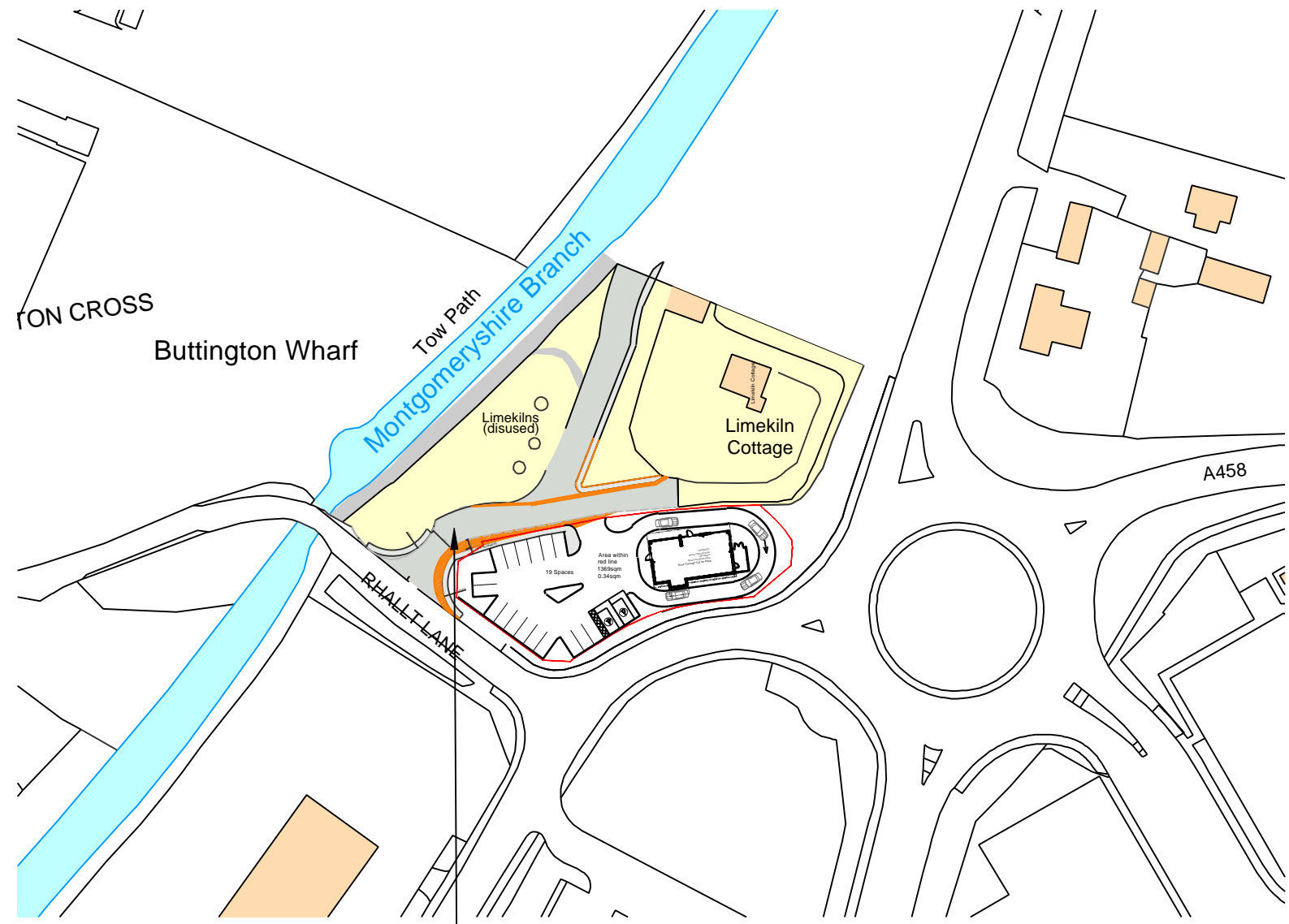
JOB TITLE.

LAND TO THE NORTH OF
RHALLT LANE, WELSHPOOL

DRAWING TITLE.

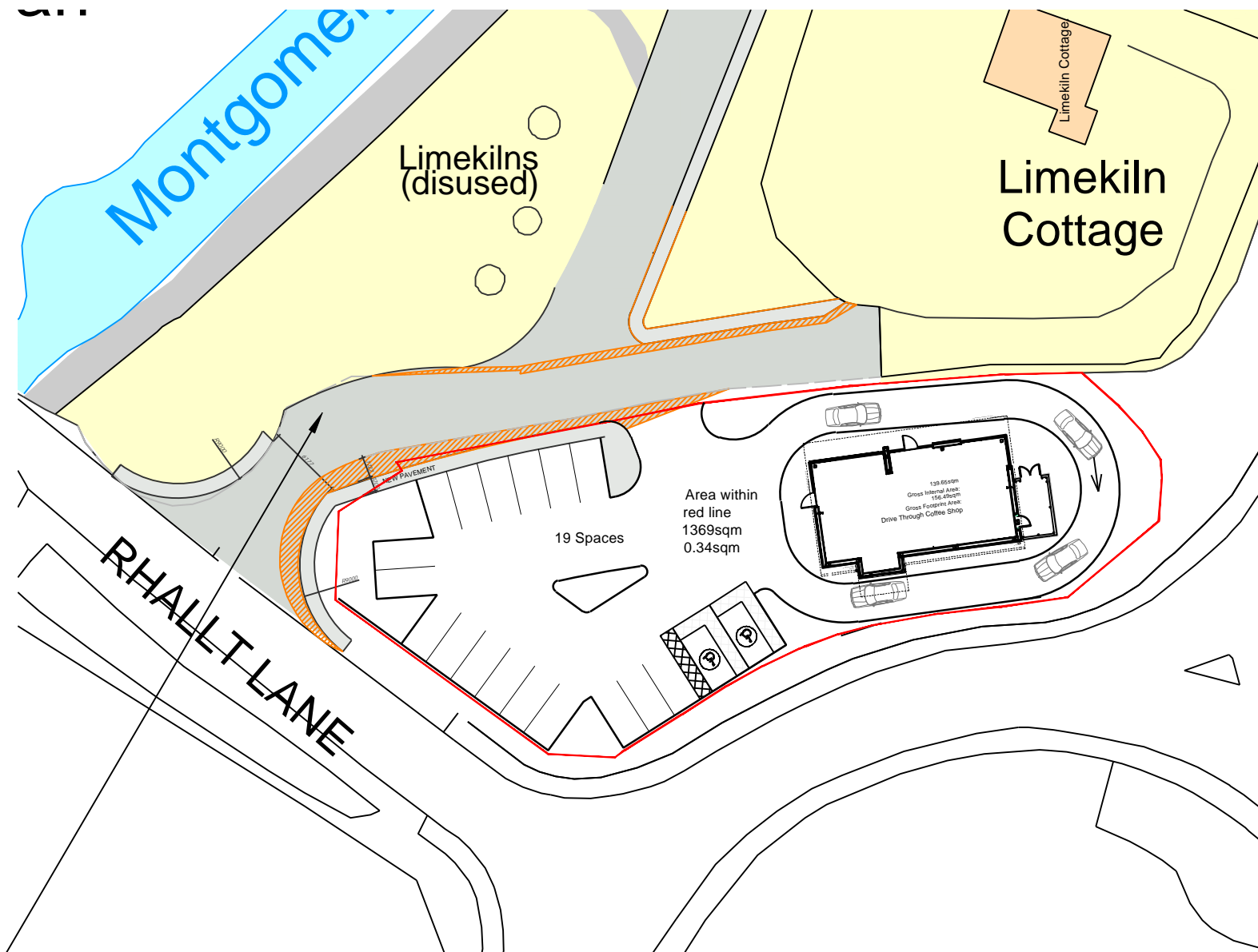
SITE INVESTIGATION
LOCATION PLAN

SCALE @ A3. NTS	DRAWN BY. D.E.	APPROVED BY. M.B.	DATE. 08/ 10/ 20
DRAWING No. 20771-3			REV. -



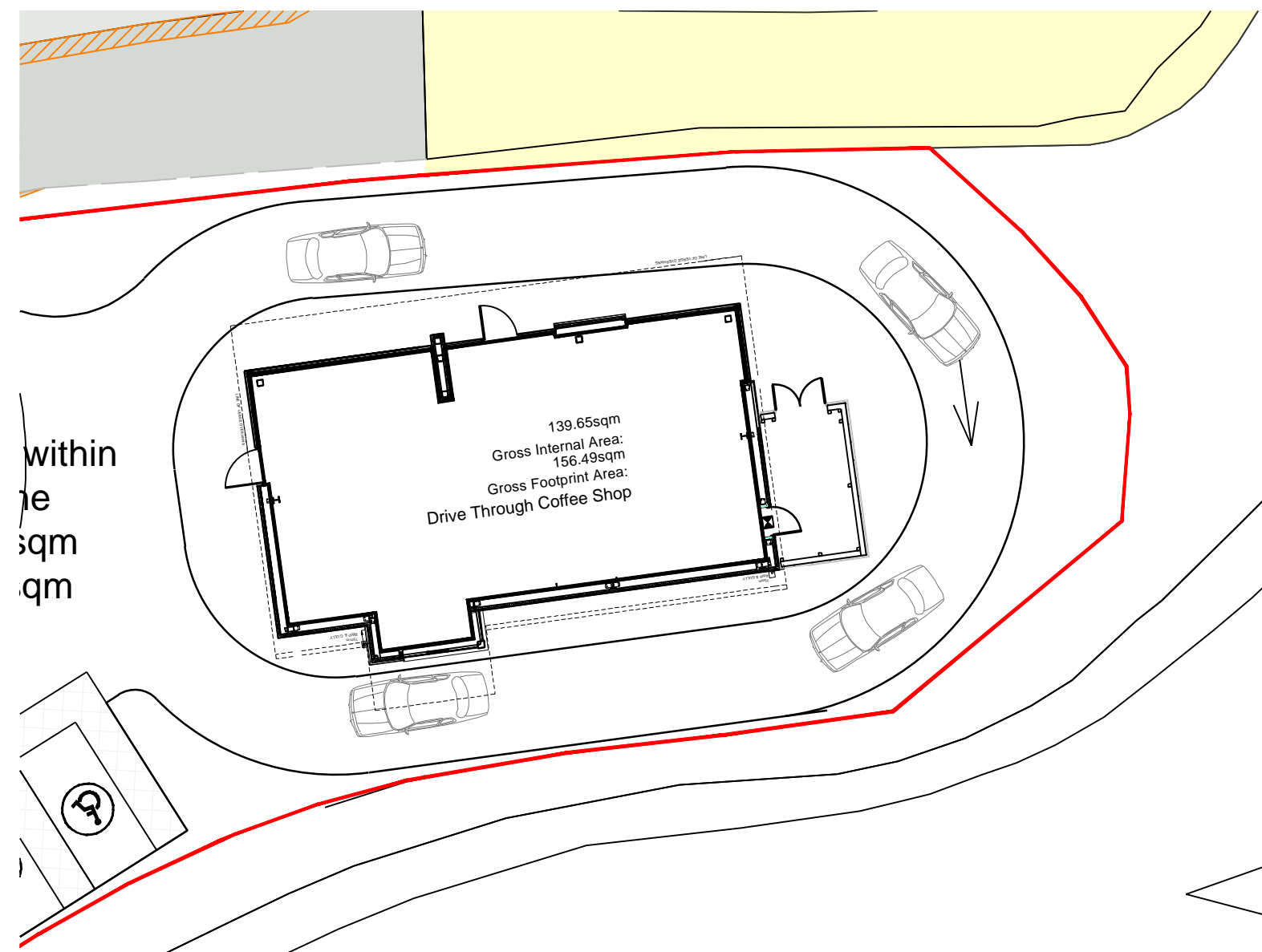
Location Plan
Scale 1:1250

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Block Plan
Scale 1:500

EXISTING ACCESS ROAD



Enlarged Plan
Scale 1:200



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Rev	Date	By	Checked
P01.4	07/09/2020	AC	AA
Parking updated following comments from client			
P01.3	03/09/2020	AC	AA
Further alterations to utilise more of existing access road			
P01.2	01/09/2020	AC	AA
Redesign of site entrance to make use of existing access			
P01.1	24/08/2020	AC	AA
Outline of existing access road added			



Client
Stephen James Property LTD

Project Title
Moors Farm, Mixed Use
Redevelopment

Date	Drawn By:	Checked By:
16/09/2019	AC	AA
Suitability	Scale	Revision
S0	As Stated	P01.4

Drawing Name
Retail A1 Drive Thru Option

Drawing Number
SHR17056-REVA-DR-A-035