



e3p

Phase I Geoenvironmental Site Assessment
Carr Lane, Prescott

Reference: 14-245-R2
Date: June 2022



PHASE I GEOENVIRONMENTAL SITE ASSESSMENT

Land at Carr Lane,
Prescot
L34 1QL

Prepared for:
United Utilities PLC

Report Ref: 14-245-R2
Date Issued: June 2022

Carr Lane, Prescott

Phase I Geoenvironmental Site Assessment
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EXECUTIVE SUMMARY

Site Address	Carr Lane, Prescott, L34 1QL	
Grid Reference	E 346190, N 392100	
Site Area	0.19 Ha.	
Proposed Development	E3P understands that United Utilities PLC is proposing to divest the wider site to a residential developer for the future construction of a residential estate with associated infrastructure and estate roads. This report is required to facilitate the construction of an entrance off the roundabout to the north and so 'the subject site' noted herein relates to a small area to the northeast of the wider site including the existing swale that will form the access point along Prescott Park Way.	
Current Site Use	The site is an irregular shaped parcel of land situated along Prescott Park Way. The hard standing road identified as Prescott Park Way covers the majority of the site, with an area of soft standing within the western section of the site. A wooden fence with an advertising board is present within the southern site associated with the new development of houses situated south of the site. As the site is a proposed access point to an additional site (Ref: 14-245-R1, February 2021), access can be gained via the western section of the subject site. The access point into the additional site comprises a well-trodden path, currently used for dog walkers and pedestrians. Street lighting is present along Prescott Park Way.	
Site History	A review of the pertinent Ordnance Survey mapping suggests that the site comprised agricultural land pre-1892, with a road intersecting the north-eastern sector of the site in a northwest to southeast direction. Circa 1927 the southern section of the site was part of a sewage disposal works with associated pipelines and drains situated onsite. The sewage works had been removed pre-1994 where the land has remained undeveloped to the present. Pre 2005, the construction of Prescott Park Way replaced the historical road located onsite, with a roundabout structure north of the site.	
Environmental Setting	Drift Geology	Till, Devensian
	Bedrock Geology	Pennine Lower Coal Measures
	Faults	No faults noted however given the bedrock geology there are likely to be geological faults between strata at rockhead.
	Hydrogeology	Undifferentiated aquifer (drift) overlying secondary A aquifer (solid). No potable or groundwater abstractions have been identified within a 1 km radius.
	Hydrology	The Prescott Brook is situated on-site. Two ditches have been also identified on-site.



	Flood Risk	The site is located within a currently defined "Flood Risk Zone 1"; defined as land assessed as having less than 1 in 1,000 annual probabilities of river or sea flooding (< 0.1%), and as such is considered to be unaffected by river flooding.
Utility Locations	A public sewer (combined) has been identified, entering the site along the southern boundary, and exiting along the western boundary. A live distribution water main intersects the site beneath the Prescott Park Way Road, running in a southeast to northwest direction. High voltage electricity is present along the north-eastern side of the road, assumed to be underground given the absence of overhead cables. BT has also been identified along Prescott Park Way Road. No gas has been recorded on-site according to Cadent Gas. An additional manhole was noted within Prescott Park Way Road. Street lighting is present on either side of the road.	
Landfill Sites and Ground Gases	A historical landfill is present on-site associated with Prescott Wastewater Treatment Works. No input date or waste type has been supplied; however historical mapping suggests it was active between pre-1927 and pre-1999, receiving untreated sewage. Made Ground associated with infill material may produce hazardous ground gases such as methane and carbon dioxide. The site is likely to be underlain by < 10 m bgl of permeable clay therefore the likelihood of mine gas migration through the clay to the ground surface is low. There are no recorded mine shafts or faults below the site which would create preferential pathways for mine gases. An additional landfill has been recorded within 500 m formerly receiving industrial, commercial, household, and liquid sludge waste.	
Radon	Less than 1% of houses above the 'Action Level' – no special precautions required.	
Coal Mining/Land Stability	The site is located in a coal mining reporting area but not within a development high-risk area. No mine shafts are recorded within the site boundary. In accordance with industry best practice as detailed within CIRIA C758D, E3P has concluded that shallow mine workings (<30 m) are likely to be present beneath the site. Additionally, Made Ground associated with coal workings and the historical landfill with possible infilled areas on-site, is likely to be loosely compacted and possibly prone to collapse.	
Hazardous Installations	A lower tier control of major accident hazards site (COMAH) is present 4 m to the southeast of the subject site. The entry is associated with Bicc Metals (Pyrotenax) Limited and is considered ceased. No further hazardous installations are noted that would otherwise risk the construction of future residential property at the subject site.	



Initial Conceptual Site Model	On-Site Sources of Contamination  Former sewage disposal works and landfill  Underground mining activities  Made Ground Off-Site Sources of Contamination  Former tanks  Infilled ponds  Unlicensed open cast mining  Refuse tip  Railway and motorway construction/use Pathways  Direct contact and ingestion  Volatilisation/indoor explosion  Vapour inhalation  Dust inhalation Receptors  Future site users and construction workers  Underlying Undifferentiated aquifer (drift) and Secondary A aquifer (solid).
Recommendations	An intrusive investigation is recommended to confirm the conceptual site model and to assess the geotechnical properties of the underlying strata for street furniture foundations and highways design.



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DRAWING LIST

14-245-R1-001 - Site Location Plan
14-245-R1-002 - Site Features Plan
14-245-R1-003 - Historical Features Plan



1. INTRODUCTION

1.1. BACKGROUND

E3P understands that United Utilities PLC is proposing to divest the wider site to a residential developer for the future construction of a residential estate with associated infrastructure and estate roads.

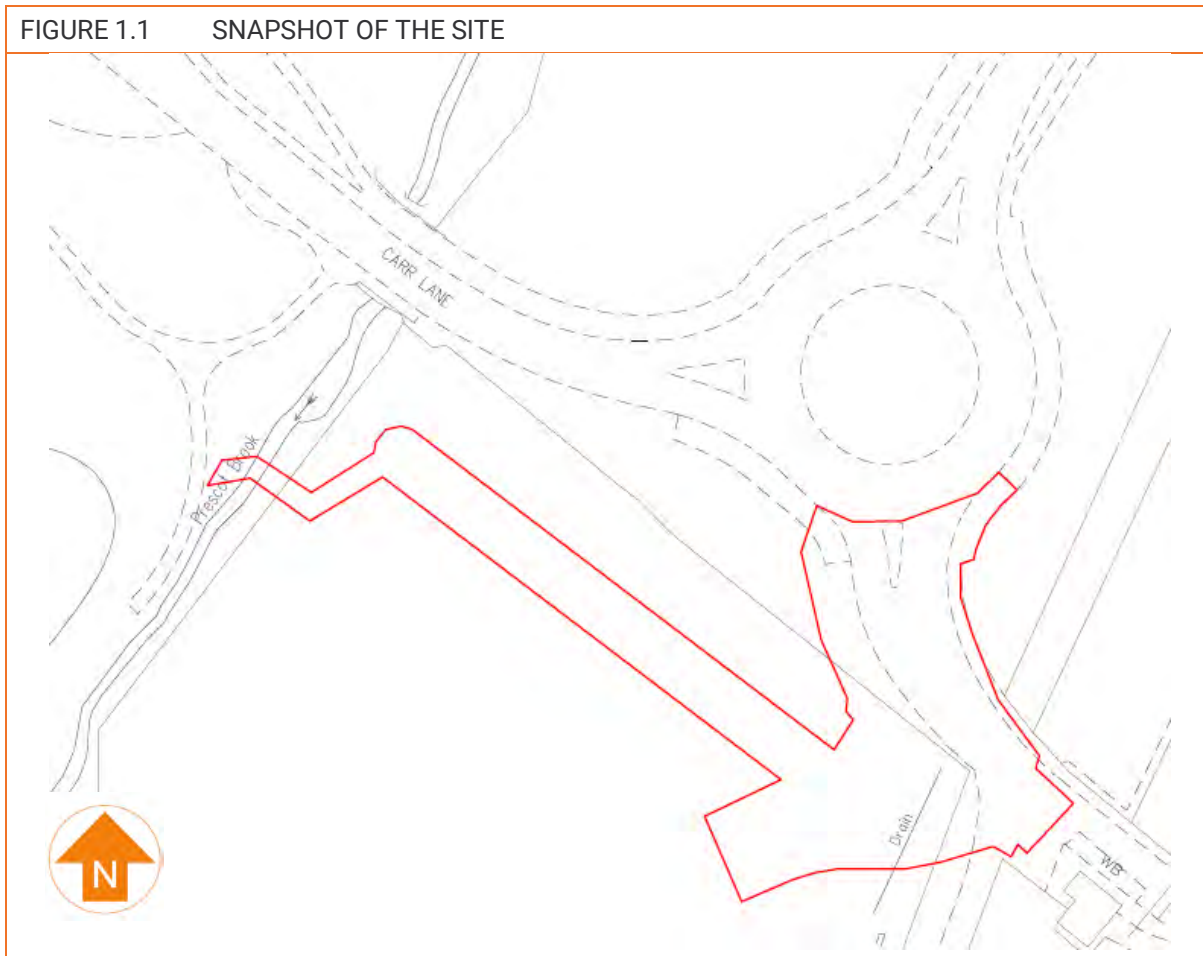
This report is required to facilitate the construction of an entrance off the roundabout to the north and so 'the subject site' noted herein relates to a area to the north of the wider site that will form the access point along Prescott Park Way.

1.2. PROPOSED DEVELOPMENT

E3P understands that United Utilities PLC is proposing to divest a site to a residential developer for the future construction of a residential estate with associated infrastructure and adopted estate roads. The subject site comprises the access location for the proposed residential development.

A snapshot of the site layout is indicated in Figure 1.1.

FIGURE 1.1 SNAPSHOT OF THE SITE



1.3. OBJECTIVES

The objectives of the geoenvironmental investigation are as follows:

- ✿ Review historical plans, geology, hydrogeology, site sensitivity, floodplain issues, mining records and any local authority information available in order to complete a desk study in line with Environment Agency (EA) document Land Contamination: Risk Management (LC:RM) (2019)
- ✿ 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.
- ✿ Provide recommendations regarding future works required and undertake a preliminary pre-construction cost appraisal.

1.4. SOURCES OF INFORMATION

Background information was sought from the following sources:

- ✿ Envirocheck Search;
- ✿ Historical mapping dated 1850 to 2022. A selection of historical maps are reproduced in Appendix V;
- ✿ On-line planning records held by Knowsley Metropolitan Council;
- ✿ Consultations with representatives of Knowsley Metropolitan Council;
- ✿ Magic Map Groundwater Vulnerability Map;
- ✿ Radon: Guidance on protective measures for new buildings (BRE Document BR 211, 2007);
- ✿ British Geological Survey Map;
- ✿ Groundsure IO database;
- ✿ <https://zeticauxo.com/downloads-and-resources/risk-maps/>; and,
- ✿ <https://flood-map-for-planning.service.gov.uk>.

1.5. LIMITATIONS

The limitations of this report are presented in Appendix I.

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.



1.7. RISK CLASSIFICATION

E3P has utilised the available data to classify the site on the basis of its likely contaminated land liability and potential for geotechnical constraints in relation to the site development. The risk classification definitions are summarised in Table 1.1.

TABLE 1.1 RISK CLASSIFICATION

RISK	DEFINITION
Low	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property.
Low Moderate	There are unlikely to be significant contaminated land liabilities/geotechnical constraints associated with the property with regard to the proposed use. However, minor issues may require further consideration in the event of future redevelopment of the site.
Moderate	Some potential contaminated land liabilities/geotechnical constraints are likely to affect the property as a result of historical and/or current activities. The risks identified are unlikely to pose an immediate significant issue but the purchaser/developer may wish to make further enquiries of the vendor or undertake further environmental improvements. Redevelopment of the site will likely require further site investigation.
Moderate-High	Some potentially significant contaminated land liabilities/geotechnical constraints have been identified at the property that requires further assessment, including intrusive ground investigations.
High	Significant potential contaminated land liabilities/geotechnical constraints have been identified at the property. Further assessment including intrusive ground investigation will be required to determine the level of risk and associated liability.



2. SITE SETTING

2.1. SITE DETAILS

Site Address	Carr Lane, Prescot, L34 1QL
National Grid Reference	E 346190, N 392100
Site Area	0.19 Ha.

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 14-245-001.

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 site is an irregular shaped parcel of land situated along Prescot Park Lane. The hard standing road identified as Prescot Park Lane covers the majority of the site, with an area of soft standing within the western section of the site. A wooden fence with an advertising board is present within the southern site associated with the new development of houses situated south of the site. Precott Brook is situated on-site in a northeast – southwest orientation. The access point into the additional site comprises a well-trodden path, currently used for dog walkers and pedestrians. Street lighting is present along Prescot Park Lane.	
Surface Cover (%)	Buildings	0%
	Hardstand	55%
	Soft Cover	45%
Structures	The majority of the site comprises a hard standing road identified as Prescot Park Way. No further structures have been identified within the site boundary.	
Access	Access via Prescot Park Way that intersects the site from north to east. Access to the western section of the site can be gained off Prescot Park Way where a well-trodden footpath is situated.	
Slope	Given that the majority of the site is a hard standing road, there is little topographical variances on-site. The western section of the site appears to be at a similar level to the remainder of the site.	
Retaining Structures	No retaining structures have been identified on-site.	
Vegetation/Ecology	Rough scrub vegetation is present within the western section of the site with overgrown semi-mature trees bordering Prescot Park Way Road to the east and west. One large mature tree is situated on the southern boundary of the site. A habitat survey will be required to support the planning application.	



Hazardous Material Storage	No above-ground storage tanks (ASTs) or underground storage tanks (USTs) have been identified on-site.
Asbestos-Containing Material (ACM)	As a historical landfill was present on-site, in addition to structures associated with the sewage disposal works, ACM may be present within Made Ground deposits underlying the site.
Polychlorinated Biphenyls (PCBs)	There is no equipment currently identified that may contain PCBs within the site boundary. Historic uses of the site may have benefited from such equipment.
Waste Storage	Potentially hazardous waste streams are unlikely to be generated at the site and none were identified. Although the site was historically utilised as a sewage disposal works, any waste storage infrastructure is likely to have been decommissioned prior to demolition works.
Drainage	A review of records held by United Utilities indicates a public sewer (combined) enters the site along the southern boundary and exits in the eastern sector of the site. A live distribution water main follows Prescott Park Way Road, intersecting the site from north to south.

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	Agricultural land
East	Commercial unit
South	Residential units
West	Agricultural land

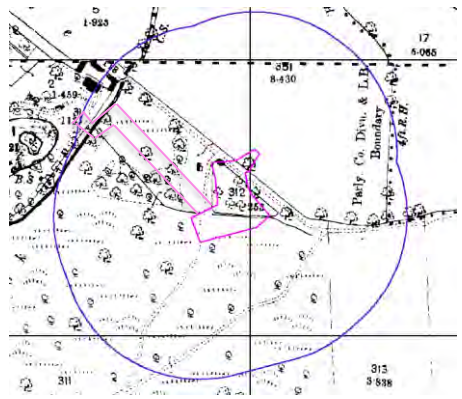
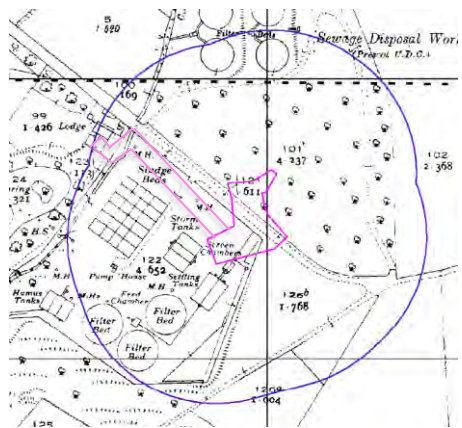


3. SITE HISTORY

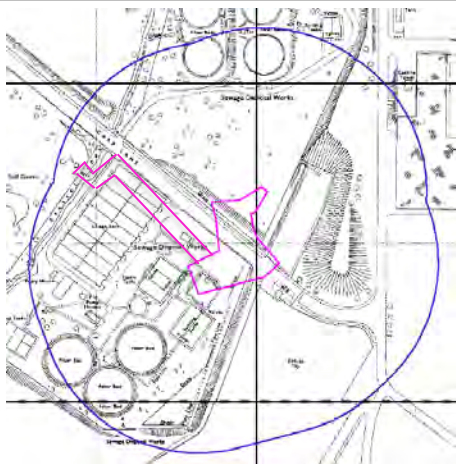
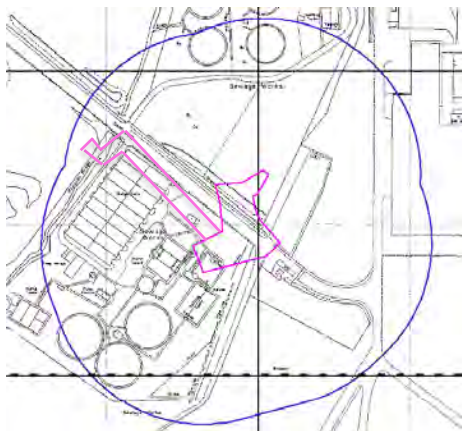
3.1. ON-SITE HISTORICAL DEVELOPMENT

A review of historical mapping and historical aerial imagery pertinent to the site is summarised in Table 3.1. In addition, historical site features are presented in Drawing No 14-245-003 in Appendix III.

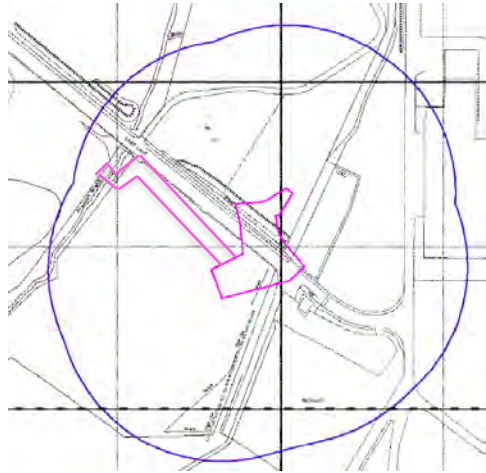
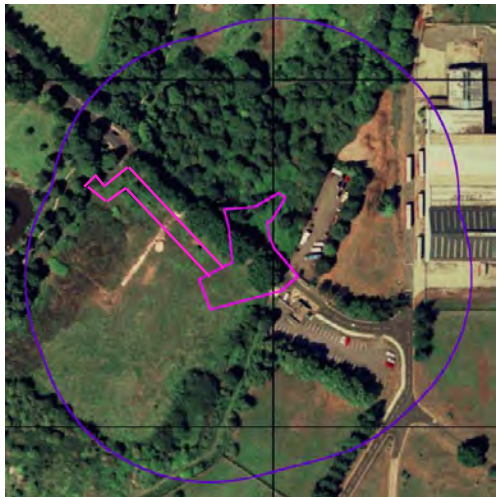
TABLE 3.1 HISTORICAL DEVELOPMENT

MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1892 1:2,500	A review of the pertinent Ordnance Survey mapping suggests that the site comprised agricultural land pre-1892, with a road intersecting the middle of the site in a northwest to southeast direction. Prescott Brook is located within the western sector of the site.	
1927 1:2,500	The southern section of the site has been associated with a sewage waste disposal works. The pumping station with tanks, screen chambers and filter beds are situated within site boundary. A pipeline has been identified, from the settling tank, entering the site along the southern boundary, running northeast towards the road. It is assumed the pipeline splits, following the direction of the road. Two drains are located either side of the road.	



MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1955 1:2,500	An embankment has been constructed along the northeast section of the road. No additional features have been identified.	
1962 1:1,250	The sewage disposal works has extended into the southern and western section of the site with sledge beds and additional pipelines located on-site.	
1993 1:1,250	There have been no significant changes recorded on-site.	



MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
1994 1:1,250	All structures associated with the sewage works located west of the site have been removed.	
Historical Aerial Imagery Photography 2000	Mature trees are situated either side of the road. The northeast and southwest sections of the site comprise soft standing ground covered by short vegetation with areas of mature and semi-mature trees.	
Historical Aerial Imagery Photography 2005	The construction of a new road, recorded as Prescott Park Way has replaced the historical road located within the site. A roundabout structure is situated north of the site.	



MAP EDITION	HISTORICAL LAND USE	HISTORICAL MAP EXCERPT
Aerial Imagery Photography 2021	There have been no significant changes to the site.	

3.2. OFF-SITE HISTORICAL DEVELOPMENT

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

TABLE 3.2 SURROUNDING HISTORICAL DEVELOPMENT

SURROUNDING FEATURE	DISTANCE	DATES	DIRECTION
Pond <i>Then: infilled</i>	107 m	Pre 1850–Pre 1908 Pre 1908–Present	South
The Colliery <i>Then: no longer marked</i>	45 m	Pre 1850–Pre 1894 Pre 1894–Present	West
Sewage Outfall works <i>Then: Sewage disposal Works</i> <i>Then: Demolished</i>	145 m	Pre 1908–Pre 1928 Pre 1928–Pre 1999 Pre 1999–Present	North
Old Carr Pit (Pumping station) <i>Then: Old Carr Pit (Pumping station disused)</i> <i>Then: No longer recorded</i>	156 m	Pre 1892–Pre 1907 Pre 1907–Pre 1955 Pre 1955–Present	South
Warehouse (Works) <i>Then: Extended south</i> <i>Then: Demolished</i>	171 m	Pre 1956–Pre 1965 Pre 1965–Pre 2020 Pre 2020–Present	Northeast
Shaft <i>Then: No longer recorded</i>	250 m	Pre 1894–Pre 1908 Pre 1908–Present	South

3.3. PLANNING HISTORY

E3P has undertaken a review of online planning records held by Knowsley Metropolitan Borough Council and no environmentally pertinent information has been obtained for the site.



3.4. ANECDOTAL INFORMATION

A web-based search of the subject site has recovered the following photographs, courtesy of Britain From Above:

PLATE 1 – BRITAIN FROM ABOVE 1949 British Insulated Callender's Cable Works and the Sewage Disposal Works, Prescott, 1949 (EAW021949)



3.5. PREVIOUS REPORTS

The following previous site investigation and report has been completed by E3P for a site situated adjacent to the western site boundary:

- 📌 E3P Phase 1 and 2 Geoenvironmental Assessment (Ref: 14-245-R1, February 2021).

The key findings of the previous site investigation reports are summarised below and where necessary data is used to support the E3P geoenvironmental site assessment.

GEOLOGY

Made Ground was encountered throughout the whole site to depths between 0.50 m and in excess of 5.45 m bgl. The full depth of Made Ground was not proven due to concrete obstructions or rapid water ingress. The site has been subject to significant historical development and, while above-ground structures have been removed, potential subsurface obstructions from relict foundations and slabs remain within the northern and central sectors.



The drift deposits generally comprise firm to stiff, medium strength, brown slightly gravelly sandy CLAY with gravel of sandstone and mudstone with occasional areas encountering brown silty fine to medium SAND with occasional areas encountering CLAY pockets.

Black pseudo fibrous peat with a strong organic odour was encountered within two isolated areas of the site measuring a thickness between 0.10 m and at 2.40m bgl.

The solid bedrock geology was encountered between 6.00 m and in excess of 9.70 m bgl, becoming deeper in the northern sector of the site. The solid geology comprises grey/brown MUDSTONE which is underlain by grey SILTSTONE. Coal has not been identified within any exploratory hole locations.

LANDFILL AND GROUND GAS

A historical landfill is present on-site associated with Prescot Wastewater Treatment Works. No input date or waste type has been supplied; however historical mapping suggests it was active between pre-1927 and pre-1999, receiving untreated sewage. Historical mapping also indicates the south of the site was utilised as a refuse tip between pre-1966 and pre-1993.

Two other historical landfill sites are located within 500 m formerly receiving industrial, commercial, household and liquid sludge waste.

Infilled ponds, Made Ground and underlying coal seams also pose a ground gas risk.

A completed ground gas assessment suggests the majority of the site is classified as CS2 and properties within this area will likely require specialist protection measures.

SITE HISTORY

- ✳ Historical mapping suggests the southern site is the former location of the Old Carrs Pit with associated pumping stations. A shaft is present within the southern site utilised as a refuse tip.
- ✳ A public footpath runs along the eastern boundary. From the early 1920s the northern area of the site is part of the Prescot Sewage Disposal Works and features sludge beds, storm tanks, screen chambers, settling tanks, filter beds, pumps, and humus tanks.
- ✳ From 1950s a number of drains are marked through the sewage disposal works with the hardstanding area no longer marked; however, embankments are present surrounding the works and the western boundary. By the late 1990s, the work's features are no longer present.

CONTAMINATED LAND

The following potential on-site sources of contamination have been identified:

- ✳ Former Sewage disposal Works
- ✳ Former Tanks
- ✳ Infilled Ponds
- ✳ Underground mining activities
- ✳ Unlicensed Open cast mining
- ✳ Refuse Tip

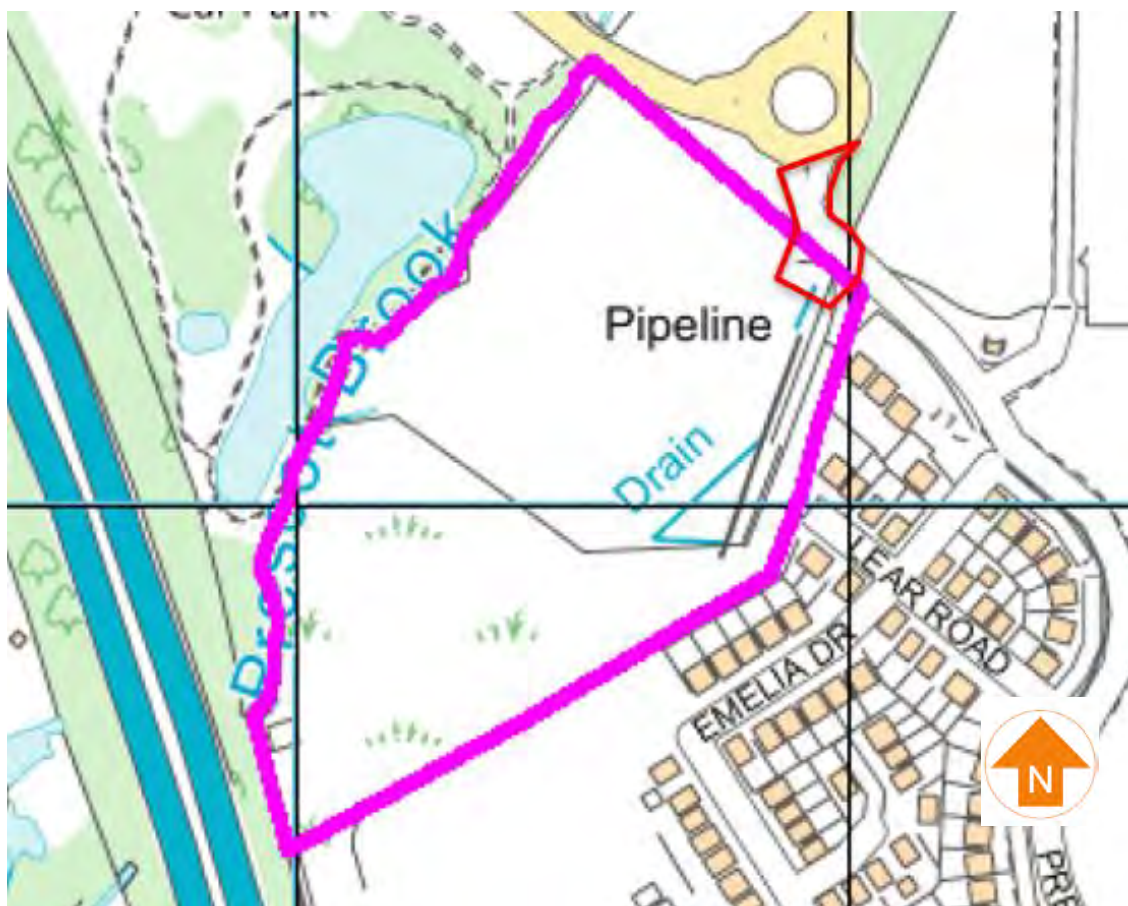


The following contaminants have been found at concentrations in exceedance of SGVs:

- ☛ Mercury (Potential volatile risk)
- ☛ Benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, benzo(ghi)perylene (non-volatile Polycyclic Aromatic Hydrocarbons [PAHs] – Dermal contact and ingestion risk)
- ☛ Arsenic, Lead, Nickel (inorganic heavy metals – dermal contact and ingestion risk)
- ☛ TPH C16-C21 (total petroleum hydrocarbons – low volatility, dermal contact and ingestion risk)
- ☛ Asbestos (chrysotile <0.001 % ; amosite and chrysotile 0.288% - inhalation of fibres risk)

Figure 3.1 outlines the site boundary for the previous site investigation situated along the western boundary of the current site.

FIGURE 3.1 E3P PHASE 1 AND 2 GEOENVIRONMENTAL ASSESSMENT (REF: 14-245-R1, FEBRUARY 2021).



4. ENVIRONMENTAL SETTING

4.1. GEOLOGY AND HYDROGEOLOGY

The British Geological Survey (BGS) map for the site, (1:50,000, Solid and Drift editions) and online records indicate 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	Till, Devensian	Sand, clay and gravel	Secondary undifferentiated
Solid	Pennine lower coal measures	Mudstone, siltstone, sandstone	Secondary A aquifer

TABLE 4.2 SUMMARY OF BGS BOREHOLE RECORDS

LOCATION	DEPTH	MADE GROUND	DRIFT	SOLID
527 m NW SJ49SE119	15.89 m	Sandy, silty, gravelly CLAY 0.00 – 1.50 m	Gravelly, silty CLAY 1.50 – 4.15 m	Weathered MUDSTONE 1.50 – 15.89 m Possible workings 12.03 – 13.54 m (coal fragments at 13.54 m)
650 m NW SJ49SE114	28.05 m	GRAVEL and CLAY 0.00 – 6.40 m	Sandy, silty, gravelly CLAY 6.40 – 8.50 m	SANDSTONE, MUDSTONE 8.50 – 28.05 m (coal at 19.34 – 20.34 m and 21.09 – 22.90m)
735 m NE SJ49SE200	25.00 m	N/A	CLAY 0.20 – 0.90 m	Weathered SILTSTONE, MUDSTONE 0.90 – 25.00 m
760 m NW SJ49SE181	2.50 m	N/A	SAND and GRAVEL 0.00–1.80 m	Weathered SANDSTONE 1.80–2.50 m

The Envirocheck report indicates that the site is not located within a groundwater source protection zone.

The closest surface water abstraction is located 636 m northwest of the site. The abstraction grants 773 m³/Yr for spray irrigation at James Whitaker and Sons Nurserymen Ltd (horticulture and nurseries).

No potable or groundwater abstractions are noted within a 1 km radius of the site.

Following a review of the historical and present-day mapping, Prescott Brook is shown to be located within the western sector of site.



Based on the local topography surrounding the site, the location of surface watercourses and the presence of drainage ditches on either side of Prescott Park Way, it is considered likely that shallow groundwater, if present, will flow in a northwesterly direction, following the topographical gradient towards Prescott Brook.

4.2. NATURAL LANDFORM AND GEOMORPHOLOGY

Based on the initial geological assessment, a review of available topographic data and pertinent mapping, E3P has undertaken a preliminary geomorphological assessment of the landform and its possible mechanism for formation.

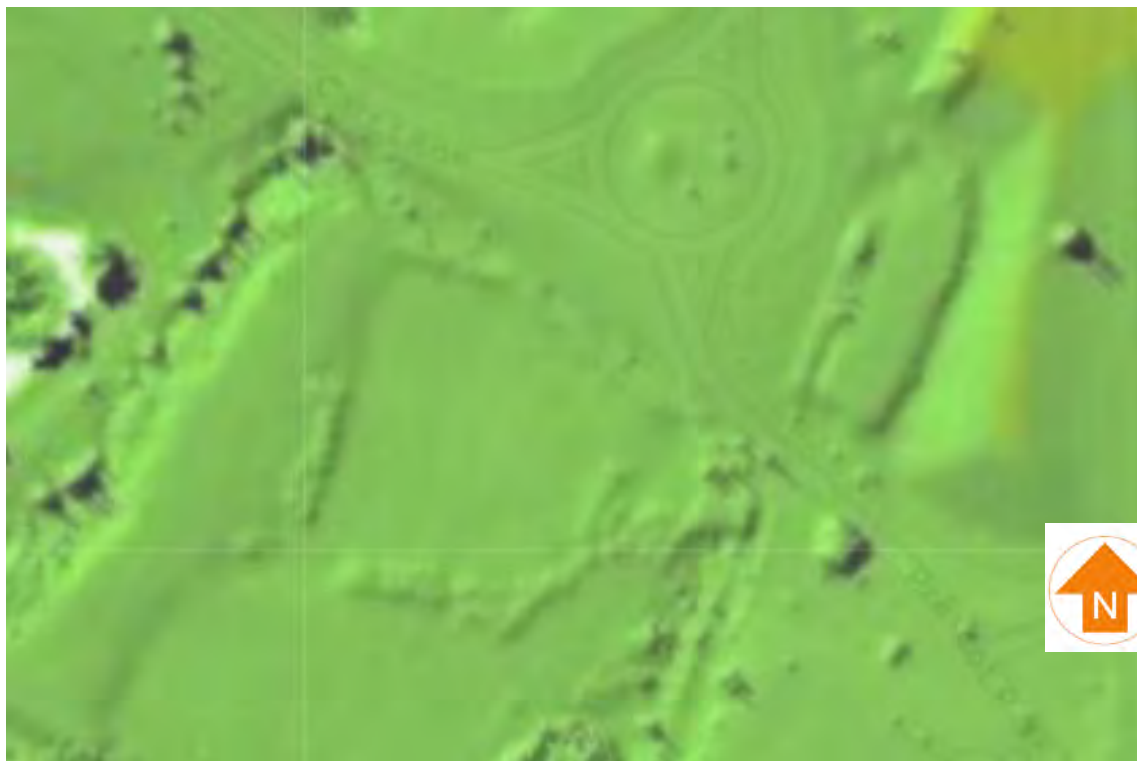
The subject site is underlain by glacial till – these are deposits laid down by the deposition of melting ice shelf in the most recent glaciation. The underlying rock formations are associated with the Pennine Lower Coal Measures.

The Prescott Brook is evident northwest of the site at a lower elevation to the surrounding land as well as a drainage ditch within the southern section of the site. As the brook is likely to have been within a shallow valley, it would appear that the current site level plateau will have been formed by the placement and upfilling of material before the construction of the historical development.

Historical raising of the site during the construction of road networks including Prescott Park Way, may have resulted in the placement of more fill material and Made Ground above the glacial till deposits. Historical Ordnance survey mapping circa 1955 shows the anthropogenic gradient changes adjacent to the road.

Prior to development, it is possible that the site will have sloped downwards towards in a northwest direction towards the Prescott Brook.

FIGURE 4.1 SURFACE LIDAR DATA (GROUNDSURE IO)



Source: <https://groundsurre.io/#>



4.3. GEOTECHNICAL DATA

Geotechnical data presented within a commercially available environmental database is summarised in 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

4.4. COAL MINING

The Envirocheck report states the site is in an area that may be affected by coal mining.

A CA mining report was obtained (Ref: 51002306872001) dated 2nd September 2020.

The CA operates a risk-based approach to the assessment of potential instability issues associated with the future development of land located within the predefined CA consultation areas. This risk-based approach subdivides the potential risk into “low” and “high” risk categories.

The risk categories can be defined as:

Low-Risk Sites – Deemed to be land where coal mining has taken place, however, it was at such depth not to pose a risk to new development and it, therefore, contains no known recorded risks and as such no further assessment is required.

For low-risk sites, the CA categorically states:

If your proposed development is within the Development Low Risk Area there is no need for you to submit any coal mining information with your planning application and The Coal Authority will not be consulted by the LPA. The LPA will include our Standing Advice as an informative note within the decision notice.

High-Risk Sites – Deemed to be landholdings located within an area known to contain legacy risks that include:

- ☛ Mine entries (shaft or adit);
- ☛ Shallow coal workings (recorded and probable);
- ☛ Workable coal seam outcrops;
- ☛ Mine gas sites and areas;
- ☛ Recorded coal-mining-related hazards;
- ☛ Geological features (fissures and break lines); and



- 📍 Former surface mining sites (sometimes using historic opencast extraction methods).

4.5. COAL MINING INFORMATION

Prior to the enactment of the Coal Mines Regulation Act (1872), which came into force on the 1st January 1883, there was no statutory requirement to record the extent of abandoned mine workings and as such the CA has no knowledge of extensive workings throughout the UK Coal Fields where shallow workings are present at a depth that could result in a subsidence event in the future (through successive cavitation) associated with failure of support mechanism.

To determine if a site may have unrecorded or recorded coal mine workings requires the consideration of a wide range of information and E3P has completed a review of relevant information in relation to potential coal mining activities.

In the first instance, E3P has reviewed the Coal Authority Online Viewer and an excerpt of this is presented as Figure 4.2. This map shows that the site lies within an area of underground working. There is potential for shallow workings beneath the site. Mine entries are in the surrounding area, none are recorded on-site.

Furthermore, there are identified coal outcrops approximately 170 m west (Tenlands Coal) and 178 m north (Bastions Coal) of the site, the northern outcrop, appears to dip below the site. Using a dip of 6° as per the 1:50,000 geological mapping, this would indicate the noted coal seam, to be at depth circa 17.00 m bgl beneath the site. The eastern and northern site is in an area of underground working.

According to the Envirocheck search, there are several old coal pits, shafts, and collieries located in the surrounding area of the site, also indicated throughout historical Ordnance Survey maps pre-1850.

FIGURE 4.2 EXCERPT OF THE COAL AUTHORITY ONLINE VIEWER



As the site is within an area affected by Coal Mining E3P has consulted with the Coal Authority who has provided a Consultant Coal Mining Report for the site (Ref: 51002306872001) dated 2nd September 2020.

Table 4.4 provides a summary of pertinent coal mining information with this report.



TABLE 4.4 COAL MINING INFORMATION

SOURCES OF INFORMATION	SUMMARY
Known Past Underground Mining	SIR JOHN (1895) – Dip: 9.3° southwest. Extraction thickness: 60 cm. Depth: 100 m. RUSHY PARK (1863) – Dip: 11° south. Extraction thickness: 120 cm. Depth: 138 m. RUSHY PARK (1863) – Dip: 11° south. Extraction thickness: 120 cm. Depth: 147 m. RUSHY PARK (1885) – Dip: 9.4° south. Extraction thickness: 130 cm. Depth: 166 m.
Probable Unrecorded workings	Yes
Spine Roadways at Shallow Depth	No spine roadway recorded at shallow depth.
Mine Entries within 100m of the site	None recorded (closest mine entry circa 105 m west of site).
Mine Abandonment plans	Yes
Known outcrops	Wigan Five Feet – Seam workable.
Faults / Fissures	No faults or fissures recorded.
Opencast mines	Unlicensed opencast site located 130 m south.
Coal Authority Managed Tips	None recorded.
Remediated Sites	None recorded.
Coal Mining Subsidence	The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994. There is no current Stop Notice delaying the start of remedial works or repairs to the property. The Coal Authority is not aware of any request having been made to carry out preventive works before the coal is worked under section 33 of the Coal Mining Subsidence Act 1991.
Mine Gas	None recorded.
Mine Water	None recorded.
Future Underground Mining	None recorded.
Coal Authority Development Advice	None recorded.
Review of Coal Authority Archive	No CA archives/mine abandonment plans are made available.



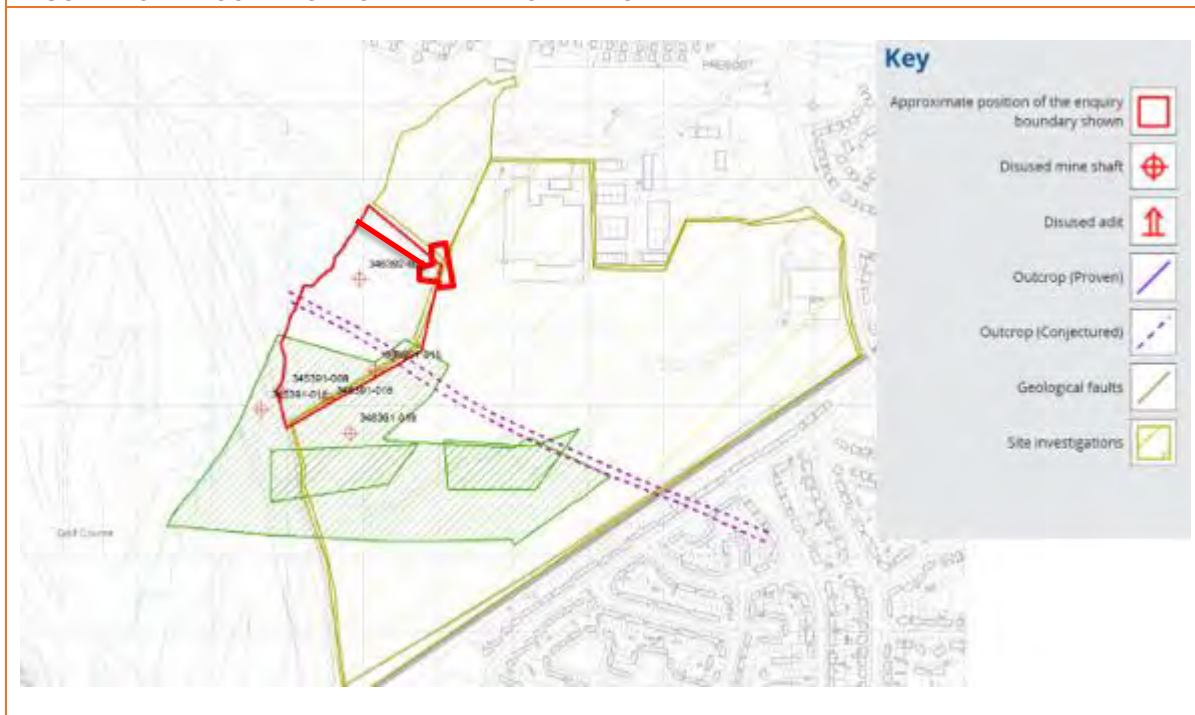
SOURCES OF INFORMATION	SUMMARY
Historical Ordnance Survey Mapping	A review of the 1:10,000 Ordnance Survey mapping from circa 1850, which has records of mine workings that predate the Mining & Regulation Act of 1872, identified the following features indicative of historical mine workings in proximity to the application site: 📍 The Colliery (Old Carrs Pit) – 190 m west 📍 Shaft – 500 m west  In consideration of the historical mining features in proximity to the site and the potential for coal close to the surface, it is considered possible that coal extraction has occurred, underlying the site at relatively shallow depths; further investigation would be required to determine the extent and depth of any worked seams.
Historical Site Investigations	E3P has not been provided with any historic site investigation reports.



4.5.1. COAL AUTHORITY PLAN

The Coal Authority plan referenced: MR-LARGE-PLOT-51002306872001-1599044718660 notes three unlicensed opencast to the south of the site with a coal outcrop to the southwest. A disused mine shaft has been identified circa 130 m west of the site.

FIGURE 4.3 COAL AUTHORITY PLAN FOR THE SITE



4.6. COAL MINING RISK ASSESSMENT

This risk assessment comprises a desk-based review of all available information on coal mining issues that are relevant to the application site deemed to be located within a high-risk area. This includes:

- Interpretation of information to identify and assess the risks to the proposed development from coal mining legacy, including the cumulative impact of issues;
- Setting out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development; and
- Demonstrating to the local planning authority that the application site is, or can be made, safe and stable to meet the requirements of national planning policy with regard to development on unstable land.

The coal mining risk assessment is summarised in Table 4.5

TABLE 4.5 SUMMARY OF COAL MINING RISK ASSESSMENT

COAL MINING RISK ASSESSMENT	YES/NO	RISK ASSESSMENT
Recorded Underground Coal Mining at Shallow Depth (< 30 m)	No	Low
Recorded Underground Coal Mining at Shallow Depth (> 30 m)	Yes	High
Evidence of Unrecorded Surface Extraction of Coal Outcrop	No	Low



Unrecorded Underground Coal Mining at Shallow Depth (< 30 m)	No	Low
Mine Entries (Shaft/Adits)	No	Low
Coal Mining Geology – Fractures/Fissures	No	Low
Recorded Gas Emissions	No	Low
Recorded Mining Surface Hazard	No	Low
Surface Mining (Opencast)	No	Low

Based on the above, a high risk of unrecorded coal mining at shallow depth has been identified. The CA, as a statutory consultee, will require a series of rotary open holes across the site to determine the presence of any coal on-site and to understand the nature of any coal workings.

Following the previous site investigation for the proposed residential development site west of the subject site boundary, E3P was able to determine the presence of any coal and understand the nature of any coal workings. Furthermore, a series of trial trenches had been advanced to attempt to locate the shafts present within the additional site.

These initial investigations have not provided evidence of shafts or worked seams.

4.7. BRINE WORKINGS

The site is not situated within the Cheshire Salt Field, therefore, is unaffected by brine workings.

4.8. PRELIMINARY GEOTECHNICAL ASSESSMENT

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

- ✚ Given the extensive historical development of a sewage disposal works in the western section of the site and the historical landfill (Prescot Wastewater Treatment Works), together with underground mine workings, it is likely there will be extensive Made Ground fill deposits and obstructions.
- ✚ Shallow workings < 30 m are potentially present beneath the site associated with the Bastions Coal Seam. The extent will need to be determined through intrusive site investigation. Worked coal seams will require a program of stabilisation by drill and grout.
- ✚ Made Ground present within possible infilled areas on-site is likely to be loosely compacted and possibly prone to collapse.
- ✚ Where trees are present in the location of cohesive material, consideration and assessment will be required of the potential heave issues associated.
- ✚ Given the proposed development for an access road onto a residential site, significant earthworks will be required to create a suitable levelled developable platform.

4.9. HYDROLOGY

Surface water features within 250 m of the subject site are summarised in Table 4.6.



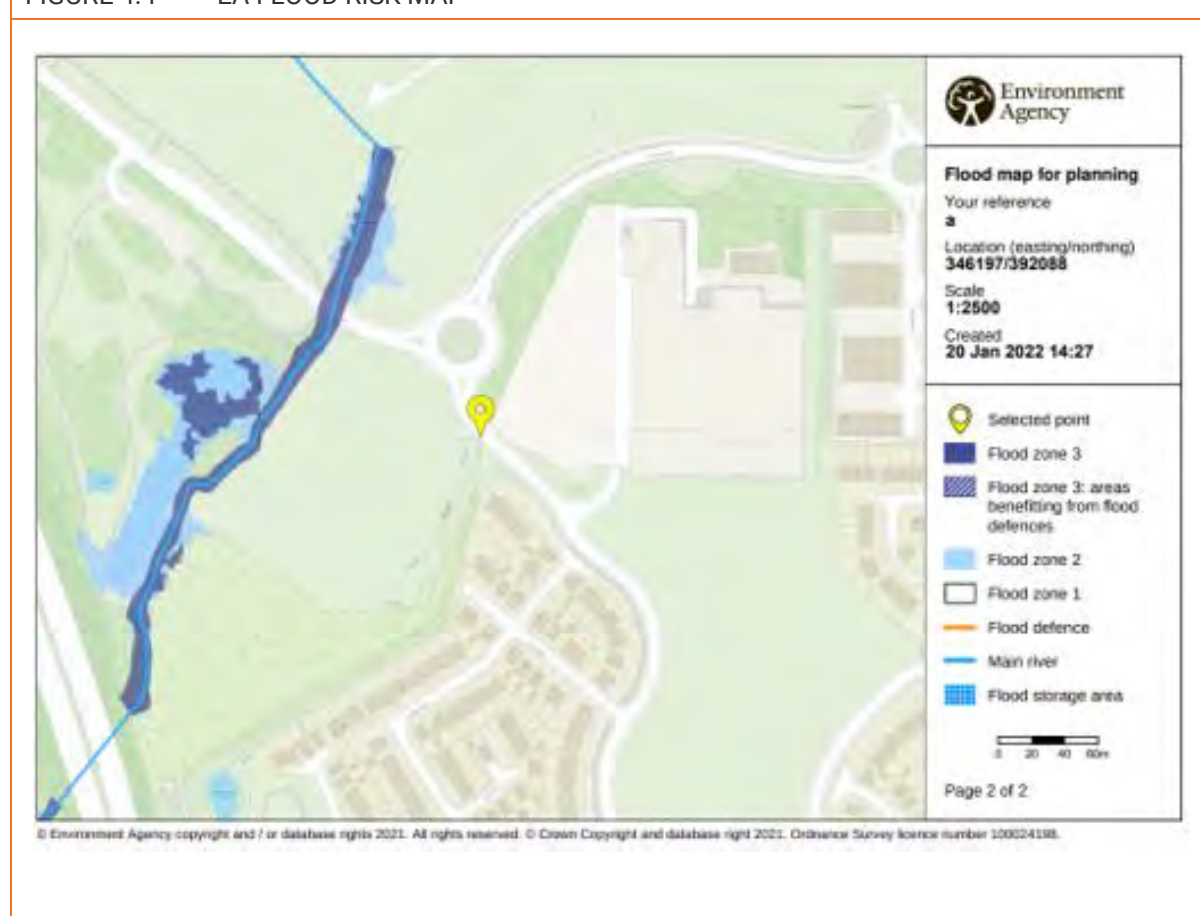
TABLE 4.6 SURFACE WATER FEATURES

SURFACE WATER FEATURE	QUALITY	DISTANCE (m)	DIRECTION
Ditch	N/A	0 m	South
Prescot Brook	N/A	0 m	West

A large percentage site is predominantly located within a currently defined "Flood Risk Zone 1"; defined as land assessed as having less than 1 in 1,000 annual probability of river or sea flooding (< 0.1%), and as such is considered to be unaffected by river flooding. There is no risk of flooding associated with the on-site ditch. However, areas within close proximity to Prescot Brook situated in the western sector of the site is currently defined "Flood Risk Zone 3".

In addition, the Envirocheck report states there is a limited potential for groundwater flooding to occur at the site. The Environment Agency (EA) Flood Risk Map for the site is presented in Figure 4.4.

FIGURE 4.4 EA FLOOD RISK MAP



Source - <https://flood-map-for-planning.service.gov.uk/>

4.10. INDUSTRIAL LAND USES

Four active entries are within the trade directory for industrial land uses within 250 m of site. These include (by distance from site):

- 📍 Recycling services (135 m NE),
- 📍 Cleaning services (209 m E),
- 📍 Electrical Engineers (238 m E),



 Printers Textile (242 E).

4.11. SENSITIVE LAND USES

The closest residential properties are located 50 m south of the site. The site is within a Nitrate Vulnerable Zone and an area of adopted green belt is situated 31 m northwest of the subject site.

4.12. SITE SENSITIVITY ASSESSMENT

The site is assessed to be located within a “Low” sensitivity setting as discussed within Table 4.7.

TABLE 4.7 SITE SENSITIVITY ASSESSMENT

SENSITIVITY PROFILE	DISCUSSION	RATING
Groundwater Source Protection Zone or Drinking Water Safeguard Zone	The site is not located within a source protection zone or drinking water safeguarding zone.	Low
Distance to the Closest Groundwater Abstraction Point	636 m northwest – James Whitaker & Sons Nurserymen Ltd, utilised for spray irrigation.	Low
Aquifer Classification in Superficial Drift Deposits	Secondary undifferentiated. Likely comprised of low permeability clay soils interbedded with sands and gravels.	Low
Aquifer Classification in Bedrock	Secondary A aquifer.	Low
Is the Site Underlain by Low-Permeability Drift to Depths in Excess of 10 m?	Drift deposits have been encountered to 9.50 m bgl during the investigation of the wider site. BGS borehole records identified low permeability clay deposits which will act as an aquitard and limit the migration down to the underlying secondary A aquifer.	Low
Is the Site Located Within 50 m of a Surface Watercourse?	The risk of surface water is moderate given the location of a viable receptor within influencing distance of the site.	Moderate ^{efg}
Sensitive Land Uses	Residential units are situated south of the site. The site is within a Nitrate Vulnerable Zone and an adopted green belt is situated 31 m northwest of the site.	Moderate
OVERALL SITE ENVIRONMENTAL SENSITIVITY		Low



5. REGULATORY DATA

5.1. LANDFILL SITES AND WASTE TREATMENT SITES

A historical landfill site is present on either side of Prescott Park Way, known as Prescott Wastewater Treatment Works. No input date or waste type has been supplied; however historical mapping suggests it was active between pre 1927 and pre 1999, receiving untreated sewage.

The Whiston Tip dated January 1873 is situated 480 m south of the site. The historical tip waste included industrial, commercial, household waste, and liquid sludge.

There are a series of potentially infilled land sites within 500 m representing historical pits, quarries, ponds etc. There are none recorded on-site.

5.2. 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 250 m of the subject site and not otherwise detailed in the report.

TABLE 5.1 SUMMARY OF ENVIRONMENTAL DATA

RECORD	ENTRIES WITHIN 250 m	DETAILS
Contaminated Land Register Entries and Notices	0	None Identified
Authorised Industrial Processes (IPC/IPPC/LAPPC)	8	Three associated with Pirelli Cables Ltd (13 m SE) for Non-ferrous Metal processes within the Metal Industry. (Two suspended, one revoked, now IPPC). Four associated with Remondis Uk Limited (146m NE) – disposal of hazardous and non-hazardous waste (all superseded). One associated with Prysmian Cables and Systems Ltd (146m NE) - Non-Ferrous Metals;(Lead and Cadmium) (Superseded – surrendered).
Fuel Stations Entries	0	None Identified
Licensed Radioactive Substances	0	None Identified
Enforcements, Prohibitions or Prosecutions	0	None Identified
Discharge Consents	27	18 Licenses assigned to United Utilities WwTW (98 m W) for sewage discharge into freshwater (all revoked). One license was assigned to Knowsley Metropolitan Borough Council (134 m N) for discharge of Process Water (discharge ceased). Five licenses assigned to Bicc Developments Ltd (139 m N) for trade water discharge into freshwater (revoked / lapsed).

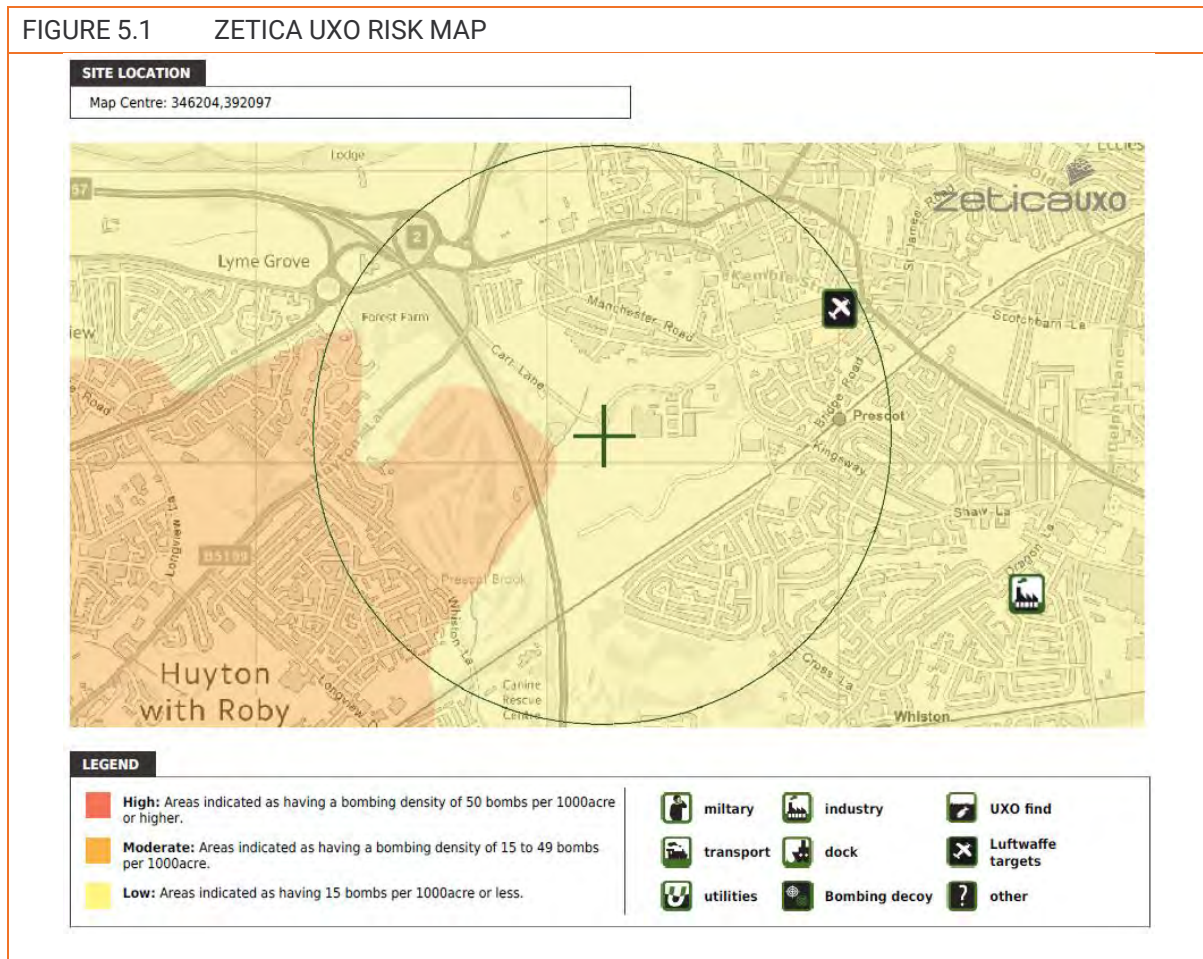


RECORD	ENTRIES WITHIN 250 m	DETAILS
		Three licenses assigned to United Utilities Water Limited (141 m N) for public sewage discharge into fresh water (revoked).
Pollution Incidents	6	Six minor incidents with input of unknown sewage, oils, rubble, litter, or solids into Preston Brook. One significant incident of rubble/solids into Preston Brook.
Consents Issued Under the Planning (Hazardous Substances) Act 1990	0	None Identified
Control of Major Accident Hazard (COMAH) Sites	1	(Now Ceased) Bicc Metals Ltd (4 m SE), former lower tier.

5.1. UNEXPLODED ORDNANCE

The regional unexploded bomb risk map from Zetica (2014) indicates that the site is in an area at low risk from possible unexploded ordnance (UXO) resulting from the Second World War. A Luftwaffe Target is situated northeast of the site. The Zetica UXO Risk Map is presented as Figure 5.1.

FIGURE 5.1 ZETICA UXO RISK MAP



Source - <https://zeticauxo.com/downloads-and-resources/risk-maps/>



5.2. INITIAL CONCEPTUAL SITE MODEL

In accordance with EA LCRM (2019) and BSI 10175 (Code of Practice for Investigation of Potentially Contaminated Land), E3P has developed an initial conceptual site model (CSM) to identify potential contamination sources, migration pathways and receptors within the study area. This is summarised within Table 5.2.

ON-SITE SOURCES OF CONTAMINATION

The following potential on-site sources of contamination have been identified:

-  Former Sewage disposal Works
-  Underground mining activities

OFF-SITE SOURCES OF CONTAMINATION

The following potential off-site source of contamination have been identified:

-  Former Tanks
-  Infilled Ponds
-  Unlicensed Open cast mining
-  Refuse Tip
-  Railway and motorway construction/use



5.3. CONCEPTUAL SITE MODEL

Following the completion of the intrusive site investigation, chemical analysis and risk assessment, the conceptual model shown in Table 5.2 has been prepared for the site. It should be noted at this stage that this report is prepared in anticipation of a tie in to an existing highway. It is not expected that any residential dwellings will be constructed within the boundary. Ultimately, the risk associated with this is considered very low and primarily to construction workers during the installation.

TABLE 5.2 CONCEPTUAL MODEL

POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL1 PL2	Heavy Metals, non-volatile PAH, petroleum hydrocarbons (Made Ground, sewage work disposable, mining)	Dermal contact. Dermal contact and ingestion.	Construction workers	Probable	Moderate	LOW

Discussion:

Historically the site was utilised for a sewage disposal works. In accordance with the department of the environment industry profile (1995) for Sewage works a number of potential contaminant sources exists. The incoming raw materials could be a source of Heavy Metals, organic chemicals (Solvents and pesticides) though the likely process to treat the materials would have been biological with chlorine and hydrochloric acid. The putrescible organic elements were mostly split off from the liquids and allowed to degrade along with the sludges. Often fungi, bacteria and algae are added to aid oxidation and break down. The sludges are often moved to alternative sites including farms where the sludge is mixed into the soils, alternatively landfill or less likely incinerated. Sludges and liquid effluents are the most significant source of heavy metals contamination and organic compounds may provide a source of hydrocarbons (fuel oils and solvents). pH may be dramatically affected by the treatment chemicals that boost the acidic environment for degradation.

The site has been the location of a historical landfill site, the Prescott Wastewater Treatment Works. The contents and accepted materials of the landfill are unknown however, could contain sources of Heavy Metals, PAHs and heavy end hydrocarbons based on the original source of the material and any number of processes that could have been completed prior to its placement.

Carrs Colliery with associated mine entries and shafts are situated west of the subject site and coal seams are situated northeast and southwest of the site. The processes including burning coal producing ash is likely to be present at the site.



POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
Recommendation: There is a risk to future construction workers should they be exposed to impacted soils during the earthworks phase of works. Works should be completed with appropriate welfare, hygiene and PPE protocols in place.						
PL3	ACM in Made Ground	Inhalation of dust.	Construction Workers Off-site land users.	Possible	Moderate	LOW
Assessment: Asbestos containing materials may be found within the Made Ground associated with the sewage treatment works. This includes building fabric, insulation, and ducting. ACM is likely to be present within the vicinity of the site from sources such as mining structures and a refuse tip. Excluding the possibility of windblown asbestos, it is unlikely ACM will be found on-site from off-site sources. Disturbance of potentially asbestos impacted Made Ground soils may give rise to dust generation, and migration of asbestos fibres on, or off site. If present, impacted soil poses a risk to construction workers, third party and future end users. Recommendation: Construction works should be completed with PPE and provision of welfare. There may be a requirement to dampen soils during the works to mitigate the potential fibre release to atmosphere.						
PL4	Volatile contaminants such as hydrocarbons, solvents, antifreeze (Made Ground, Sewage disposal works, mining activities)	Inhalation of vapours. Migration through permeable strata and preferential pathways.	Construction Workers. Off-site receptors.	Possible	Moderate	LOW
Assessment: The use lubricants, fuels and oils during the site's operations including previous mining activities and the construction of the on-site road may be sources of volatile compounds. Similarly, chemicals, lubricants and oils associated with the plant operations at the sewage works are likely to present a potential source of volatile compounds. The materials within historical on-site landfill may also provide a potential source of volatile compounds.						



POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
Where identified volatile contaminants present a short-term risk to construction workers who may encounter impacted soils during earthworks and collecting within excavations or temporary structures. The risk to construction workers is low given the absence of an indoor space where compounds can collect and only shallow excavations likely. Recommendation: Construction works should be completed with appropriate PPE and provision of welfare and consideration of the potential for gasses to collect.						
PL4	Methane, carbon dioxide (peat, coal measures, sewage disposal works, potentially infilled features within 250 m of the site)	Inhalation of gas. Migration through permeable strata and preferential pathways. Explosion in confined spaces.	Construction Workers.	Possible	Moderate	Low
Assessment: Glacial till will restrict the migration of ground gases including coal measures gas into shallow foundations. Nearby BGS boreholes have identified depths of Made Ground, alluvium deposits, and peat. Given the historical developments on-site including the development of the road and the upfill of material, it is likely Made Ground will be present throughout. Biodegradable material within sludge from the former sewage disposal works can generate these harmful gases and in some cases hydrogen sulphide where sulphur compounds exist. The underlying coal workings have a potential to release mine gasses (methane) from gassing seams present at depth. Historically Infilled areas have been identified within the vicinity of the site. Infilled land has the potential to produce hazardous gases such as carbon dioxide and methane due to decaying organic material that maybe present. Recommendation: Ground gas can accumulate within confined spaces such as excavations, sub-structures, or deep excavations. Inhalation of these gases could result in asphyxiation, while accumulation of methane gases can be explosive.						



POLLUTANT LINKAGE	CONTAMINANT (SOURCE)	PATHWAY	RECEPTOR	PROBABILITY	CURRENT RISK	RESIDUAL RISK AFTER MITIGATION
PL5	Mobile contaminants such as metals, PAHs, hydrocarbons, volatile compounds (Made Ground, sewage disposal works, landfill)	Surface runoff. Migration through permeable strata and preferential pathways. Perched waters migration.	Groundwater (secondary A aquifer). Prescot Brook	Low likelihood	Moderate	Low
Assessment: Sources of hydrocarbon compounds were historically present on-site associated with the sewage disposal works. This includes fuel oils, heating pumps, heating systems, plant, and vehicles. These along with soluble metals and PAHs could pose a risk to on-site ditches and the Prescot Brook situated in the western sector of the site. Given the nearby BGS Boreholes and a previous site investigation in the centre of the site (Ref: 14-245-R1, February 2021), Made Ground has been encountered to depths in excess of 5.45 m bgl, overlying the cohesive clay. There is a risk of migration through the Made Ground deposits, however the risk is reduced given the presence of low permeability drift deposits and the absence of a potable abstractions within influencing distance. Contaminants also have the potential to migrate towards the Prescot Brook. Recommendation: Works required to facilitate the access road are unlikely to effect the controlled waters.						
PL6	Sulphate (potential ash within Made Ground)	Sulphate attack on concrete.	Building structure.	Likely	Moderate	LOW
Assessment: Made Ground is anticipated across the site along with concrete obstructions associated with historical developments. Elevated sulphates may increase the chance of a sulphate attack and foundations. Recommendation: Assessment must be undertaken to confirm the levels of pH and sulphate within the underlying strata and in particular any Made Ground deposits so that a concrete classification can be determined.						



Main exposure pathways:

PL1 = soil ingestion, PL2 = dermal contact and ingestion, PL3 = dust inhalation; PL4 = Vapour/Gas Inhalation; PL5 = Vertical / Lateral Migration; PL6 = Corrosion of concrete; PL7=Tainting of water supply; PL8 = Uptake by plants;



6. CONCLUSIONS AND RECOMMENDATIONS

6.1. SITE SUMMARY

Current Site Use	The site is an irregular shaped parcel of land situated along Prescott Park Way. The hard standing road identified as Prescott Park Way covers the majority of the site, with an area of soft standing within the western section of the site. A wooden fence with an advertising board is present within the southern site associated with the new development of houses situated south of the site. Precott Brook is situated within the western sector of the site in a north east – south west orientation. As the site is a proposed access point to an additional site (Ref: 14-245-R1, February 2021), access can be gained via the western section of the subject site. The access point into the additional site comprises a well-trodden path, currently used for dog walkers and pedestrians. Street lighting is present along Prescott Park Way.
Historical Site Use	A review of the pertinent Ordnance Survey mapping suggests that the site comprised agricultural land pre-1892, with a road intersecting the middle of the site in a northwest to southeast direction. Circa 1927 the southern section of the site was part of a sewage disposal works with associated pipelines and drains situated on-site. The sewage works had been removed pre1994 where the land has remained undeveloped to the present. Pre 2005, the construction of Prescott Park Way replaced the historical road located on-site, with a roundabout structure north of the site.
Site Sensitivity	The closest residential properties are located 50 m south of the site. Precott Brook is situated in the western sector of site. The site is within a Nitrate Vulnerable Zone and an area of adopted green belt is situated 31 m northwest of the subject site.

6.2. CONTAMINATED LAND ASSESSMENT

Human Health	The following sources of soil contamination have been identified on-site: ☛ Made Ground associated with the site's development history associated with the sewage disposal works and the development of Prescott Park Way, which may be a source of heavy metals, PAHs, sulphates and asbestos. ☛ There is a possibility that fuel storage may have historically occurred on-site, associated with the sewage disposal works and the historical tanks
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	within close proximity to the western boundary, which may be a source of localised hydrocarbon and S/VOC contamination.  Underground workings from coal seams situated to the north and west of the site with associated mine entries and mine shafts west of the site, may have the potential to generate mine gas. Given the requirements to facilitate an entrance to site from the existing highway it is not considered that there is a significant risk to construction workers.
Controlled Waters	The geology at the site supports the Undifferentiated aquifer (drift) overlying secondary A aquifer (solid). The site is not within a source protection zone and there is an absence of potable and groundwater abstractions within the surrounding site. The presents of Prescott Brook on site, the brook is considered to be a primary receptor. The on-site drain is also a receptor however, clay within the superficial deposits will reduce the lateral migration of mobile contamination sources into water features and the underlying aquifer. Given the likely absence of significant impact in the area of the entrance to site there is not considered to be any significant risk to controlled waters from these works.
Ground Gas	The historical on-site landfill and underground coal workings are potential sources of hazardous ground gas. Carbon dioxide and methane have associated asphyxiation and explosive risks. Given the works to construct the access road there are not likely to be any deep excavations or indoor air spaces that would otherwise be a risk.
Potable Water	Currently it is not expected that any pipeline would be laid in association with forming an access into the wider site. The chemical assessment following the wider site investigation suggests that barrier pipeline would be required. However further assessment in the form of a UKWIR assessment should be completed prior to any pipeline placement.

6.3. GEOTECHNICAL ASSESSMENT

Geological	The existing highway is considered to have a build up in line with highways adoption standards, free of obstructions (other than utilities) and so contains Made Ground build up over potentially Made Ground and natural soils. Beneath the area off the road within site, there is likely to be a topsoil over Made Ground over natural, however significant obstructions are unlikely. Settlement of any newly placed materials to level the entrance and construct any new elements of road should be considered ahead of any works.
Civil and Structural	It is expected that groundwater is deeper than the likely influencing depths to construct the road and access. Running sands are not anticipated at the site. There is likely to be services in the verge and main highway off the roundabout servicing the residential estate to the east. Diversions and civil works should take this into consideration



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 1.3.
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

ACM	Asbestos-containing material	MMP	Materials management plan
ADS	Acoustic design statement	ND	Not detected
AST	Above-ground storage tank	NDP	Nuclear density probe
BGS	British Geological Survey	NMP	Noise management plan
BSI	British Standards Institute	NPSE	Noise policy statement for England
BTEX	Benzene, toluene, ethylbenzene, xylenes	NR	Not recorded
CA	Coal Authority	PAH	Polycyclic aromatic hydrocarbon
CBR	California bearing ratio	PCB	Polychlorinated biphenyl
CIEH	Chartered Institute of Environmental Health	PI	Plasticity index
CIRIA	Construction Industry Research Association	PID	Photo ionisation detector
CLEA	Contaminated land exposure assessment	POS	Public open space
CML	Council of Mortgage Lenders	PPE	Personnel protective equipment
CoC	Contaminants of concern	ProPG	Professional practice guidance
CSM	Conceptual site model	QA	Quality assurance
DNAPL	Dense non-aqueous phase liquid (chlorinated solvents, PCB)	SGV	Soil guideline value
DWS	Drinking water standard	SPH	Separate-phase hydrocarbon
EA	Environment Agency	SPT	Standard penetration test
EQS	Environmental quality standard	SVOC	Semi-volatile organic compound
FFL	Finished floor level	TPH	Total and speciated petroleum hydrocarbon
GAC	General assessment criteria	TPH CWG	Total Petroleum Hydrocarbon (Criteria Working Group)
GL	Ground level	UKWIR	United Kingdom Water Infrastructure Risk
GSV	Gas screening value	UST	Underground storage tank
HCV	Health criteria value	VCC	Vibro-concrete column
ICSM	Initial conceptual site model	VOC	Volatile organic compound
LEL	Lower explosive limit	VRSC	Vibro-replacement stone columns
LMRL	Lower method reporting limit	VSC	Vibro-stone columns
LNAPL	Light non-aqueous phase liquid (petrol, diesel, kerosene)	WHO	World Health Organisation
MCV	Moisture condition value	WRAP	Waste and Resources Action Programme



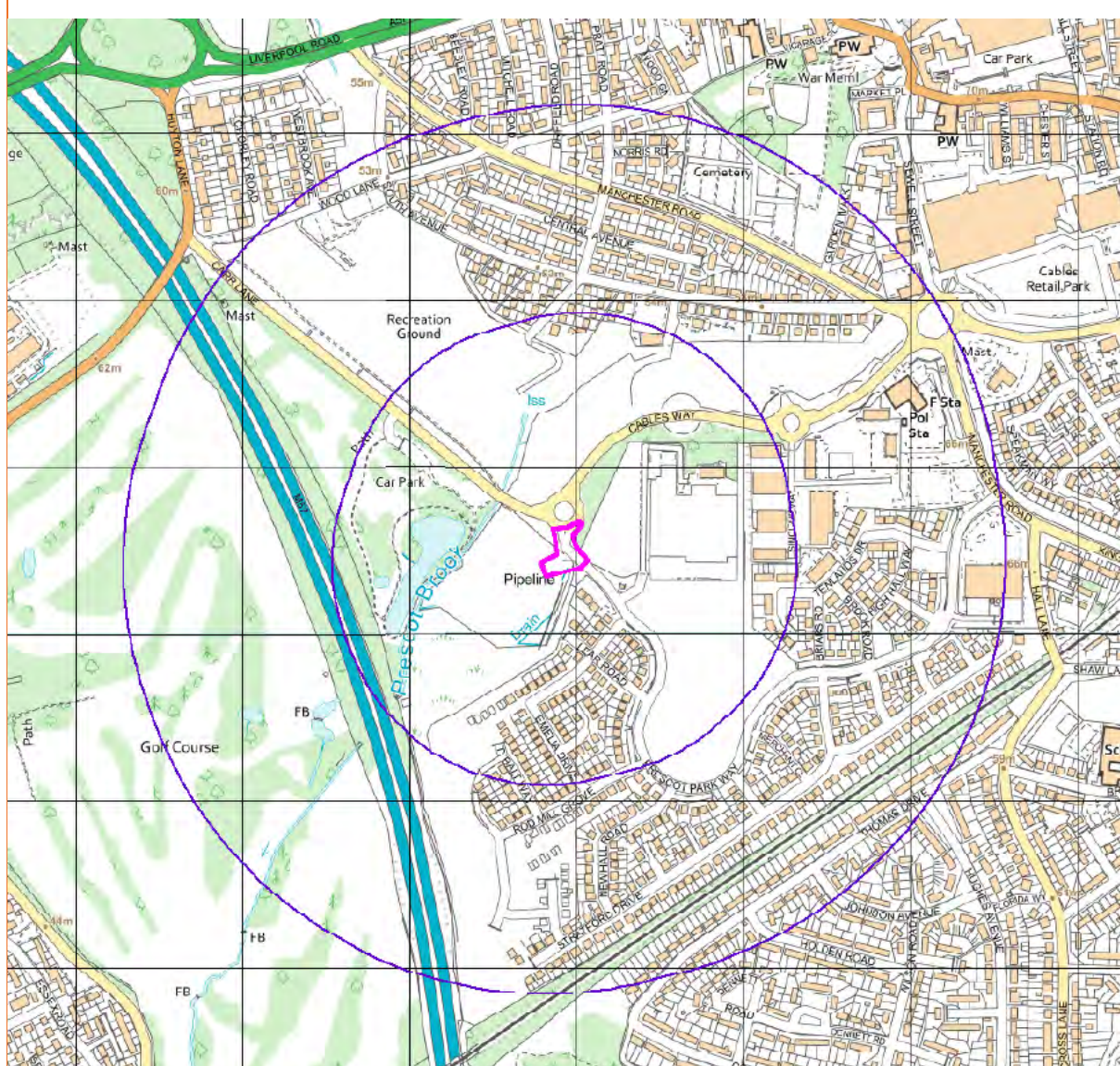
MIBK	Methyl isobutyl ketone	WTE	Water table elevation
m	Metres	ppm	Parts per million
km	Kilometres	mg/m³	Milligram per metre cubed
% v/v	Percent volume in air	m bgl bgl	Metres below ground level
mb	Millibars (atmospheric pressure)	m bcl	Metre below cover level
l/hr	Litres per hour	mAOD	Metres above ordnance datum (sea level)
µg/l	Micrograms per litre (parts per billion)	kN/m²	Kilonewtons per metre squared
ppb	Parts per billion	µm	Micrometre
mg/kg	Milligrams per kilogram (parts per million)	SSRT	Site Specific Remediation Target
PSD	Particle Size Distribution	DD	Dry Density
CL:AIRE	Contaminated Land: Applications in Real Environments	Mc	Moisture Content
ρ	Bulk Density	GPR	Ground Penetrating Radar
NDP	Nuclear Density Probe	FFL	Finished Floor Level
LEL	Lower Explosive Limit	UKWIR	UK Water Industry Research
CIRIA	Construction Industry Research and Information Association	LOD	Limit of Detection



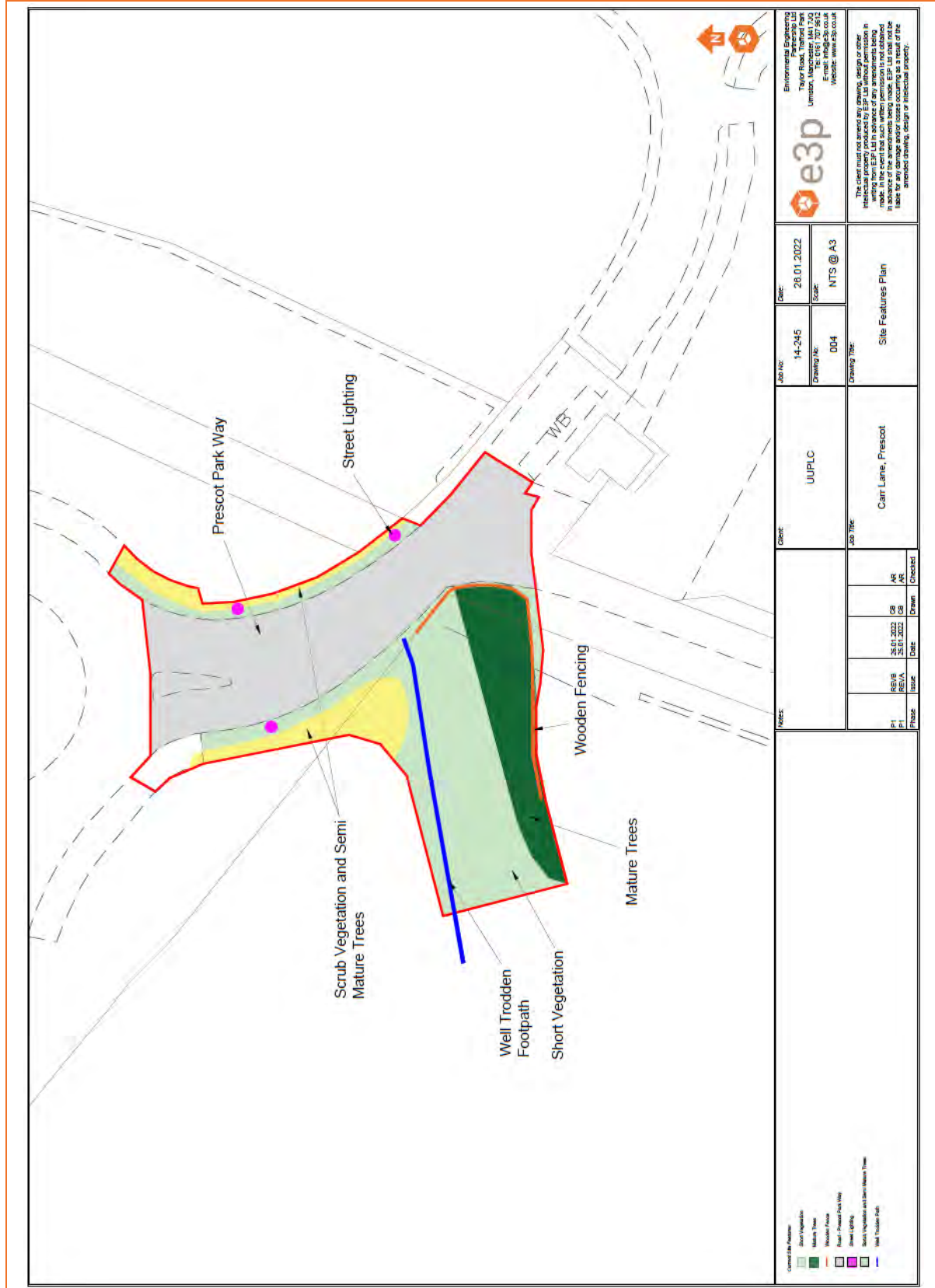
APPENDIX III

DRAWINGS

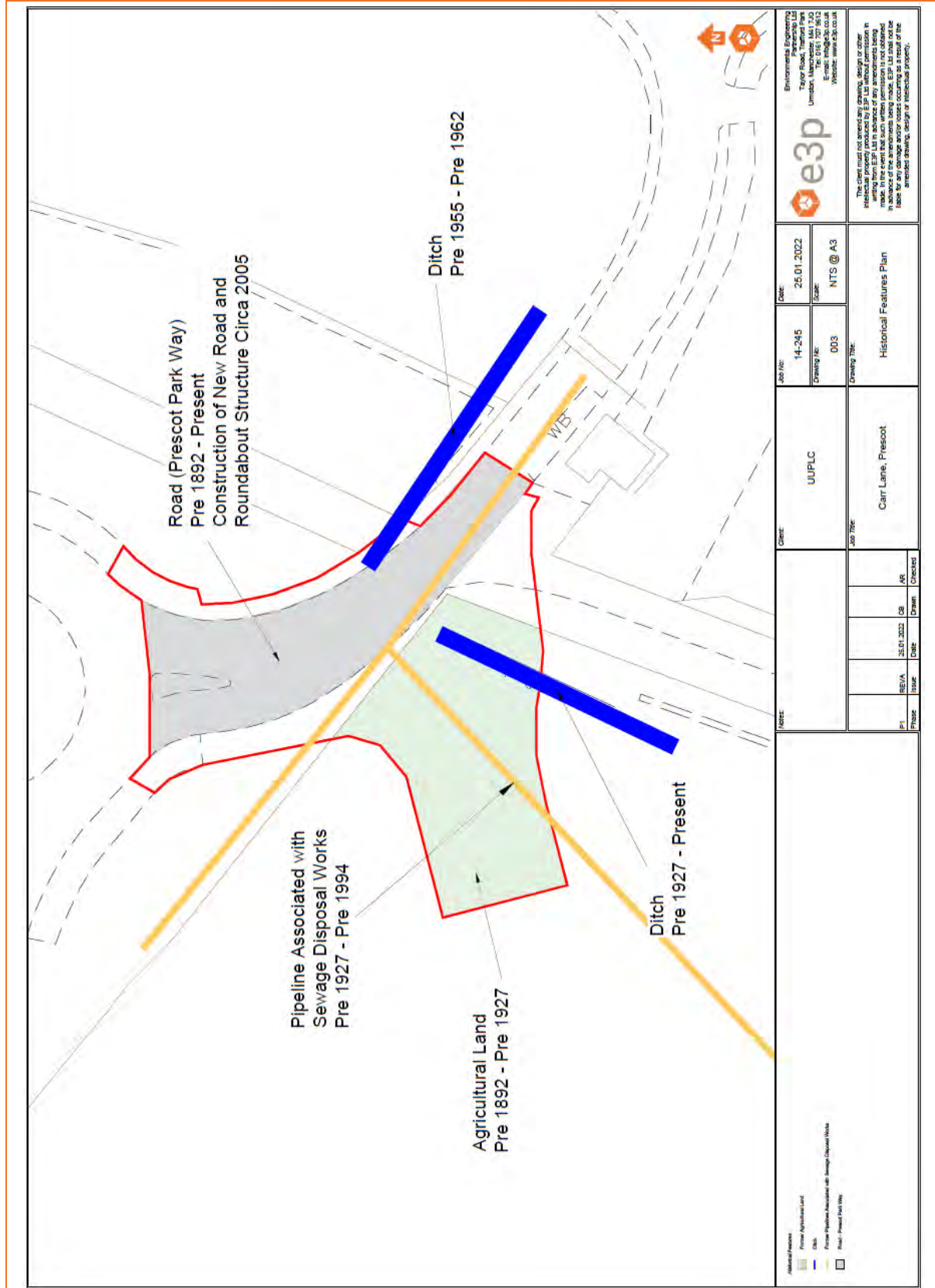
DRAWING 14-245-001 – SITE LOCATION PLAN



DRAWING 14-245-002 – SITE FEATURES PLAN



DRAWING 14-245-002 – HISTORICAL FEATURES PLAN

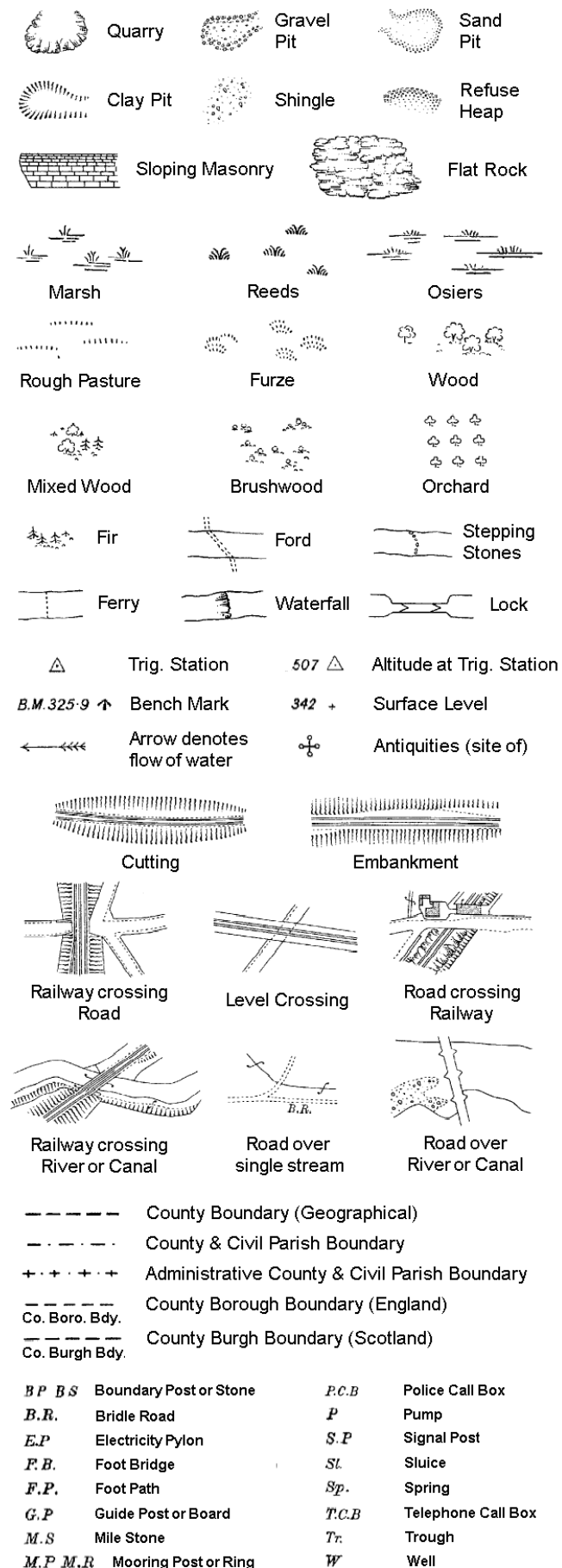


APPENDIX IV

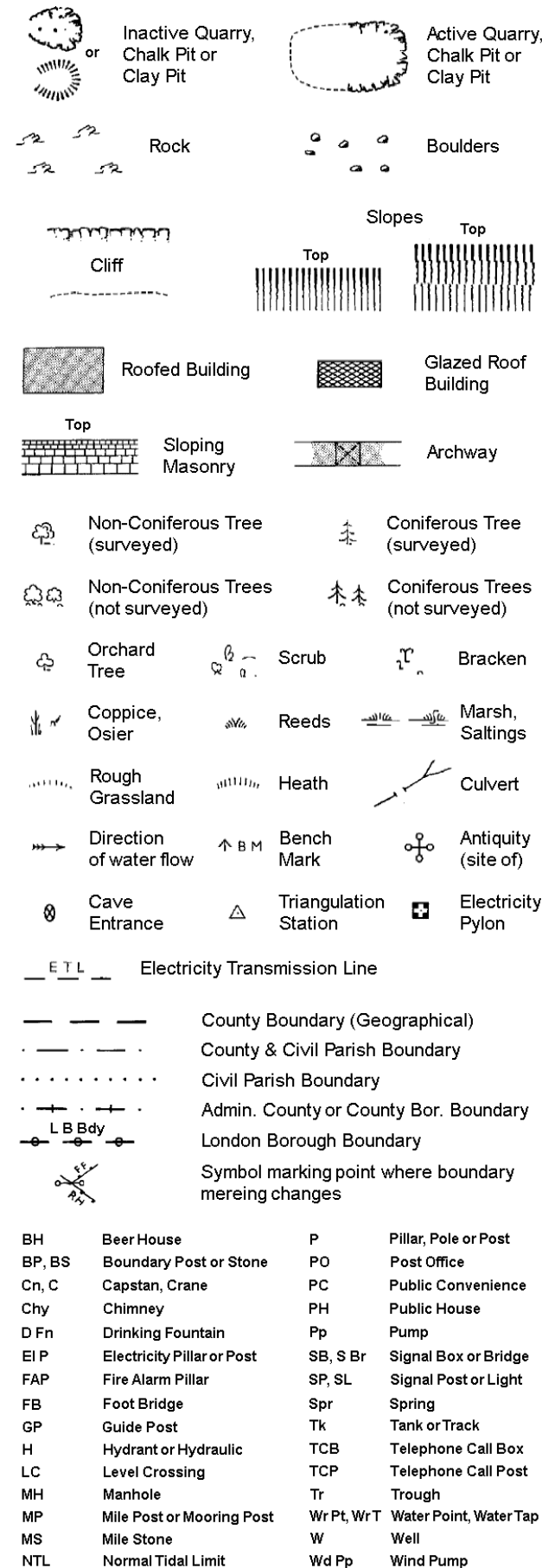
HISTORICAL MAPS

Historical Mapping Legends

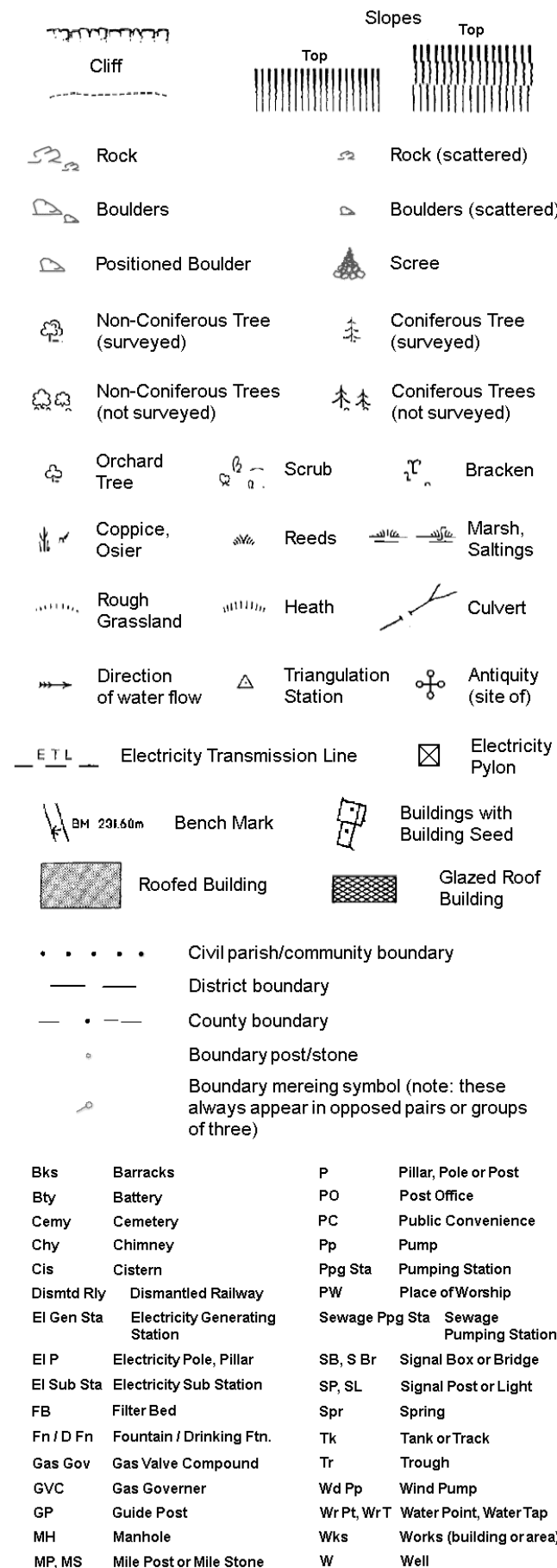
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



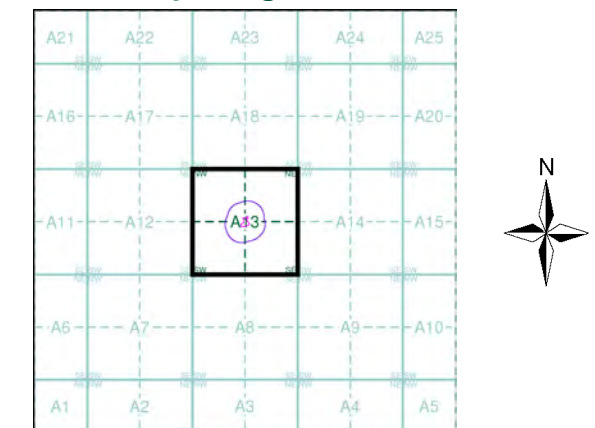
Large-Scale National Grid Data 1:2,500 and 1:1,250



Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Lancashire And Furness	1:2,500	1892 - 1893	2
Lancashire And Furness	1:2,500	1907 - 1908	3
Lancashire And Furness	1:2,500	1927	4
Lancashire And Furness	1:2,500	1937	5
Ordnance Survey Plan	1:2,500	1955 - 1956	6
Ordnance Survey Plan	1:1,250	1955	7
Ordnance Survey Plan	1:1,250	1962 - 1976	8
Ordnance Survey Plan	1:2,500	1967	9
Ordnance Survey Plan	1:1,250	1971 - 1977	10
Additional SIMs	1:1,250	1984	11
Large-Scale National Grid Data	1:1,250	1993	12
Large-Scale National Grid Data	1:1,250	1994	13
Historical Aerial Photography	1:2,500	2000	14

Historical Map - Segment A13



Order Details

Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

C S G Recovery, Carr Lane, PRESCOT, L34 1JZ



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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Lancashire And Furness

Published 1892 - 1893

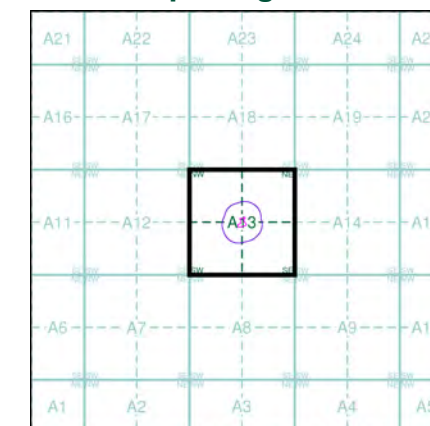
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

107_07
1893
1:2,500
107_11
1892
1:2,500

Historical Map - Segment A13



Order Details

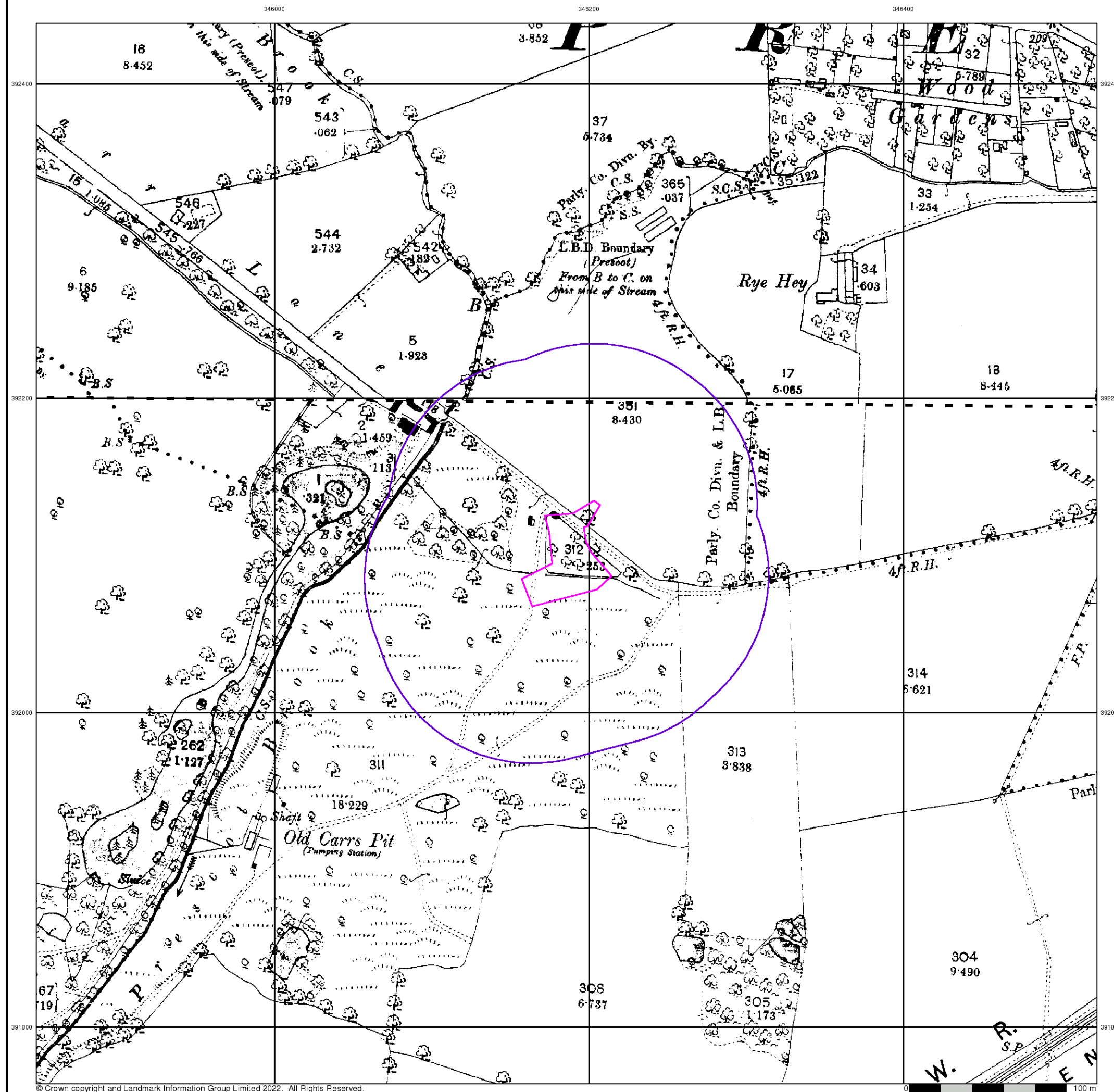
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Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

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Landmark
INFORMATION GROUP

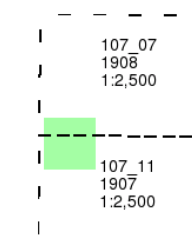
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



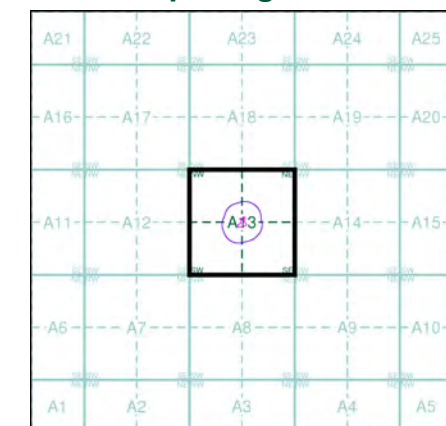


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

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Landmark
INFORMATION GROUP

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Lancashire And Furness

Published 1927

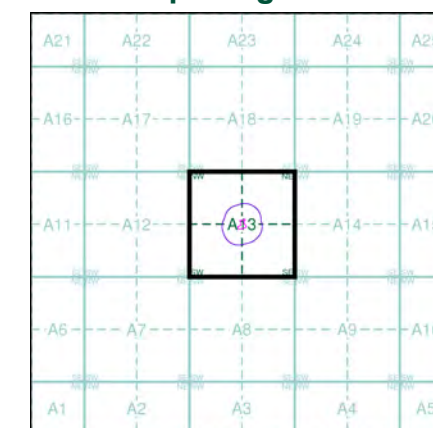
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

107_07 1927 1:2,500
107_11 1927 1:2,500

Historical Map - Segment A13



Order Details

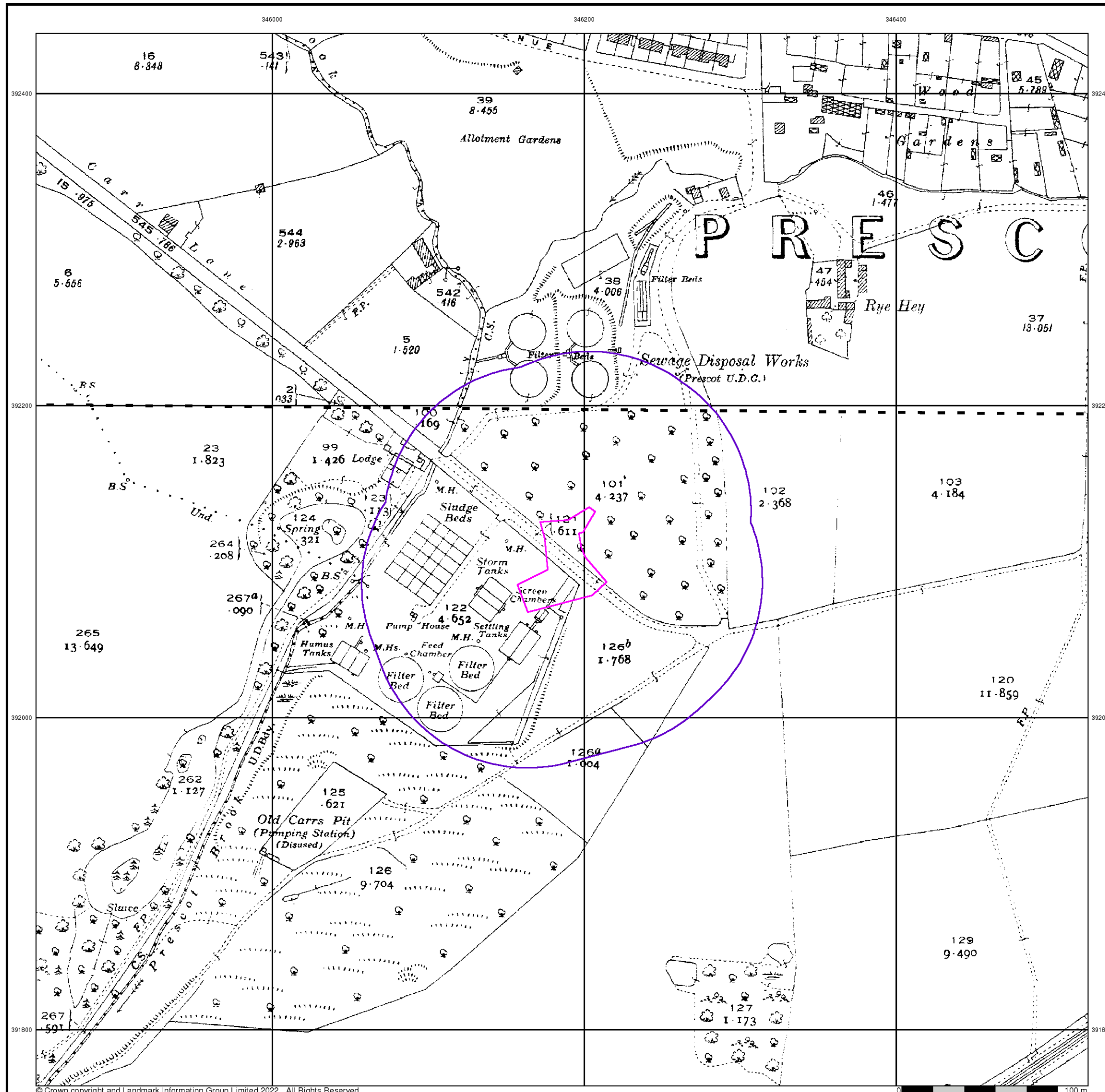
Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

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Lancashire And Furness

Published 1937

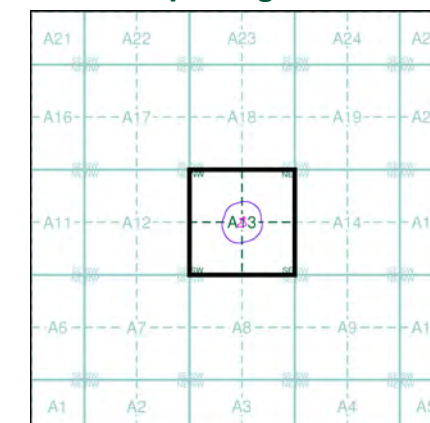
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

107_07
1937
1:2,500
107_11
1937
1:2,500

Historical Map - Segment A13



Order Details

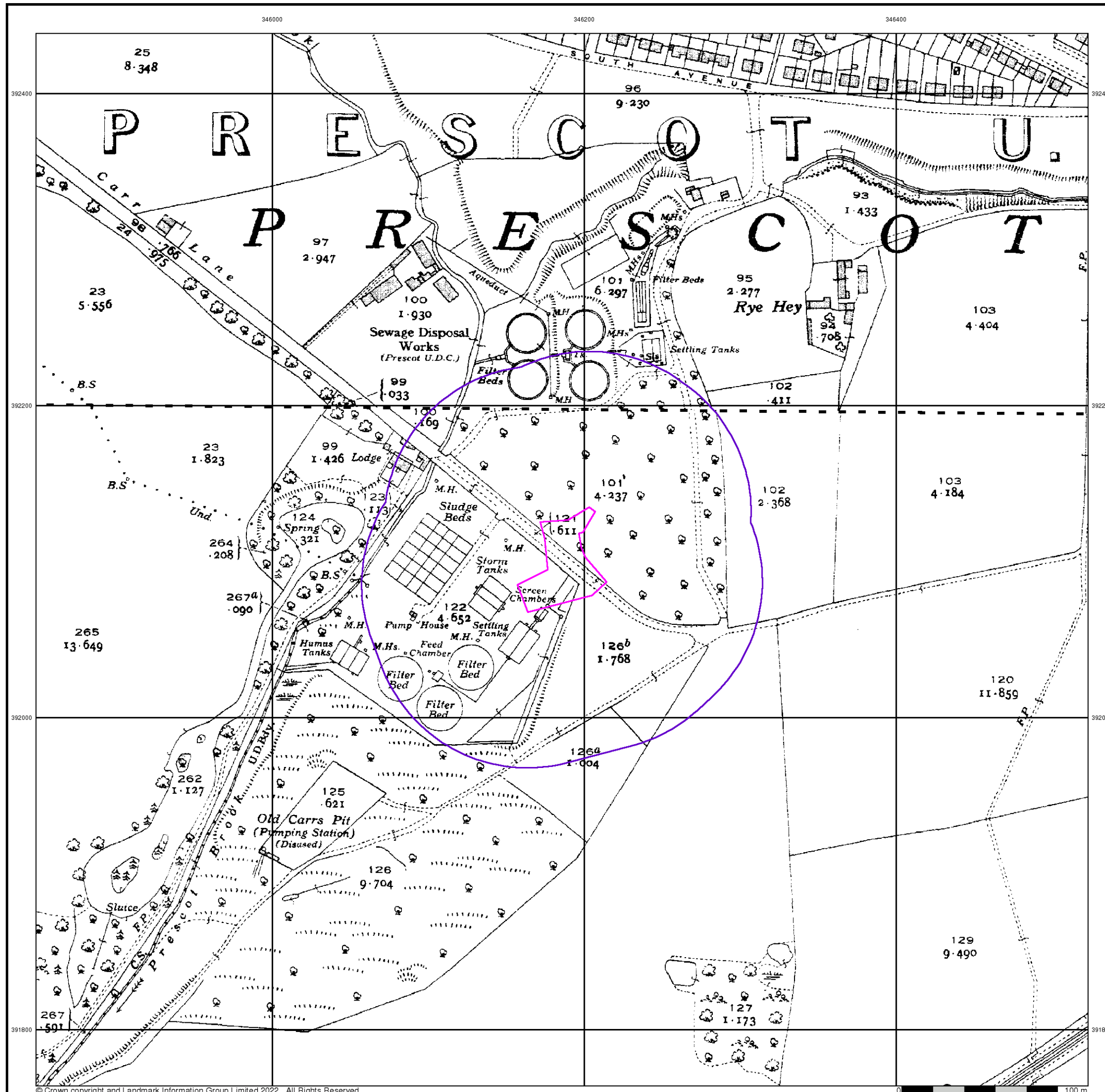
Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

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Ordnance Survey Plan

Published 1955 - 1956

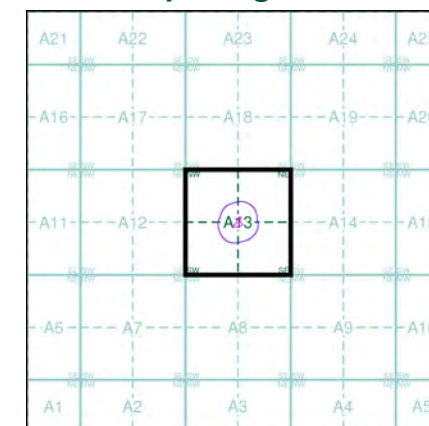
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ4592	SJ4692
1955	1956
12,500	12,500
SJ4591	SJ4691
1955	1956
12,500	12,500

Historical Map - Segment A13



Order Details

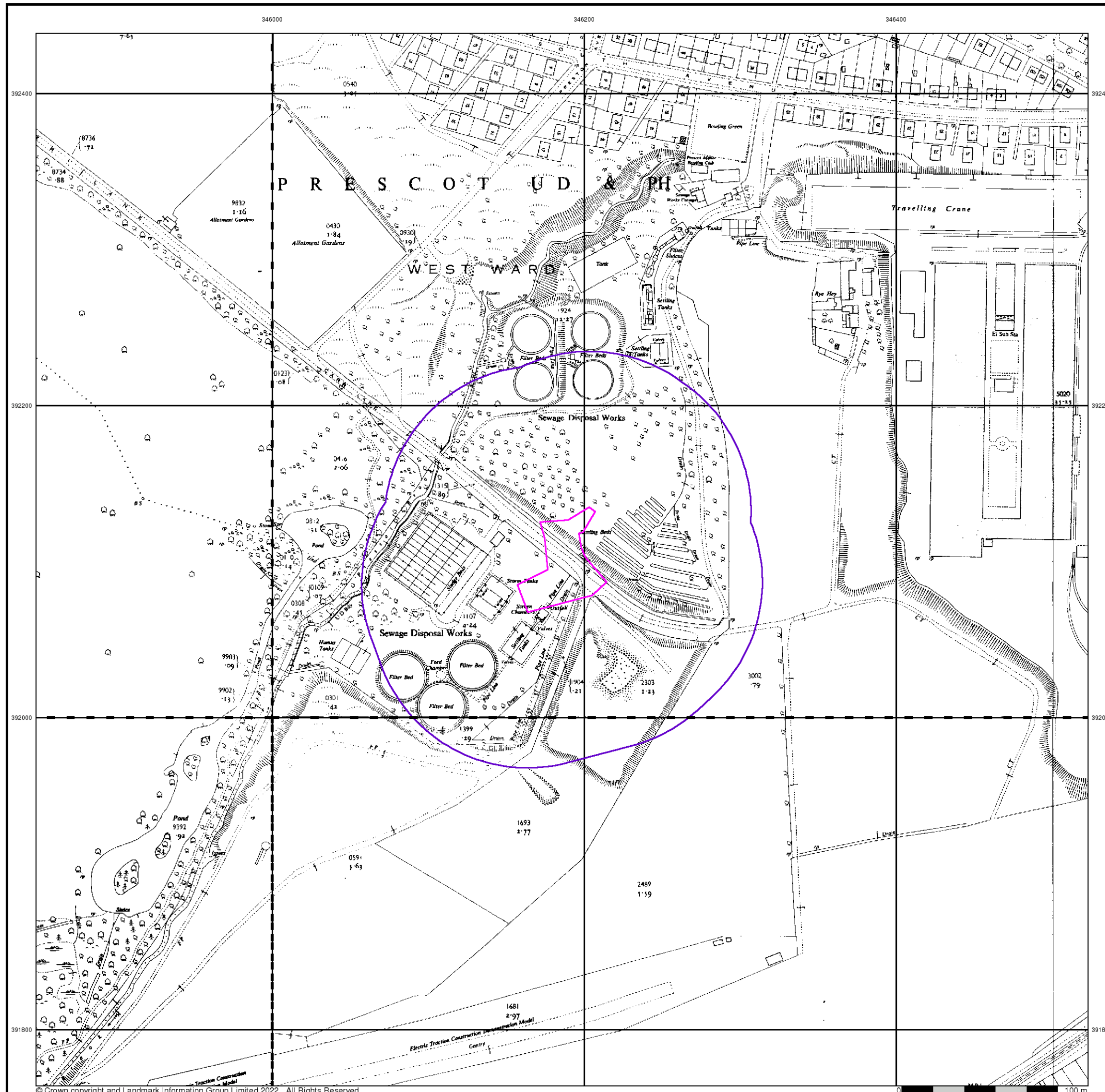
Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

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Ordnance Survey Plan

Published 1955

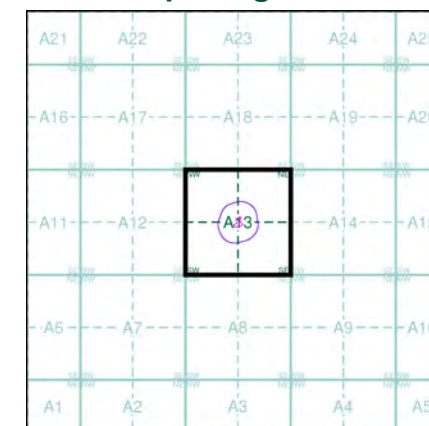
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ4592SE 1955 1:1,250	SJ4692SW 1955 1:1,250	SJ4692SE 1955 1:1,250
SJ4591NE 1955 1:1,250	SJ4691NW 1955 1:1,250	SJ4691NE 1955 1:1,250

Historical Map - Segment A13



Order Details

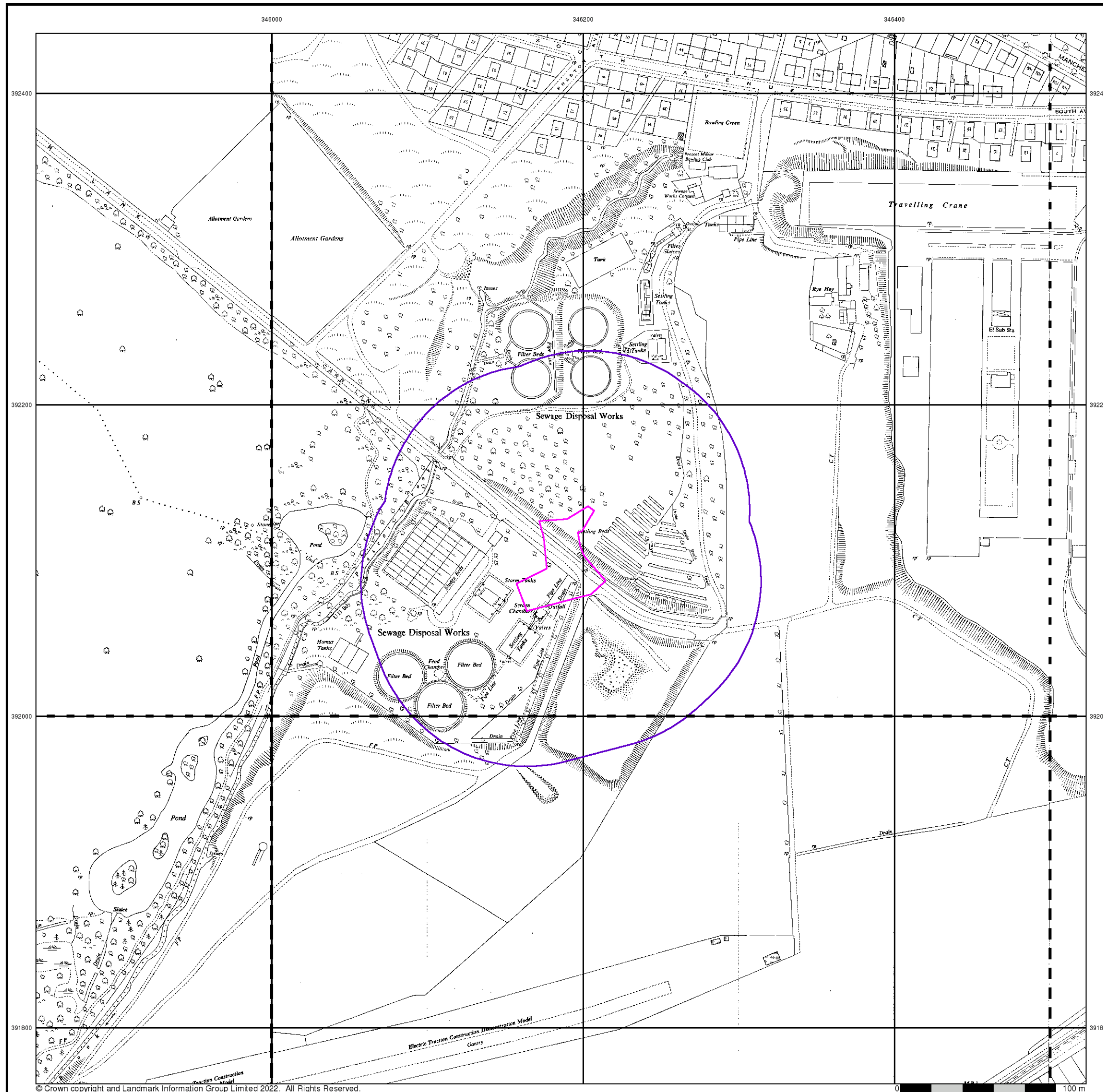
Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

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Ordnance Survey Plan

Published 1962 - 1976

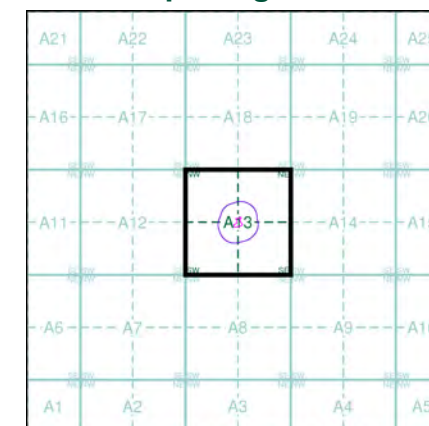
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

SJ4592SE 1976 1:1,250	SJ4692SW 1972 1:1,250	SJ4692SE 1962 1:1,250
SJ4591NE 1966 1:1,250	SJ4691NW 1976 1:1,250	SJ4691NE 1962 1:1,250

Historical Map - Segment A13



Order Details

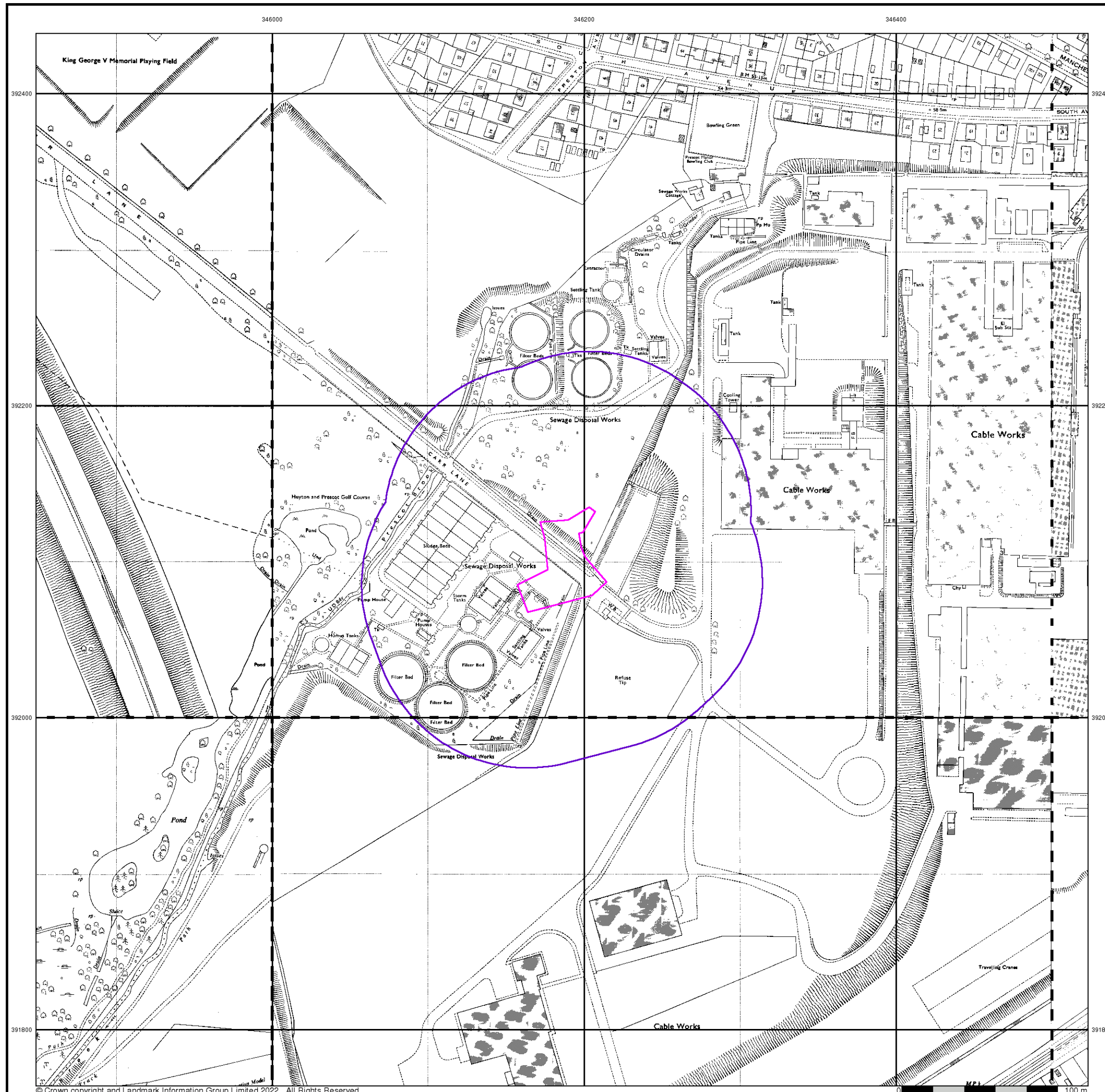
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Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

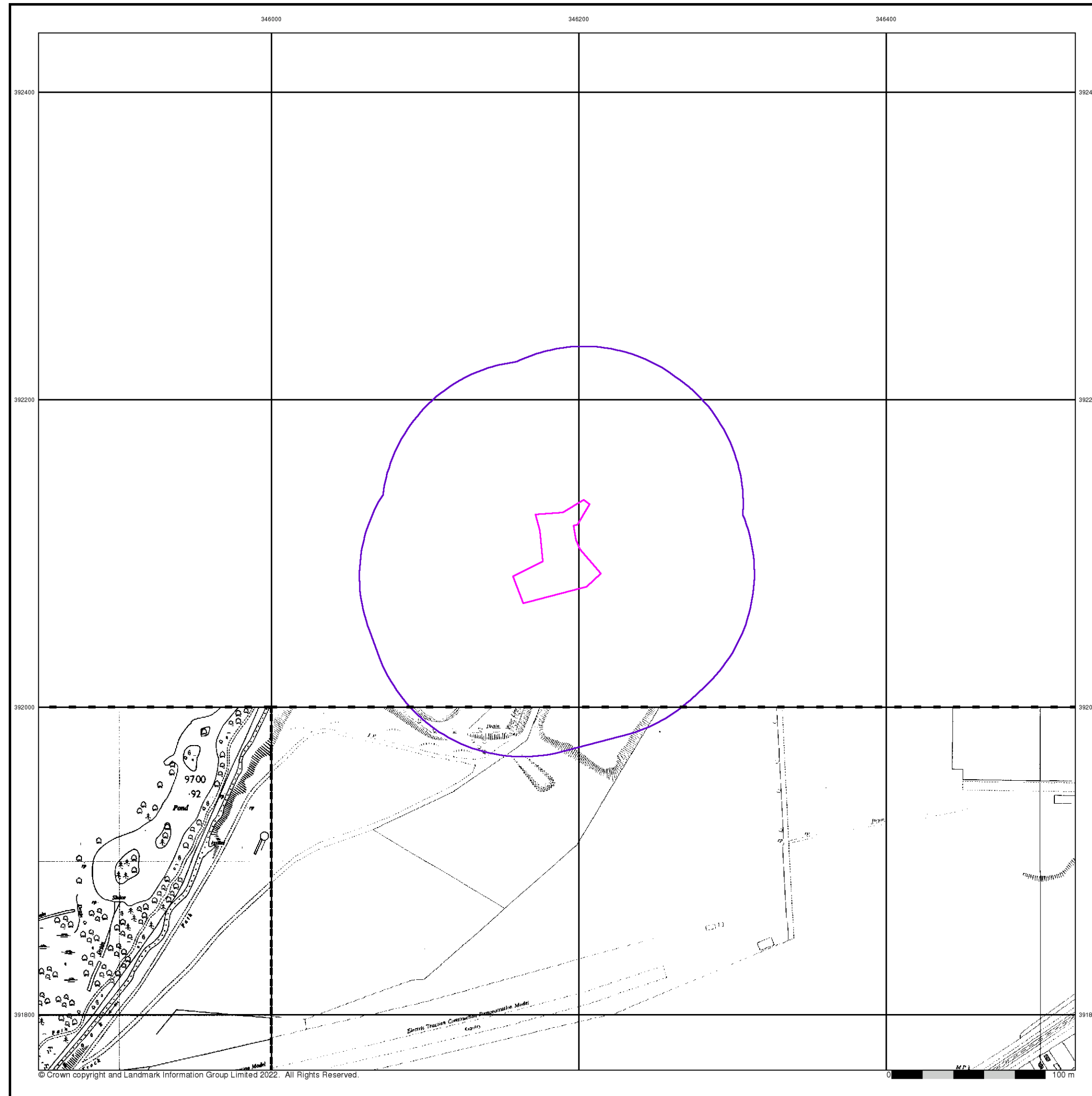
Site Details

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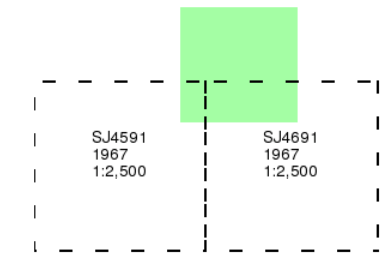
Ordnance Survey Plan

Published 1967

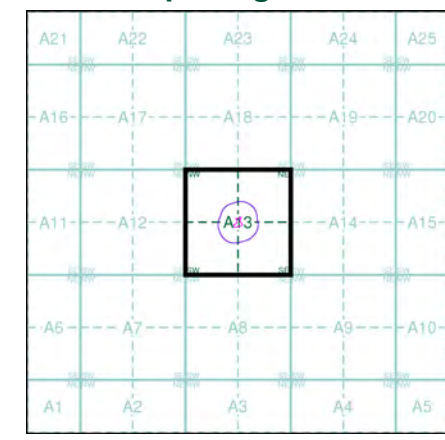
Source map scale - 1:2,500

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details
Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details
C S G Recovery, Carr Lane, PRESCOT, L34 1JZ



Ordnance Survey Plan

Published 1971 - 1977

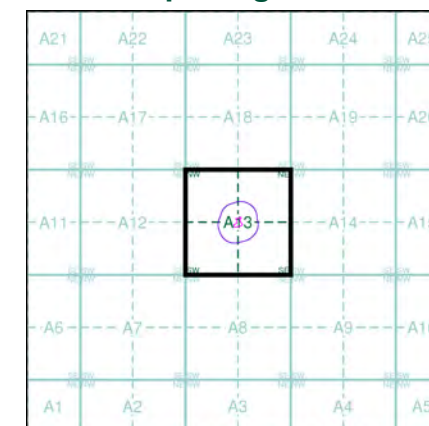
Source map scale - 1:1,250

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain. The published date given below is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas.

Map Name(s) and Date(s)

		SJ4692SE 1972 1:1,250
SJ4591NE 1977 1:1,250		SJ4691NE 1971 1:1,250

Historical Map - Segment A13



Order Details

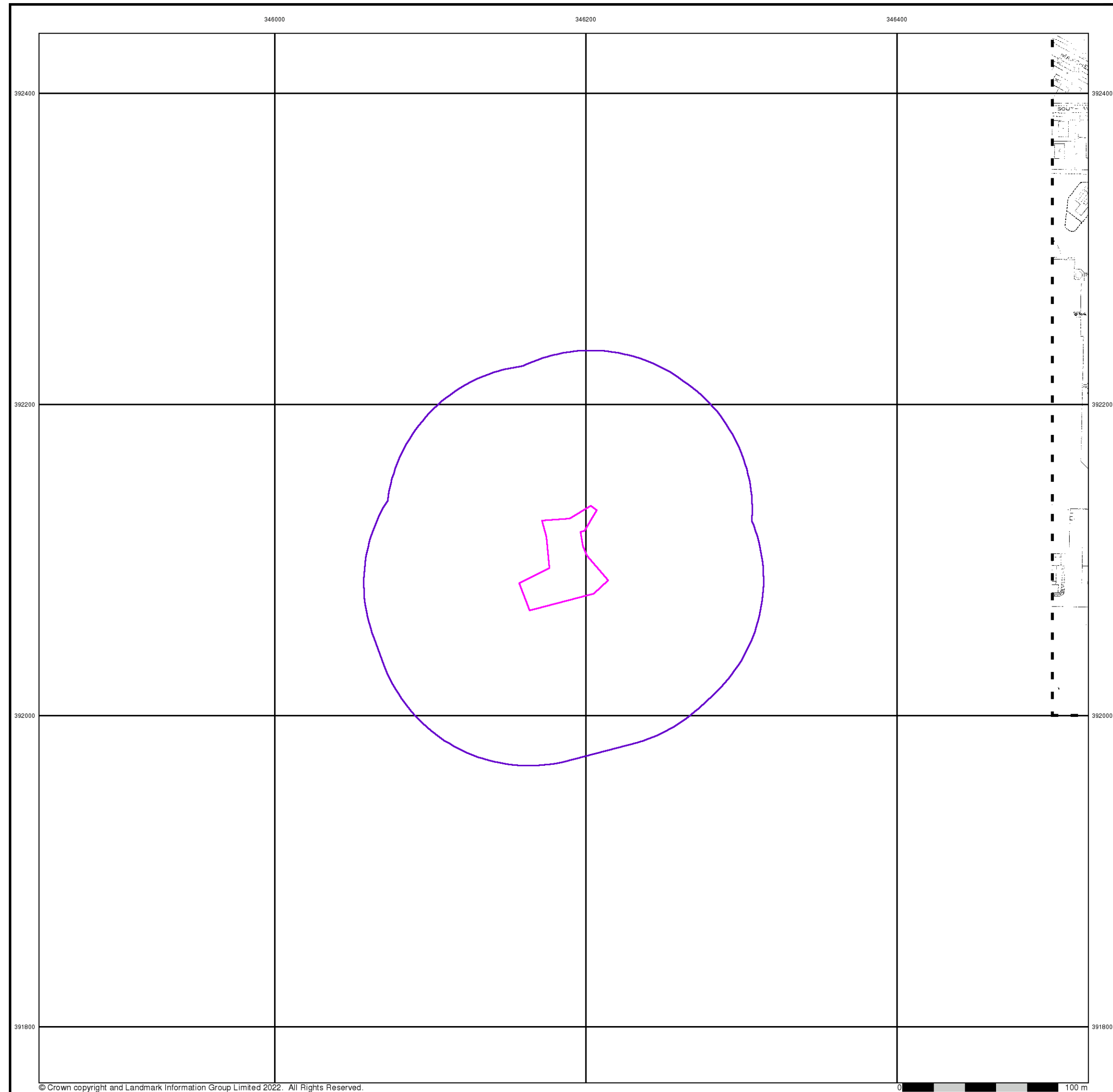
Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

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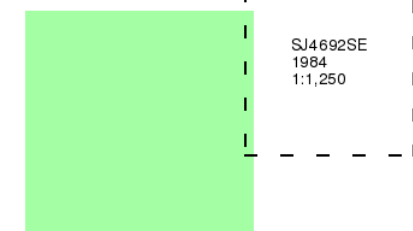
Additional SIMs

Published 1984

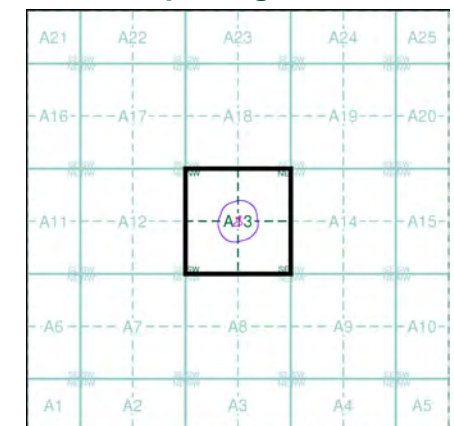
Source map scale - 1:1,250

The SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') are further, minor editions of mapping which were produced and published in between the main editions as an area was updated. They date from 1947 to 1994, and contain detailed information on buildings, roads and land-use. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

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Large-Scale National Grid Data

Published 1993

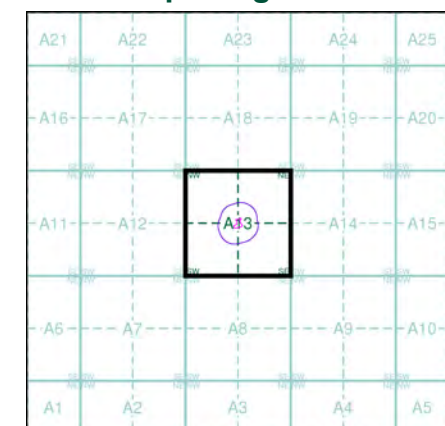
Source map scale - 1:1,250

'Large Scale National Grid Data' superseded SIM cards (Ordnance Survey's 'Survey of Information on Microfilm') in 1992, and continued to be produced until 1999. These maps were the fore-runners of digital mapping and so provide detailed information on houses and roads, but tend to show less topographic features such as vegetation. These maps were produced at both 1:2,500 and 1:1,250 scales.

Map Name(s) and Date(s)

SJ4592SE	SJ4692SW	SJ4692SE
1993	1993	1993
1:1,250	1:1,250	1:1,250
SJ4591NE	SJ4691NW	SJ4691NE
1993	1993	1993
1:1,250	1:1,250	1:1,250

Historical Map - Segment A13



Order Details

Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

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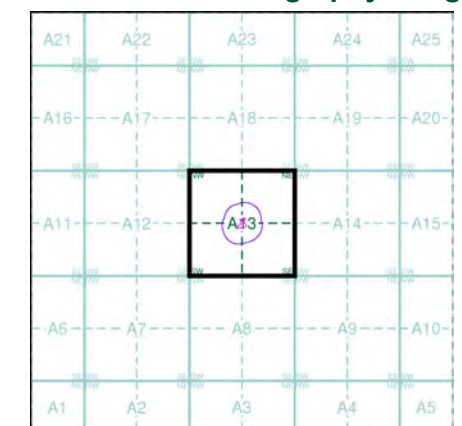


Historical Aerial Photography

Published 2000

This aerial photography was produced by Getmapping, these vertical aerial photographs provide a seamless, full colour survey of the whole of Great Britain

Historical Aerial Photography - Segment A13



Order Details

Order Number: 289715422_1_1
Customer Ref: 14245
National Grid Reference: 346190, 392100
Slice: A
Site Area (Ha): 0.19
Search Buffer (m): 100

Site Details

C S G Recovery, Carr Lane, PRESCOT, L34 1JZ

Landmark
INFORMATION GROUP

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Fax: 0844 844 9951
Web: www.envirocheck.co.uk



APPENDIX V

COAL AUTHORITY REPORT

AND MINE ABANDONMENT

PLANS



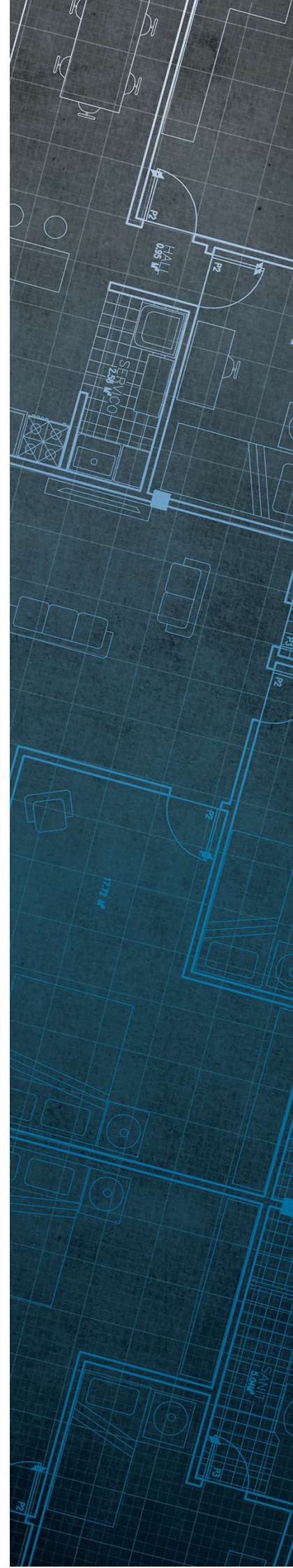
The Coal
Authority

Consultants Coal Mining Report

Carr Lane
Prescot Business Park
Prescot
Knowsley
L34 1QL

Date of enquiry:	2 September 2020
Date enquiry received:	2 September 2020
Issue date:	2 September 2020

Our reference:	51002306872001
Your reference:	14245-RJW-A



Consultants

Coal Mining Report

This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

E3P

Enquiry address

Carr Lane
Prescot Business Park
Prescot
Knowsley
L34 1QL

How to contact us

0345 762 6848 (UK)
+44 (0)1623 637 000 (International)

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

 @coalauthority

 /company/the-coal-authority

 /thecoalauthority

 /thecoalauthority



Approximate position of property



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Section 1 – Mining activity and geology

Past underground mining

Colliery	Seam	Mineral	Coal Authority reference	Depth (m)	Direction to working	Dipping rate of seam worked (degrees)	Dipped direction of seam worked	Extraction thickness (cm)	Year last mined
unnamed	SIR JOHN	Coal	300E	100	South	9.3	South-West	60	1895
unnamed	RUSHY PARK	Coal	3ZUW	138	North-East	11.0	South	120	1863
unnamed	RUSHY PARK	Coal	300G	147	Beneath Property	11.0	South	120	1863
unnamed	RUSHY PARK	Coal	300F	166	South-East	9.4	South	130	1885

Probable unrecorded shallow workings

Yes.

Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

Mine entries

Entry type	Reference	Grid reference	Treatment description	Mineral	Conveyancing details
Shaft	345391-008	345994 391915	This shaft is covered by a concrete cap enclosed by a chain link fence	Coal	
Shaft	345391-011	345966 391894	This shaft was capped to an unknown specification in May 1977	Coal	
Shaft	346391-015	346117 391947	This mine entry was searched for in 2015 by Groundshire by 78 boreholes but no evidence of features that would indicate the presence of a mine entry were found.	Coal	
Shaft	346391-016	346053 391909	This mine entry was searched for in 2015 by Groundshire by 85 boreholes but no evidence of features that would indicate the presence of a mine entry were found.	Coal	
Shaft	346391-019	346084 391863	This mine entry was searched for in 2015 by Groundshire by 145 boreholes but no evidence of features that would indicate the presence of a mine entry were found.	Coal	
Shaft	346392-001	346096 392068	This shaft was searched for by drilling boreholes in 1976 but no evidence of the shaft was found.	Coal	

Abandoned mine plan catalogue numbers

The following abandoned mine plan catalogue numbers intersect with some, or all, of the enquiry boundary:

NW67	NW822	0
16820	14928	PO0
NW315		

Please contact us on 0345 762 6848 to determine the exact abandoned mine plans you require based on your needs.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
WIGAN FIVE FEET	Coal	Yes	Within	N/A	125
WIGAN FIVE FEET	Coal	Yes	Within	N/A	298
WIGAN FOUR FEET	Coal	Yes	Within	N/A	117
WIGAN FOUR FEET	Coal	Yes	Within	N/A	122

Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

Opencast mines

Please refer to the "Summary of findings" map (on separate sheet) for details of any opencast areas within 500 metres of the enquiry boundary.

Coal Authority managed tips

None recorded within 500 metres of the enquiry boundary.

Section 2 – Investigative or remedial activity

Please refer to the 'Summary of findings' map (on separate sheet) for details of any activity within the area of the site boundary.

Site investigations

Distance to site investigation (m)	Direction
Within	N/A
6.1	North-East
Within	N/A

See Section 4 for further information.

Remediated sites

None recorded within 50 metres of the enquiry boundary.

Coal mining subsidence

The Coal Authority has not received a damage notice or claim for the subject property, or any property within 50 metres of the enquiry boundary, since 31 October 1994.

There is no current Stop Notice delaying the start of remedial works or repairs to the property.

The Coal Authority is not aware of any request having been made to carry out preventive works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991.

Mine gas

None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes

None recorded within 500 metres of the enquiry boundary.

Section 3 – Licensing and future mining activity

Future underground mining

None recorded.

Coal mining licensing

None recorded within 200 metres of the enquiry boundary.

Court orders

None recorded.

Section 46 notices

No notices have been given, under section 46 of the Coal Mining Subsidence Act 1991, stating that the land is at risk of subsidence.

Withdrawal of support notices

The property is not in an area where a notice to withdraw support has been given.

The property is not in an area where a notice has been given under section 41 of the Coal Industry Act 1994, cancelling the entitlement to withdraw support.

Payments to owners of former copyhold land

The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Section 4 – Further information

The following potential risks have been identified and as part of your risk assessment should be investigated further.

Development advice

The site is within an area of historical coal mining activity. Should you require advice and/or support on understanding the mining legacy, its risks to your development or what next steps you need to take, please contact us.

Site investigations

The site is within an area of previous interest. It is close to where the Coal Authority has received information relating to past site investigations.

The site requires further investigation and may influence how you approach your risk assessment.

For further information on specific site or ground investigations in relation to any issues raised in Section 4, please call us on 0345 762 6848 or email us at groundstability@coal.gov.uk.

Section 5 – Data definitions

The datasets used in this report have limitations and assumptions within their results. For more guidance on the data and the results specific to the enquiry boundary, please **call us on 0345 762 6848** or **email us at groundstability@coal.gov.uk**.

Past underground coal mining

Details of all recorded underground mining relative to the enquiry boundary. Only past underground workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination, will be included.

Probable unrecorded shallow workings

Areas where the Coal Authority believes there to be unrecorded coal workings that exist at or close to the surface (less than 30 metres deep).

Spine roadways at shallow depth

Connecting roadways either, working to working, or, surface to working, both in-seam and cross measures that exist at or close to the surface (less than 30 metres deep), either within or within 10 metres of the enquiry boundary.

Mine entries

Details of any shaft or adit either within, or within 100 metres of the enquiry boundary including approximate location, brief treatment details where known, the mineral worked from the mine entry and conveyance details where the mine entry has previously been sold by the Authority or its predecessors British Coal or the National Coal Board.

Abandoned mine plan catalogue numbers

Plan numbers extracted from the abandoned mines catalogue containing details of coal and other mineral abandonment plans deposited via the Mines Inspectorate in accordance with the Coal Mines Regulation Act and Metalliferous Mines Regulation Act 1872. A maximum of 9 plan extents that intersect with the enquiry boundary will be included. This does not infer that the workings and/or mine entries shown on the abandonment plan will be relevant to the site/property boundary.

Outcrops

Details of seam outcrops will be included where the enquiry boundary intersects with a conjectured or actual seam outcrop location (derived by either the British Geological Survey or the Coal Authority) or intersects with a defined 50 metres buffer on the coal (dip) side of the outcrop. An indication of whether the Coal Authority believes the seam to be of sufficient thickness and/or quality to have been worked will also be included.

Geological faults, fissures and breaklines

Geological disturbances or fractures in the bedrock. Surface fault lines (British Geological Survey derived data) and fissures and breaklines (Coal Authority derived data) intersecting with the enquiry boundary will be included. In some circumstances faults, fissures or breaklines have been known to contribute to surface subsidence damage as a consequence of underground coal mining.

Opencast mines

Opencast coal sites from which coal has been removed in the past by opencast (surface) methods and where the enquiry boundary is within 500 metres of either the licence area, site boundary, excavation area (high wall) or coaling area.

Coal Authority managed tips

Locations of disused colliery tip sites owned and managed by the Coal Authority, located within 500 metres of the enquiry boundary.

Site investigations

Details of site investigations within 50 metres of the enquiry boundary where the Coal Authority has received information relating to coal mining risk investigation and/or remediation by third parties.

Remediated sites

Sites where the Coal Authority has undertaken remedial works either within or within 50 metres of the enquiry boundary following report of a hazard relating to coal mining under the Coal Authority's Emergency Surface Hazard Call Out procedures.

Coal mining subsidence

Details of alleged coal mining subsidence claims made since 31 October 1994 either within or within 50 metres of the enquiry boundary. Where the claim relates to the enquiry boundary confirmation of whether the claim was accepted, rejected or whether liability is still being determined will be given. Where the claim has been discharged, whether this was by repair, payment of compensation or a combination of both, the value of the claim, where known, will also be given.

Details of any current 'Stop Notice' deferring remedial works or repairs affecting the property/site, and if so the date of the notice.

Details of any request made to execute preventative works before coal is worked under section 33 of the Coal Mining Subsidence Act 1991. If yes, whether any person withheld consent or failed to comply with any request to execute preventative works.

Mine gas

Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission.

Mine water treatment schemes

Locations where the Coal Authority has constructed or operates assets that remove pollutants from mine water prior to the treated mine water being discharged into the receiving water body.

These schemes are part of the UK's strategy to meet the requirements of the Water Framework Directive. Schemes fall into 2 basic categories: Remedial – mitigating the impact of existing pollution or Preventative – preventing a future pollution incident.

Mine water treatment schemes generally consist of one or more primary settlement lagoons and one or more reed beds for secondary treatment. A small number are more specialised process treatment plants.

Future underground mining

Details of all planned underground mining relative to the enquiry boundary. Only those future workings where the enquiry boundary is within 0.7 times the depth of the workings (zone of likely physical influence) allowing for seam inclination will be included.

Coal mining licensing

Details of all licenses issued by the Coal Authority either within or within 200 metres of the enquiry boundary in relation to the under taking of surface coal mining, underground coal mining or underground coal gasification.

Court orders

Orders in respect of the working of coal under the Mines (Working Facilities and Support) Acts of 1923 and 1966 or any statutory modification or amendment thereof.

Section 46 notices

Notice of proposals relating to underground coal mining operations that have been given under section 46 of the Coal Mining Subsidence Act 1991.

Withdrawal of support notices

Published notices of entitlement to withdraw support and the date of the notice. Details of any revocation notice withdrawing the entitlement to withdraw support given under Section 41 of the Coal Industry Act 1994.

Payment to owners of former copyhold land

Relevant notices which may affect the property and any subsequent notice of retained interests in coal and coal mines, acceptance or rejection notices and whether any compensation has been paid to a claimant.

The map highlights any specific surface or subsurface features within or near to the boundary of the site.

