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## **PHASE 1: DESK TOP STUDY AND COAL MINING RISK ASSESSMENT REPORT**

### **SUENO**

### **PROPOSED COMMERCIAL UNIT**

### **BRETTON STREET**

### **DEWSBURY**

### **WEST YORKSHIRE**

### **WF12 9DB**

**Project No: 21-775**

Prepared By:

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Date: 25<sup>th</sup> October 2021

Approved By:

John Ditchburn

Date: 25<sup>th</sup> October 2021

The information and /or advice contained in this Phase 1: Desk Top Study and Coal Mining Risk Assessment Report is based solely on, and is limited to, the boundaries of the site, the immediate area around the site, and the historical use(s) unless otherwise stated. This 'Report' has been prepared to collate information relating to the physical, environmental and industrial setting of the site, and to highlight, where possible, the likely problems that might be encountered when considering the future development of this site for the proposed end use. All comments, opinions, diagrams, cross sections and / or sketches contained within the report, and / or any configuration of the findings is conjectural and given for guidance only and confirmation of the anticipated ground conditions should be considered before development proceeds. Agreement for the use or copying of this report by any Third Party must be obtained in writing from Arc Environmental Limited (ARC). If a change in the proposed land use is envisaged, then a reassessment of the site should be carried out.

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## 1.0 Introduction

**October 2021**

Arc Environmental Limited has been instructed by Parkdesigned on behalf of Sueno to undertake a Phase 1: Desk Top Study and Coal Mining Risk Assessment (CMRA) Report for an existing plot of commercial land on Bretton Street in Dewsbury, West Yorkshire. It is understood that the existing structures on site will be demolished to make way for a new commercial unit with associated hardstanding with no areas of soft landscaping envisaged.

The primary objectives of this report are to assess the geological, geotechnical and potential ground contamination conditions on and beneath the surface of this site. The report has been carried out generally in accordance with the EA (Environment Agency) guidance for Land Contamination Risk Management (LCRM: October 2020) which has replaced CLR11: Model Procedures for the Management of Land Contamination. Based on all the data reviewed, a preliminary Conceptual Site Model (CSM) has been developed to define the scope and extent of any further investigation works deemed necessary, prior to commencing with the intended development works.

A site reconnaissance (walkover) survey was completed as part of this study with all relevant observations noted in Section 2.1, below.

## 2.0 Physical Setting

### 2.1 Site Details:-

**Table 2.1**

<b>Site Name &amp; Address:</b>	Proposed Commercial Unit, Bretton Street, Dewsbury WF12 9DB.
<b>National Grid Reference:</b>	424850, 420240 (Representative of the central part of the site).
<b>Description of Location:</b>	The site lies in a commercial setting to the south of Dewsbury Town Centre.
<b>Site Boundaries:</b>	N = Commercial units, E = Railway line, W = Bretfield Court with commercial units beyond & S = Bretton Street with commercial units beyond.
<b>Site Shape:</b>	The site is irregular in shape, occupying a total area of c.1.29 Hectares (Ha).
<b>General Topography:</b>	Overall, the ground profile across the site is relatively level. A detailed topographical survey plan of the site has not been provided at this stage.
<b>Site surfacing:</b>	Out with the existing structures on site there are areas of hardstanding cover (concrete and tarmac) with sporadic vegetation and trees noted.
<b>Above Ground Structures:</b>	Two industrial units are present on site. Asbestos Containing Materials (ACM's) may be present within the existing building fabric. The existing structures are to be demolished as part of the redevelopment of the site.
<b>Sub-surface Structures &amp; Services:</b>	The site reconnaissance survey inferred existing drains (manholes, etc.) on site. Other live services are also present beneath the site associated with the current and adjacent development. Relic foundations associated with historical buildings and structures may also be present. A potential below ground fuel tank was / is present adjacent to the western building.
<b>Summary of Site History:</b>	From the historical records reviewed since c.1855, the site appears to initially comprise undeveloped land, by c.1972 a depot comprising two separate buildings and associated hardscaping is recorded on site. A third building has been developed on site by c.1978 with two buildings recorded as works and the remaining building recorded as an Ambulance Station. The southerly building is no longer recorded on site by c.2021 and has been demolished. The adjoining region has historically been occupied by a mixture of residential dwellings and commercial end-use and associated infrastructure.

## 3.0 Environmental Setting

### 3.1 Site Geology:-

The geological assessment for this site has been based on geological plans and digital online data published by the British Geological Survey (BGS). The following documents have been reviewed as part of this study: -

## **3.0 Environmental Setting (Cont'd)**

### **3.1 Site Geology (Cont'd):-**

- BGS Sheet 77, Huddersfield, Solid & Drift Edition, 1:50,000 scale, 2003
- BGS Digital Mapping (Geoindex Onshore)
- Landmark Information Group: Envirocheck Report (284419784\_1\_1)
- Online CA Interactive Map Viewer
- On site BGS Borehole (SE22SW125)
- Coal Authority Coal Mining Report (51002635178001)

#### **3.1.1 Made Ground:-**

In accordance with the published BGS maps, significant thicknesses of made ground are not recorded to directly impinge on the site. However, given the previous developmental interactions recorded within the environ, made ground deposits are expected to dominate the initial part of the succession across much of the site, with reference to creating the current site levels to accommodate the existing buildings. The made ground is anticipated to comprise a mixture of disturbed natural strata (clays, silts, sands, gravels, etc.) and anthropogenic debris including on-site sourced construction wastes.

The onsite BGS borehole recorded made ground comprising topsoil, clay and brick to a depth of c.2.65m.

#### **3.1.2 Superficial Deposits:-**

As established from the published geology the natural superficial sequence is expected to comprise River Terrace Deposits (undifferentiated) - Sand and Gravel.

The onsite BGS borehole recorded initially firm to stiff clay to c.5.20m bgl (below the fill materials) above dense clayey sand and gravel to at least c.8.00m bgl.

#### **3.1.3 Solid Geology:-**

According to published BGS data, the site is underlain by the Pennine Lower Coal Measures Formation (PLCM) deposited during the Carboniferous Period. These undifferentiated deposits typically comprise cyclical alternations of Sandstone, Ironstone, Mudrocks (siltstone, mudstone & shale), productive Coal Seams and Seat Earths / Fire Clays. The site is recorded within a complex geological setting with several faults recorded in close proximity to the site.

### **3.2 Coal Mining Risk Assessment:-**

In accordance with the Coal Authority (CA – interactive website), the site is recorded to lie within a ‘Coal Mining Report Area’. However, it lies out with a ‘Development High Risk Area’ (DHRA) and ‘Area of Recorded or Possible Shallow Coal Workings’. In addition, there are no recorded mine entries (shafts or adits) on the site (or within <20m of the site boundary).

In order to assist with this coal mining risk assessment (CMRA) a Consultants Coal Mining Report (reference 51002635178001) has been obtained from the CA for this site and a copy of which is attached in Appendix II. The CA report indicates that there is past underground mining recorded to the south west of the site within the Black Bed Coal Seam at depths of between c.228m and c.259m.

It is recorded that there are no probable unrecorded shallow workings, spine roadways recorded at shallow depths, mine entries within c.100m or opencast mines / managed tip/ mine water treatment schemes within c.500m of the site. There are no recorded subsidence claims within c.50m of the site.

### 3.0 Environmental Setting (Cont'd)

#### 3.2 Coal Mining Risk Assessment (Cont'd):-

The Second Brown Metal Coal (2BM) is recorded to outcrop c.700m north west of the site dipping below the site. The 2BM is anticipated to be the shallowest seam below the site at a depth in excess of c.30m. Therefore, the site is not deemed to be at risk from potential future surface stability issues that can arise from shallow coal mining activities. As such no further assessment or intrusive works are required with regards to historical coal mining activities or instability issues that may arise from this potential geohazard.

There are no recorded gas incidents, that required investigation and remediation by the Coal Authority to mitigate the effects of the mine gas emission.

#### 3.3 Potential Geological Hazards: -

**Table 3.1**

<b>Land Slip:</b>	Ground Instability in association with landslide events is reported to be very low.
<b>Shrinkable Soils:</b>	The information provided in the Envirocheck Report reported a very low to no hazard classification for ground stability.
<b>Collapsible Soils:</b>	The stability of the superficial deposits in relation to a potential collapsibility hazard, normally associated with poorly consolidated deposits such as made ground, is reported to be very low.
<b>Compressible Soils:</b>	There is no hazard related to compressible ground stability.
<b>Running Sand:</b>	The hazard rating in connection with running sand conditions in open excavations is reported to be very low to no hazard.
<b>Ground Dissolution</b>	The site does not fall within the brine subsidence solution or compensation area ground dissolution is reported as no hazard.

#### 3.4 Site Hydrogeology:-

**Table 3.2**

<u>STRATA</u>	<u>Aquifer / Soil Leachability EA Classification</u>	<u>Comments</u>
<b>Groundwater Vulnerability:</b>	Medium Vulnerability (Secondary Superficial & Bedrock Aquifer) (Combined)	Medium vulnerability– (low pollutant speed 300-550 mm / year productive bedrock and superficial aquifer.
<b>Superficial Deposits</b>	Secondary Aquifer – A	Permeable layers capable of supporting water supplies at a local rather than strategic scale and in some cases forming an important source of base flows to rivers.
<b>Solid Geology:</b>	Secondary Aquifer - A	

- There are no Source Protection Zones that lie within 500m of the site.
- There are no water abstraction points recorded on or within 500m of the site boundary.

### 3.0 Environmental Setting (Cont'd)

#### 3.5 Site Hydrology:-

Table 3.3

<u>SURFACE WATER FEATURE</u>	<u>Location</u>	<u>Comments</u>
OS Water Network & GQA Classified River:	One recorded within c.250m.	The Calder & Hebble Navigation Canal is recorded c.245m east of the site with a GQA Grade: River Quality C.
Unclassified Watercourse(s), Canals, Ponds, Lakes & Other Bodies of Water:	None recorded within c.250m.	~
Flooding from River or Sea: (Fluvial & Tidal)	The site and immediate vicinity do not fall within a recorded flood risk area.	The EA considers the site to be at very low risk from fluvial flooding within a Flood Zone 1 (annual probability of flooding of <0.1%). Given the nature of the proposed development, it is not anticipated that a site-specific flood risk assessment will be required for this site.
Surface Water Flooding: (Pluvial) (Environment Agency)	The published EA data shows that parts of the site are considered to be at risk from pluvial flooding.	The EA considers the site to be at low (1000 year return) to high (30 year return) risk from surface water flooding. Appropriate surface water management should be adopted to deal with the future management of positively drained surface water.
Groundwater Flooding at Surface (BGS):	The site is inferred to have limited potential for groundwater flooding to occur.	Information obtained from Landmark, including recently published new maps indicating the potential for groundwater flooding at surface and below ground level, proposed by the British Geological Survey (BGS). This information is based on areas which may be potentially influenced by geological factors. Given the nature of the geological deposits below this site and the nature of the proposed development, groundwater flooding is not considered to be a potential risk to this site.
<u>RAINFALL</u>	<u>Measurements (mm)</u>	<u>Comments</u>
Annual:	574.45	Based on 'station average' records from Durham, dated from 1981-2010.
Rainfall: Min (February)	32.22	
Rainfall: Max (June)	62.98	

#### 3.6 Radon Assessment:-

The site is recorded to lie within an intermediate probability radon area, with 1% - 3% of homes estimated to be at or above the action level, in accordance with the BGS, National Geoscience Information Service, and their assessment suggests that no radon protective measures are necessary in the construction of new dwellings or extensions.

#### 3.7 Site Ecology:-

There was no visual evidence to suggest that the site is affected by the presence of invasive weed species such as Japanese Knotweed, Giant Hogweed or Himalayan Balsam, at the time of the recent site survey. Site awareness during future investigation works and during the construction phase for any potential invasive weed species would be considered prudent.

### 3.0 Environmental Setting (Cont'd)

#### 3.7 Site Ecology (Cont'd):-

Table 3.4

FEATURES	Location	Comments
Local Nature Reserves:	None recorded within c.250m.	Sparrow Wood is located c.248m SW of the site.
Areas of Adopted Green Belt:	One recorded within c.250m.	c.220m NE of the site.
Special Protection Areas:	None recorded within c.250m.	~
Nitrate Vulnerable Zone:	None recorded within c.250m.	~
Other Sensitive Land-use:	None recorded within c.250m.	~

#### 3.8 Estimated Soil Chemistry:-

Data provided by the BGS in relation to estimated soil chemistry for a number of key metals and metalloid elements is summarised in Table 3.5 below. Note; the references to the anticipated background concentrations of contaminants, sourced from the BGS, should not be relied upon. They are not site-specific and do not represent the condition of the ground at the proposed development site.

Table 3.5

Element	Soil Sample Type	Estimated Soil Concentrations (mg/kg)
Arsenic	Sediment	25 - 35
Cadmium	Sediment	<1.8
Chromium (total)	Sediment	90 – 120
Lead	Sediment	<100
Nickel	Sediment	15 - 30

### 4.0 Industrial Setting

#### 4.1 Site History:-

Copies of historical OS maps covering the site area & adjacent land are included in Appendix III and a summary of the site history based on these plans, is provided in Table 4.1 below and on the following page.

Table 4.1

Significant features / potential contamination sources highlighted in bold

Date	Site	Adjacent Areas
c.1855	The site comprises undeveloped agricultural land.	The <b>Aire &amp; Calder Navigation Canal</b> is recorded c.200m to the east with the <b>River Calder</b> recorded c.250m to the north east of the site. The <b>Lancashire &amp; Yorkshire Railway</b> is recorded c.250m south of the site.
c.1893 – c.1922	Generally as c.1855.	<b>Bretton Street</b> has been developed along the southern boundary of the site with a <b>railway</b> recorded adjacent the eastern boundary. Further <b>railway infrastructure</b> has been developed to the south and south east of the site. <b>Savile Town Glass Works</b> is recorded beyond the railway to the east whilst a <b>Gas Works</b> is recorded c.250m to the south east.
c.1933 – c.1969	Generally as c.1893 – c.1922.	<b>Savile Town Glass Works</b> is now recorded as <b>Savile Town New Chemical Works</b> . Residential developments are recorded c.125m to the west of the site.
c.1972	A <b>depot</b> comprising two separate buildings and associated hardscaping is recorded on site.	Generally as c.1933 – c.1969.

## 4.0 Industrial Setting (Cont'd)

### 4.1 Site History (Cont'd):-

Table 4.1 (Cont'd)

Significant features / potential contamination sources highlighted in bold

<u>Date</u>	<u>Site</u>	<u>Adjacent Areas</u>
c.1978 – c.2006	A third building has been developed on site with two buildings recorded as <b>works</b> and the remaining building recorded as an <b>Ambulance Station</b> .	<b>Savile Town New Chemical Works</b> is no longer recorded to the east. Further <b>commercial developments</b> are recorded in the vicinity of the site.
c.2021	The southerly building is no longer recorded on site and has been <b>demolished</b> .	The <b>Gas Works</b> are no longer recorded to the south east.

From the results of the site reconnaissance (walkover), there was no evidence of unrecorded or indiscriminate waste tipping on the site.

### 4.2 Landfill & Waste:-

The following information relating to landfill and waste has been obtained from the Envirocheck Report (attached in Appendix III) site walkover and published data;

- There is one BGS Recorded Landfill site c.219m north east (EC Ref. 103 – associated with Bretton Street).
- There are three Historical Landfill Sites located c.143m to the north, 156m to the south west and c.220m to the north east (EC Refs. 104 - 106 – associated with Scarborough Street, Railway Cutting off Savile Road and a tipping site).
- There are two Licensed Waste Management Facilities located c.68m and c.194m to the north east (EC Refs. 111 - 112 – associated with Tarmac Trading Ltd and K & M Metals Ltd).
- There are no areas of Potentially Infilled Land (Water & Non-water), BGS Recorded Landfill Sites, Local Authority Recorded Landfill Sites, Registered Landfill sites or Registered Waste Transfer Sites, within c.250m of the site.

Following a review of OS maps and other site-specific data, the risk of hazardous ground gas production / migration is considered to be moderate in connection with potential made ground beneath the site (relating to the historical development of the site) and the plausible risk associated with the adjacent landfill activities. In order to validate such, it is recommended that a programme of ground gas monitoring is undertaken, as part of the recommended intrusive investigation works for the proposed development at the site, in accordance with CIRIA 665 and BS8485:2015+A1:2019.

### 4.3 Statutory Requirements/Authorisations:-

Table 4.2

<u>TYPE</u>	<u>Location</u>	<u>Comments</u>
Enforcement and Prohibition Notices:	None recorded within c.250m.	~
Integrated Pollution Prevention & Controls:	None recorded within c.250m.	~
Local Authority Pollution Prevention and Controls:	Four recorded within c.250m.	EC. Refs. 16 - 19 located between c.9m and c.241m to the south, south east and east of the site: PG3/5 Coal, coke and coal product processes, PG3/1Blending, packing, loading and use of bulk cement, PG6/16 Printworks & PG1/1Waste oil burners, less than 0.4MW net rated thermal input.

## 4.0 Industrial Setting (Cont'd)

### 4.3 Statutory Requirements/Authorisations (Cont'd):-

Table 4.2 (Cont'd)

TYPE	Location	Comments
Prosecutions Relating to Authorised Processes:	None recorded within c.250m.	~
Registered Radioactive Substances:	None recorded within c.250m.	~
COMAH/Explosive/NI HHS Sites:	None recorded within c.250m.	~
Planning Hazardous Substances Consents / Enforcements:	One recorded within c.250m.	EC. Ref. 148 located c.243m east: Liquefied extremely flammable gas (including LPG) and natural gas (whether liquefied or not).
Contemporary Trade Entries:	Four recorded on site and forty nine recorded within c.250m.	On site - EC Refs 153 - 154 – All inactive Within 250m - EC Refs 155 - 173 – Thirteen active entries corresponding to Sand, Gravel & Other Aggregates, Polythene & Plastic Sheeting Supplies, Tool Design, Manufacturers & Makers, Printers, Packaging Materials Manufacturers & Suppliers, Road Haulage Services, Precision Engineers, Valve Manufacturers & Suppliers, Print Finishers, Gearboxes & Car Dealers – Used – not attributable to this site.
Fuel Station Entries:	None recorded within c.250m.	~

### 4.4 Pollution Incidents and Discharge Consents:-

Table 4.3

TYPE	Location	Comments
Discharge Consents:	None recorded within c.250m.	~
Prosecutions Relating to Controlled Waters:	None recorded within c.250m.	~
Pollution Incidents to Controlled Waters:	Four recorded within c.250m.	EC. Refs. 27 - 30 located between c.92m and c.210m east, south east and north: Cat 2 Significant Incident and Cat 3 Minor Incident into freshwater stream / river.
Substantiated Pollution Incident Register:	One recorded within c.250m.	EC. Ref. 51 located c.189m north east: Cat 2 Significant Incident to Land of commercial waste.
Water Industry Act Referrals:	None recorded within c.250m.	~

## 5.0 Conceptual Site Model (CSM)

The Conceptual Site Model (CSM) is one of the primary planning tools that can be used to support the decision-making process of managing contaminated land and groundwater on any given site and allows a better understanding of what needs to be done to achieve risk management, and from this appropriate remediation techniques, if required for those risk management goals can be chosen.

This can be done by undertaking a *source-pathway-receptor* analysis of the site. The anticipated *sources, pathways* and *receptors* for this site are summarised in Table 5.1 on the following page.

## 5.0 Conceptual Site Model (CSM) (Cont'd)

**Table 5.1**

\*= Not included in the Human Health & Controlled Waters Risk Assessment

	<i>Sources (S)</i>		<i>Pathways (P)</i>		<i>Receptors (R)</i>
S1	Any potential ground contamination present within made ground materials.	P1	Ingestion & Dermal Contact.	R1	Human health - End users and construction workforce.
		P2	<del>Plant uptake and attached soils.</del>		
		P3	Air inhalation of vapours and direct contact of dust.	R2	Controlled Waters: Groundwater – within the underlying drift and solid geology designated as Secondary Aquifer – A. Calder & Hebble Navigation Canal.
S2	Potential hazardous gas from adjacent landfill activities.	P4	Migration through existing services.		
		P5	Direct contact with building Materials.		
		P6	Surface runoff and leachate migration.	R4*	Building materials.
				R5*	Flora and fauna.

### 5.1 Geotechnical Considerations:-

The following potential geotechnical issues and hazards have been identified for this site. These issues should be considered should future development of the site is to take place;

- Depth, type and condition of made ground deposits across this site.
- Geotechnical parameters of the natural deposits (drift deposits and solid geology) underlying the site.
- The presence of possible underground services (i.e. gas, water, electricity, etc.) and potential below ground fuel tank.
- Stability of excavations if significant thickness of geotechnically “poor” drift deposits exist below the site.
- The presence of buried services beneath the site associated with the adjacent developments.
- Chemical attack on buried concrete.

To determine the geotechnical considerations above with more certainty, it is recommended that a programme of intrusive geotechnical investigation works is undertaken on this site with associated geotechnical testing (insitu and laboratory), to aid in assessing the extent of any potential issues prior to commencing with any development in the future.

The information reviewed indicates that the site can be considered as being located within a **LOW** geotechnical risk setting.

### 5.2 Sources of Contamination and Probable Contaminants:-

The historical Ordnance Survey maps within the Landmark Envirocheck Report and other environmental information reviewed indicates that there are potential sources of ground contamination anticipated to be present on this site.

No olfactory or visual evidence (i.e., distinct odours or surface staining) of contamination was apparent during the site reconnaissance survey. Potential ACMs may need to be dealt with during future development works, post demolition of the buildings on site.

Ground contamination testing will need to be incorporated into the design of any intrusive investigation works. Laboratory testing should also be undertaken on representative samples taken from site for naturally occurring contaminants which could have a detrimental effect on building materials.

The information reviewed indicates that the site can be considered as being located within a **MODERATE** ground contamination risk setting for Human Health.

## **5.0 Conceptual Site Model (CSM) (Cont'd)**

### **5.2 Sources of Contamination and Probable Contaminants (Cont'd):-**

#### **Soils – Human Health**

In order to assess the associated risks to human health and environmental impact the following outline geo-environmental testing is recommended:

- Generic contamination suite, typically comprising; Arsenic, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Zinc, Total Organic Carbon (TOC), pH and Phenol.
- Asbestos screening (and quantification if encountered).
- Speciated Polyaromatic Hydrocarbons (PAHs) and Total Petroleum Hydrocarbons (TPHs) should be undertaken, where ashy type deposits are encountered and/or fuels/oils are suspected.
- pH and sulphate testing, for foundation classification.

Consideration may need to be given to the protection of service pipes for the proposed development from the potential made ground deposits present, and therefore a supplementary suite of contamination testing may be required in order to meet the requirements of the local utilities service provider for their 'pipe selection risk assessment' (PSRA), once the location and depth of future services have been determined.

#### **Controlled Waters:**

The following issues have been taken into consideration when assessing the risks towards controlled waters;

- There are no Source Protection Zones that lie within 500m of the site.
- There are no Water Abstractions recorded on site or within 500m of the site.
- The superficial geology is a Secondary Aquifer - A.
- The solid geology is a Secondary Aquifer - A.
- Shallow groundwater is not anticipated to be present below this site.
- The Calder & Hebble Navigation Canal is recorded c.245m south of the site.

The information reviewed indicates that the site can be considered as being located within a **LOW** ground contamination risk setting for Controlled Waters.

## **6.0 Recommendations for Phase 2: Ground Investigation Works**

The conclusions contained within this report have been based on a review of geological plans, historical plans and available environmental data relating to the site and nearby adjacent land and forms the basis of a preliminary risk assessment. The primary benefits of undertaking this report are as follows;

- (i) Identify the geotechnical and/or geo-environmental characteristics of the ground in sufficient detail to quantify the groundwater flood risk at the site and for the economic design of any future site/proposed development, construction or associated remedial works.
- (ii) Minimise the risk of unforeseen ground conditions which might cause increased costs and/or programme (construction) delays at a later date.

Therefore, it is recommended that a programme of Phase 2: Ground Investigation (intrusive investigation) works are completed for this site to provide an assessment of the geo-environmental characteristics of the site. These intrusive investigation works should be completed prior to commencing with any future acquisition or development works and should include for the following or a similar scope of investigation works;

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## **6.0 Recommendations for Phase 2: Ground Investigation Works (Cont'd)**

- A series of window sampling boreholes across the site with insitu sampling and testing (i.e. hand shear vanes and SPTs).
- Provision and installation of combined ground gas & groundwater monitoring wells followed by a number of monitoring visits.
- Appropriate laboratory geotechnical testing on the samples recovered from the site, including chemical testing for concrete classification.
- Ground contamination screening including appropriate ground contamination risk assessment.
- Site supervision (with RAMS production) and production of interpretive Phase 2: Ground Investigation Report.

The samples of soil collected should be forwarded to UKAS and MCERTS accredited laboratory to undertake the recommended testing.

**END OF REPORT**



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# **APPENDIX I**

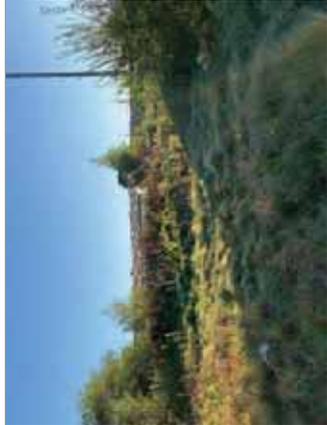
**Existing Site Layout Plan**

**Proposed Development Layout Plan**

**Site Photographic Record Sheets**







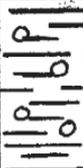
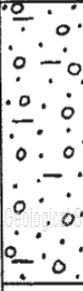




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# **APPENDIX II**

## **Archive BGS Borehole Record & Coal Authority Coal Mining Report**

<b>Holst Soil Engineering Limited</b>						Borehole No. <b>1</b>			
<b>BOREHOLE LOG SE 22 SW 125</b>									
Contract No. <b>S11329/F2694</b>		Location <b>Bratton St. Sewer.</b>		Sheet <b>1</b> of <b>1</b>					
Client <b>Dewsbury Borough Engineer.</b>		Method of Boring <b>Percussion</b>		Chainage		Ground Level			
Diameter of Borehole <b>0.20m.</b>		<b>GR SE 2484 2021</b>		Date <b>29.11.10/13</b>					
Description of Strata	Legend	Depth below G.L.(m)	Thickness of Strata(m)	Type of Sample	c KN/sq.m	$\phi$ deg	m.c. %	$\gamma$ Kg/cum	N
TOPSOIL and clay		1.50	1.50						
MADE GROUND: Loose brown grey mottled sandy stoney CLAY		2.50	1.00	2.00 I					6
MADE GROUND Brick.		2.65	0.15						
Firm brown/grey very sandy silty stoney CLAY with coal fragments.		3.30	0.65						
Firm to stiff grey/brown mottled stoney CLAY.		5.20	1.90	4.00 I					30
Dense light brown/grey clayey SAND and fine GRAVEL with thin clay bands.		8.00	2.80	6.05 I  7.55 I					44  48
Type of Sample <input type="checkbox"/> Undisturbed Sample $\phi$ Angle of Friction <input type="checkbox"/> Disturbed Sample    m.c. Moisture Content <input type="checkbox"/> Water Sample $\gamma$ Bulk Density <input type="checkbox"/> Penetration Test    N S.P.T. Value c Apparent Cohesion				Remarks (Observations of Ground Water etc)  <p style="text-align: center;"><b>Borehole Dry</b></p> <p style="font-size: small;">Water levels are subject to seasonal or tidal variations and should not be taken as constant</p>					



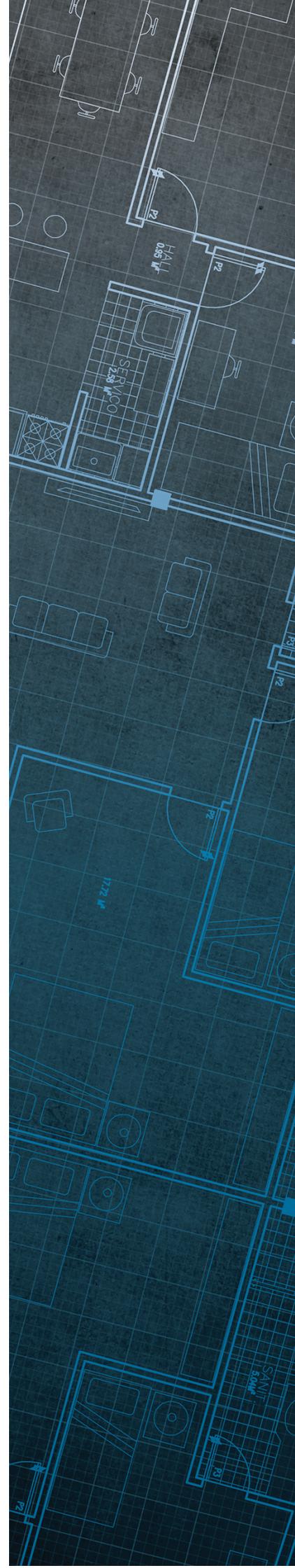
The Coal  
Authority

# Consultants Coal Mining Report

Proposed Industrial Unit Bretton  
Street Industrial Estate  
Bretton Street  
Dewsbury

Date of enquiry: 3 September 2021  
Date enquiry received: 3 September 2021  
Issue date: 3 September 2021

Our reference: 51002635178001  
Your reference: 21-775



# 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

ARC ENVIRONMENTAL LTD

### Enquiry address

Proposed Industrial Unit Bretton Street Industrial Estate  
Bretton Street  
Dewsbury

### How to contact us

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

200 Lichfield Lane  
Mansfield  
Nottinghamshire  
NG18 4RG

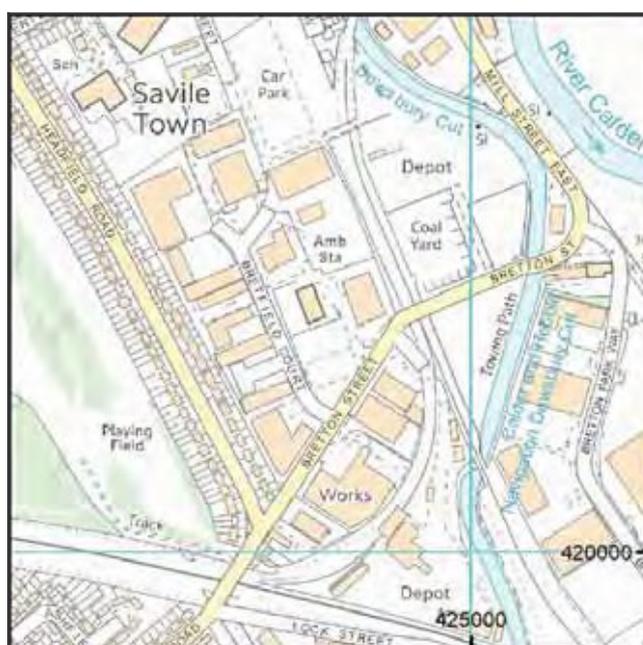
[www.groundstability.com](http://www.groundstability.com)

 @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	BLACK BED	Coal	62NY	228	South-West	2.2	East	76	1948
unnamed	BLACK BED	Coal	6HVV	259	South-West	2.4	South-East	76	1915

## Probable unrecorded shallow workings

None.

## Spine roadways at shallow depth

No spine roadway recorded at shallow depth.

## Mine entries

None recorded within 100 metres of the enquiry boundary.

## Abandoned mine plan catalogue numbers

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

2363	14475	NE774
NE773	NE108	GCR104

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

## Outcrops

No outcrops recorded.

## Geological faults, fissures and breaklines

No faults, fissures or breaklines recorded.

## Opencast mines

None recorded 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

None recorded within 50 metres of the enquiry boundary.

### 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.

**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](mailto: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](mailto: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.

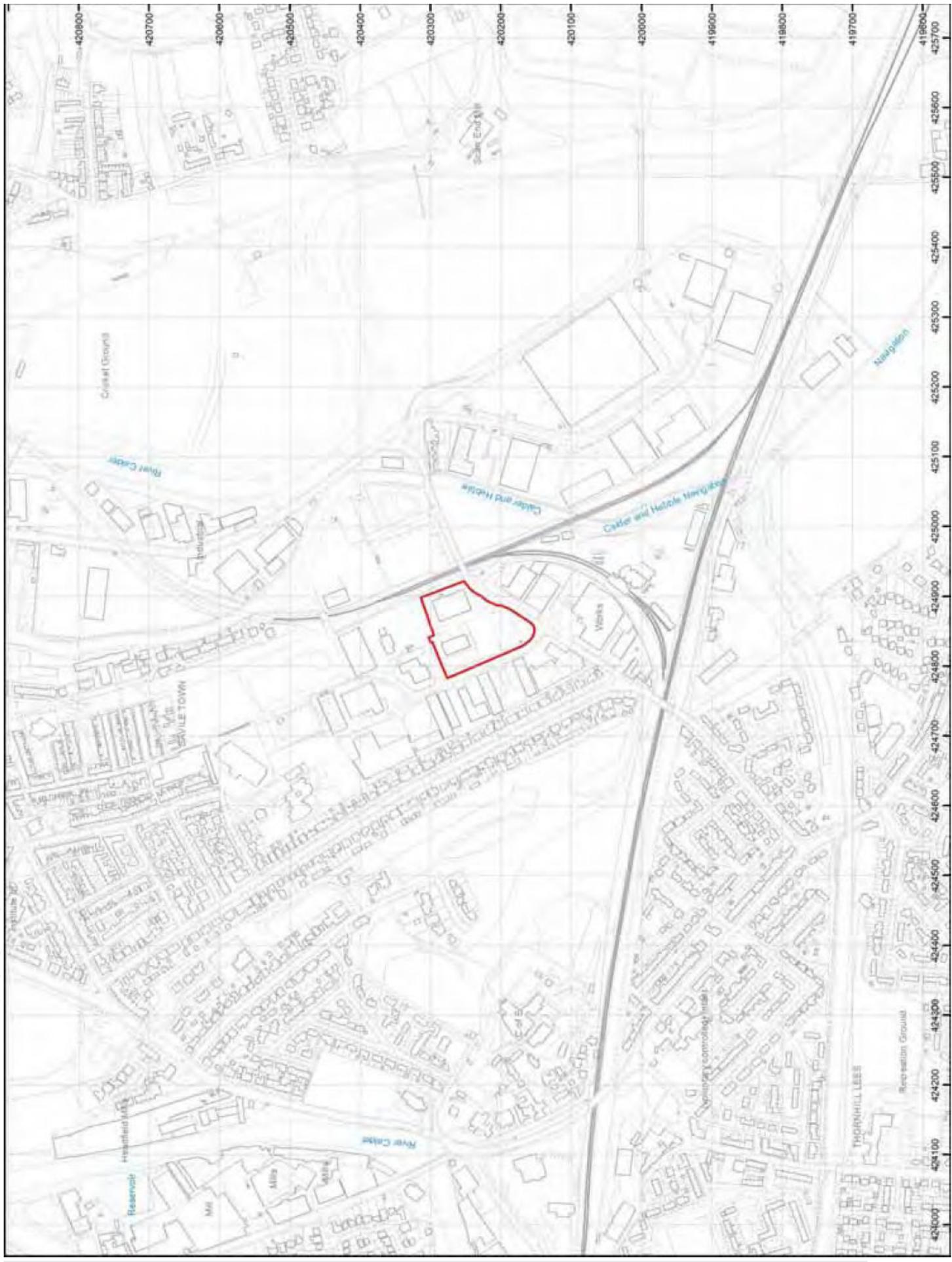
### **Withdrawal of support notices**

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.



**Key**

Approximate position of the enquiry boundary shown

**How to contact us**  
0345 762 6848 (UK)  
+44 (0)1623 637 000 (International)  
[www.groundstability.com](http://www.groundstability.com)

# **APPENDIX III**

## **Landmark Information Group – Envirocheck Report**

# Historical Mapping Legends

## Ordnance Survey County Series 1:10,560

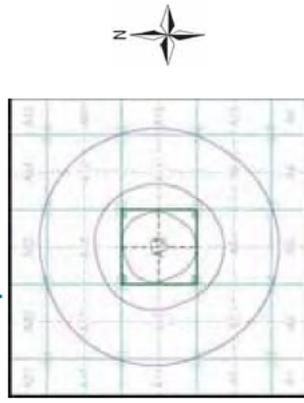

## Ordnance Survey Plan 1:10,000


## 1:10,000 Raster Mapping


## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg.
Yorkshire	1:10,560	1855	3
Yorkshire	1:10,560	1894	4
Yorkshire	1:10,560	1908	5
Yorkshire	1:10,560	1931	6
Yorkshire	1:10,560	1938	7
Yorkshire	1:10,560	1948	8
Ordnance Survey Plan	1:10,000	1955 - 1957	9
Ordnance Survey Plan	1:10,000	1966 - 1967	10
Ordnance Survey Plan	1:10,000	1972 - 1974	11
Ordnance Survey Plan	1:10,000	1982 - 1984	12
Batley	1:10,000	1983	13
Ordnance Survey Plan	1:10,000	1989	14
Ordnance Survey Plan	1:10,000	1992 - 1993	15
10K Raster Mapping	1:10,000	2000	16
10K Raster Mapping	1:10,000	2006	17
VectorMap Local	1:10,000	2021	18

## Historical Map - Slice A



## Order Details

Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

## Site Details

Proposed Industrial Unit, Bretton Street Industrial Estate,  
 Bretton Street, DEWSBURY



# Russian Military Mapping Legends

## 1:5,000 and 1:10,000 mapping

a. Not drawn to scale    b. Drawn to scale

	Government and Administrative Buildings		Military and Industrial Buildings
	Military and Communication Areas		Subway Entrance
	Fireproof Building		Prominent Fireproof Building
	Non-fireproof Building (non-dwelling)		Factory, mill, and flour mill, with chimneys
	Power Station drawn to scale		Hydroelectric Power Station
	Radio Station drawn to scale		Telephone Station drawn to scale
	Abandoned Open-pit Mine or Quarry		Open-pit Salt Mine
	Oil Deposit or Well		Oil Seepage
	Fuel Storage Tanks		Natural Gas Tank
	Drill Hole		Triangulation Point on Burial Mound
	Bench Mark		Bench Mark (monumented)
	Single-track Railroad		Double-track Railroad Building
	Coniferous Forest		Deciduous Forest
	Mixed Forest		Scattered Vegetation
	Larva		Citrus Orchard
	Wet Ground		Wet Ground

243.8 Values for prominent elevations  
 Numbers for spot elevations, depth soundings, contour lines, etc.  
 0.2 Velocity of the current, width of river bed, depth of river fords and condition of the river bottom; height of forest and the diameter of trees.

**Russian Alphabet** For reference and phonetic interpretation of map text

А а (A)	З з (Z)	И и (I)	П п (P)	Ч ч (CH)
Б б (B)	И и (I)	К к (K)	Р р (R)	Ш ш (SH)
В в (V)	Й й (Y)	Л л (L)	С с (S)	Щ щ (SHCH)
Г г (G)	К к (K)	М м (M)	Т т (T)	Ъ ъ (-)
Д д (D)	Л л (L)	Н н (N)	У у (U)	Ы ы (Y)
Е е (E)	М м (M)	О о (O)	Ф ф (F)	Ь ь (-)
Ё ё (YO)	Н н (N)	Ю ю (YU or IJU)	Х х (KH)	Э э (E)
Ж ж (ZH)	О о (O)	Я я (YA or IJA)	Ц ц (TS)	Ю ю (YU or IJU)

## 1:25,000 mapping

a. Not drawn to scale    b. Drawn to scale

	Government and Administrative Buildings		Military and Industrial Buildings
	Military and Communication Areas		Subway Entrance
	Partly Demolished Buildings		Demolished Buildings
	Built-Up Area with Fireproof Buildings Predominant		Built-Up Area with Non-Fireproof Buildings Predominant
	Individual Fireproof Building		Prominent Industrial Building
	Individual Dwelling		Runs of an Individual Dwelling
	Factory or Mill with Chimney		Mine or Open Pit Mine without Chimney
	Non-Operating Shaft or Mine		Salt Mine
	Stone Quarry		Gas Pump or Service Station
	Small Hydroelectric Power Station		Transformer Station
	Burial Mound (height in metres)		Triangulation Point on Burial Mound
	Bench Mark (monumented)		Telephone Office
	Radio Tower		Airfield or Seaplane Base
	Kin Post		Width of Road
	Telegraph Telephone Lines		Swampy Ground
	Main Highway		Improved Dirt Road (former truck road)
	Pipe (Culvert)		Dismantled Railroad
	Double-track Railroad with First Class Station		Railroad Under Construction
	Shore Embankment		Wear Grooves
	Water Reservoir or Rain Water Pit		Director and velocity of current
	Well		Water Level Mark
	Heavy (Index) Contour Line		Isobath with value
	Contour Line and Value		Spot Elevation
	Coniferous		Mixed
	Deciduous		Scrub

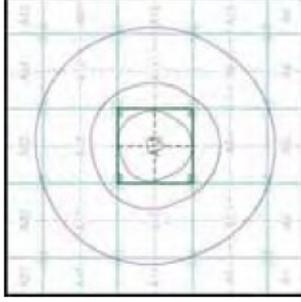
## Key to Numbers on Mapping

SE21NW_Batley		
No.	Description	Scale
23	Post Office	1:10,560
83	Factory (Textiles)	1:10,560
SE22SE_Batley		
No.	Description	Scale
3	Industrial Buildings (Use Unknown)	1:10,000
12	Factory (Machinery)	1:10,000
SE22SW_Batley		
No.	Description	Scale
7	Factories (Food, Textile And Machinery)	1:10,000
38	Railway Station (Freight And Passenger)	1:10,000
70	Factory (Use Unknown)	1:10,000
89	Factory (Textiles)	1:10,000

## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Fq.
Yorkshire	1:10,560	1855	3
Yorkshire	1:10,560	1894	4
Yorkshire	1:10,560	1908	5
Yorkshire	1:10,560	1931	6
Yorkshire	1:10,560	1938	7
Yorkshire	1:10,560	1948	8
Ordnance Survey Plan	1:10,000	1955 - 1957	9
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Ordnance Survey Plan	1:10,000	1972 - 1974	11
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Ordnance Survey Plan	1:10,000	1992 - 1993	15
10K Raster Mapping	1:10,000	2000	16
10K Raster Mapping	1:10,000	2006	17
Vector Map Local	1:10,000	2021	18

## Russian Map - Slice A



## Order Details

Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

## Site Details

Proposed Industrial Unit, Bretton Street Industrial Estate,  
 Bretton Street, DEWSBURY





## Yorkshire

### Published 1855

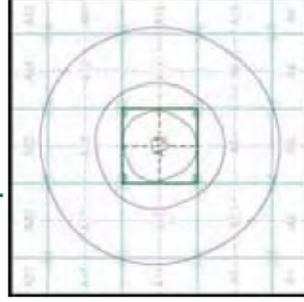
#### Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1854 the 2,500 maps for the mapping of the areas, these maps were then updated to 1:10,560 scale. The updated data was then used to produce maps 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

#### Map Name(s) and Date(s)



#### Historical Map - Slice A



#### Order Details

Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

#### Site Details

Proposed Industrial Unit, Bretton Street Industrial Estate,  
 Bretton Street, DEWSBURY



Tel 0844 844 9852  
 Fax 0844 844 9851  
 Web www.envisiocheck.co.uk





## Yorkshire

### Published 1894

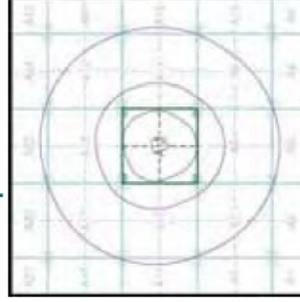
### Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey, which were adopted for England, Wales and Scotland in the 1940's. In 1894 the Ordnance Survey produced the first 1:10,560 scale maps. These maps were 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)

247NE	1894
	1:10,560
247SE	1894
	1:10,560

### Historical Map - Slice A



### Order Details

Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

### Site Details

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 Bretton Street, DEWSBURY



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## Yorkshire

### Published 1908

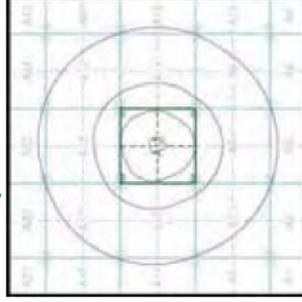
#### Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1854 the 2,500 scale was adopted for the Ordnance Survey. The maps were then updated to 1:10,560 scale for the 1908 edition. The maps were 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

#### Map Name(s) and Date(s)

247NE	1908
	1:10,560
247SE	1908
	1:10,560

#### Historical Map - Slice A



#### Order Details

Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

#### Site Details

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 Bretton Street, DEWSBURY



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Yorkshire

Published 1931

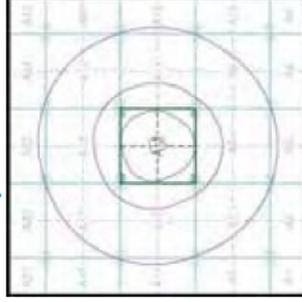
Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1854 the Ordnance Survey began the process of mapping urban areas, these maps were then updated in 1:10,560 scale. The maps shown are the 1:10,560 scale maps 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

Map Name(s) and Date(s)

247NE	1931	1:10,560
247SE	1931	1:10,560

Historical Map - Slice A



Order Details

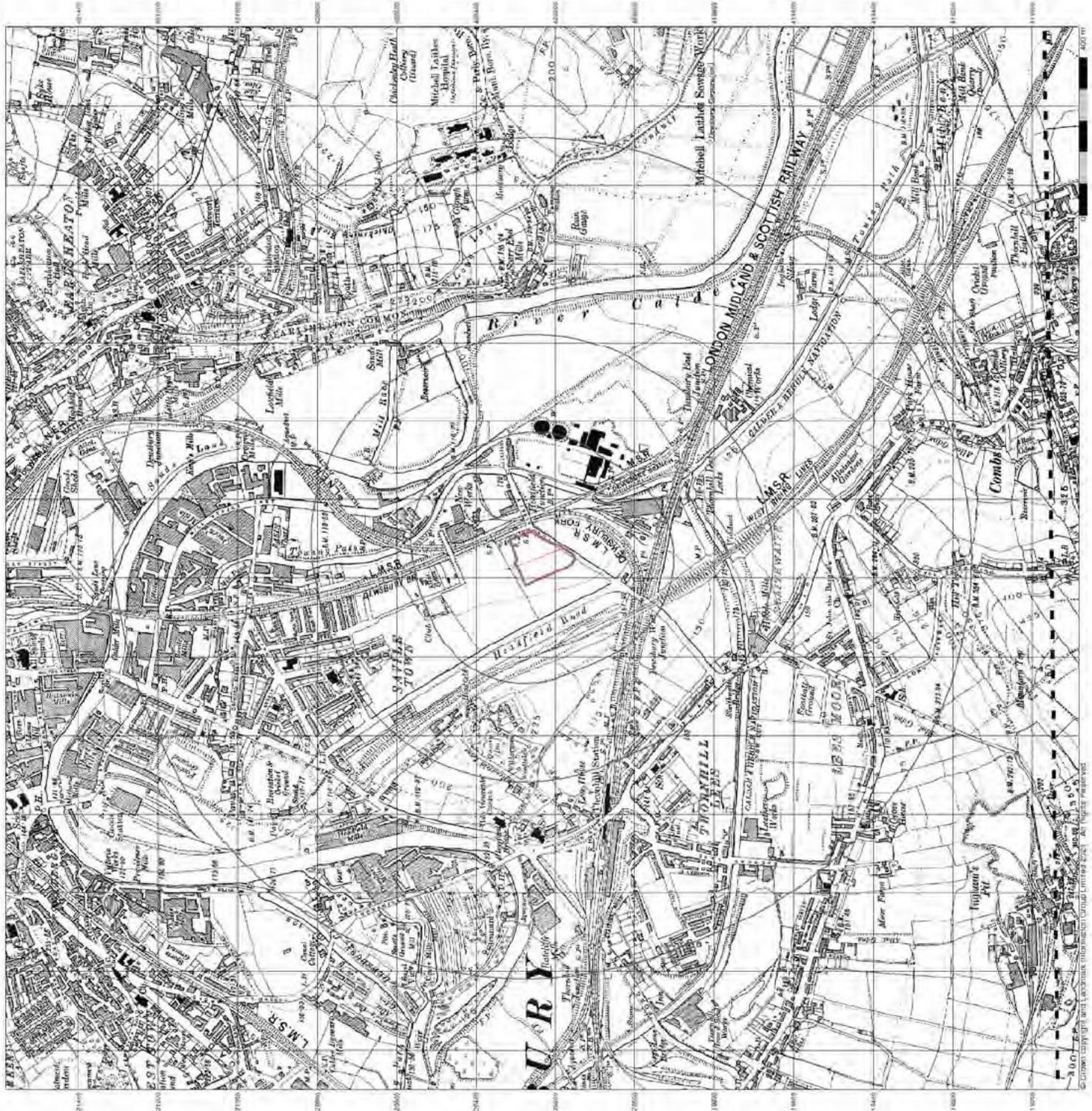
Order Number: 284419784\_1\_1  
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 Slice: A  
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Site Details

Proposed Industrial Unit, Bretton Street Industrial Estate,  
 Bretton Street, DEWSBURY



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**Yorkshire**

**Published 1938**

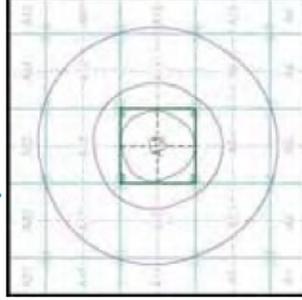
**Source map scale - 1:10,560**

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1854 the 2,500 maps for the mapping of the country were produced. These maps were 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

**Map Name(s) and Date(s)**

247NE	1938
1:10,560	
247SE	1938
1:10,560	

**Historical Map - Slice A**



**Order Details**

Order Number: 284419784\_1\_1  
Customer Ref: 21-775 MPB  
National Grid Reference: 424850, 420240  
Slice: A  
Site Area (Ha): 1.29  
Search Buffer (m): 1000

**Site Details**

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## Yorkshire

### Published 1948

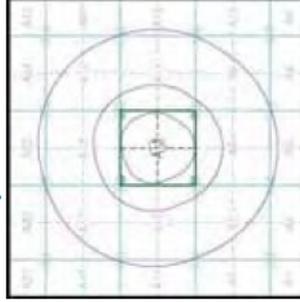
#### Source map scale - 1:10,560

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1854 the Ordnance Survey began to produce maps for the urban areas, these maps were first published in 1910, 1950 and 1960. The maps used for this project were 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping on a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

#### Map Name(s) and Date(s)

247NE	1948
	1:10,560
247SE	1948
	1:10,560

#### Historical Map - Slice A



#### Order Details

Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

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# Ordnance Survey Plan Published 1955 - 1957

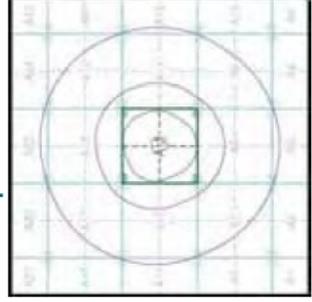
## Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1854 the 2,500 maps for the first time for the mapping of the country were produced at a scale of 1:10,000. The maps were 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,000 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)

SE22SW	1955	SE22SE	1957
1:10,560	1:10,560	1:10,560	1:10,560
SE21NW	1955	SE21NE	1955
1:10,560	1:10,560	1:10,560	1:10,560

### Historical Map - Slice A



### Order Details

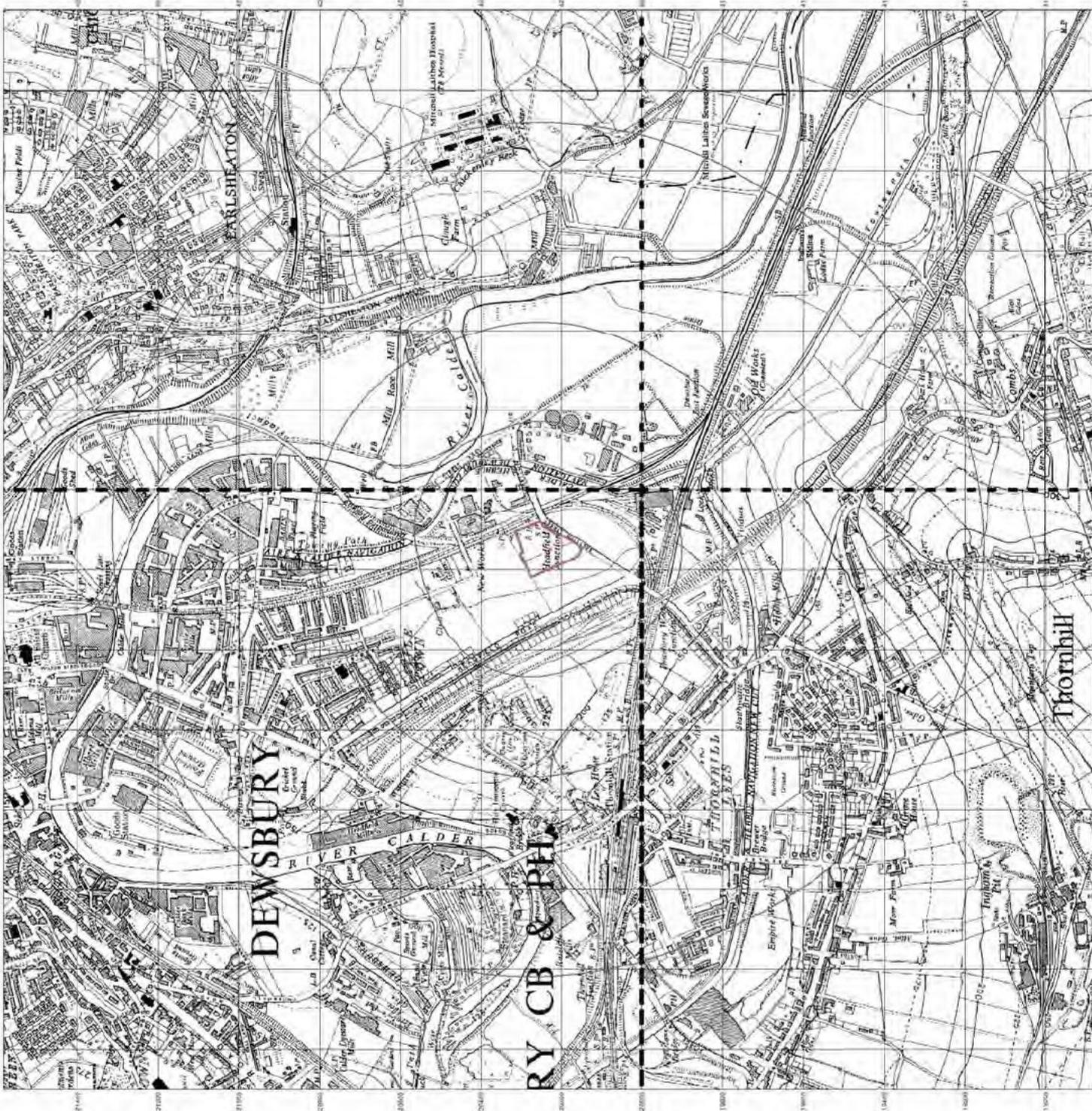
Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

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# Ordnance Survey Plan Published 1966 - 1967

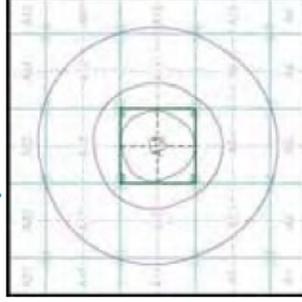
## Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1854 the 2:50,000 scale was used for mapping urban areas, these maps were then updated to 1:10,000 scale. The maps were produced in 1966 and 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,000 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)

SE22SW	1957	1:10,560
SE21NW	1966	1:10,560
SE21NE	1966	1:10,560

### Historical Map - Slice A



### Order Details

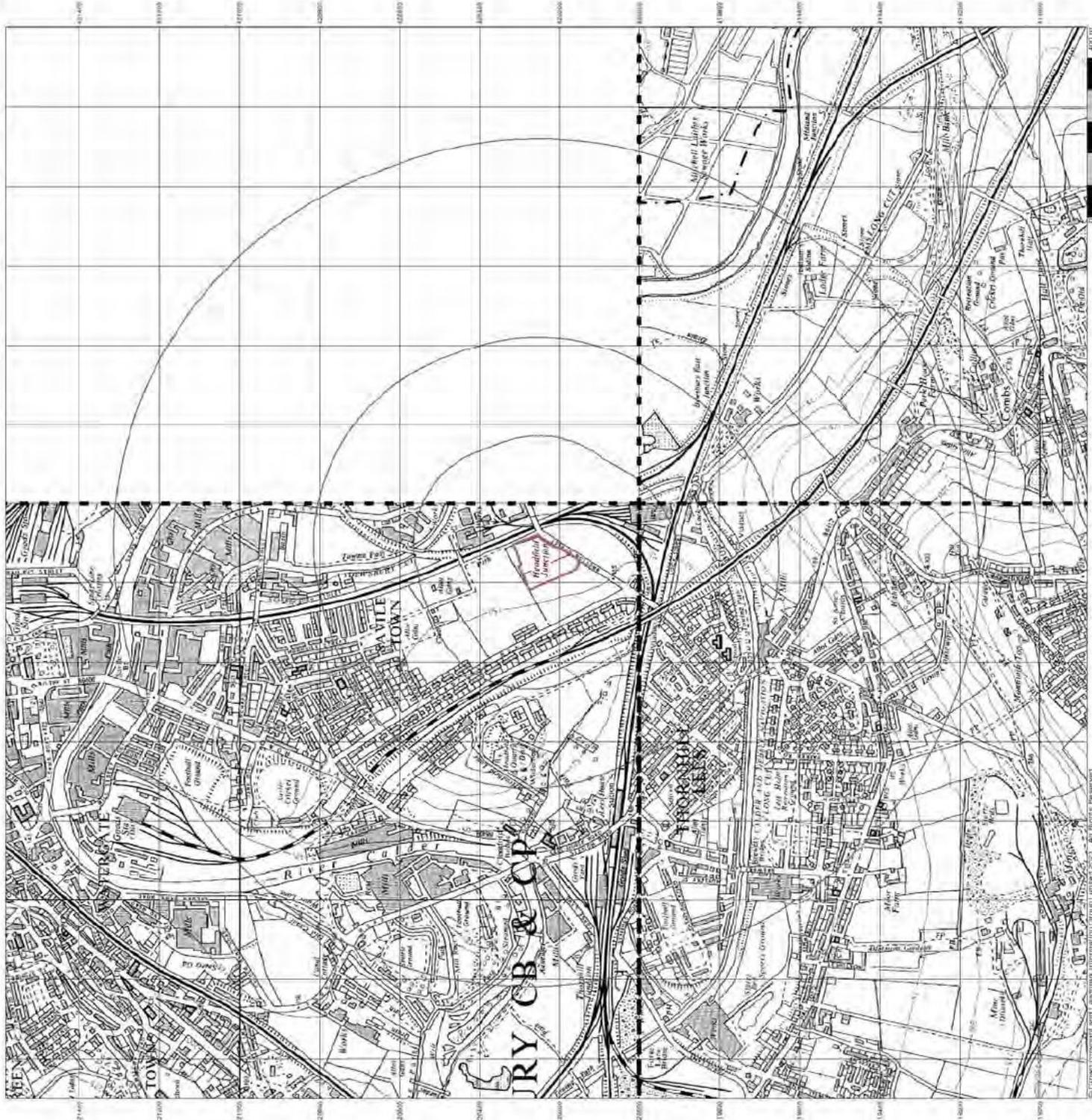
Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

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# Ordnance Survey Plan Published 1972 - 1974

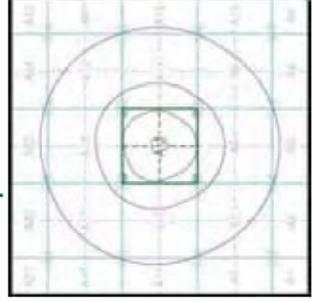
## Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1854 the 2,500 scale maps were produced for the first time. These maps were then updated to 1:10,000 scale in 1900. The maps shown were produced after 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,000 maps from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)

SE22SW	SE22SE
1974	1972
1:10,000	1:10,000
	SE23NE
	1973
	1:10,000

### Historical Map - Slice A



### Order Details

Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

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## Ordinance Survey Plan Published 1982 - 1984

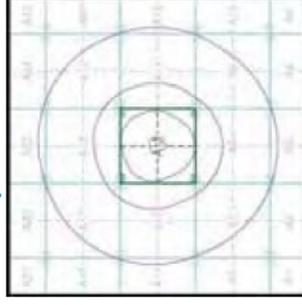
### Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey office in Southampton in the 1940's. In 1854 the 1:2,500 maps were replaced by 1:10,000 maps for the urban areas. These maps were then replaced by 1:10,000 maps for the rural areas. The maps were 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,000 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)

SE20SW	1983	1:10,000	SE20SE	1982	1:10,000
SE21NW	1983	1:10,000	SE21NE	1984	1:10,000

### Historical Map - Slice A



### Order Details

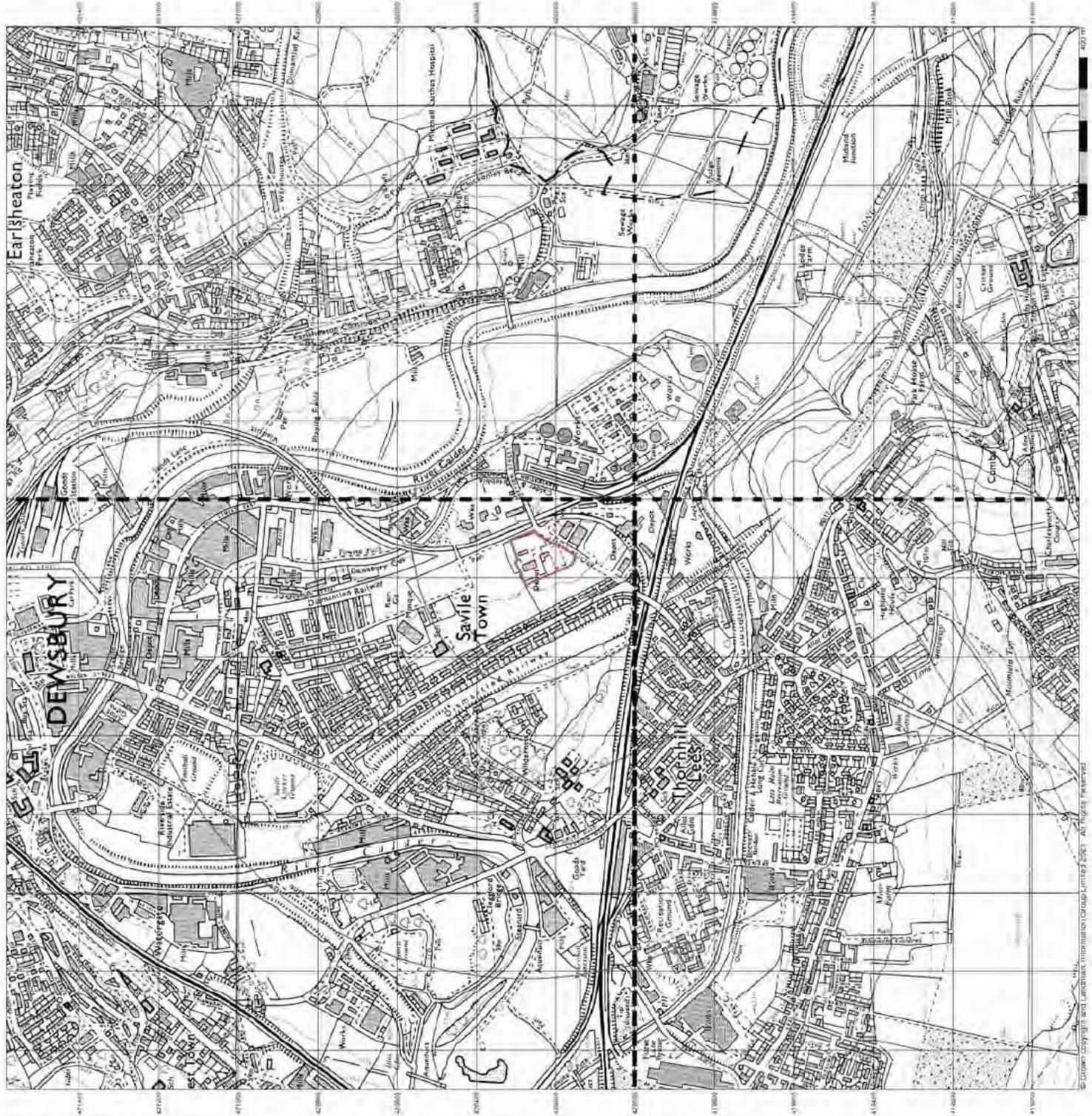
Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

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**Batley**

**Published 1983**

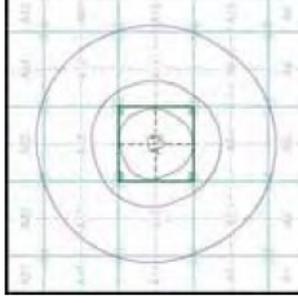
**Source map scale - 1:10,000**

These maps were produced by the Russian military during the Cold War between 1950 and 1989, and so contain 100m and 500m contours throughout the U.K. The maps are produced on a 1:25,000 and 1:10,000 scale, and show both developed and non-developed areas. Buildings are coloured black and iron-ore building uses (such as hospitals, post offices, factories etc.) are numbered, with a numbered key describing their use. They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that are mapped.

**Map Name(s) and Date(s)**

SE22SW 1983	SE22SE 1983
1:10,000	1:10,000
SE21NW 1983	SE21NE 1983
1:10,000	1:10,000

**Russian Map - Slice A**



**Order Details**

Order Number: 284419784\_1\_1  
Customer Ref: 21-775 MPB  
National Grid Reference: 424850, 420240  
Site: A  
Site Area (Ha): 1.29  
Search Buffer (m): 1000

**Site Details**

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# Ordnance Survey Plan Published 1989

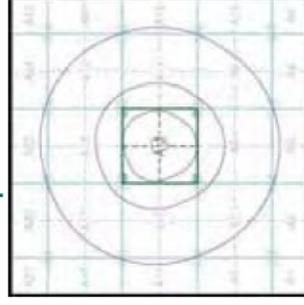
## Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the time adopted for England, Wales and Scotland in the 1940's. In 1854 the 2:50,000 scale maps for mapping urban areas, these maps were then updated to 1:10,000 scale. The maps were then updated to 1:10,000 scale in 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,000 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)

SE29SW
1963
1:10,000

### Historical Map - Slice A



### Order Details

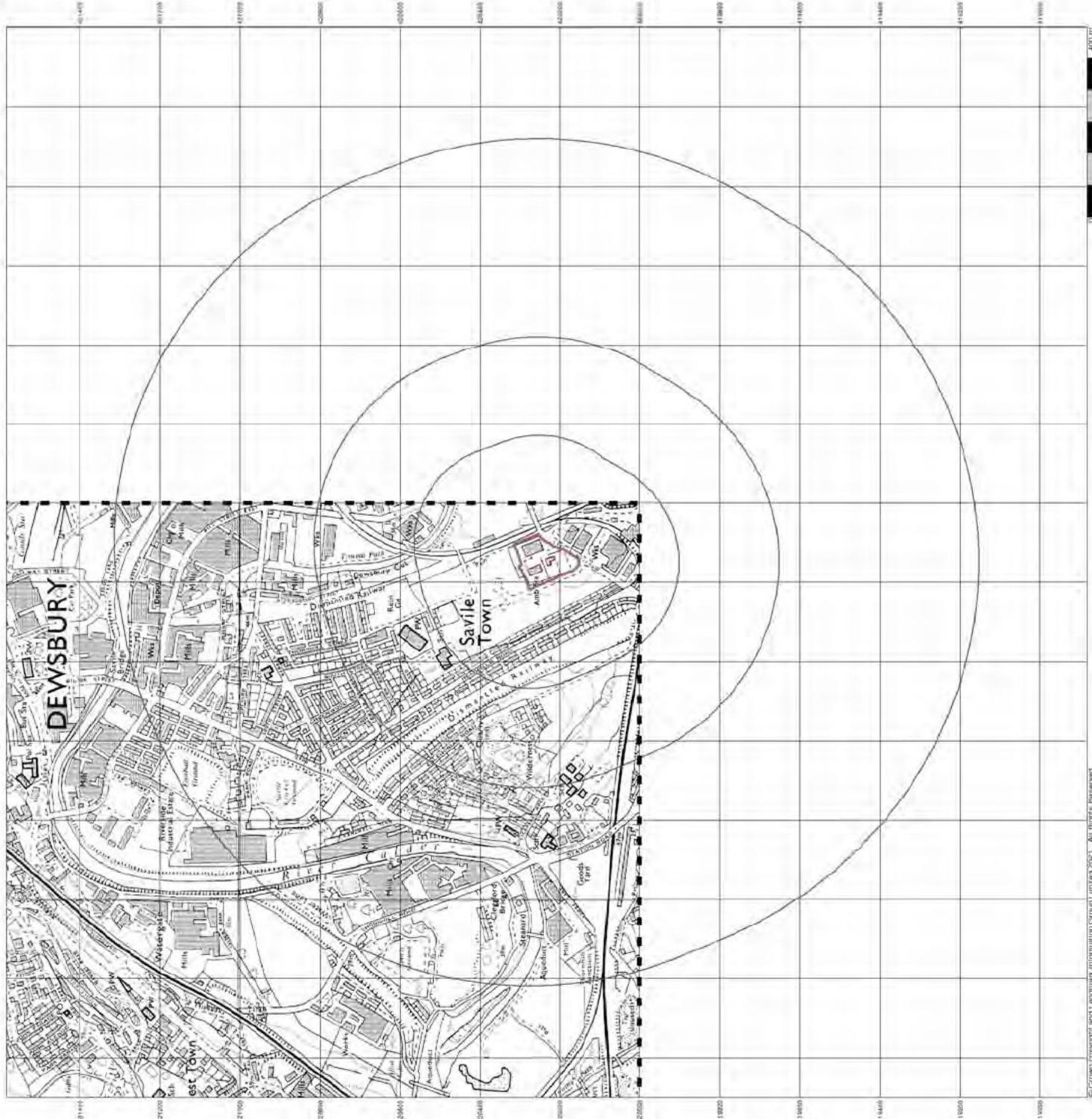
Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

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# Ordnance Survey Plan Published 1992 - 1993

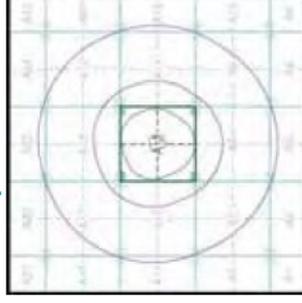
## Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the Ordnance Survey, Wales and Scotland in the 1940's. In 1854 the 2,500 scale maps for the mapping of the areas, these maps were then updated to 1:10,000 scale. The maps were updated 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. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,000 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overlaid with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

### Map Name(s) and Date(s)

SE20SE	1993	1:10,000
SE21NW	1992	1:10,000
SE21NE	1993	1:10,000

### Historical Map - Slice A



### Order Details

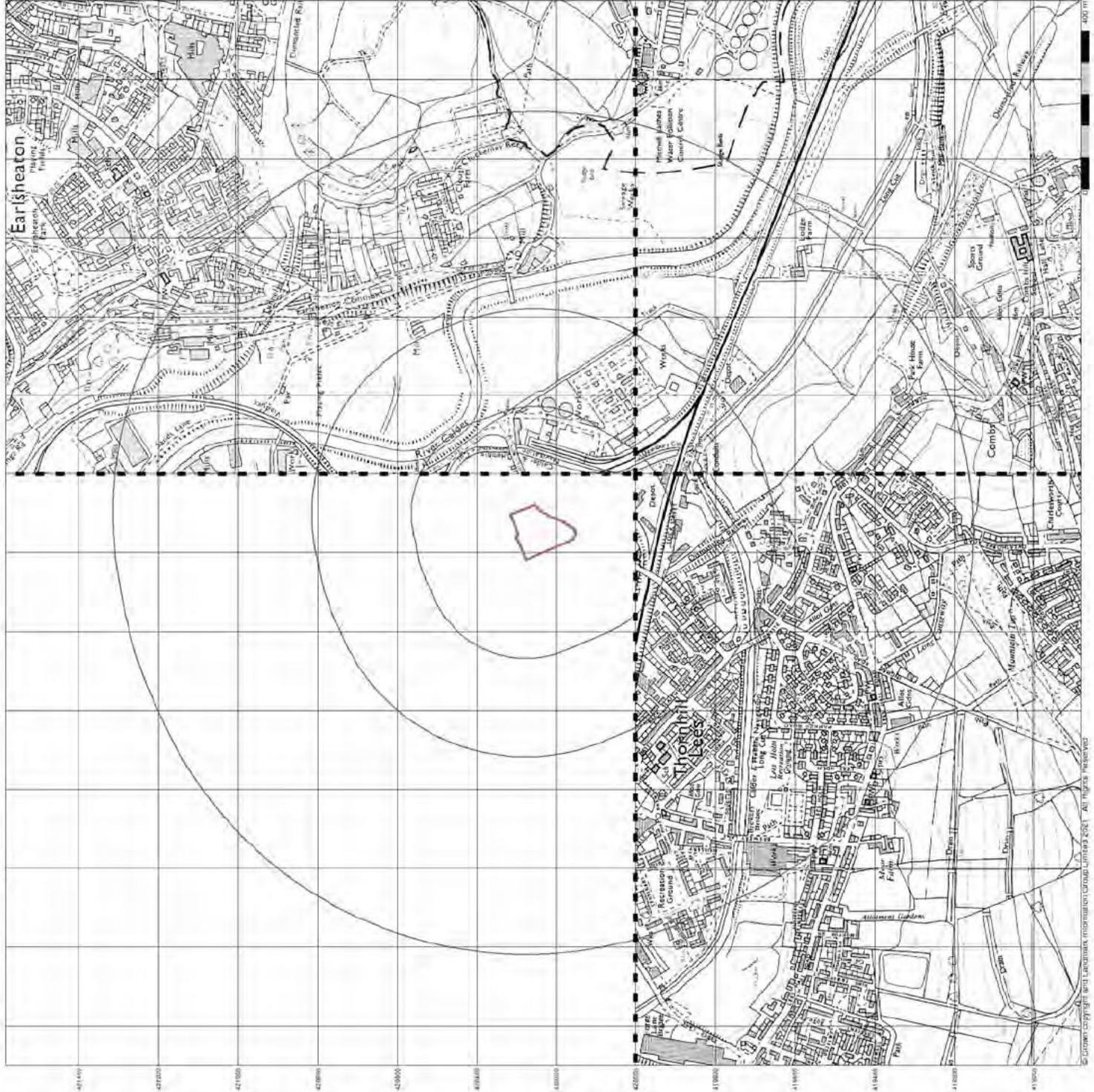
Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

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# 10k Raster Mapping

Published 2000

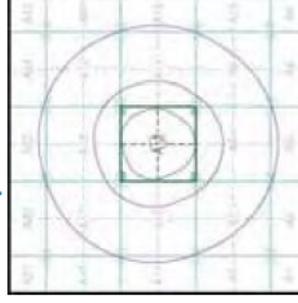
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Ordnance Survey's original data and are not subject to the same accuracy as the original data. The maps are published in a high resolution format, as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information denotation includes county, unitary authority, district, civil parish and constituency.

## Map Name(s) and Date(s)

SE20SW	2000	1:10,000
SE20SE	2000	1:10,000
SE21NW	2000	1:10,000
SE21NE	2000	1:10,000

## Historical Map - Slice A



## Order Details

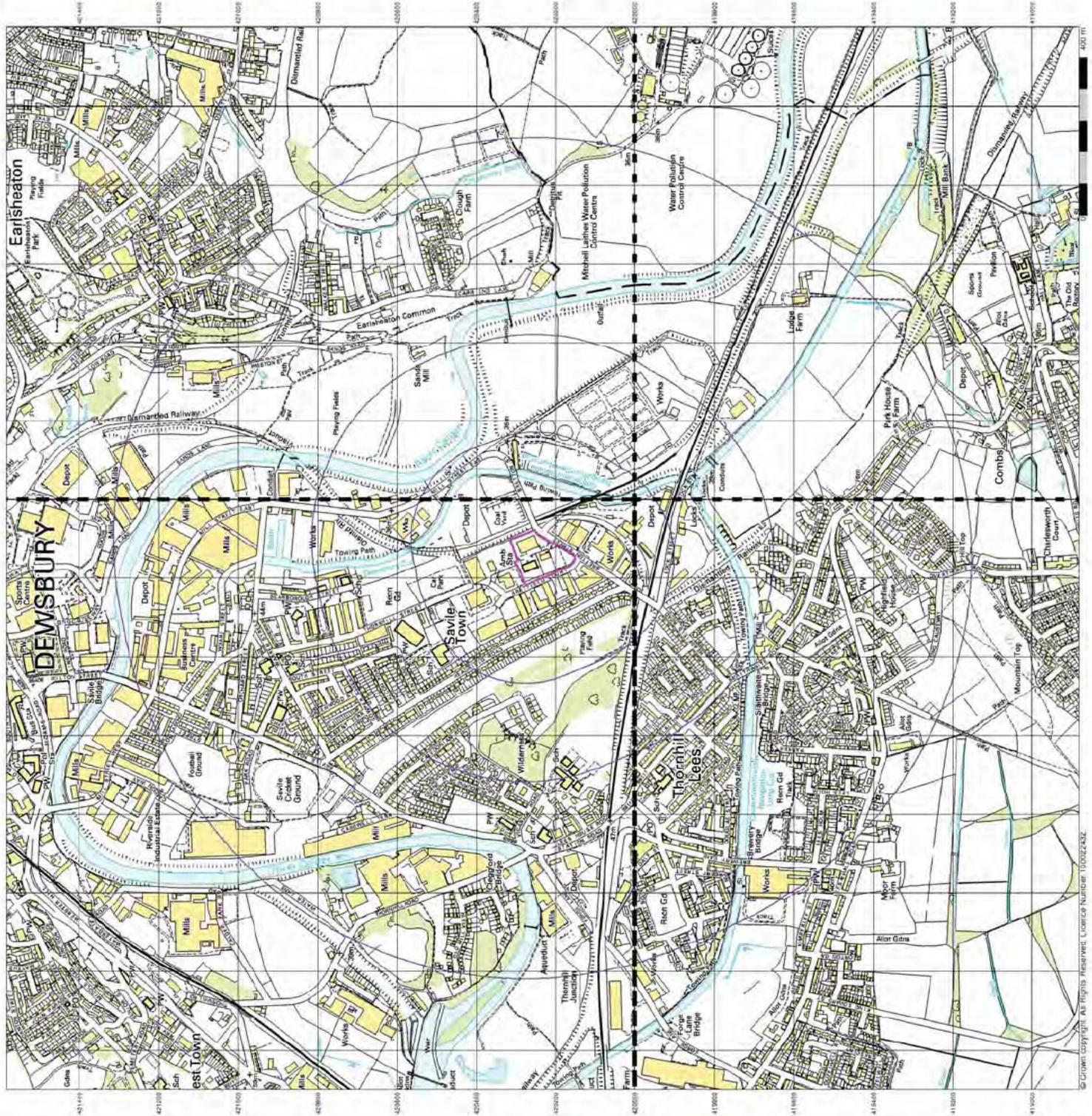
Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

## Site Details

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# 10k Raster Mapping

Published 2006

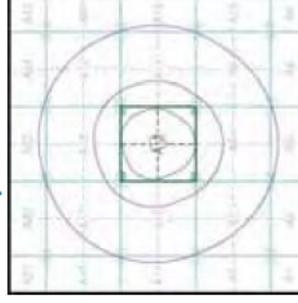
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Ordnance Survey's original data and are not subject to the same accuracy as the original data. The maps are also included together with the relevant road number and classification. Boundary information denotation includes county, unitary authority, district, civil parish and constituency.

### Map Name(s) and Date(s)

SE20SW	2006	1:10,000
SE20SE	2006	1:10,000
SE21NW	2006	1:10,000
SE21NE	2006	1:10,000

### Historical Map - Slice A



### Order Details

Order Number: 284419784\_1\_1  
 Customer Ref: 21-775 MPB  
 National Grid Reference: 424850, 420240  
 Slice: A  
 Site Area (Ha): 1.29  
 Search Buffer (m): 1000

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