



PHASE I GEO-ENVIRONMENTAL SITE ASSESSMENT

Land off Henthorn Road
Clitheroe

Prepared for
Strategic Land Group



Report Ref: 10-699-R1
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EXECUTIVE SUMMARY

Site Address	Land off Henthorn Road, Clitheroe, BB7 2QF	
Grid Reference	E373210, N440560	
Site Area	2.69 Hectares	
Current Site Use	The subject site is an irregular shaped parcel of land in a semi-rural area, on the edge of Clitheroe. The site is undeveloped grassland with trees and hedges at the perimeter. Stables and a railway viaduct are immediately north and east of the site and Pendleton Brook is immediately adjacent to the southern boundary, beyond a riverbank that slopes steeply down-gradient towards the brook. A large metal pipe emerges from the riverbank in the southeast sector and crosses (over) Pendleton Brook.	
Proposed Development	E3P understands that Strategic Land Group propose to develop the subject site for low rise residential end use. A proposed plot development layout has not been made available for the site as yet, however it is assumed that the proposed development will comprise a series of low rise residential dwellings with associated garden and landscaped areas, estate roads, pavements and infrastructure.	
Environmental Setting	<i>Drift Geology</i>	Glacial Till across the site with Alluvium in southern sector, adjacent to Pendleton Brook. BGS borehole logs in the vicinity indicate Boulder Clay to circa 9m depth.
	<i>Bedrock Geology</i>	Clitheroe Limestone Formation and Hodder Mudstone Formation.
	<i>Hydrogeology</i>	Secondary A Aquifer and Secondary Undifferentiated Aquifer within superficial deposits, overlying a Secondary A Aquifer (Bedrock Geology).
	<i>Hydrology</i>	Pendleton Brook is immediately south of the site.
	<i>Flood Risk</i>	Areas within Flood Zone 2 and Flood Zone 3 are present on the southern boundary, adjacent to Pendleton Brook.
	<i>Ecology</i>	Trees, hedges, and the adjacent watercourse may provide habitat for protected species.
	<i>Compressible Ground and Subsidence Hazards</i>	There is a moderate risk associated with compressible ground at the site.
Site History	Historical mapping indicates the site has remained largely undeveloped. A sewage works and railway have been present in the vicinity since the 1800s.	
Utility Locations	A formal drainage survey has not been completed. Overhead electricity cables and associated pylons are present in the west sector. A large metal pipe emerges from the riverbank in the southeast sector and crosses (over) Pendleton Brook.	
Landfill Sites & Ground Gases	Henthorn Tip, located 189m southwest is identified as a historical landfill site, registered landfill site, and licensed waste management facility.	
Invasive Plant Species	No invasive plant species were identified during the site walkover however some areas of the site were inaccessible and their presence cannot be ruled out. A Ecological Survey may be required.	
Radon	Unaffected – No special precaution required.	

EXECUTIVE SUMMARY

Coal Mining / Land Stability

The site is not within an area that may be affected by coal mining.

Geotechnical Risk

Based on the desk study information, the following geotechnical assessment has been made:

-  Considering the proximity of a railway viaduct and residential development, as well as a large metal pipe in the southeast sector, there may be limited Made Ground fill deposits and obstructions;
-  Alluvium is anticipated in the south sector, and there is a moderate risk associated with compressible ground at the site; and,
-  Intrusive investigation will be required to assess the ground conditions and undertake in-situ geotechnical testing to determine possible foundation solutions.

Contaminated Land Risk Assessment

Human Health

The presence of any localised (albeit not anticipated) Made Ground may be a source of low level heavy metals, non-volatile PAHs and asbestos, however the site has remained undeveloped and no potentially significant contaminative sources were identified at the site or within the immediate locality. Isolated Made Ground may be present along the eastern boundary of the site associated with the construction of the railway bridge and pipeline present along the eastern boundary.

Controlled Waters

In the absence of any significant sources and the impermeable nature of the superficial deposits, no significant risk to controlled waters has been identified, however due to the presence of Pendleton Brook care will need to be taken in the construction phase as to not affect this receptor.

Ground Gas

Ground gasses may be present at the site within localised areas of Made Ground within the eastern boundary, potential alluvial deposits within the southern sector of the site may also be a plausible sources of Ground Gas.

Recommendations

-  A detailed Phase II intrusive Geo-Environmental Ground Investigation should be undertaken to confirm the findings of the initial conceptual site model and value engineer a development solution.
-  A habitat survey may be required.
-  A flood risk assessment may be required.

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Appendix I Limitations

Appendix II Glossary

Appendix III Drawings

Drawing No 11-699-001 – Site Location Plan

Drawing No 11-699-002 – Current Site Layout and Constraints Plan

Drawing No 11-699-003 – Historical Features Plan

Appendix IV Photographs

Appendix V Historical Maps

1. INTRODUCTION

1.1 Background

E3P Ltd has been commissioned by Strategic Land Group to undertake a Phase I Geo-Environmental Site Assessment at land off Henthorn Road, Clitheroe.

This report is required to determine potential contaminated land and geotechnical liabilities associated with a proposed residential development.

1.2 Proposed Development

E3P understands that Strategic Land Group propose to develop the subject site for low rise residential end use. A proposed plot development layout has not been made available for the site, however it is assumed that the proposed development will comprise a series of low rise residential dwellings with associated garden and landscaped areas, estate roads, pavements and infrastructure.

1.3 Objectives

The objectives of the Geo-Environmental Investigation are to:

-  Review historical plans, geology, hydrogeology, site sensitivity, flood-plain issues, mining records and any local authority information available in order to complete a Desk Study in line with Environment Agency (EA) document Model Procedures for the Management of Contaminated Land (Contaminated Land Report 11 (CLR11));
-  Assess the implications of any potential environmental risks, liabilities and development constraints associated with the site in relation to the future use of the site and in relation to off-site receptors;
-  Assess the desk study information and where possible, provide preliminary recommendations in relation to foundations, pavement construction and floor slabs; and,
-  Provide recommendations regarding future works required and undertake a preliminary pre-construction cost appraisal.

1.4 Limitations

The limitations of this report are presented in Appendix I.

1.5 Sources of Information

Background information was sought from the following sources:

-  Envirocheck Search;
-  Historical mapping dated 1847 to 2017. A selection of historical maps are reproduced in Appendix V;
-  On-line planning records held by Ribble Valley Council;
-  Consultations with representatives of the Ribble Valley Council;
-  Environment Agency Groundwater Vulnerability Map (www.environment-agency.gov.uk/wiyby);
-  Radon: Guidance on protective measures for new buildings (BRE Document BR 211, 2007); and,



 British Geological Survey Map.

1.6 Confidentiality

E3P has prepared this report solely for the use of the Client and those parties with whom a warranty agreement has been executed, or with whom an assignment has been agreed. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from E3P; a charge may be levied against such approval.

2. SITE SETTING

2.1 Site Details

Site Address	Land off Henthorn Road, Clitheroe, BB7 2QF
National Grid Reference	E373210, N440560
Site Area	2.69 Hectares

All acronyms used within this report are defined in the Glossary presented in Appendix II.

A site location map is presented in Appendix III as Drawing 10-699-001.

2.2 Current Site Use

E3P has undertaken a site walkover of the entire site and a description of the key findings is summarised in Table 2.1.

Table 2.1 Site Description

Occupancy/use	The subject site is an irregular shaped parcel of land in a semi-rural area on the edge of Clitheroe. Rough grassland is across the site, and there are trees and hedges on the perimeter of the site. Pendleton Brook is immediately adjacent to the southern boundary, beyond a riverbank that slopes steeply down-gradient towards the brook. A large metal pipe emerges from the riverbank in the southeast sector and crosses (over) Pendleton Brook.	
Structures	Except for electricity poles in the west sector, there are no structures on site.	
Access	Access is made via existing agricultural tracks off Henthorn Road to the north.	
Slope	The site and surrounding area slopes down-gradient from north to south. There is a riverbank on the southern boundary of the site that slopes steeply down-gradient towards Pendleton Brook to the south.	
Retaining structures	None.	
Surface Cover (%)	Buildings:	0%
	Hardstand:	0%
	Soft cover:	100%
Vegetation/Ecology	Trees, hedges, grassland and the adjacent watercourse may provide habitat for protected species. A Habitat Survey may be required to support the planning application.	
Hazardous Material Storage	No Above Ground Storage Tanks (AST) or Underground Storage Tanks (UST) were observed at the site during the preliminary site walkover. Due to the largely undeveloped nature of the site, hazardous materials storage is unlikely to have occurred.	
Asbestos Containing Material (ACM)	No evidence of ACM was noted across the site during the site walkover.	
Polychlorinated Biphenyls (PCBs)	There is no equipment identified which may contain PCBs within the site boundary.	
Waste Storage	Potentially hazardous waste streams are unlikely to be generated at the site and none were observed during the preliminary site inspection.	

Drainage

A formal drainage survey has not been completed. A large metal pipe emerges from the riverbank in the southeast sector and crosses (over) Pendleton Brook.

2.3 Surrounding Area

The surrounding area land uses are summarised in Table 2.2.

Table 2.2 ***Surrounding Land Uses***

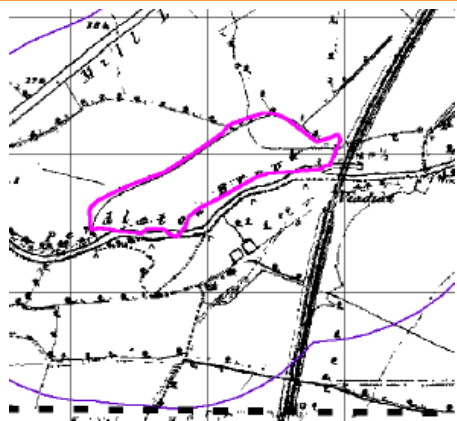
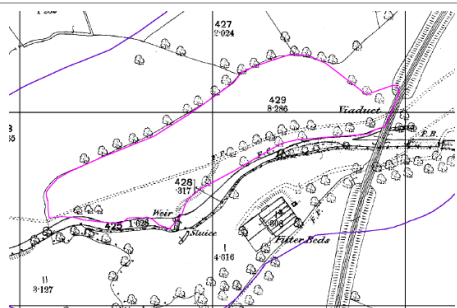
DIRECTION	LAND USE
North	Open fields, residential properties and stables.
East	Railway viaduct.
South	Pendleton Brook and sewage works beyond.
West	Open fields.

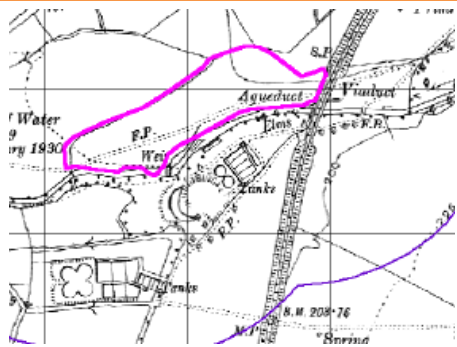
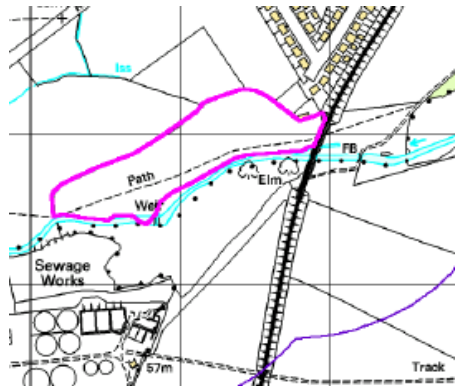
3. SITE HISTORY

3.1 On-Site Historical Development

A review of historical mapping pertinent to the site is summarised in Table 3.1 below. In addition, historical site features are presented on Drawing No 10-699-003 in Appendix III.

Table 3.1 Site Historical Development

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1847-48 1:10,560	The site and surrounding area is largely occupied by open agricultural fields, with field boundaries on the site and on the boundaries. A railway viaduct is immediately east.	
1886 1:2,500	Tress are present on the boundaries and along farm tracks that cross the site. A weir and sluice are identified on Pendleton Brook, immediately south. Filter Beds are identified beyond Pendleton Brook, approximately 40m south.	
1914 1:10,560	The site remains undeveloped. Additional filter beds and tanks are shown to the south.	

1932-33 1:10,560	An aqueduct is shown in the southeast sector.	
1970-72 1:10,000	The filter beds and tanks to the south are identified as a sewage works.	
2001 1:10,000	The site remains undeveloped, and is crossed by a path. Some of the filter beds and tanks to the south have been removed. Residential development is shown immediately north.	

3.2 Off-Site Historical Development

A review of potentially contaminative uses identified on historical Ordnance Survey maps within a 250m radius of the site is summarised below in Table 3.2.

Table 3.2 Surrounding Potentially Contaminative Land Uses.

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Railway	0m	Pre 1847 - Present	East
Filter beds Then filter beds and tanks Then sewage works	40m	Pre 1886 – Pre 1914 Pre 1914 – Pre 1964 Pre 1964 - Present	South

3.3 Planning History

E3P has undertaken a detailed search of on-line planning records held by Ribble Valley Council; there are no planning applications pertinent to the site.

4. ENVIRONMENTAL SETTING

4.1 Geology and Hydrogeology

The British Geological Survey (BGS) map for the site, (1:50,000, Solid & Drift edition) and online records indicates the site is underlain by the geological sequence presented in Table 4.1.

Table 4.1 *Summary of Underlying Geology*

GEOLOGICAL UNIT	CLASSIFICATION	DESCRIPTION	AQUIFER CLASSIFICATION
Drift North sector	Glacial Till	Diamicton	Secondary Aquifer - Undifferentiated
Drift South sector	Alluvium	Clay, Silt, Sand and Gravel	Secondary A Aquifer
Solid	Clitheroe Limestone Formation and Hodder Mudstone Formation	Mudstone	Secondary A Aquifer

The Envirocheck Report indicates that the site is not located within a Groundwater Source Protection Zone and there are no groundwater abstractions identified within a 1km radius of the site.

Based on the local topography and the location of surface watercourses, it is considered likely that shallow groundwater, if present, will flow in a southerly direction, following the topographical gradient towards Pendleton Brook.

4.2 Geotechnical Data

Geotechnical Data presented within a commercially available environmental database is summarised within Table 4.2.

Table 4.2 *Summary of Geotechnical Data*

HAZARD	DESIGNATION
Shrink-Swell Clay	Very Low
Landslides	Very Low to Low Risk
Ground Dissolution	Very Low Risk
Compressible Ground	Moderate Risk
Collapsible Deposits	Very Low Risk
Running Sand	Very Low to Low Risk

4.3 Coal Mining

The Envirocheck Report states the site is not in an area which may be affected by coal mining.

4.4 Hydrology

Pendleton Brook is immediately south of the site, at the base of a steep slope on the southern boundary and the Envirocheck report indicates a River Quality B (Good).

The closest abstractions licences are for surface water, approximately 444m east at Mearley Brook for agricultural and commercial use. There are no groundwater or potable abstraction licences within 1km of the site.

Localised areas on the southern boundary, adjacent to Pendleton Brook are indicated by the Environment Agency to be in a Flood Zone 2 and Flood Zone 3.

4.5 Radon Risk Potential

The Envirocheck Report indicates the site is situated in an area where less than 1% of homes are above the Action Level and that the BGS reports that full radon protective measures are not necessary in the construction of new dwellings or extensions.

4.6 Industrial Land Uses

The site is located within a predominantly agricultural and residential area. The closest Contemporary Trade Directory Entry is 178m west for plastic coating services but is shown as inactive. The closest active Contemporary Trade Directory Entry is approximately 346m east and is associated mechanical handling equipment.

4.7 Agricultural Land Classification

The subject site has soils classified as Subgrade 3b (moderate quality agricultural land). These soils are relatively uniform on site and comprise heavily textures topsoil overlying gleyed and slowly permeable clay subsoil. The slowly permeable layer consistently occurs close to the surface and results in soils in wetness class IV. They are naturally poorly drained and their use is significantly restricted by surface wetness and workability limitations. Land in this sub-grade is of moderate quality and capable of producing moderate to high yields of a narrower range of winter combinable or grass crops.

4.8 Sensitive Land Uses

The closest residential properties are located adjacent to the northern boundary of the site.

An ancient woodland is identified 453m southeast. No other environmentally sensitive land uses have been identified within close proximity to the site.



4.9 Site Sensitivity Assessment

The site is assessed to be located within a **High** sensitivity setting as discussed within Table 4.3.

Table 4.3 Site Sensitivity Assessment

SENSITIVITY PROFILE	DISCUSSION	RATING
Sensitive land uses within close proximity (e.g. residential, school, nursery, local nature reserves etc.)	Residential properties are immediately north.	HIGH
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	The site is not within a Groundwater Source Protection Zone or Drinking Water Safeguard Zone.	LOW
Distance to the closest groundwater abstraction point.	There are no groundwater abstractions within 1km.	LOW
Aquifer Classification in Superficial Drift Deposits.	The underlying superficial deposits are likely to comprise Glacial Till and Alluvium.	MODERATE
Aquifer classification in Bedrock.	Secondary A Aquifer.	MODERATE
Is the site underlain by low permeability Drift to depths in excess of 10.0m?	BGS boreholes records in the wider vicinity indicates the presence of Boulder Clay to circa 9m, underlain by Limestone.	LOW
Is the site located within 50m of a surface watercourse?	Pendleton Brook is immediately south.	HIGH
Overall Site Environmental Sensitivity		HIGH

4.10 Preliminary Geotechnical Assessment

Based on the desk study information, the following geotechnical assessment has been made:

- Considering the proximity of a railway viaduct and residential development, as well as a large metal pipe in the southeast sector, there may be limited Made Ground fill deposits and obstructions;
- Alluvium is anticipated in the south sector and there is a moderate risk associated with compressible ground at the site; and,
- Intrusive investigation will be required to assess the ground conditions and undertake in-situ geotechnical testing to determine possible foundation solutions.

4.1 Unexploded Ordnance

The regional unexploded bomb risk map from Zetica indicates that the site is in an area at low risk from possible Unexploded Ordnance (UXO) resulting from the Second World War. (Zetica, 2014).



5. CONSULTATIONS

5.1 Contaminated Land Officer

E3P contacted the Environmental Health Department at Ribble Valley Council who have been unable to respond within the reporting timescales. Upon receipt of the search information, E3P will issue any pertinent information and / or use the information to inform the development of any intrusive investigation proposals.

5.2 Landfill Sites and Waste Treatment Sites

The closest landfill site is located 189m southwest at Henthorn Tip. This facility is also recorded as a licensed waste management facility.

No Registered Waste Treatment or Disposal Sites are identified within 1km of the site.

5.3 Regulatory Database

The information summarised in Table 5.1 has been obtained from a commercially available environmental database. The summary table only includes records from within 250m of the subject site and not otherwise detailed in the report.

Table 5.1 *Summary of Environmental Data*

RECORD	ENTRIES WITHIN 250m	DETAILS
Contaminated Land Register Entries and Notices	0	None Identified (N/A).
Authorised industrial processes (IPC/IPPC/LAPPC).	0	N/A
Fuel Stations Entries	0	N/A
Licensed radioactive substances	0	N/A
Enforcements, prohibitions or prosecutions	0	N/A
Discharge Consents	1	A discharge consent for sewage discharges is 13m east.
Pollution Incidents	1	A minor incident was recorded in 1994, approximately 73m southeast, involving sewage.
Consents issued under the Planning (Hazardous Substances) Act 1990	0	N/A
Control of Major Accident Hazard (COMAH) sites	0	N/A

6. INITIAL CONCEPTUAL SITE MODEL

6.1 Initial CSM

In accordance with Environment Agency, CLR 11 (2004) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), E3P Ltd has developed an initial CSM to identify potential contamination sources, migration pathways and receptors within the study area. This is summarised within Table 6.1.

Table 6.1 Initial Conceptual Site Model

SOURCE	EXPOSURE	POTENTIAL PATHWAY
Human Health		
Heavy metals / Semi Volatile Organic Compounds (SVOC), associated with limited Made Ground Areas	Dermal Contact and Ingestion Consumption of Home-grown Produce	Construction Workers Residential End Users
Discussion: The presence of any localised (albeit not anticipated) Made Ground may be a source of low level heavy metals and non-volatile PAHs, however the site has remained undeveloped and no potentially significant contaminative sources were identified at the site or within the immediate locality. Isolated Made Ground may be present along the eastern boundary of the site associated with the construction of the railway bridge and pipeline present along the eastern boundary. Heavy metals and non-volatile PAHs may pose a short-term risk to construction workers who may be exposed to impacted soils during earthworks. Construction works must be undertaken using the appropriate Personal Protective Equipment (PPE) to remove this potential risk. Future residential users may come into contact with impacted soils within any garden and landscaped areas. If impacted soils are identified then localised remediation or an appropriate cover system, designed in accordance with BRE465 (<i>Cover Systems for Land Regeneration</i>), will mitigate the risk. However, considering that limited Made Ground is likely to be present, the potential risk to the proposed development from any contamination impact is likely to be very low.		
Asbestos Containing Materials (ACM) within Made Ground and adjacent railway line	Fibre / Dust Inhalation	Construction Workers Residential End Users Third Party Property
Discussion: The adjacent railway line and Made Ground within the eastern sector of the site, if present, are potential sources of ACM. Disturbance of ACM may give rise to dust generation, posing a risk to adjacent site users, construction workers and future end users. However, considering that limited Made Ground is likely to be present, the potential risk to the proposed development from any contamination impact is likely to be very low.		

SOURCE	EXPOSURE	POTENTIAL PATHWAY
Hazardous Ground Gases		
Methane and Carbon Dioxide associated with Made Ground and Alluvial deposits	Inhalation Accumulation	Construction Workers Residential End Users
Discussion: Ground gasses may be present at the site within localised areas of Made Ground within the eastern boundary, potential alluvial deposits within the southern sector of the site may also be a plausible sources of Ground Gas. Carbon dioxide and methane are associated with asphyxiation and explosive risks. Installation of monitoring wells during intrusive ground investigation is recommended to assess for the presence of ground gases and facilitate further risk assessment.		
Controlled Waters		
None identified	Vertical / Lateral Migration	Secondary A Aquifer On-site Stream Network Pendleton Brook
Discussion: In the absence of any significant sources and the impermeable nature of the superficial deposits, no significant risk to controlled waters has been identified. However due to the presence of Pendleton Brook care will need to be taken in the construction phase to prevent suspended solids etc affecting this receptor.		
Buildings and Infrastructure		
pH & Sulphate	Corrosion of Concrete	Foundations / Concrete
Discussion: Presence of pH and sulphate within any (albeit not anticipated) Made Ground deposits may result in corrosion of buried concrete within the proposed development. Assessment must be undertaken to confirm the levels of pH and sulphate within Made Ground deposits and thus determine the concrete classification.		
Ecology		
None Identified	Lateral Migration	Pendleton Brook
Discussion: The presence of Pendleton Brook as well as associated field boundaries and hedgerows may provide a suitable habitat for protected species. A habitat survey may be required.		

7. CONCLUSIONS AND RECOMMENDATIONS

Site Summary

The site has been historically occupied by agricultural land and limited Made Ground is anticipated at the site. No significant contamination issues have been identified with the site in its present configuration.

The proposed development site is located within a largely agricultural and residential area with only limited commercial and industrial premises in the surrounding area.

Contamination Issues

Human Health	The presence of any localised (albeit not anticipated) Made Ground may be a source of low level heavy metals, non-volatile PAHs and asbestos, however the site has remained undeveloped and no potentially significant contaminative sources were identified at the site or within the immediate locality. Isolated Made Ground may be present along the eastern boundary of the site associated with the construction of the railway bridge and pipeline present along the eastern boundary.
Controlled Waters	In the absence of any significant sources and the impermeable nature of the superficial deposits, no significant risk to controlled waters has been identified, however due to the presence of Pendleton Brook care will need to be taken in the construction phase as to not affect this receptor.
Ground Gas	Ground gasses may be present at the site within localised areas of Made Ground within the eastern boundary, potential alluvial deposits within the southern sector of the site may also be a plausible sources of Ground Gas.
Potable Waters	Based on existing information, it is considered the site will be suitable for PE water supply pipework.

Geotechnical Issues

Based on the desk study information, the following geotechnical assessment has been made:

-  Considering the proximity of a railway viaduct and residential development, as well as a large metal pipe in the southeast sector, there may be limited Made Ground fill deposits and obstructions;
-  Alluvium is anticipated in the south sector and there is a moderate risk associated with compressible ground at the site; and
-  Intrusive investigation will be required to assess the ground conditions and undertake in-situ geotechnical testing to determine possible foundation solutions.

END OF REPORT

APPENDIX I LIMITATIONS



1. This report and its findings should be considered in relation to the terms of reference and objectives agreed between E3P and the Client as indicated in Section 1.2.
2. For the work, reliance has been placed on publicly available data obtained from the sources identified. The information is not necessarily exhaustive and further information relevant to the site may be available from other sources. When using the information it has been assumed it is correct. No attempt has been made to verify the information.
3. This report has been produced in accordance with current UK policy and legislative requirements for land and groundwater contamination which are enforced by the local authority and the Environment Agency. Liabilities associated with land contamination are complex and requires advice from legal professionals.
4. During the site walkover reasonable effort has been made to obtain an overview of the site conditions. However, during the site walkover no attempt has been made to enter areas of the site that are unsafe or present a risk to health and safety, are locked, barricaded, overgrown, or the location of the area has not been made known or accessible.
5. Access considerations, the presence of services and the activities being carried out on the site limited the locations where sampling locations could be installed and the techniques that could be used.
6. Site sensitivity assessments have been made based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.
7. Where mention has been made to the identification of Japanese Knotweed and other invasive plant species and asbestos or asbestos-containing materials this is for indicative purposes only and do not constitute or replace full and proper surveys.
8. The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.
9. E3P cannot be held responsible for any use of the report or its contents for any purpose other than that for which it was prepared. The copyright in this report and other plans and documents prepared by E3P is owned by them and no such plans or documents may be reproduced, published or adapted without written consent. Complete copies of this may, however, be made and distributed by the client as is expected in dealing with matters related to its commission. Should the client pass copies of the report to other parties for information, the whole report should be copied, but no professional liability or warranties shall be extended to other parties by E3P in this connection without their explicit written agreement there to by E3P.
10. New information, revised practices or changes in legislation may necessitate the re-interpretation of the report, in whole or in part.



APPENDIX II GLOSSARY



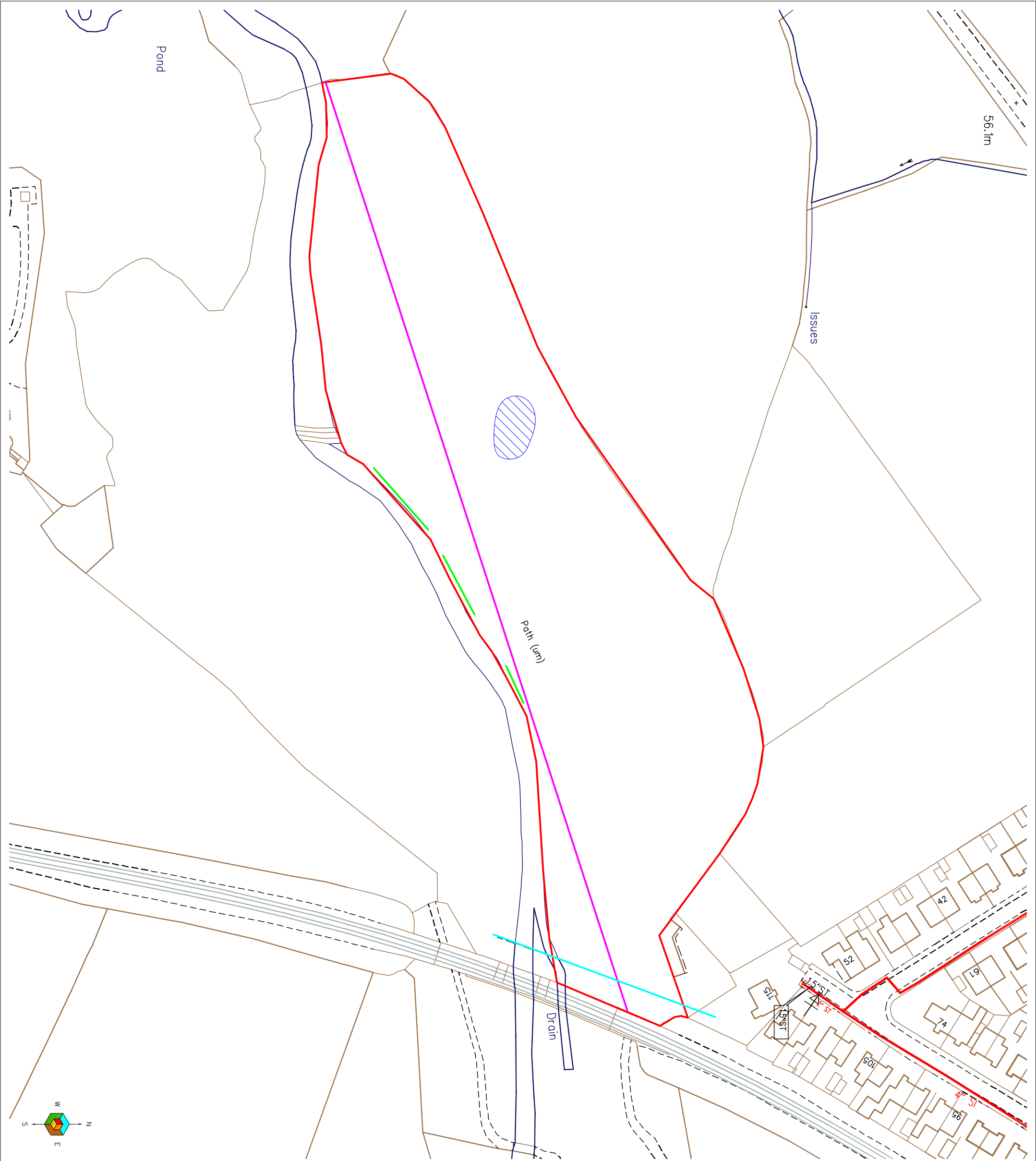
TERMS

AST	Above Ground Storage Tank	SGV	Soil Guideline Value
BGS	British Geological Survey	SPH	Separate Phase Hydrocarbon
BSI	British Standards Institute	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes	SPT	Standard Penetration Test
CIEH	Chartered Institute of Environmental Health	SVOC	Semi Volatile Organic Compound
CIRIA	Construction Industry Research Association	UST	Underground Storage Tank
CLEA	Contaminated Land Exposure Assessment	VCCs	Vibro Concrete Columns
CSM	Conceptual Site Model	VOC	Volatile Organic Compound
DNAPL	Dense Non-Aqueous Phase Liquid (chlorinated solvents, PCB)	WTE	Water Table Elevation
DWS	Drinking Water Standard	m	Metres
EA	Environment Agency	km	Kilometres
EQS	Environmental Quality Standard	%	Percent
GAC	General Assessment Criteria	%v/v	Percent volume in air
GL	Ground Level	mb	Milli Bars (atmospheric pressure)
GSV	Gas Screening Value	l/hr	Litres per hour
HCV	Health Criteria Value	µg/l	Micrograms per Litre (parts per billion)
ICSM	Initial Conceptual Site Model	ppb	Parts Per Billion
LNAPL	Light Non-Aqueous Phase Liquid (petrol, diesel, kerosene)	mg/kg	Milligrams per kilogram (parts per million)
ND	Not Detected	ppm	Parts Per Million
LMRL	Lower Method Reporting Limit	mg/m³	Milligram per metre cubed
NR	Not Recorded	m bgl	Metres Below Ground Level
PAH	Polycyclic Aromatic Hydrocarbon	m bcl	Metre Below Cover Level
PCB	Poly-Chlorinated Biphenyl	mAOD	Metres Above Ordnance Datum (sea level)
PID	Photo Ionisation Detector	kN/m²	Kilo Newtons per metre squared
QA	Quality Assurance	µm	Micro metre
SGV	Soil Guideline Value		

APPENDIX III DRAWINGS







Current Site Features/Development Constraints

- Public Footpath
- Areas of River Bank Erosion
- Area of Standing Water
- Large Pipe Line

Notes:				

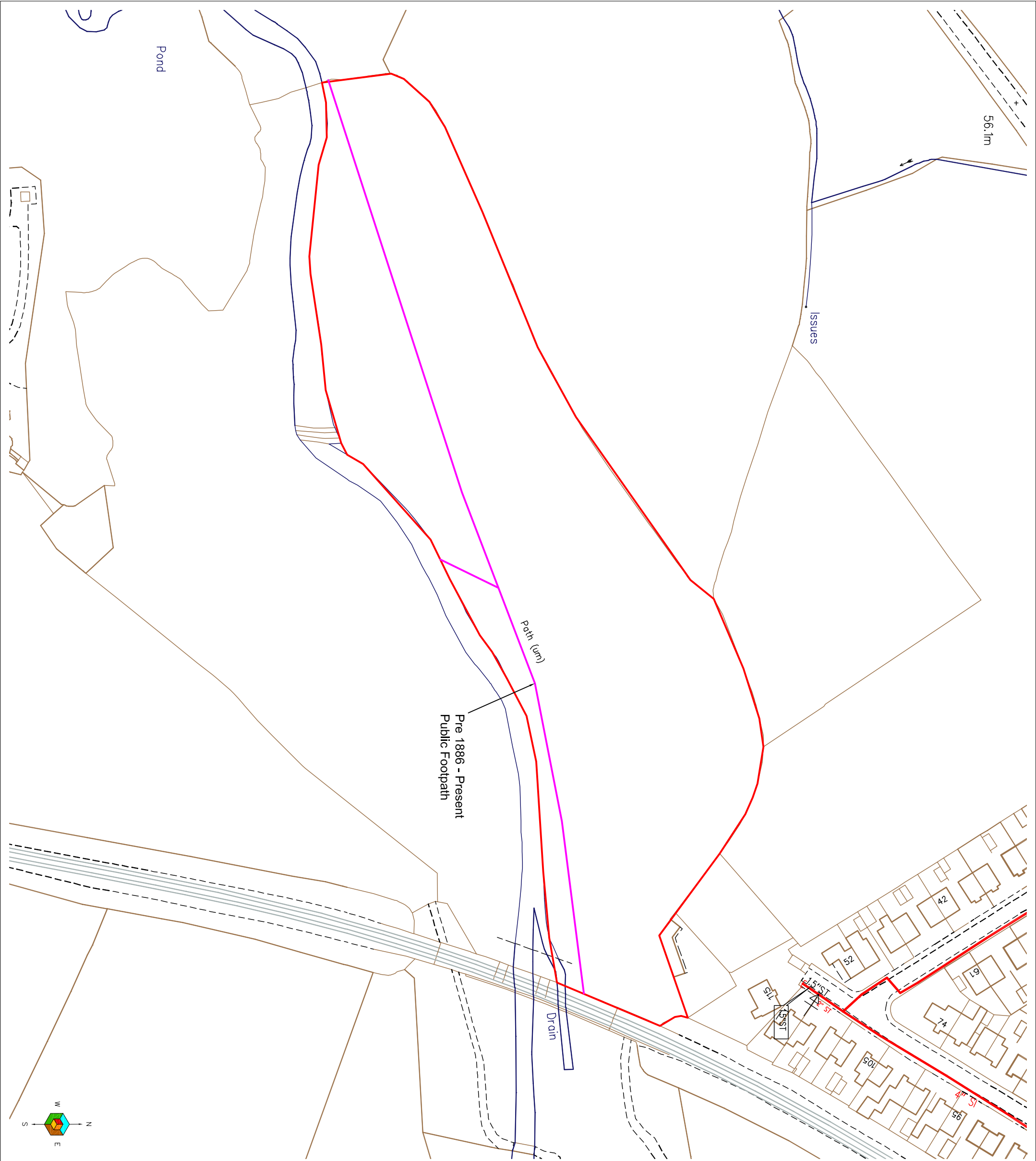
P1	-	06-03-2017	DRAFT	CB	MD
Phase	Revision	Date	Issue	Drawn	Authorised
Client:		Job No:	11-699	Date:	06-03-2017
Strategic Land Group		Drawing No:	002	Scale:	NTS @ A3

Job Title:	Henthorn Road, Clitheroe	Drawing Title:	Current Site Features and Development Constraints Plan
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Eccles, Manchester, M20 7RU
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E-mail: info@e3p.co.uk
Website: www.e3p.co.uk



Historical Features

Pre 1886 - Present (Public Footpath)

Notes:

P1	-	06-03-2017	DRAFT	CB	MD
Phase	Revision	Date	Issue	Drawn	Authorised
Client:			Job No:	Date:	
Strategic Land Group			11-699	06-03-2017	
			Drawing No:	Scale:	
			003	NTS @ A3	

Job Title:	Drawing Title:
Henthorn Road, Clitheroe	Historical Features Plan



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APPENDIX IV PHOTOGRAPHS





PLATE 1 – PENDLETON BROOK ON SOUTHERN BOUNDARY



PLATE 2 – OVERHEAD ELECTRICITY CABLES IN WEST SECTOR





PLATE 3 – ROUGH GRASSLAND AND TREES ON SITE



PLATE 4 – STABLES AND RAILWAY ADJACENT TO NORTHEAST BOUNDARY





PLATE 5 – RAILWAY VIADUCT AND PIPE CROSSING ADJACENT TO SOUTHEAST BOUNDARY

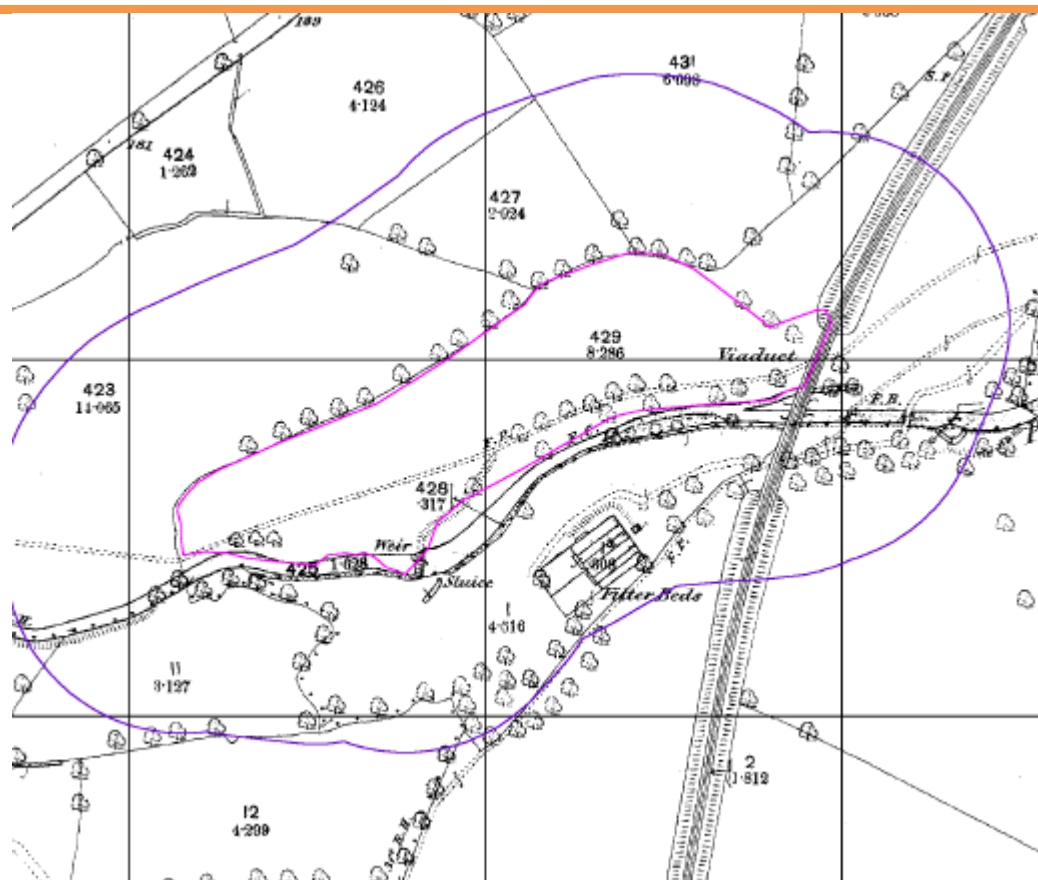


PLATE 6 – RAILWAY VIADUCT AND PIPE CROSSING ADJACENT TO SOUTHEAST BOUNDARY



APPENDIX V HISTORICAL MAPS





Historical Map

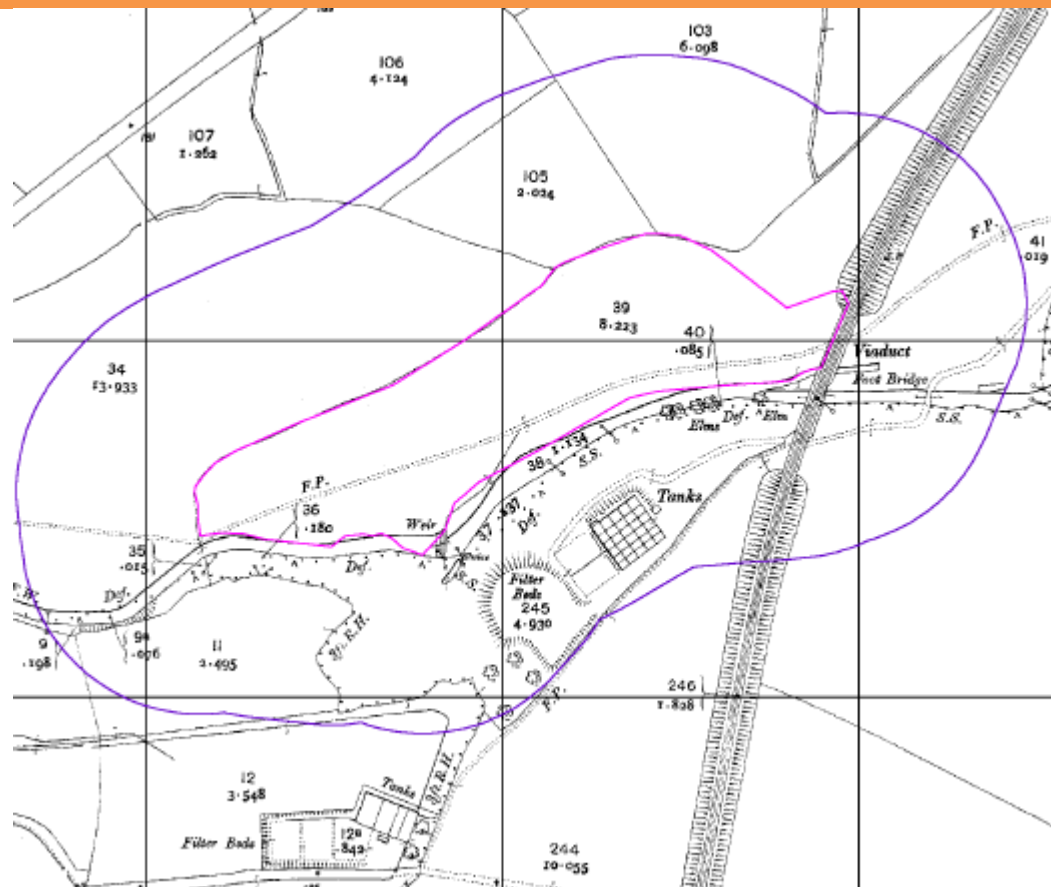
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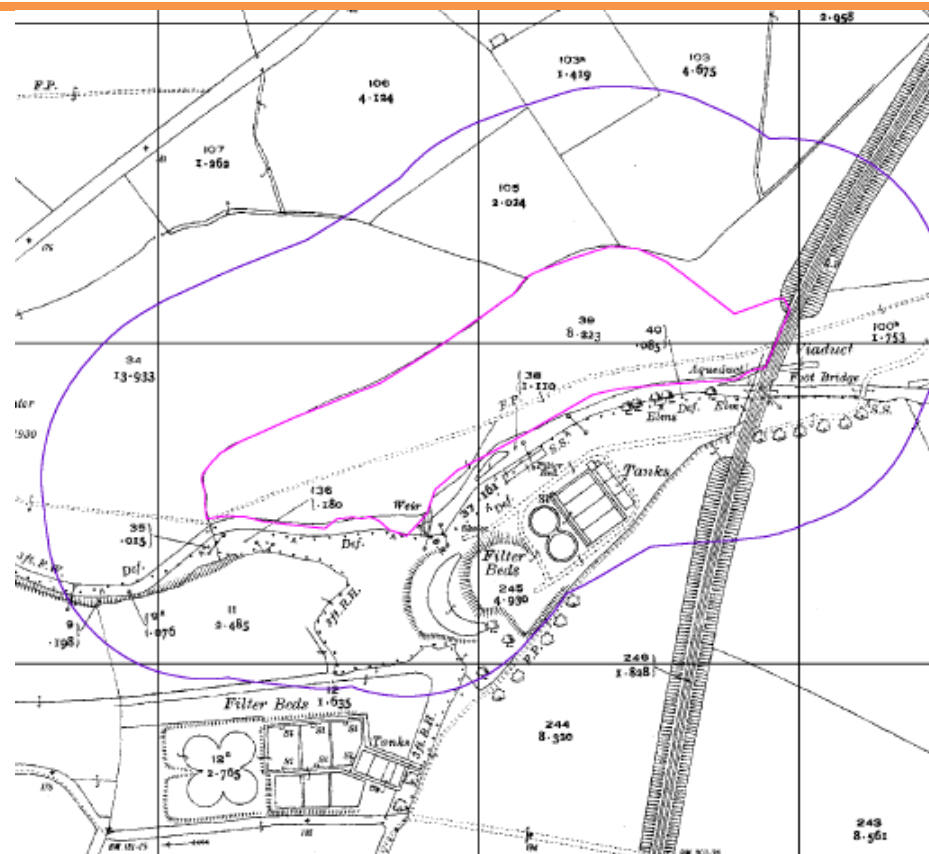
Original Scale: 1:2,500



North







Historical Map

Dated: 1932

Original Scale: 1:2,500



North





Original Scale: 1:2,500





