



e3p

PHASE I GEO-ENVIRONMENTAL SITE ASSESSMENT

Oldham Road
Manchester

Prepared for:

Mulbury City

Report Ref: 12-730
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E3P

Heliport Business Park,
Liverpool Road,
Eccles,
Manchester,
M30 7RU

Tel : + 00 (0) 161 707 9612
<http://www.e3p.co.uk>

Registered in England
No.: 807255262

QUALITY ASSURANCE

REMARKS	Draft for Comment
DATE	November 2019
PREPARED BY	J Carrick
QUALIFICATIONS	BSc
SIGNATURE	
CHECKED BY	A Edgar
QUALIFICATIONS	BSc, MSc, PIEMA, MEnvSc, CEnv
SIGNATURE	
AUTHORISED BY	M Dyer
QUALIFICATIONS	BSc, FGS, MEnvSc, CEnv
SIGNATURE	
PROJECT NUMBER	12-729
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EXECUTIVE SUMMARY

Site Address	Oldham Road, Manchester, M4 5FU	
Grid Reference	E384700, N398800	
Site Area	0.13Hectares	
Current Site Use	The subject site is currently occupied by retail premises and car parking. Two connected brick buildings are present in the west sector of the site. One of the buildings is currently unoccupied, having been previously occupied by clothing manufacturers. The building comprises four storeys and fronts onto Addington Street to the southwest. The second building is occupied by a carpet retailer and comprises a single storey brick building on the corner of Addington Street to the southwest and Chadderton Street to the northwest. Hardstanding, which is utilised for car parking is to the rear and side of the buildings.	
Proposed Development	E3P understands that Mulbury City proposes to develop the subject site for high rise residential end use incorporating the demolition of existing buildings and redevelopment of the site for a 12-storey residential building (Use Class C3) comprising 144 residential units, with ground floor commercial use (Use Class A1, A2, A3, B1, and / or D1 (excluding Places of Worship)), disabled car parking, with highways, landscaping and other associated works.	
Environmental Setting	<i>Drift Geology</i>	Glacial Till. BGS borehole logs indicate the presence of Clay.
	<i>Bedrock Geology</i>	Chester Formation - Sandstone.
	<i>Hydrogeology</i>	Secondary Aquifer - undifferentiated, overlying a Principal Aquifer (Bedrock Geology).
	<i>Hydrology</i>	The Rochdale Canal is 354m southeast.
	<i>Flood Risk</i>	The site is not within an area prone to flooding.
	<i>Ecology</i>	The existing buildings may support protected species such as bats. A habitat assessment may be required.
	<i>Subsidence Hazards</i>	No hazard.
Site History	The site has been occupied by residential and commercial buildings throughout its mapped history. Terraced housing across the site was gradually removed during the 1900s and replaced by commercial premises.	
Utility Locations	A formal drainage survey has not been completed. It is assumed that services will be present on the site, associated with the existing development and within adjacent highways.	
Landfill Sites & Ground Gases	No landfills are identified within 250m of the site. Made Ground associated with historical development on and in the vicinity of the site, is anticipated.	
Invasive Plant Species	No invasive plant species were identified during the site walkover; however, their presence cannot be ruled out. A Habitat Survey may be required.	
Radon	Unaffected – No special precaution required.	
Coal Mining / Land Stability	According to the Coal Authority Interactive Map Viewer the site is not within a Development High Risk Area, and no mine entries are identified in the vicinity, therefore, no further action considered necessary.	

EXECUTIVE SUMMARY

Geotechnical Risk

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

- Made Ground deposits and obstructions are anticipated. Relict foundations will require grubbing out prior to redevelopment of the site; and
- An intrusive site investigation will be required across the site to assess ground conditions and undertake in-situ geotechnical testing to determine foundation solutions across the site.

Contaminated Land Risk Assessment

Human Health

Historical commercial land uses and Made Ground represent potential localised sources of heavy metal, polycyclic aromatic hydrocarbon (PAH), petroleum hydrocarbon, asbestos, and ground gas. Considering the potential for direct contact during development works and within proposed landscaping areas, these potential sources of soil and groundwater contamination represent a moderate risk to construction workers and residential end users. An intrusive ground investigation to identify and assess for the presence of these contaminants is required to facilitate further risk assessment and determine appropriate remediation and / or mitigation measures.

Controlled Waters

Historical commercial land uses on site and Made Ground represent potential sources of mobile hydrocarbon contamination. Considering the underlying Principal Aquifer, a moderate risk to controlled waters is identified. Intrusive investigation with chemical analysis of soil and groundwater samples is recommended to assess the presence of mobile contaminants and facilitate further risk assessment.

Ground Gas

Made Ground associated with historical development represents a potential source of hazardous ground gases. 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.

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.

An asbestos survey may be required.

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Appendix II Glossary

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Drawing No 12-730-001 – Site Location Plan

Drawing No 12-730-002 – Historical Features Plan

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1. INTRODUCTION

1.1 Background

E3P Ltd has been commissioned by Mulbury City to undertake a Phase I Geo-Environmental Site Assessment at a site off Oldham Road, Manchester.

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

1.2 Proposed Development

E3P understands that Mulbury City proposes to develop the subject site for high rise residential end use. This will include demolition of existing buildings and redevelopment of the site for a 12-storey residential building (Use Class C3) comprising 144 residential units, with ground floor commercial use (Use Class A1, A2, A3, B1, and / or D1 (excluding Places of Worship)), disabled car parking, with highways, landscaping and other associated works.

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 1848 to 2019. A selection of historical maps is reproduced in Appendix V;
- On-line planning records held by Manchester City Council;
- Consultations with representatives of the Manchester City Council;
- Environment Agency Groundwater Vulnerability Map;
- 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	Oldham Road, Manchester, M4 5FU
National Grid Reference	E384700, N398800
Site Area	0.13Hectares

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 12-730-001.

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 currently occupied by retail premises and car parking. Two connected brick buildings are present in the west sector of the site. One of the buildings is currently unoccupied, having been previously occupied by clothing manufacturers. The building comprises four storeys and fronts onto Addington Street to the southwest. The second building is occupied by a carpet retailer and comprises a single storey brick building on the corner of Addington Street to the southwest and Chadderton Street to the northwest. Hardstanding to the rear of the buildings is utilised for car parking. Heras fencing is present on the site boundaries.	
Structures	Two connected brick buildings are present in the west sector of the site.	
Access	Vehicular access is available via gates in the existing fencing on the north boundary, off Chadderton Street.	
Slope	The site and surrounding area is generally flat.	
Retaining structures	None	
Surface Cover (%)	Buildings:	40%
	Hardstand:	60%
	Soft cover:	0%
Vegetation/Ecology	The existing buildings may support protected species such as bats. A habitat assessment may be required.	
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 previous commercial land use hazardous materials storage may have occurred on the site.	
Asbestos Containing Material (ACM)	ACM may be present within the fabric of the existing building; however, no evidence of ACM was noted during the site walkover.	
Polychlorinated Biphenyls (PCBs)	There is no equipment identified which may contain PCBs within the site boundary.	
Waste Storage	Given the previously commercial land use, potentially hazardous waste streams may have been generated at the site, however, none were observed during the preliminary site inspection.	

Drainage

A formal drainage survey has not been completed. It is assumed that services will be present on the site, associated with the existing development and within adjacent highways.

2.3 Surrounding Area

The surrounding area land uses are summarised in Table 2.2.

Table 2.2 ***Surrounding Land Uses***

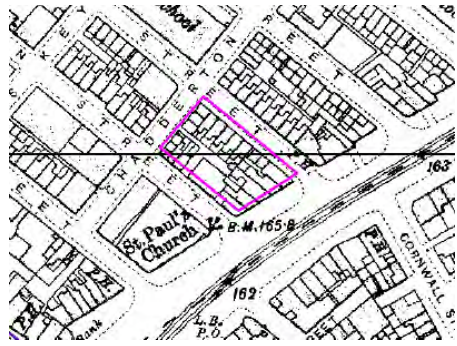
DIRECTION	LAND USE
North	Car park.
East	Car park.
South	Highway and apartment dwellings beyond.
West	Car park and disused commercial premises.

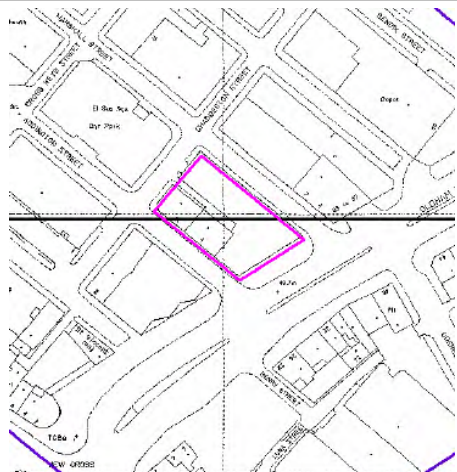
3. SITE HISTORY

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 12-730-002 in Appendix III.

Table 3.1 Site Historical Development

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1892-93 1:2,500	The site is occupied by terraced residential housing.	
1908 1:2,500	Some of the terraced housing in the southwest sector has been removed and replaced by a commercial building, indicating demolition and construction activities.	
1922-33 1:2,500	More of the terraced housing in the west sector has been replaced by a commercial building, indicating demolition and construction activities.	

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1948-49 1:1,250	Terraced housing in the east sector has been removed, indicating demolition activities. A building in the west sector is identified as a 'ruin'.	
1959-66 1:2,500	Terraced housing in the northeast sector has been removed, indicating demolition activities.	
1978-85 1:1,250	An additional terraced building is shown in the east sector.	
1995 1:1,250	The remainder of the terraced properties in the south sector have been removed, indicating demolition activities.	



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 overleaf in Table 3.2.

Table 3.2 Surrounding Potentially Contaminative Land Uses.

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Railway sidings and goods station <i>Then</i> fire station	250m	Pre 1848 – Pre 1988 Pre 1988 – Present	Northeast
Potato market <i>Then</i> warehouse	250m	Pre 1892 – Pre 1952 Pre 1952 - Present	North east
Market <i>Then</i> car park <i>Then</i> hotels and offices	180m	Pre 1848 – Pre 1985 Pre 1985 – Pre 2019 Present	West
Goods station <i>Then</i> depot <i>Then</i> fire station	130m	Pre 1922 – Pre 1985 Pre 1985 – Pre 1988 Pre 1988 – Present	East
Warehouse	65m	Pre 1948 - Present	Northwest
Garage	170m	Pre 1952 - Present	North
Garage	12m	Pre 1952 – Pre 1968	East
Garage <i>Then</i> depot	50m	Pre 1952 – Pre 1968 Pre 1968 - Present	Northeast
Warehouses	235m	Pre 1959 - Present	East
Electrical substation	20m	Pre 1978 - Present	North
Works <i>Then</i> offices	85m	Pre 1968 – Pre 1985 Pre 1985 - Present	Southwest

3.3 Planning History

E3P has undertaken a search of on-line planning records held by Manchester City Council Council. No planning applications at the site were identified.

An outline application (ref: 064569/OO/NORTH1/02) for a three-storey mixed use building at the site, comprising car sales and residential dwellings above was approved in 2002.

An outline application (ref: 070784/OO/2004/N1) for a five-storey mixed use building at the site, comprising car sales on the ground floor and residential dwellings above, with car parking was approved in 2004.

A planning application (ref: 061865/AOH/NORTH1/01) for an advertising hoarding on the site was submitted in the 2001 and allowed on appeal.

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	Glacial Till	Diamicton	Secondary Aquifer-undifferentiated
Solid	Chester Formation	Sandstone	Principal Aquifer

Table 4.2 Summary of BGS Borehole Records

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
25m north	12m	Tarmac, cinder and Clay to 1.82m	Silty Clay to >12m depth	Not encountered

The Envirocheck Report indicates that the site is not located within a Groundwater Source Protection Zone. The closest groundwater abstraction is a potable supply, located 937m northwest.

Based on the underlying ground conditions, shallow perched groundwater is considered likely controlled by sub-structures while regional groundwater in the Chester Formation is likely to be controlled by surface watercourses in the vicinity and may flow northwards towards the River Irk approximately 560m to the northwest.

4.2 Geotechnical Data

Geotechnical Data presented within a commercially available environmental database is summarised within Table 4.3.

Table 4.3 Summary of Geotechnical Data

HAZARD	DESIGNATION
Shrink-Swell Clay	Very Low Risk
Landslides	Very Low Risk
Ground Dissolution	No Hazard
Compressible Ground	No Hazard
Collapsible Deposits	Very Low Risk
Running Sand	Very Low Risk

4.3 Coal Mining

The Envirocheck Report states the site is in an area which may be affected by coal mining. However, according to the Coal Authority Interactive Map Viewer the site is not within a

Development High Risk Area, and no mine entries are identified in the vicinity, therefore, no further action considered necessary.

4.4 Brine Workings

The site is situated not located within the Cheshire Brine Compensation District.

4.5 Hydrology

There are no surface water features identified within 250m of the site.

The site is not located within an area prone to flooding from rivers or sea.

4.6 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.

4.7 Industrial Land Uses

There is an active Contemporary Trade Directory Entry identified on the site, associated with clothing and fabric manufacture.

There are 77no. further Contemporary Trade Directory Entries within 250m of the site. The closest is associated with exhaust and shock absorber centres, 22m east, but is shown as inactive. The closest active Contemporary Trade Directory Entry is associated with the supply and installation of safes and vaults, 44m west.

4.8 Sensitive Land Uses

The closest residential properties are high-rise dwellings, approximately 35m south. No other environmentally sensitive land uses have been identified near to the site.

4.9 Site Sensitivity Assessment

The site is assessed to be located within a **Moderate** sensitivity setting as discussed within Table 4.4.

Table 4.4 Site Sensitivity Assessment

SESITIVITY PROFILE	DISCUSSION	RATING
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	The site is not located within a Groundwater Source Protection Zone.	LOW
Distance to the closest groundwater abstraction point.	The closest groundwater abstraction is a potable supply, located 937m west.	MODERATE
Aquifer Classification in Superficial Drift Deposits.	Glacial Till across most of the site is classified as a Secondary Aquifer - undifferentiated.	LOW
Aquifer classification in Bedrock.	Underlying bedrock is classified as a Principal Aquifer.	HIGH
Is the site underlain by low permeability Drift to depths in excess of 10.0m?	BGS borehole records indicate the presence of clay to >12m depth.	LOW
Is the site located within 50m of a surface watercourse?	None.	LOW
Sensitive land uses within close proximity (e.g. residential, school, nursery, local nature reserves etc.)	The closest residential properties are high-rise dwellings, approximately 35m south.	MODERATE
Overall Site Environmental Sensitivity		MODERATE

4.10 Preliminary Geotechnical Assessment

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

- Made Ground deposits and obstructions are anticipated. Relic foundations will require grubbing out prior to redevelopment of the site; and
- An intrusive site investigation will be required across the site to assess ground conditions and undertake in-situ geotechnical testing to determine foundation solutions across the site.

4.1 Unexploded Ordnance

The regional unexploded bomb risk map from Zetica indicates that the site is in an area at moderate 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 Manchester City 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

No landfill sites are identified within 250m of the site.

The closest Licensed Waste Management Facility is associated with end of life vehicles and is located 65m northeast.

There are no recorded Registered Waste Treatment or Disposal Sites, or Waste Transfer Sites within 250m 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)	1	A LAPPC is 89m south of the site, associated with hide and skin processes, but is revoked.
Fuel Stations Entries	2	Fuel stations are identified 177m south and 181m northwest but both are shown as obsolete.
Licensed radioactive substances	0	N/A
Enforcements, prohibitions, or prosecutions	0	N/A
Discharge Consents	0	N/A
Pollution Incidents	0	N/A
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	PATHWAY	RECEPTOR
Human Health		
Heavy metals, PAH associated with commercial land use and Made Ground	Dermal Contact and Ingestion	Construction Workers Residential End Users
Discussion: Historical commercial land uses on site are potential sources of heavy metals and PAHs. Made Ground associated with the historical development may contain ash deposits, a source of heavy metals and PAHs. 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 risk. Future residential end users may be exposed to impacted soils within landscaped areas. An intrusive ground investigation is required to identify and assess for the presence of heavy metals and PAHs, to facilitate further risk assessment, and to determine appropriate remediation and / or mitigation measures.		
Volatile hydrocarbon compounds associated commercial land use and Made Ground	Volatilisation / Accumulation, Vapour Inhalation	Construction Workers, Residential End Users
Discussion: Historical commercial land uses on site as well as Made Ground represent potential sources of volatile hydrocarbons. Volatile hydrocarbons pose a short-term risk to construction workers during earthworks. Construction works should be undertaken using the appropriate Personal Protective Equipment (PPE) to remove this risk. Proposed residential end users may be exposed to hydrocarbon vapour via inhalation and accumulation of vapours in indoor space, representing a long-term risk. An intrusive ground investigation with chemical analysis of soil and groundwater samples is recommended to investigate the presence of vapours and facilitate further risk assessment.		
Asbestos Containing Materials (ACM) associated with existing structures and Made Ground	Fibre / Dust Inhalation	Construction Workers Residential End Users Third Party Property
Discussion: ACM may be present within existing buildings on site. Made Ground, if present, may contain ACM. Disturbance of ACM may give rise to dust generation, posing a risk to adjacent site users, construction workers, and residential end users. A pre-demolition asbestos survey may be required. An intrusive ground investigation should test and assess for the presence of asbestos within Made Ground to facilitate further risk assessment.		

Hazardous Ground Gases

Methane and Carbon Dioxide associated with Made Ground

Inhalation
Accumulation

Construction Workers
Residential End Users

Discussion:

Made Ground associated with historical development represents a potential source of hazardous ground gases. 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

Hydrocarbon compounds associated with commercial land use and Made Ground

Vertical / Lateral Migration

Principal Aquifer

Discussion:

Historical commercial land uses on site as well as Made Ground represent potential localised sources of mobile hydrocarbon contamination. Considering the underlying Principal Aquifer, a moderate risk to controlled waters is identified. Intrusive investigation with chemical analysis of soil and groundwater samples is recommended to assess the presence of mobile contaminants and facilitate further risk assessment.

Buildings and Infrastructure

pH & Sulphate

Corrosion of Concrete

Foundations / Concrete

Discussion:

Presence of pH and sulphate within Made Ground may result in corrosion of buried concrete within the proposed development. Intrusive investigation with chemical analysis of soil samples is recommended to confirm the levels of pH and sulphate within Made Ground deposits and thus determine the concrete classification.

Ecology

None Identified

Lateral Migration

N/A

Discussion:

No significant ecological receptors are identified.

7. CONCLUSIONS AND RECOMMENDATIONS

Site Summary

Historical and existing commercial premises, including clothing and fabric manufacturing, and retail, are identified at the site.

Made Ground associated with historical development is anticipated on and in the vicinity of the site.

Commercial land uses on the site and Made Ground are potential sources of heavy metal, polycyclic aromatic hydrocarbon (PAH), petroleum hydrocarbon, asbestos and ground gas.

Contamination Issues

Human Health	Historical commercial land uses and Made Ground represent potential localised sources of heavy metal, polycyclic aromatic hydrocarbon (PAH), petroleum hydrocarbon, asbestos, and ground gas. Considering the potential for direct contact during development works and within proposed landscaping areas, these potential sources of soil and groundwater contamination represent a moderate risk to construction workers and residential end users. An intrusive ground investigation to identify and assess for the presence of these contaminants is required to facilitate further risk assessment and determine appropriate remediation and / or mitigation measures.
Controlled Waters	Historical commercial land uses on site and Made Ground represent potential sources of mobile hydrocarbon contamination. Considering the underlying Principal Aquifer, a moderate risk to controlled waters is identified. Intrusive investigation with chemical analysis of soil and groundwater samples is recommended to assess the presence of mobile contaminants and facilitate further risk assessment.
Ground Gas	Made Ground associated with historical development represents a potential source of hazardous ground gases. 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.
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:

- Made Ground deposits and obstructions are anticipated. Relic foundations will require grubbing out prior to redevelopment of the site; and
- An intrusive site investigation will be required across the site to assess ground conditions and undertake in-situ geotechnical testing to determine foundation solutions across the site.

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.
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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

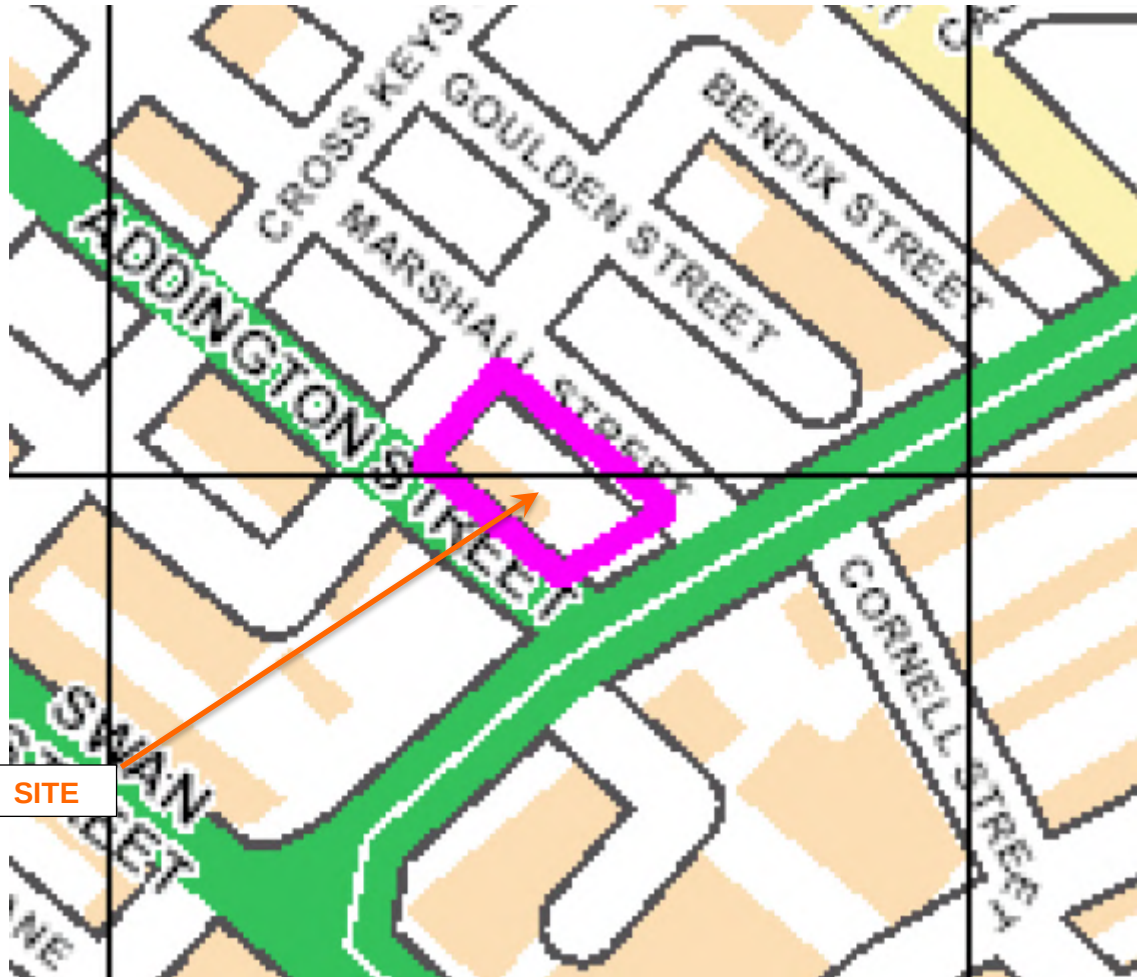


TERMS

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





SITE

Drawing 12-730-001
Site Location Plan



Key:

Historical Features

- Former Buildings (Pre 1892 - Pre 1922)
- Former Boundary (Pre 1892 - Pre 1958)
- Former Buildings (Pre 1892 - Pre 1958)
- Former Buildings (Pre 1958 - Pre 1993)
- Buildings (Pre 1993 - Present)



Notes:

P1	-	18.07.2018	DRAFT	HM	MD
Phase	Revision	Date	Issue	Drawn	Authorised
Client:		Job No:	Date:		
Mulbury Homes		12-729	18.07.2018		
		Drawing No:	Scale:		
		002	NTS		

Job Title:	Thompson Street	Drawing Title:	Historic Features Plan
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Environmental Engineering Partnerships Ltd
City Helport & Business Centre
Eccles, Manchester, M30 7RU
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk

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APPENDIX IV PHOTOGRAPHS





PLATE 1 – ACCESS TO SITE VIA GATE ON NORTH WEST BOUNDARY.



PLATE 2 – VIEW OF CAR PARK FROM WESTERN BOUNDARY LOOKING TOWARDS EASTERN BOUNDARY.





APPENDIX IV HISTORICAL MAPS



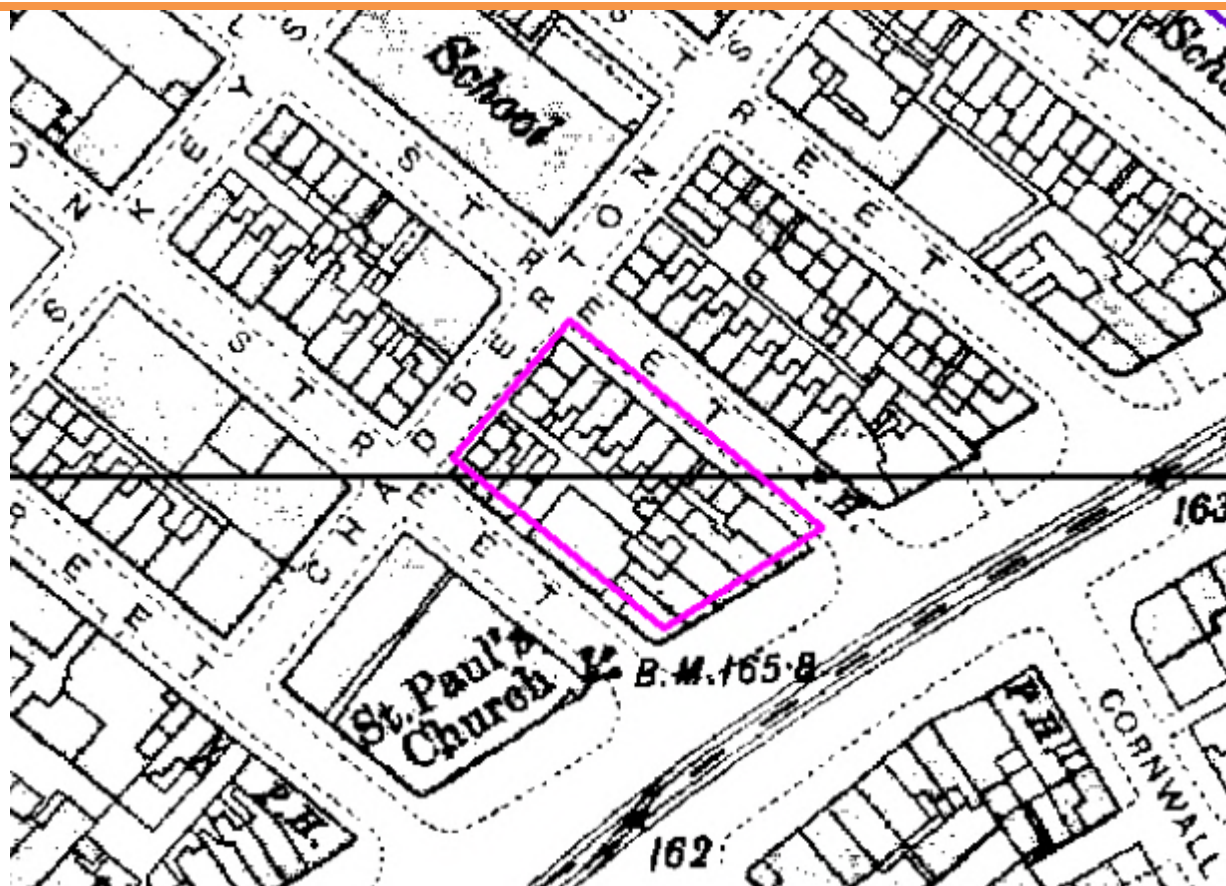


Historical Map

Dated: 1892-93

Original Scale: 1:2,500





Historical Map

Dated: 1908

Original Scale: 1:2,500



North





Historical Map

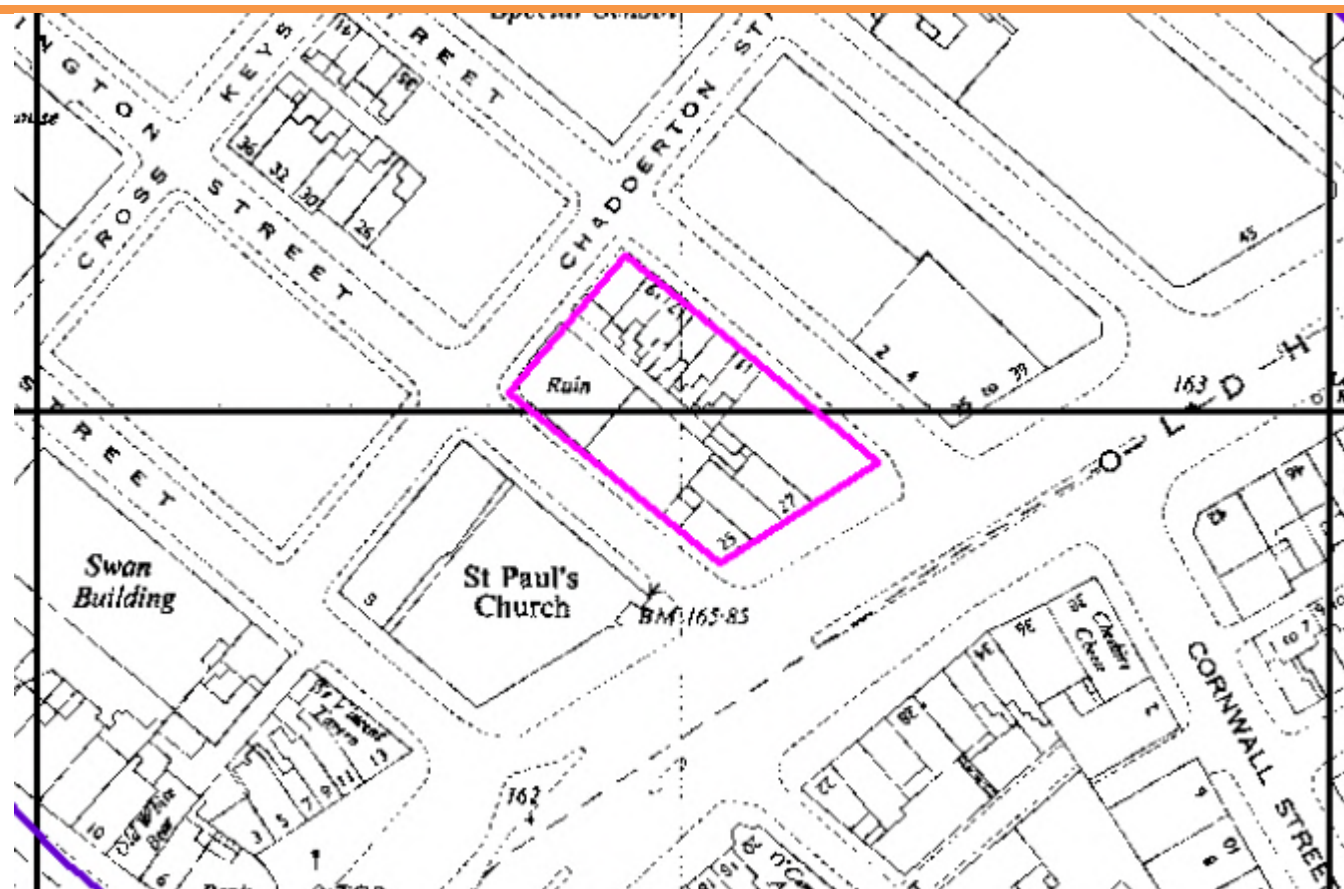
Dated: 1922-33

Original Scale: 1:2,500



North



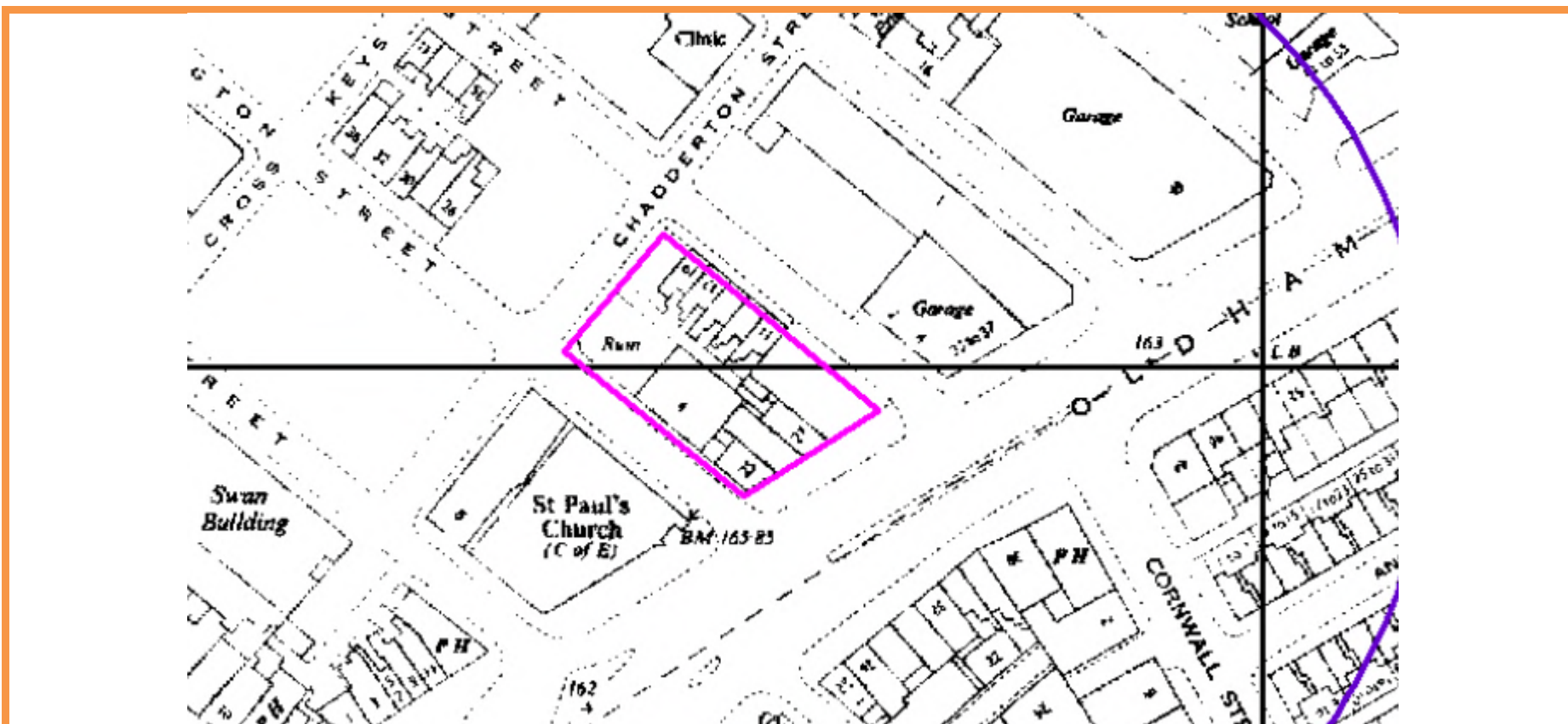


Historical Map

Dated: 1948-49

Original Scale: 1:1,250





Historical Map

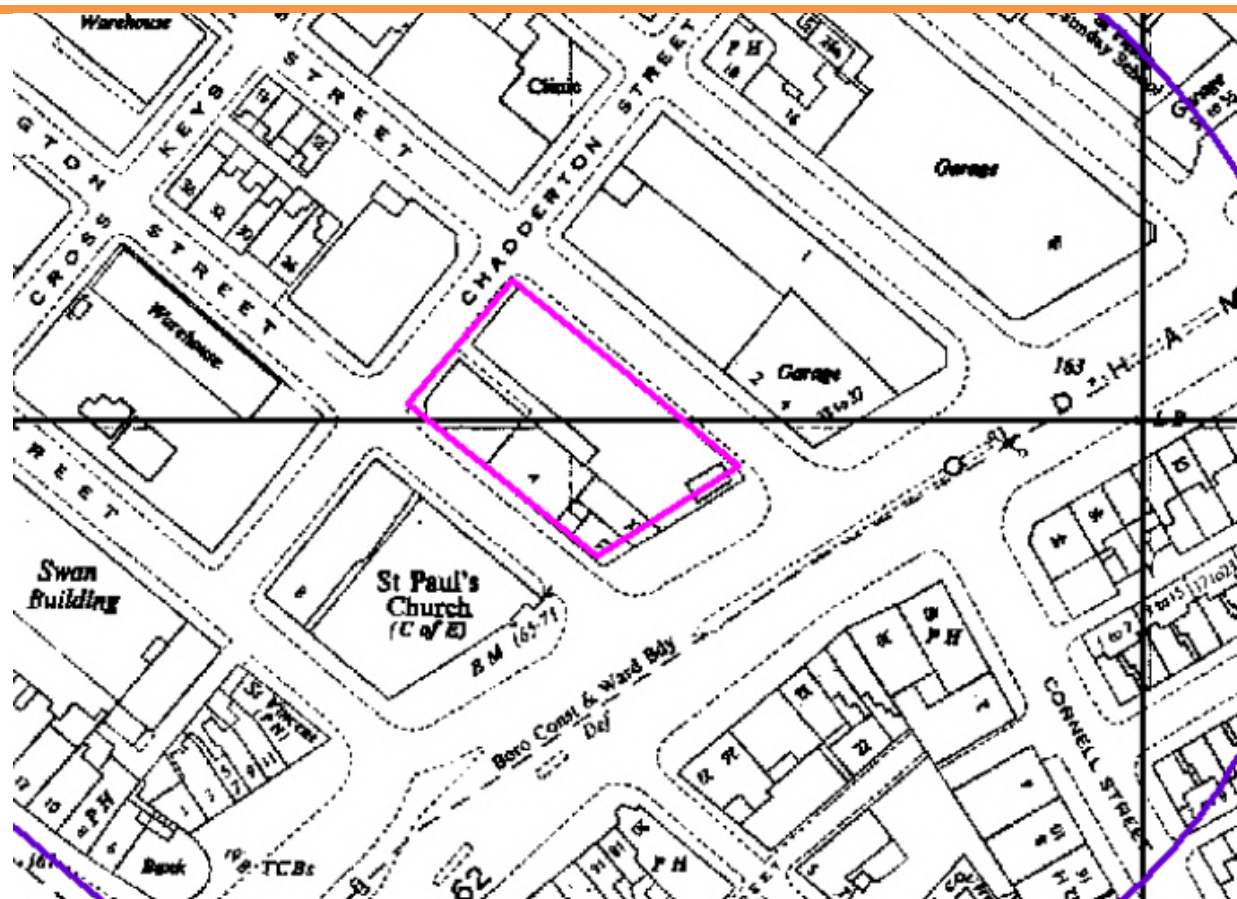
Dated: 1953-55

Original Scale: 1:2,500



North





Historical Map

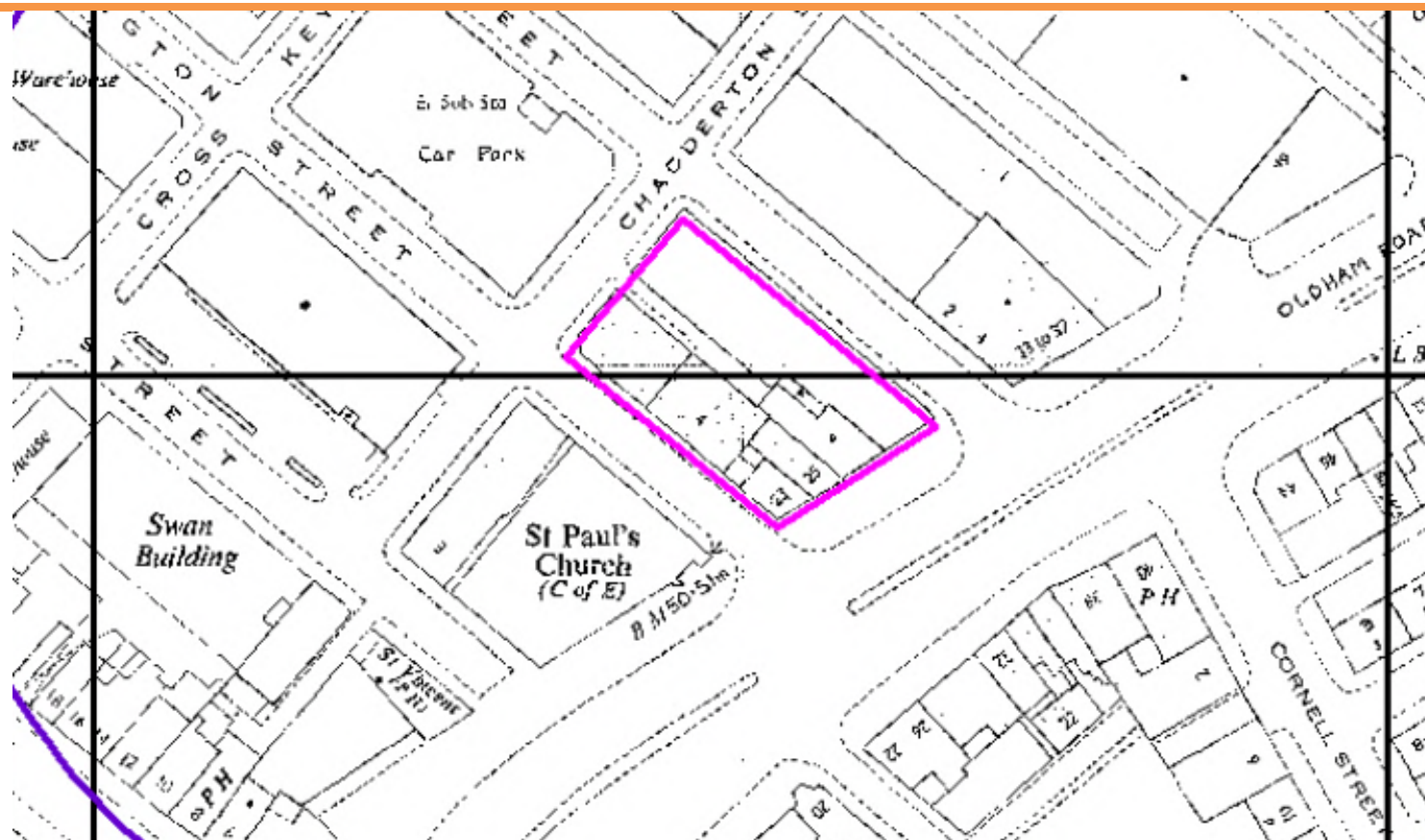
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Original Scale: 1:2,500



North





Historical Map

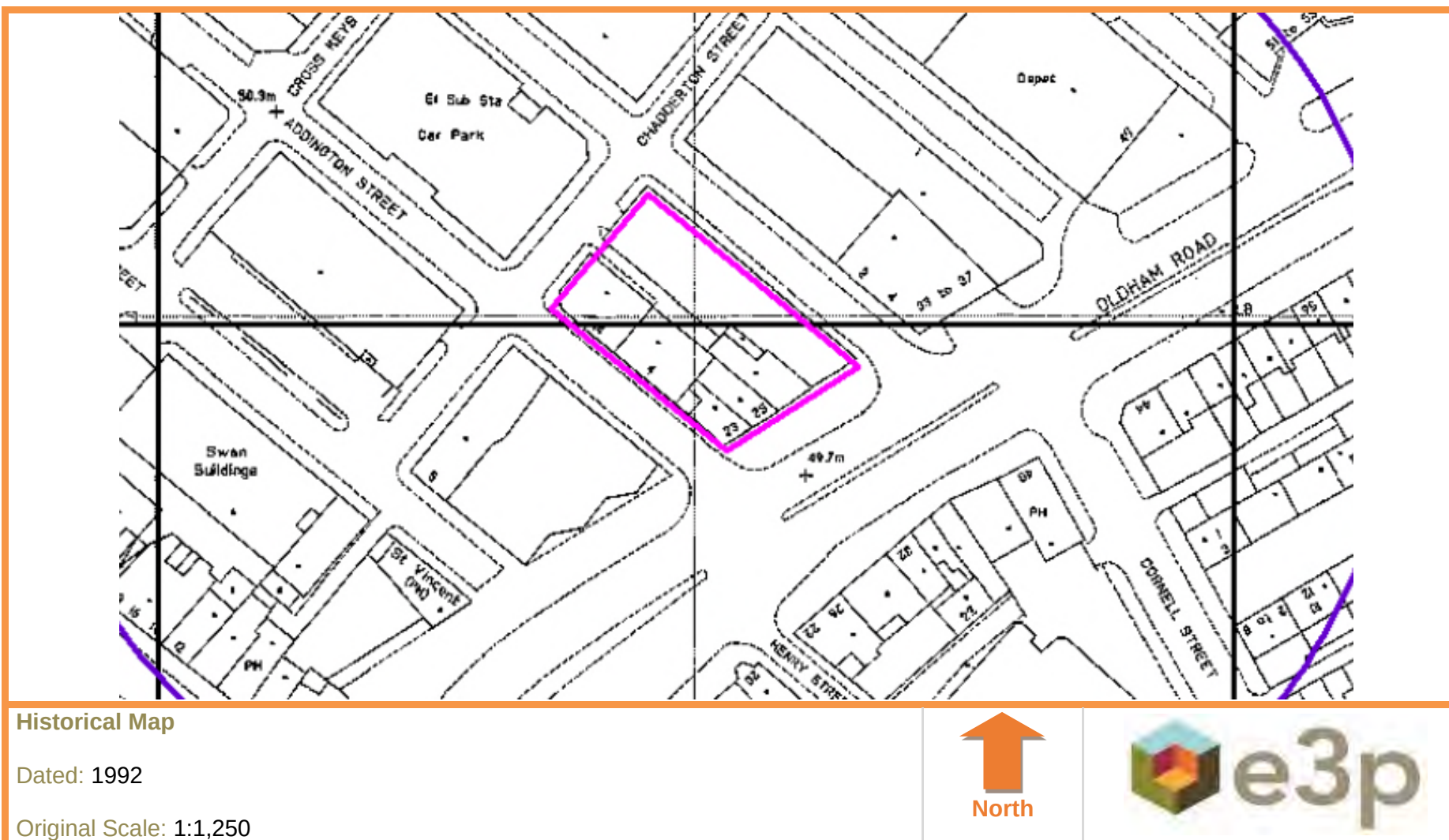
Dated: 1978-85

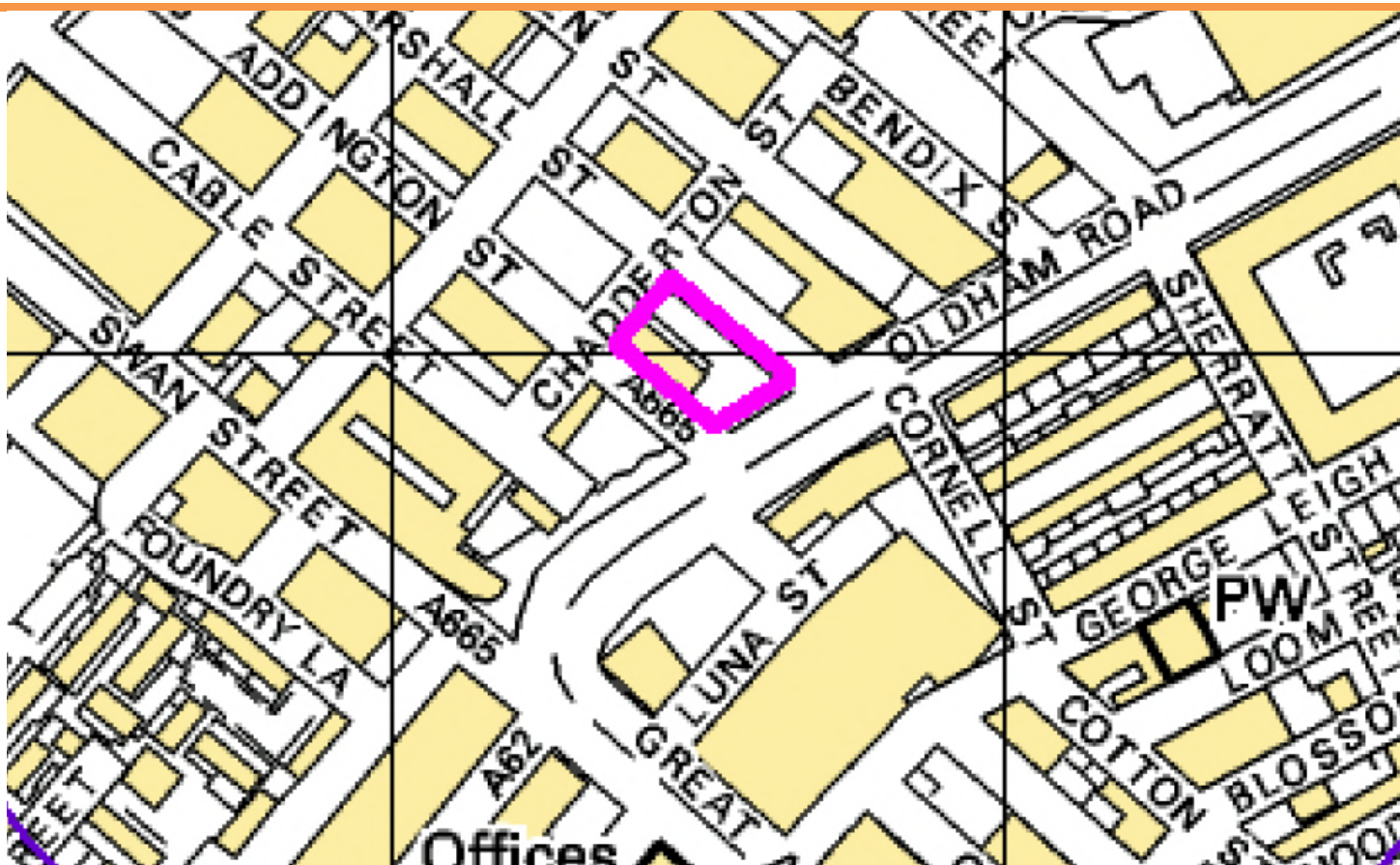
Original Scale: 1:1,250



North







Historical Map

Dated: 1999

Original Scale: 1:10,000

