

**GEOTECHNICAL AND GEO-  
ENVIRONMENTAL REPORT:**

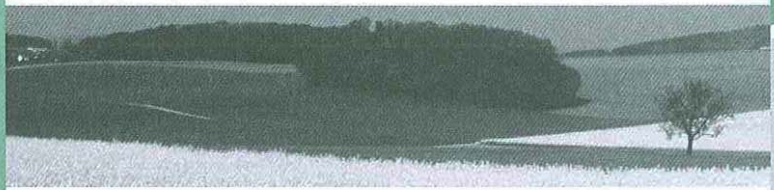
Proposed Residential Development,  
Land Adjacent to Willowbrook Drive, St Mellons,  
Cardiff

**PREPARED FOR:**

Cardiff Council

**May 2016**

**Job No: 13601**



  
**terrafirma**


**REPORT TITLE** : **Geotechnical and Geo-environmental Report: Proposed Residential Development, Land Adjacent to Willowbrook Drive, St Mellons, Cardiff**

**REPORT STATUS** : **Final**

**JOB NUMBER** : **13601**

**DATE** : **May 2016**

**PREPARED BY** :   
.....  
**Mr James Rhys-Williams**

**REVIEWED BY** :   
.....  
**Mr Alan Beattie**

**APPROVED BY** :   
.....  
**Dr Gwyn C Lake**



## Executive Summary

<b>Site Location and Proposed Development</b>	<i>The development site is irregular in shape and centres on an approximate National Grid Reference of 323420 180730, occupying a plan area of approximately 4.50 Hectares. The site is currently unused and comprises areas of scrub vegetation, open public space, hedgerows and trees.</i>
<b>Site History</b>	<i>The earliest edition of the historic maps (1982) shows the site to be formed by several fields. A track cuts across the southern section of the site. Two streams cross the site in an approximate west to east direction. The surrounding area sees considerable development from circa 1968 onwards but the actual site remains largely unchanged from the earliest edition.</i>
<b>Ground Conditions</b>	<i>The general ground conditions comprise of topsoil over superficial deposits of firm to very stiff mottled slightly sandy slightly gravelly silty clay locally clayey silt. Made ground was encountered to a maximum depth of 1.60m towards the south of the site. At a depth of between 0.20m and 2.30m stiff to very stiff dark reddish brown slightly sandy slightly gravelly clay or (Medium dense?) dark reddish brown slightly clayey slightly gravelly silty fine to coarse sand was encountered.</i>
<b>Radon</b>	<i>No radon protection is required for all new development on the investigation site.</i>
<b>Laboratory Chemical Testing</b>	<i>Asbestos in the form of Chrysotile fibres was identified in one sample of made ground in the southern portion of the site (TP14). All other substances tested for were found to be present at concentrations below their respective human health threshold levels.</i>
<b>Remedial Measures</b>	<p><i>Remedial measures will be required with regards to asbestos in made ground. The trial pits confirmed that made ground is only present in the southern half of the site (south of Willowbrook Drive).</i></p> <p><i>There are two options at this stage.</i></p> <p><i>Option 1 would be to cap all proposed garden and landscaped areas above all made ground in the southern section of the site. This would comprise a 600mm thick capping layer of imported clean soils, with the placement of a double 'no-dig' barrier between the made ground and the capping. The no dig barrier should comprise a geotextile to stop mixing of the soils and a geogrid to stop penetration with a spade.</i></p> <p><i>Option 2 would be to undertake further investigative work comprising sampling and testing of the shallow made ground for asbestos. This may conclude that only part of the southern section of the site is affected by asbestos and the remedial measures may apply only to a specific area. However, if asbestos is found to be typical of the made ground across this area the aforementioned 'no-dig' barrier and 600mm capping would still be required.</i></p> <p><i>If made ground is removed entirely from any area then the necessity for capping is removed.</i></p>
<b>Foundation Solution</b>	<p><i>For the new development mass concrete strip/trench fill foundations, founded within the underlying firm to very stiff mottled light orangish brown, dark orangish brown, dark brown and dark grey slightly sandy slightly gravelly silty clay locally clayey silt are recommended. Based upon the site investigation the depth to the in-situ founding horizon will be between 0.20m and 1.90m depth below the existing ground level.</i></p> <p><i>An allowable bearing pressure of 100kN/m<sup>2</sup> may be used for design purposes.</i></p> <p><i>The floor slabs should be designed as suspended.</i></p>
<b>Soakaways</b>	<i>It is considered that soakaway storm water drainage is unlikely to be suitable on this site.</i>

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## **SECTION 1 Introduction and Proposed Development**

### **1.1 Introduction**

Cardiff Council is proposing a residential development at land adjacent to Willowbrook Drive, St Mellons, Cardiff.

Terra Firma (Wales) Limited have been commissioned to undertake a geo-environmental assessment and geotechnical investigation of the site.

The main objectives of the geoenvironmental assessment programme were to:

- Investigate the potential environmental liabilities at the site associated with any soil contamination
- Provide a summary of the environmental conditions at the site, together with any necessary further intrusive works and / or remediation works to render the site fit for its intended use

The main objectives of the geotechnical site investigation were to:

- Determine the type, strength and bearing characteristics of the shallow superficial and underlying solid geology
- Provide engineering foundation and floor slab recommendations for the development
- Provide recommendations with regard to any other geotechnical aspects pertaining to the development

In order to achieve the above objectives, Terra Firma (Wales) Limited carried out an assessment programme including a review of existing data, followed by a field investigation to collect geotechnical and environmental data from selected locations.

### **1.2 Limitations and Exceptions of Investigation**

Cardiff Council has requested that a Geoenvironmental Site Assessment (GSA) and Geotechnical Investigation (GI) be performed in order to determine if contamination is present beneath the site and to determine an appropriate foundation and floor slab solution for the proposed development.

The GSA and GI were conducted and this report has been prepared for the sole internal reliance of Cardiff Council and their design and construction team. This report shall not be relied upon or transferred to any other parties without the express written authorisation of Terra Firma (Wales) Limited. If an unauthorised third party comes into possession of this report they rely on it at their peril and the authors owe them no duty of care and skill. The report represents the findings and opinions of experienced geo-environmental and geotechnical consultants. Terra Firma (Wales) Limited does not provide legal advice and the advice of lawyers may be required.

The subsurface geological profiles, any contamination and other plots are generalised by necessity and have been based on the information found at the locations of the exploratory holes and depths sampled and tested.

Large areas of the site were inaccessible due to dense vegetation coverage.

Possible underground services limited the investigation in the far south of the site.



## **SECTION 2 Review of Existing Data**

### **2.1 Physical Setting and Current Site Use**

The development site is irregular in shape and centres on an approximate National Grid Reference of 323420 180730, occupying a plan area of approximately 4.50 Hectares. The site is currently unused and comprises areas of scrub vegetation, open public space, hedgerows and trees.

The boundary to the north of the site is defined by Recreational Grounds and fields. The southern and eastern boundary are defined by Crickhowell Road beyond which is largely housing. The western perimeter is marked by residential housing. Willowbrook Drive crosses the centre of the site in a northwest-southeast direction.

The site level is approximately 15m AOD and slopes shallowly down to the east or southeast.

The site location can be seen in **Drawing 01** and the existing site layout can be seen in **Drawing 02**.

### **2.2 Site History**

Historical maps of the site have been obtained in an Envirocheck History Report, provided by Landmark Information Group. The history plans are supplied in **Annex A** of this report, and the most relevant editions are summarised below. Distances are approximate, and any changes in-between map editions may not be recorded.

#### **1882**

The earliest edition of the historic maps shows the site to be formed by several fields. A track cuts across the southern section of the site. Two streams cross the site in an approximate west to east direction. The first stream locates on the south-western boundary and meanders across the central southern section. The second stream crosses the southern tip of the site.

#### **1901**

A property called The Oaklands is now shows to the southeast of the site. The remainder of the site and surrounding area is largely unchanged.

#### **1919**

The site remains largely unchanged.

#### **1968-1970**

The area immediately to the west of the site has seen extensive residential development. The stream previously mentioned crossing the central southern section forks into a west flowing and south flowing tributary. The stream crossing the southern tip of the site is now absent.

#### **1983**

The 1983 edition shows the development of Crickhowell Road to the south/southeast and Willowbrook Drive through the centre of the site. A path is also seen to cross the south section of the site.

#### **1992**

The area directly to the east of the site adjacent to Crickhowell Road has now seen extensive residential development. The site remains largely unchanged.

## 2.2 Site History (Continued)

### 2015

The site remains unchanged from the previous edition.

## 2.3 Geological Setting

### 2.3.1 Geology

The 1:50,000 scale geological map of the area (Sheet 263, Cardiff) was consulted for geology underlying the site. The site is shown to be underlain by the St Maughans Formation which is Devonian in age. The formation comprises interbedded argillaceous rocks and sandstone.

The bedrock geology is shown to be overlain by superficial deposits of Glacial Till. The deposit is expected to be largely clay material with varying amounts of sand and gravel.

The bedrock is recorded dipping 20° to the northwest in the local area. Similar conditions may be expected beneath the site.

The underlying geology is not prone to dissolution and the risk of natural cavities in the bedrock is considered negligible.

Little or no made ground is not anticipated to be present.

### 2.3.2 Radon

The Envirocheck datasheet and maps (**Annex A**) detail that the site is in a lower probability radon area, as less than 1% of homes are above the action level.

**No** radon protection is required for new development on the investigation site.

## 2.4 Environmental Setting

The following sections have been compiled using the Envirocheck datasheet and maps which can be found in **Annex A**.

### 2.4.1 Hydrogeology and Hydrology

The Envirocheck Report records one surface water feature which forks into two tributaries located on the southern section of the site. The surface water feature is described as a tertiary river and broadly flows from the northwest to east/southeast, initially along the south-western boundary meandering across the centre of the southern section of the site.

The topography of the site and surrounding area falls very shallowly to the east/southeast. Given the relatively level nature of the site the likely flow of surface and shallow groundwater would be towards the previously described surface water features.

Deeper groundwater flow within the underlying bedrock will be controlled by the strata dip and any fractures or bedding planes within the rock units.

The hydraulic gradient will be at its steepest during periods of heavy rainfall and aquifer recharge.



### **2.4.1 Hydrogeology and Hydrology (Continued)**

The bedrock beneath the site has an aquifer designation of 'Secondary A'. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

The superficial deposits are designated unproductive strata.

### **2.4.2 Groundwater**

The Envirocheck Report does not place the site within a groundwater source protection zone.

There is no recorded groundwater abstraction point within 1000m of the site.

### **2.4.3 Flooding**

The Envirocheck Report states the site is not located within a flooding affected area.

The BGS groundwater flooding susceptibility plan locates the northern portion of the site within an area with potential for groundwater flooding of property situated below ground level. The southern section of the site is located within an area that has the potential for groundwater flooding to occur at surface.

### **2.4.4 Waste**

There are no recorded landfill sites (historic or current) within a 250m radius of the site.

There are no licensed waste management facilities or waste transfer sites within 250m of the site.

### **2.4.5 Pollution**

There have been no recorded pollution incidents to controlled waters or substantial pollution incidents within a 250m radius of the site.

### **2.4.7 Sensitive Land Use**

The Envirocheck Report details a Site of Special Scientific Interest located 506m south of the site, known as the Gwent Levels.

### **2.4.8 Urban Soil Chemistry**

The BGS have published anticipated soil concentrations for a number of common contaminants, i.e. arsenic, cadmium, chromium, lead and nickel. All of the given determinants have anticipated concentrations on the site that are below the recognised trigger levels for a residential with plant uptake scenario.

## **SECTION 3                      Preliminary Human Health and Environmental Risk Assessment**

### **3.1      General**

The contaminated land regime is set out in Part IIA of the Environmental Protection Act (EPA) 1990 and was introduced on the 1<sup>st</sup> April 2000 in England and 1<sup>st</sup> July 2001 in Wales. A similar regime was introduced in Scotland on 14<sup>th</sup> July 2000. Part IIA was introduced to achieve two aims:

- (1)      The identification of contaminated land
- (2)      The remediation of contaminated land that poses an unacceptable risk to human health and/or the environment

Under Part IIA the statutory definition of 'contaminated land' is: any land which appears to the local authority in whose area it is situated, to be in such a condition, by reason of substances in, on, or under the land, that:

- (a)      Significant harm is being caused or there is a significant possibility of such harm being caused; or
- (b)      Pollution of controlled waters is being, or is likely to be, caused."

For land to be classified as 'Contaminated Land' there must be a 'pollutant linkage'.

For our definitions of pollution linkage and how we define risk please refer to **Annex B** which includes our classifications of consequence and probability and risk assessment matrix.

### **3.2      Preliminary Site Conceptual Model**

The preceding sections enable a preliminary conceptual model of the site to be drawn up, to illustrate the likely ground conditions beneath the site together with a preliminary assessment of the nature of any underlying aquifers and groundwater movement. The preliminary site conceptual model is used as a model for the design and implementation of the site investigation, whereby areas of potential contamination can be targeted as well as investigating the site as a whole.

### **3.3      Potential Sources of Contamination and Gas**

The potential contamination beneath the site, whether in the matrix of soil or groundwater is related to the sites past use. The site has largely remained as field land throughout its history, however, the site locates adjacent to a road and housing development. Made ground is therefore not anticipated to be on present on site but reworked materials and possible waste building material may be encountered at locations adjacent to the road or housing development. No other potential on-site sources of contamination have been identified during the desk study.

### **3.4      Potential Receptors and Pollution Pathways**

There are human and hydrological receptors to any contamination that may be present on site.

Construction workers will be excavating in soils and will be exposed via dermal contact with soils and dust, ingestion of soil dust and inhalation of soil dust.

### 3.4 Potential Receptors and Pollution Pathways (Continued)

A residential end use is proposed. Once developed, future site users (residents and visitors) will potentially be at risk from contaminated soils through the same pathways as well as through consumption of site grown produce and potable drinking water.

Neighbouring site users and passers-by may potentially be exposed to soil dust.

If contamination is identified it may be leachable, enabling it to mobilise through perched groundwater within site soils and impact on deeper groundwater or surface water.

A Preliminary Human Health and Environmental Risk Assessment summarises the above and is detailed in the **Table 3.1** below and on the following pages.

### 3.5 Preliminary Human Health and Environmental Risk Assessment

<b>Table 3.1 Preliminary Qualitative Human Health and Environmental Risk Assessment</b>			
<b>Potential Source</b>	<b>Potential Pathway</b>	<b>Potential Target</b>	<b>Preliminary Risk Assessment</b>
<b>Human Health</b>			
Site Soil	Dermal contact with soil, ingestion of soil/soil dust, inhalation of soil dust	Construction workers	<b>Negligible Risk</b> COSHH assessment and good level of PPE/ hygiene by site workers/ staff; dust suppression measures if required
Site Soil	Dermal contact with soil, ingestion of soil/soil dust inhalation of soil dust	Passers - by/neighbouring site users	<b>Negligible Risk</b> No source of contamination has been identified on or in the vicinity of the site
Site Soil	Dermal contact with soil, ingestion of soil/soil dust or site grown vegetables, inhalation of soil dust	Site End Users – Staff and visitors.	<b>Negligible Risk</b> No source of contamination has been identified on or in the vicinity of the site
Radon Gas from underlying bedrock	Migration into indoor air	Site End Users – Staff and visitors	<b>Low Risk</b> BGS Radon Report confirms NO radon protection measures required
Landfill gas	Migration through superficial deposits and bedrock and accumulation indoors	Site End Users – Staff and visitors	<b>Negligible Risk</b> There are no historic or active landfills within 250m of the site
Ground gas	Direct from any made ground/buried organic matter on site and accumulation indoors	Site End Users – Staff and visitors	<b>Low Risk</b> No source of ground gas is anticipated on the site
Vapours	Migration into indoor air	Site End Users – Residents and visitors	<b>Low Risk</b> No source of vapours is anticipated on the site
Site Soils	Permeation of drinking water pipes	Site End Users – Residents and visitors	<b>Low Risk</b> No source of contamination has been identified on the site



### 3.5 Preliminary Human Health and Environmental Risk Assessment (Continued)

<b>Table 3.1 Preliminary Qualitative Human Health and Environmental Risk Assessment (Continued)</b>			
<b>Aquatic Environment</b>			
Site Soils	Surface runoff and leaching of contamination into the perched groundwater	Perched groundwater beneath the site	<b>Low Risk</b> No source of contamination has been identified on or in the vicinity of the site
Site Soils	Groundwater transport	Tertiary rivers and culvert located on site.	<b>Low Risk</b> No source of contamination has been identified on or in the vicinity of the site
Site Soils	Groundwater transport	Underlying bedrock: Secondary A Aquifer	<b>Low Risk</b> No source of contamination has been identified on or in the vicinity of the site
<b>Vegetation</b>			
Site Soils	Uptake of phytotoxic contaminants	Vegetation	<b>Low Risk</b> Made ground not anticipated on the site.
<b>Building Materials</b>			
Site Soils	Damage of building materials	New buildings	<b>Low Risk</b> Correct class of concrete to be chosen

### 3.6 Preliminary Illustrative Site Conceptual Model

The following illustration represents a theorised cross section through the site. The drawing is generalised and not to scale.

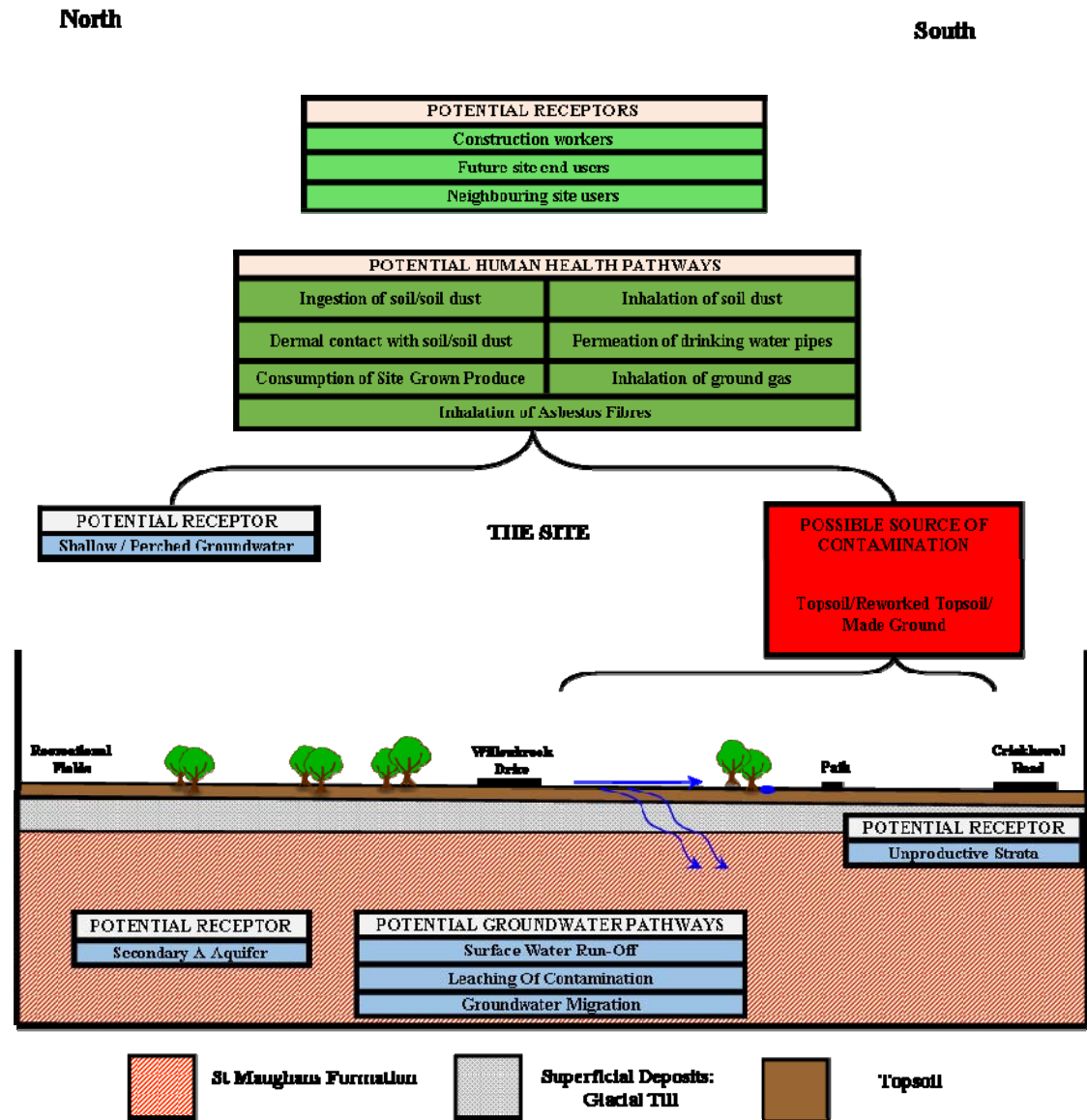


Figure 3.1 Preliminary Site Conceptual Model

## SECTION 4 Field Investigation

### 4.1 Site Works

A geotechnical and geo-environmental site investigation comprising fifteen machine excavated trial pits was undertaken on the 27<sup>th</sup> and 28<sup>th</sup> February 2016. Two soakaway tests were also undertaken during the trial pitting site works.

The fieldworks were also supervised by Terra Firma (Wales) Limited, who logged the exploratory holes to the requirements of BS5930:2015.

The trial pits, referenced TP01-TP15 were formed by a JCB 3CX wheeled mechanical excavator with a 0.60m wide bucket. The proposed locations of the exploratory holes were determined by Terra Firma (Wales) Limited.

Representative disturbed samples were taken and retained in airtight containers for environmental and geotechnical testing.

Soakaway tests were carried out in trial pit TP11 and TP12 in general accordance with BRE365 (2007). The excavation sides were squared using the excavator bucket and dimensions recorded within the test section. The trial pit was partially filled with clean water using a dedicated bowser with a 75mm diameter outlet and the fall in level recorded against time. The results are presented in **Annex D**.

On completion all trial pits were backfilled with arisings compacted in suitable layers by the excavator bucket.

The trial pit logs are presented in **Annex C** and their locations are shown on **Drawing 02**.

### 4.2 Exploratory Strategy

It is considered that the number and spacing of exploratory holes was adequate to:

- Investigate the presence, nature and distribution of contamination on site in an efficient but cost effective manner.
- Optimise the chances of finding contamination hot spots of various sizes and orientations.
- Provide good representation of the ground conditions beneath the site.
- Provide sufficient data to determine suitable remedial measures if necessary.

### 4.3 Ground Conditions

The ground conditions encountered by the exploratory holes can in general be summarised as shown in **Table 4.1** and **Table 4.2**.

Table 4.1 Summary of Ground Conditions NORTH			
Depth (m)		Thickness (m)	Stratum
GL	- 0.20/0.40	0.20-0.40	Grass/Vegetation over very soft dark brown slightly sandy <b>silty CLAY. (TOPSOIL)</b>
0.20/0.40	- 0.50/1.80	0.20/1.50	Firm to very stiff mottled light orangish brown, dark orangish brown and grey slightly sandy slightly gravelly <b>silty CLAY</b> locally <b>clayey SILT. (GLACIAL TILL)</b> (TP01 strata absent)
0.20/1.80	- >1.75/>3.20	-	Stiff to very stiff dark reddish brown slightly sandy slightly gravelly <b>CLAY OR</b> (Medium dense?) dark reddish brown slightly clayey slightly gravelly silty fine to coarse <b>SAND. (ST MAUGHANS FORMATION)</b>

Table 4.2 Summary of Ground Conditions SOUTH			
Depth (m)		Thickness (m)	Stratum
GL	- 0.50/1.60	0.50-1.60	Grass over very soft dark brown slightly sandy <b>silty CLAY</b> ; OVER Firm locally very stiff dark greyish brown variably sandy locally slightly gravelly <b>silty CLAY</b> or <b>clayey SILT. (MADE GROUND)</b>
0.90/1.60	- 1.10/>1.90	0.20-0.30	Firm dark grey locally mottled black slightly sandy organic <b>clayey SILT</b> or <b>silty CLAY. (RELICT TOPSOIL?)</b> (TP13, TP14 & TP15 only)
0.50/1.30	- 1.10/2.30	1.10-2.30	Firm mottled light orangish brown, dark orangish brown, dark brown and dark grey slightly sandy locally sandy slightly gravelly locally gravel absent <b>silty CLAY</b> locally <b>clayey SILT. (GLACIAL TILL)</b> (TP15 strata not observed)
1.10/2.30	- >2.30/>2.70	-	Stiff to very stiff dark reddish brown slightly sandy slightly gravelly <b>CLAY. (ST MAUGHANS FORMATION)</b> (TP15 strata not observed)

The north south divide used for the varying ground conditions is delineated by Willowbrook Drive.

Superficial deposits were absent from TP01.

### 4.3 Ground Conditions (Continued)

Suspected relict topsoil was only observed in TP13, TP14 and TP15.

Neither superficial nor solid deposits were observed in TP15.

### 4.4 Water Strikes

Groundwater details are summarised in **Table 4.3** below.

Table 4.3 Summary of Groundwater		
Trial Pit	Depth (m)	Description
TP01	2.00	Seepage
TP02	2.00	Seepage
TP03	-	Dry
TP04	2.70	Seepage
TP05	1.60	Seepage
TP06	1.30	Seepage
TP07	1.70	Seepage
TP08	-	Dry
TP09	-	Dry
TP10	-	Dry
TP11	-	Dry
TP12	-	Dry
TP13	-	Dry
TP14	2.10	Seepage
TP15	-	Dry

### 4.5 Stability and Obstructions

Short term instabilities were recorded in several trial pits, trial pit walls were seen to spall at varying depth. See remarks section on the relevant trial pit logs for details.

### 4.6 Laboratory Chemical Testing

#### 4.6.1 Quality Assurance

During the intrusive investigation, 12 small disturbed soil samples were collected.

Care was taken to ensure that sampling quality assurance occurred during site works. This included the following measures:

- Soil samples were collected by hand with nitrile gloves.
- Clean gloves were used for each sample.
- Soil samples were stored at a temperature below 4 degrees.
- No head space was left in sample containers.
- Appropriate sample containers were used.
- Samples were submitted for laboratory testing within holding times.



## 4.6.2 Sampling Regime

The sampling regime was conducted in accordance with BS5930:2015 in order to satisfy the following criteria:

- Investigate suspected sources of contamination
- Investigate type and concentration of contamination
- Ensure good representation of the site
- Provide data to advise on remedial measures if necessary

The sample locations and depths are illustrated in the following table:

Table 4.4 Sample Locations and Depths		
Sample	Depth (m)	MCERTS Sample Description
TP01	0.50-0.60	Brown slightly gravelly, sandy CLAY
TP02	0.30-0.40	Brown slightly gravelly, sandy CLAY
TP03	0.20-0.30	Brown slightly gravelly, sandy CLAY
TP04	0.40-0.50	Brown slightly gravelly, sandy CLAY
TP05	0.30-0.40	Brown slightly gravelly, sandy CLAY
TP06	0.30-0.40	Brown slightly gravelly, sandy CLAY
TP09	0.20-0.30	Brown slightly gravelly, sandy CLAY
TP10	0.30-0.40	Brown slightly gravelly, sandy CLAY
TP11	0.20-0.30	Brown slightly gravelly, sandy CLAY
TP12	0.20-0.40	Brown slightly gravelly, sandy CLAY
TP13	0.20-0.30	Brown slightly gravelly, sandy CLAY
TP14	0.40-0.50	Brown slightly gravelly, sandy CLAY

## 4.6.3 Soil Laboratory Analysis

During the site works a number of soil samples were taken and despatched to the laboratories of Derwentside Environmental Testing Services (DETS) for laboratory chemical testing;

### Metals and Metalloids

Lead  
Arsenic  
Mercury  
Cadmium  
Chromium III  
Chromium VI  
Copper  
Nickel  
Zinc  
Selenium

### In-Organics

Cyanide  
Sulphate

### Others

pH (acidity)  
Asbestos

### Organic Chemicals

Phenols  
Polyaromatic Hydrocarbons (PAH)  
Petroleum Hydrocarbons

The results are discussed in detail in **Section 5** and the laboratory test results certificates may be found in **Annex E**.

## **4.7 Soil Property Testing**

### **4.7.1 In-situ Permeability Testing**

During the site investigation two soakaway tests were undertaken in trial pits TP11 and TP12 and were carried out in general accordance with BRE Digest 365 (2007).

The soakaway tests were terminated early due to a nil infiltration rate.

The test results are discussed in **Section 7.6** and the calculation sheets can be found in **Annex D**.

### **4.7.2 Atterberg Limit Soil Plasticity Testing**

During the fieldworks four small disturbed soil samples of in-situ material were taken and despatched to the laboratories of GSTL for plasticity testing.

The tests were undertaken to the appropriate British standards.

The test results are presented in **Annex F** and discussed in detail in **Section 7.2** of this report.

## SECTION 5 Evaluation of Soil Analytical Results

### 5.1 Soil Assessment Methodology

Comparison of the analytical results has been made with Soil Guideline Values (SGVs) for a residential scenario, sourced from The Environment Agency Contaminated Land Exposure Assessment (CLEA). Where SGV values are not available reference has been made to the 2015 residential Suitable 4 Use Levels (S4ULs) provided by Land Quality Management Limited and the Chartered Institute of Environmental Health (CIEH) or Category 4 Screening Levels (C4SLs).

Sulphate results have been compared to British Research Establishment (BRE) guidelines as sulphate levels need only be considered for buried concrete risk assessment only, not human health related.

### 5.2 Soil Test Results

A summary of the chemical test results which include the regulatory soil guideline values used in the Tier 1 assessment are given in **Tables 5.1** and **5.2** and can be found in **Annex F**.

<b>Table 5.1 Summary of Soil Chemical Test Results Standard Suite</b>					
Substance	SGV/GAC (mg/kg)	Source	Measured Concentrations of Tested Substances (mg/kg)		Number of Exceedences
			Minimum	Maximum	
Arsenic	32	CLEA	4.0	11	0
Cadmium	10	CLEA	0.2	1.7	0
Chromium III	910	LQM/CIEH	11	45	0
Chromium VI	6	LQM/CIEH	<1.0	<1.0	0
Copper	2400	LQM/CIEH	6.7	25	0
Lead	200	C4SL	16	58	0
Mercury	170	CLEA	<0.05	0.06	0
Nickel	180	LQM/CIEH	12	23	0
Selenium	350	CLEA	<0.5	2.5	0
Zinc	3700	LQM/CIEH	60	140	0
Cyanide	8	CLEA	<0.1	0.2	0
Phenols	420	CLEA	<0.3	1.0	0
Sulphate	2400	BRE	200	900	0
Organic Matter	-	-	30000	29000	-
pH	-	-	6.3	8.5	-
Total PAH	0.1	LDL	<0.10	0.28	<b>See Table 5.2</b>

#### Notes:

- CLEA-Soil guideline values for a residential development with plant uptake
- LQM/CIEH - Generic Assessment Criteria for a residential development with plant uptake
- C4SL - category four screening level for a residential development with plant uptake
- BRE - British Research Establishment
- LDL – Laboratory Detection Limit
- A total of 12 samples were tested
- - no available guideline

## 5.2 Soil Test Results (Continued)

All samples were tested for speciated PAH, the results are shown below.

<b>Table 5.2 Summary of Soil Chemical Test Results Speciated Polyaromatic Hydrocarbons</b>					
Substance	GAC (mg/kg)	Source	Measured Concentrations of Tested Substances (mg/kg)		Number of Exceedences
			Minimum	Maximum	
Naphthalene	2.3	LQM/CIEH	<0.03	<0.03	0
Acenaphthylene	170	LQM/CIEH	<0.03	<0.03	0
Acenaphthene	210	LQM/CIEH	<0.03	<0.03	0
Fluorene	170	LQM/CIEH	<0.03	<0.03	0
Phenanthrene	95	LQM/CIEH	<0.03	<0.03	0
Anthracene	2400	LQM/CIEH	<0.03	<0.03	0
Fluoranthene	280	LQM/CIEH	<0.03	0.08	0
Pyrene	620	LQM/CIEH	<0.03	0.06	0
Benzo(a)anthracene	7.2	LQM/CIEH	<0.03	<0.03	0
Chrysene	15	LQM/CIEH	<0.03	0.07	0
Benzo(b)fluoranthene	2.6	LQM/CIEH	<0.03	0.06	0
Benzo(k)fluoranthene	77	LQM/CIEH	<0.03	<0.03	0
Benzo(a)pyrene	2.2	LQM/CIEH	<0.03	<0.03	0
Indeno(123cd)pyrene	27	LQM/CIEH	<0.03	<0.03	0
Dibenzo(ah)anthracene	0.24	LQM/CIEH	<0.03	<0.03	0
Benzo(ghi)perylene	320	LQM/CIEH	<0.03	<0.03	0
Total PAH	-	-	<0.10	0.28	-

### Notes:

- LQM/CIEH - Generic Assessment Criteria for a residential development with plant uptake.
- Guidelines for a residential land use with plant uptake.
- Thresholds based on 1.0% SOM
- 12 samples were tested for Speciated PAH

## 5.2 Soil Test Results (Continued)

Two samples were tested for petroleum hydrocarbons. The summarised results are shown below in **Table 5.3**.

<b>Table 5.3 Summary of Soil Chemical Test Results Petroleum Hydrocarbons</b>					
Substance	SGV/GAC (mg/kg)	Source	Measured Concentrations of Tested Substances (mg/kg)		Number of Exceedences
			Minimum	Maximum	
<b>Aliphatic</b>					
PH C5 – C6 Ali	42	LQM/CEIH	<0.01	<0.01	0
PH C6 – C8 Ali	100	LQM/CEIH	<0.01	<0.01	0
PH C8 – C10 Ali	27	LQM/CEIH	<0.01	<0.01	0
PH C10 – C12 Ali	130	LQM/CEIH	<1.5	<1.5	0
PH C12 – C16 Ali	1100	LQM/CEIH	<1.2	<1.2	0
PH C16 – C21 Ali	65000	LQM/CEIH	<1.5	<1.5	0
PH C21 – C35 Ali	65000	LQM/CEIH	<3.4	<3.4	0
<b>Aromatic</b>					
PH C5 – C7 Arom	70	LQM/CEIH	<0.01	<0.01	0
PH C7 – C8 Arom	130	LQM/CEIH	<0.01	<0.01	0
PH C8 – C10 Arom	34	LQM/CEIH	<0.01	<0.01	0
PH C10 – C12 Arom	74	LQM/CEIH	<0.9	<0.9	0
PH C12 – C16 Arom	140	LQM/CEIH	<0.5	<0.5	0
PH C16 – C21 Arom	260	LQM/CEIH	4.9	5.1	0
PH C21 – C35 Arom	1100	LQM/CEIH	<1.4	<1.4	0

### Notes:

- LQM/CEIH - Generic Assessment Criteria for a residential development with plant uptake
- CLEA-Soil guideline values for a residential development with plant uptake
- A total of 2 soil samples were tested for Petroleum Hydrocarbons
- Ali - Aliphatic Hydrocarbon
- Arom - Aromatic Hydrocarbon
- LQM/CEIH Based on 1.0% SOM
- \* - LQM for Ali C16 - 21 and C21 - C35 based on LQM for EC >16 - 35

### 5.2.1 Asbestos

Asbestos testing was undertaken on two samples taken from made ground at the site. A positive asbestos result was recorded in one sample. The sample TP14 0.40-0.50m contained a bundle of Chrysotile fibres known alternatively as White Asbestos. No asbestos was detected in the remaining sample.



## **SECTION 6 Quantitative Risk Assessment**

### **6.1 Contaminants of Concern**

#### **6.1.1 Contaminants of Concern in Soil**

Asbestos in the form of Chrysotile fibres was identified in one sample of made ground in the southern portion of the site.

All other substances tested for were found to be present at concentrations below their respective human health threshold levels.

#### **6.1.2 Leachable Contaminants of Concern**

None of the substances tested for in site soils is considered to present a risk through leaching.

Sulphate levels should be considered when assessing concrete for use in construction. Please refer to **Section 7.4**.

### **6.2 Potential Receptors and Pathways**

#### **6.2.1 Human Receptors**

Construction workers may be in intimate contact with the site soils and are potentially at risk from exposure to Asbestos fibres within the made ground through inhalation pathways.

Neighbouring site users and passers-by are also potentially at risk of exposure to Asbestos fibres during construction works at the site.

Similarly future site users, residents and visitors, are at risk of Asbestos fibre inhalation if site soils are not remediated.

#### **6.2.2 Aquatic Environment**

Based upon the soil analysis, no contaminants of concern are considered to present a risk to the aquatic environment.

### **6.3 Mitigation and Remedial Measures**

#### **6.3.1 Human Health**

Remedial measures will be required with regards to asbestos fibres, found in a sample of made ground taken from TP14.

The trial pits confirmed that made ground is only present in the southern half of the site (south of Willowbrook Drive).

Given the limited number of representative samples of the made ground it cannot be confirmed whether the occurrence of asbestos is isolated or more representative of the made ground.

### **6.3.1 Human Health (Continued)**

There are two options at this stage.

Option 1 would be to cap all proposed garden and landscaped areas above all made ground in the southern section of the site. This would comprise a 600mm thick capping layer of imported clean soils, with the placement of a double 'no-dig' barrier between the made ground and the capping. The no dig barrier should comprise a geotextile to stop mixing of the soils and a geogrid to stop penetration with a spade.

Option 2 would be to undertake further investigative work comprising sampling and testing of the shallow made ground for asbestos. This may conclude that only part of the southern section of the site is affected by asbestos and the remedial measures may apply only to a specific area. However, if asbestos is found to be typical of the made ground across this area the aforementioned 'no-dig' barrier and 600mm capping would still be required.

If made ground is removed entirely from any area then the necessity for capping is removed.

As good practise, construction workers should adhere to good site management, COSHH, good standards of hygiene and appropriate health & safety on site, with personal protection equipment (PPE) and dust suppression where appropriate. Additional measures may also be required to deal with the asbestos contamination present.

Neighbouring site occupants and passers-by can be protected by site screening and dust suppression measures if necessary. Additional measures may also be required to deal with the asbestos contamination.

If during development works any other unexpected ground conditions or evidence of contamination is found, inspection by a geo-environmental engineer should be made, and any required testing or investigation carried out prior to continuation of works.

For proposed new supply water pipes, the UK Water Industry Research publication 'Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites (Report 10/WM/03/21)' should be consulted.

Any imported soils should be tested and validated as suitable prior to use in accordance with 'Requirements for the Chemical Testing of Imported Materials for Various End Uses and Validation Cover Systems' published by the Welsh Contaminated Land Working Group.

### **6.3.2 Aquatic Environment**

There are not considered to be any risks to the aquatic environment from site soils.

During the construction period, there is a risk to the environment/adjacent sites from de-watering, digging foundations, moving contaminated soil, drainage misconnections, discharges to local surface waters or the ground, runoff from construction materials and/or exposed ground, wheel washings and oil or chemical spills.

The risk is considered to be negligible as any adverse effects will be easily preventable by due diligence to good construction practise and housekeeping in preventing surface runoff and the spillage of materials.

### 6.3.2 Aquatic Environment (Continued)

The basic measures that should be taken are as follows:

- Prepare a drainage plan and mark the manholes to prevent pollutants accidentally reaching the surface water sewers;
- Carry out any activities that could cause pollution in a designated, bunded area, away from rivers or boreholes. Where possible it should drain to the foul sewer;
- Use settlement ponds to remove silty water;
- Store all oils and chemicals in a fully bunded area to prevent leaks or spills;
- Get advice on whether you need an environmental permit and apply in good time

### 6.4 Refined Illustrative Site Conceptual Model

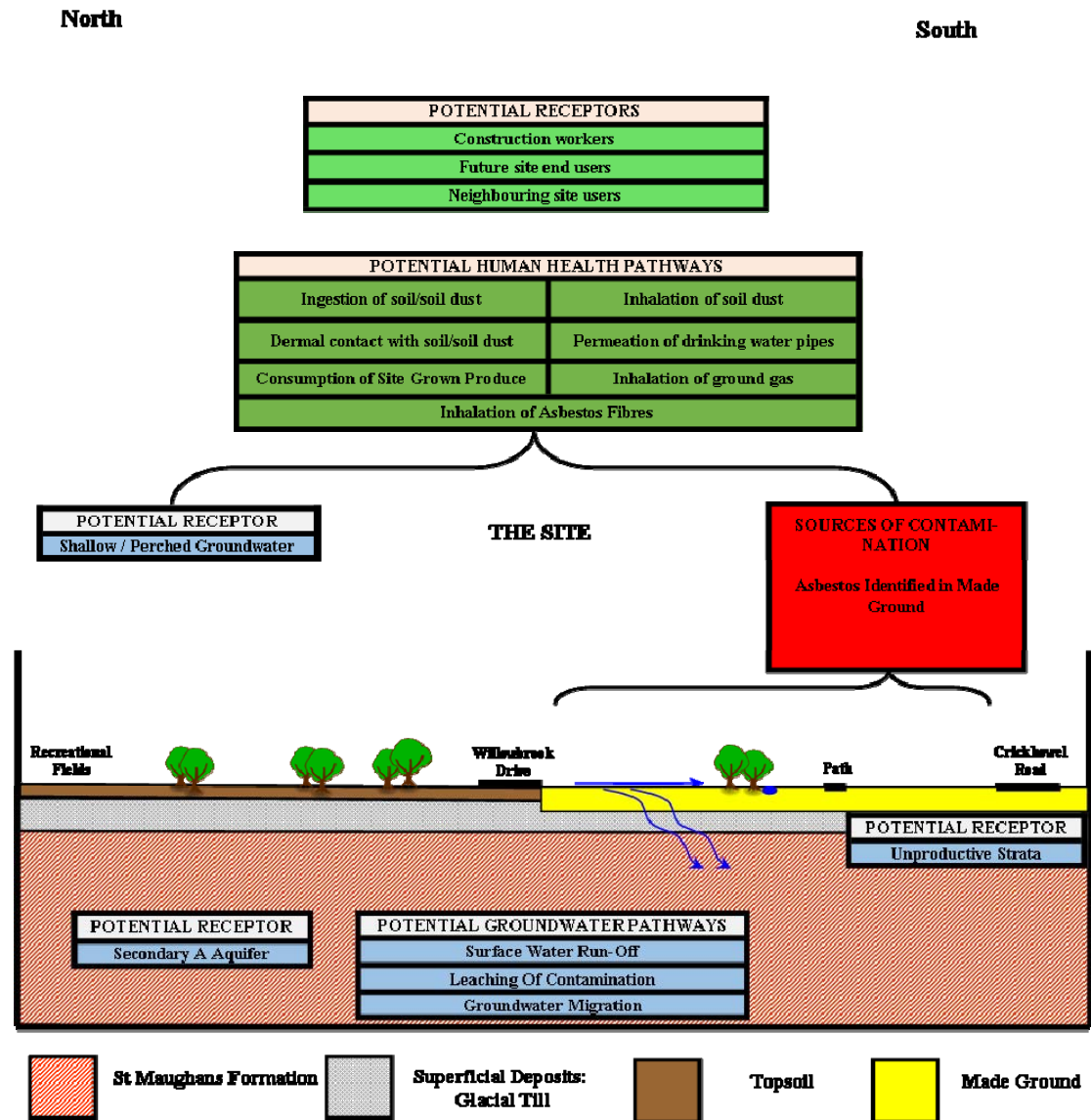


Figure 6.1: Refined Illustrative Site Conceptual Model

## **SECTION 7 Engineering Recommendations**

### **7.1 Preparation of Site**

All top soil, scrub vegetation and trees including all roots should be stripped and removed from beneath the proposed buildings, roads and areas of hard standing.

Contingencies should be made for the protection/diversion any underground/overhead services present beneath the site brought about as a result of the proposed works.

Allowances should be made for the excavation of any soft spots/areas and their replacement with well compacted imported granular materials.

Any reduced levels should be brought up to the required levels with suitable inert mainly granular materials. Department of Transport (DoT) type 2 sub base or similar should be used and should be compacted in layers to the requirements of the Specification for Highway works.

In accordance with EC Regulation 1272/2008 and Environment Agency Guidance WM3 soils and other materials destined for off-site disposal should be classified on the basis of their hazard phrases prior to disposal. Soils are classified as a mirror entry waste and should be classified on the basis of their specific chemical properties. Terra Firma (Wales) Ltd offer this service if required.

### **7.2 Foundation and Floor Slab Solution**

For the new development mass concrete strip/trench fill foundations, founded within the underlying firm to very stiff mottled light orangish brown, dark orangish brown, dark brown and dark grey slightly sandy slightly gravelly silty clay locally clayey silt are recommended. Based upon the site investigation the depth to the in-situ founding horizon will be between 0.20m and 1.90m depth below the existing ground level.

The foundations should penetrate at least 200mm into the founding horizon and in order to prevent any effects from frost heave the foundations should extend to a minimum depth of 900mm.

An allowable bearing pressure of 100kN/m<sup>2</sup> may be used for design purposes. For the given foundation solution and bearing pressure, maximum total settlements of 25mm should result with differential movements of the superstructure not exceeding 1:750.

The floor slabs should be designed as suspended.

Allowances should be made for the removal of any 'soft spots' and their replacement with well-compacted granular materials. Department of Transport (DoT) Type 2 materials or similar could be used and should be compacted in layers to the specification for Highway Works.

There are a number of mature trees within the site and therefore the foundations will need to be taken deeper within influencing distance of the tree root systems. The National House Building Council (NHBC) Chapter 4.2 gives guidelines as to the appropriate type of floor slab and void based on the type of tree, distance of the foundation from the tree and the plasticity index of the in-situ materials.

## 7.2 Foundation and Floor Slab Solution (continued)

During the investigation four samples of the in-situ materials were taken and submitted for plasticity testing (**Annex F**). In line with the NHBC (Chapter 4.2), the modified plasticity index for the sample was calculated.

Table 7.1 Plasticity Test Results					
Sample	Depth (m)	Soil Type	Plasticity Index (%)	Modified Plasticity Index (%)	Volume Change Potential
TP2	0.3 – 0.4	Sandy gravelly silty CLAY	32	27	Medium
TP3	0.2 – 0.3		31	24	Medium
TP8	0.8 – 0.9		27	20	Medium
TP13	1.9 – 2.0		25	18	Low

All foundation formations should be inspected by a suitably qualified engineer before being concreted.

## 7.3 Excavations and Formations

Shallow excavations will be possible with normal soil excavating machinery.

Shallow perched water and groundwater flows should be expected. Any water inflows together with rainwater infiltration should be dealt with by conventional pumping techniques. However it should be noted that during times of heavy rainfall a higher water table will be encountered.

The trial pit walls were seen to be locally unstable in the short term, therefore the sides of any excavations deeper than 1.0m, or shallower if unstable, should be supported by planking and strutting or other proprietary means.

The sub-formations/formations are likely to be susceptible to loosening, softening and deterioration by exposure to weather (rain, frost and drying conditions), the action of water (flood water or removal of groundwater) and site traffic.

Formations should never be left unprotected and continuously exposed to rain causing degradation, or left exposed/uncovered overnight, unless permitted by a qualified engineer.

Construction plant and other vehicular traffic should not be operated on unprotected formations.

As a minimum the formation/excavation surfaces must be protected by blinding concrete immediately after exposure.

Allowances should be made for the removal of soft spots/areas and their replacement with well compacted granular materials.

Allowances should also be made for special precautions to prevent formation deterioration in addition to the above.



## **7.4 Protection of Buried Concrete**

Levels of total sulphate within the in-situ materials measured between 200mg/kg to 900mg/kg and the pH varied between 6.3 and 8.5.

When these results are compared with Table C1 of BRE Digest 1:2005, it indicates that all buried concrete should most likely as a minimum conform to Class AC-1s.

## **7.5 Access Roads and Car Parking Areas**

For car parking and road areas, formations within the in-situ soils a CBR value of 1% may be used for design purposes.

Allowances should be made for the removal of any 'soft spots/areas' and their replacement with well-compacted granular materials as previously described.

Please note that the Local Council / Highways Authority may require in-situ CBR testing to be undertaken before a road is adopted.

## **7.6 Storm Water Drainage**

During the site investigation two soakaway tests were undertaken in general accordance of BRE Digests 365 (2007). The soakaway tests were undertaken in TP11 and TP12 in the natural clay deposits.

The soakaway tests in TP11 and TP12 were terminated after 62 minutes and 103 minutes respectively due to a nil infiltration rate.

It is considered that soakaway storm water drainage is unlikely to be suitable on this site.

---

## **SECTION 8 Recommended Additional Investigation**

During the site investigation works, Terra Firma (Wales) Ltd was unable to investigate an area of the site which was covered in dense vegetation of scrub and woodland. Once this area becomes available, it is recommended that a series of trial pits be undertaken to confirm the previously recommended foundation solution is also suitable in these areas.

**ANNEX A**  
**Envirocheck Report**

## Envirocheck<sup>®</sup> Report:

### Datasheet

#### Order Details:

**Order Number:**

84845006\_1\_1

**Customer Reference:**

13601

**National Grid Reference:**

323420, 180730

**Slice:**

A

**Site Area (Ha):**

4.5

**Search Buffer (m):**

1000

#### Site Details:

Site at 323440, 180740

#### Client Details:

Mr J Rhys-Williams  
Terra Firma (Wales) Ltd  
5 Deryn Court  
Wharfdale Road  
Pentwyn  
Cardiff  
CF23 7HB

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Agency & Hydrological	1
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Hazardous Substances	-
Geological	18
Industrial Land Use	23
Sensitive Land Use	33
Data Currency	34
Data Suppliers	40
Useful Contacts	41

## Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination. For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency/Natural Resources Wales and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

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## Report Version v50.0



Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Agency &amp; Hydrological</b>					
BGS Groundwater Flooding Susceptibility	pg 1	Yes	Yes	Yes	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 2	1	3	7	10
Prosecutions Relating to Controlled Waters			n/a	n/a	n/a
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 7			1	1
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 7	Yes			
Pollution Incidents to Controlled Waters	pg 7			2	6
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances	pg 9				5
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 9				2
Water Abstractions	pg 10				(*2)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 10	Yes	n/a	n/a	n/a
Drift Deposits	pg 10	1	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 10	Yes	n/a	n/a	n/a
Superficial Aquifer Designations	pg 10	Yes	n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
Detailed River Network Lines	pg 11	Yes	Yes	Yes	n/a
Detailed River Network Offline Drainage	pg 14			Yes	n/a

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Waste</b>					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 15				3
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 15	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)					
Potentially Infilled Land (Water)	pg 15		6	6	22
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					
<b>Hazardous Substances</b>					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Geological</b>					
BGS 1:625,000 Solid Geology	pg 18	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 18	Yes			
BGS Recorded Mineral Sites					
BGS Urban Soil Chemistry	pg 18		Yes	Yes	Yes
BGS Urban Soil Chemistry Averages	pg 21	Yes			
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain	pg 22	Yes		n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 22	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 22	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 22	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 22	Yes		n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
<b>Industrial Land Use</b>					
Contemporary Trade Directory Entries	pg 23		3	8	41
Fuel Station Entries	pg 27			1	2
Points of Interest - Commercial Services	pg 27			1	12
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 29			4	2
Points of Interest - Public Infrastructure	pg 29			5	11
Points of Interest - Recreational and Environmental	pg 31		2	7	8
Gas Pipelines					
Underground Electrical Cables					

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
<b>Sensitive Land Use</b>					
Ancient Woodland					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest	pg 33				1
Special Areas of Conservation					
Special Protection Areas					
World Heritage Sites					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding to Occur at Surface	A13NW (E)	0	2	323424 180726
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13NW (N)	0	2	323424 180750
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A13SW (W)	119	2	323200 180700
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13SW (W)	188	2	323150 180650
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A12NE (W)	206	2	323100 180750
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A14SW (E)	212	2	323800 180700
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (W)	262	2	323050 180700
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NE (NW)	305	2	323050 181000
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NE (W)	306	2	323000 180726
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12SE (SW)	310	2	323050 180450
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SW (NW)	344	2	323200 181200
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SW (N)	372	2	323250 181250
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A18SW (NW)	389	2	323200 181250
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Limited Potential for Groundwater Flooding to Occur	A7NE (SW)	398	2	323000 180350
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SW (N)	408	2	323300 181300
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SW (N)	451	2	323350 181350
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A18SW (N)	451	2	323400 181350
	<b>BGS Groundwater Flooding Susceptibility</b> Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level	A7NE (SW)	490	2	323000 180200

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: St Mellons - New Development -  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115406  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Pil-Du Reen Via Unnamed Reens  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A13SE (SE)	0	3	323480 180660
2	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Construction &amp; Repair Of Buildings  Location: St Mellons - New Development -  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115405  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Pil-Du Reen Via Unnamed Reens  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A13SE (SE)	108	3	323580 180550
3	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Ofall H At New Devmt St Mellons  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115407  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A18SW (N)	224	3	323300 181110
3	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Ofall H At New Devmt St Mellons  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115408  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A18SW (N)	224	3	323300 181110

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
4	<p><b>Discharge Consents</b></p> <p>Operator: Tesco Stores Ltd  Property Type: Construction &amp; Repair Of Buildings  Location: St Mellons Devplt  Authority: Natural Resources Wales  Catchment Area: Not Supplied  Reference: Ac0133201  Permit Version: 1  Effective Date: 21st October 1981  Issued Date: 21st October 1981  Revocation Date: 26th May 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 100m</p>	A18SE (NE)	298	3	323600 181100
5	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: St Mellons - New Development -  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115403  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Pil-Du Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A8NW (SW)	305	3	323200 180280
6	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: St Mellons - New Development -  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115404  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Pil-Du Reen Via Unnamed Reens  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A13SE (SE)	305	3	323710 180400
7	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: St Mellons - New Development -  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115409  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A18SE (NE)	401	3	323700 181160



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Ofall L At New Devmt St Mellons  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115410  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A18SE (NE)	410	3	323740 181150
7	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Ofall L At New Devmt St Mellons  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115411  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A18SE (NE)	410	3	323740 181150
8	<p><b>Discharge Consents</b></p> <p>Operator: Hall &amp; Tawse Partnership Ltd  Property Type: Undefined Or Other  Location: North Of Crickhowell Devmt St Mel, St Mellons  Authority: Natural Resources Wales  Catchment Area: River Rhymney  Reference: An0026501  Permit Version: 1  Effective Date: 17th May 1987  Issued Date: 17th May 1987  Revocation Date: 17th May 1993  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: The Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 100m</p>	A19SW (NE)	454	3	323900 181100
9	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Cardiff - St Mellons Res. Developme, Res. Development On Area 4a  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0050301  Permit Version: 1  Effective Date: 20th October 1987  Issued Date: 20th October 1987  Revocation Date: 31st March 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A19SW (NE)	601	3	324080 181120

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Ofall M At New Devmt St Mellons  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115412  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A18NE (NE)	673	3	323750 181460
11	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: St Mellons - New Development -  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115402  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Pil-Du Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A9NW (SE)	678	3	324120 180330
12	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Cardiff - St Mellons Res. Deve  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0050302  Permit Version: 1  Effective Date: 20th October 1987  Issued Date: 20th October 1987  Revocation Date: 31st March 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A19SE (NE)	692	3	324170 181150
13	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Cardiff - St Mellons Res. Deve  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0050303  Permit Version: 1  Effective Date: 20th October 1987  Issued Date: 20th October 1987  Revocation Date: 31st March 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A19SE (NE)	764	3	324230 181190

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	<p><b>Discharge Consents</b></p> <p>Operator: Pitman A (Hon Secretary)  Property Type: Undefined Or Other  Location: Broads Social Club Pontmister Ind E, Pontmister Ind Estate  Authority: Natural Resources Wales  Catchment Area: Not Supplied  Reference: Ac0123001  Permit Version: 1  Effective Date: 7th February 1980  Issued Date: 7th February 1980  Revocation Date: 5th April 1995  Discharge Type: Unspecified  Discharge: Unknown  Environment:  Receiving Water: Unspecified  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A14NE (E)	776	3	324370 180840
15	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Cardiff - St Mellons Res. Deve  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0050304  Permit Version: 1  Effective Date: 20th October 1987  Issued Date: 20th October 1987  Revocation Date: 31st March 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A19SE (NE)	816	3	324280 181210
16	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: St Mellons - New Development -  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115401  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Pil-Du Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A14SE (E)	835	3	324350 180400
17	<p><b>Discharge Consents</b></p> <p>Operator: Cardiff City Council  Property Type: Undefined Or Other  Location: Ofall T At New Devmt St Mellons  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: An0115418  Permit Version: 1  Effective Date: 28th November 1988  Issued Date: 28th November 1988  Revocation Date: 3rd April 1995  Discharge Type: Unspecified  Discharge: Into And/Or Watercourse  Environment:  Receiving Water: Faendre Reen  <b>Status: Consent expired</b>  Positional Accuracy: Located by supplier to within 10m</p>	A19SE (NE)	963	3	324360 181350

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
18	<p><b>Discharge Consents</b></p> <p>Operator: Maxfield Sa  Property Type: Retail Distribution  Location: Willowbrook Dr Adj To Jasmine Drive, St Mellons, Cardiff, Cf3 0ay  Authority: Natural Resources Wales  Catchment Area: Tarwick Reen  Reference: AN0245501  Permit Version: 1  Effective Date: 15th December 1993  Issued Date: 15th December 1993  Revocation Date: 22nd May 2010  Discharge Type: Trade Discharges - Site Drainage  Discharge: Freshwater Stream/River  Environment:  Receiving Water: Faendre Reen  <b>Status: Revoked (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b>  Positional Accuracy: Located by supplier to within 100m</p>	A19SE (NE)	966	3	324400 181300
19	<p><b>Local Authority Pollution Prevention and Controls</b></p> <p>Name: Tesco Petrol Filling Station  Location: Crickhowell Road, St Mellons, CARDIFF, South Glamorgan, CF3 0EF  Authority: Cardiff Council, Pollution Control Division  Permit Reference: PPC/79/1.2  Dated: 31st December 1998  Process Type: Local Authority Pollution Prevention and Control  Description: PG1/14 Petrol filling station  <b>Status: Permitted</b>  Positional Accuracy: Automatically positioned to the address</p>	A18SE (N)	360	4	323565 181207
20	<p><b>Local Authority Pollution Prevention and Controls</b></p> <p>Name: St Mellons Service Station  Location: Newport Road, St Mellons, CARDIFF, South Glamorgan, CF3 5UA  Authority: Cardiff Council, Pollution Control Division  Permit Reference: PPC/83/1.2  Dated: 31st December 1998  Process Type: Local Authority Pollution Prevention and Control  Description: PG1/14 Petrol filling station  <b>Status: Permitted</b>  Positional Accuracy: Automatically positioned to the address</p>	A17SE (NW)	554	4	322976 181300
	<p><b>Nearest Surface Water Feature</b></p>	A13SW (S)	0	-	323407 180655
21	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Land  Location: Tescos, Stmellons  Authority: Environment Agency, Welsh Region  Pollutant: Oils - Diesel (Including Agricultural)  Note: Not Supplied  Incident Date: 5th March 1991  Incident Reference: 108  Catchment Area: Not Given  Receiving Water: Not Given  Cause of Incident: Unknown  Incident Severity: Category 2 - Significant Incident  Positional Accuracy: Located by supplier to within 100m</p>	A18SE (N)	374	5	323600 181200
22	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Miscellaneous Premises: Surface Runoff  Location: Tescos, CRICKHOWELL  Authority: Environment Agency, Welsh Region  Pollutant: Mud/Clay/Soil  Note: Accidental Spillage/Leakage  Incident Date: 4th January 1992  Incident Reference: 1724  Catchment Area: Not Given  Receiving Water: Not Given  Cause of Incident: Spillage  Incident Severity: Category 3 - Minor Incident  Positional Accuracy: Located by supplier to within 100m</p>	A18SE (N)	458	5	323600 181300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
23	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: 50 Yards From Roundabout            Authority: Environment Agency, Welsh Region            Pollutant: Crude Sewage            Note: Blockage; Pil-Du-Reen            Incident Date: 7th December 1998            Incident Reference: 37213            Catchment Area: Not Given            Receiving Water: Not Given            Cause of Incident: Overflow            Incident Severity: Category 3 - Minor Incident            Positional Accuracy: Located by supplier to within 100m</p>	A18NE (N)	771	5	323700 181600
24	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Rhosog Fach, Lamby Industrial Park, Wentlooge            Authority: Environment Agency, Welsh Region            Pollutant: Miscellaneous - Vehicles            Note: Unknown; Rhosog Fach Reen            Incident Date: 30th November 1998            Incident Reference: 37197            Catchment Area: Not Given            Receiving Water: Not Given            Cause of Incident: Unknown            Incident Severity: Category 3 - Minor Incident            Positional Accuracy: Located by supplier to within 100m</p>	A8SE (S)	786	5	323600 179800
25	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Collage Glan, Haffron, TROWBRIDGE            Authority: Environment Agency, Welsh Region            Pollutant: Mud/Clay/Soil            Note: Not Supplied            Incident Date: 10th November 1995            Incident Reference: 26629            Catchment Area: Not Given            Receiving Water: Not Given            Cause of Incident: Unknown            Incident Severity: Category 3 - Minor Incident            Positional Accuracy: Located by supplier to within 100m</p>	A8SW (S)	802	5	323250 179750
26	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Behind Tesco , ST MELLONS            Authority: Environment Agency, Welsh Region            Pollutant: Oils - Diesel (Including Agricultural)            Note: Unknown; Un-Named Stream            Incident Date: 8th December 1998            Incident Reference: 37220            Catchment Area: Not Given            Receiving Water: Not Given            Cause of Incident: Unknown            Incident Severity: Category 3 - Minor Incident            Positional Accuracy: Located by supplier to within 100m</p>	A19NW (NE)	841	5	324000 181500
27	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Hendre Lane, St Mellons, CARDIFF            Authority: Environment Agency, Welsh Region            Pollutant: Algae            Note: Natural Occurrence; Pil Du Reen &amp; Hendre Lake            Incident Date: 29th June 1998            Incident Reference: 36128            Catchment Area: Not Given            Receiving Water: Not Given            Cause of Incident: Natural Causes            Incident Severity: Category 3 - Minor Incident            Positional Accuracy: Located by supplier to within 100m</p>	A15SW (E)	940	5	324500 180500
27	<p><b>Pollution Incidents to Controlled Waters</b></p> <p>Property Type: Not Given            Location: Hendre Road, Cowbridge Estate            Authority: Environment Agency, Welsh Region            Pollutant: Algae            Note: Natural Occurrence; Pil Du Reen &amp; Hendre Lake            Incident Date: 29th June 1998            Incident Reference: 36128            Catchment Area: Not Given            Receiving Water: Not Given            Cause of Incident: Natural Causes            Incident Severity: Category 3 - Minor Incident            Positional Accuracy: Located by supplier to within 100m</p>	A15SW (E)	941	5	324500 180495

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	<p><b>Registered Radioactive Substances</b></p> <p>Name: Bioclinical Services Ltd            Location: Units 1-6 Willowbrook Laboratory Units, Crickhowell Road, St. Mellons, CARDIFF, South Glamorgan, CF3 0EF            Authority: Natural Resources Wales            Permit Reference: Bi4934            Dated: 15th August 2000            Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7)            Description: Initial variation to an authorisation under RSA  <b>Status: Authorisation either revoked or cancelledCancelled</b>            Positional Accuracy: Manually positioned to the address or location</p>	A18SE (N)	524	3	323642 181352
28	<p><b>Registered Radioactive Substances</b></p> <p>Name: Bioclinical Services Ltd            Location: Units 1-6 Willowbrook Laboratory Units, Crickhowell Road, St. Mellons, CARDIFF, South Glamorgan, CF3 0EF            Authority: Natural Resources Wales            Permit Reference: Bi4888            Dated: 13th June 2000            Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1)            Description: Discretionary registration under the Act of an open source which is also the subject of an authorisation  <b>Status: Authorisation either revoked or cancelledCancelled</b>            Positional Accuracy: Manually positioned to the address or location</p>	A18SE (N)	524	3	323642 181352
28	<p><b>Registered Radioactive Substances</b></p> <p>Name: Bioclinical Services Ltd            Location: Units 1-6 Willowbrook Laboratory Units, Crickhowell Road, St. Mellons, CARDIFF, South Glamorgan, CF3 0EF            Authority: Natural Resources Wales            Permit Reference: AY2524            Dated: 16th April 1997            Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7)            Description: Minor variation to authorisation under RSA  <b>Status: Authorisation superseded by a substantial or non substantial variationSuperseded</b>            Positional Accuracy: Manually positioned to the address or location</p>	A18SE (N)	524	3	323642 181352
28	<p><b>Registered Radioactive Substances</b></p> <p>Name: Bioclinical Services Ltd            Location: Units 1-6 Willowbrook Laboratory Units, Crickhowell Road, St. Mellons, CARDIFF, South Glamorgan, CF3 0EF            Authority: Natural Resources Wales            Permit Reference: AQ3229            Dated: 21st April 1995            Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7)            Description: Substantial variation to authorisation under RSA  <b>Status: Authorisation superseded by a substantial or non substantial variationSuperseded</b>            Positional Accuracy: Manually positioned to the address or location</p>	A18SE (N)	524	3	323642 181352
28	<p><b>Registered Radioactive Substances</b></p> <p>Name: Bioclinical Services Ltd            Location: Units 1-6 Willowbrook Laboratory Units, Crickhowell Road, St. Mellons, CARDIFF, South Glamorgan, CF3 0EF            Authority: Natural Resources Wales            Permit Reference: AE8011            Dated: 31st March 1991            Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7)            Description: Authorisation under RSA  <b>Status: Authorisation superseded by a substantial or non substantial variationSuperseded</b>            Positional Accuracy: Manually positioned to the address or location</p>	A18SE (N)	524	3	323642 181352
29	<p><b>Substantiated Pollution Incident Register</b></p> <p>Authority: Natural Resources Wales            Incident Date: 2nd November 2006            Incident Reference: 447599            Water Impact: Category 3 - Minor Incident            Air Impact: Category 4 - No Impact            Land Impact: Category 2 - Significant Incident            Positional Accuracy: Located by supplier to within 10m            Pollutant: Crude Sewage</p>	A15SW (E)	919	3	324465 180459

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
30	<b>Substantiated Pollution Incident Register</b> Authority: Natural Resources Wales Incident Date: 13th February 2007 Incident Reference: 469465 Water Impact: Category 3 - Minor Incident Air Impact: Category 3 - Minor Incident Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Crude Sewage	A10NW (E)	980	3	324501 180381
	<b>Water Abstractions</b> Operator: St Mellons Golf Club (1964) Ltd Licence Number: 20/56/71/0008 Permit Version: 100 Location: Borehole At St Mellons Golf Club Authority: Natural Resources Wales Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 27th May 2004 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A25NW (NE)	1898	3	324800 182230
	<b>Water Abstractions</b> Operator: St Mellons Golf Club (1964) Ltd Licence Number: 20/56/71/0008 Permit Version: Not Supplied Location: Location Description Not Available Authority: Environment Agency, Welsh Region Abstraction: Spray Irrigation Abstraction Type: Not Supplied Source: Well And Borehole Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	A25NW (NE)	1905	5	324800 182240
	<b>Groundwater Vulnerability</b> Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Map Sheet: Sheet 36 Mid Glamorgan Scale: 1:100,000	A13SW (SW)	0	5	323321 180678
	<b>Groundwater Vulnerability</b> Soil Classification: Soils of High Leaching Potential (H1) - Soils which readily transmit liquid discharges because they are either shallow, or susceptible to rapid by-pass flow directly to rock, gravel or groundwater Map Sheet: Sheet 36 Mid Glamorgan Scale: 1:100,000	A13NW (E)	0	5	323424 180726
	<b>Drift Deposits</b> Drift Deposit: Low permeability drift deposits occurring at the surface and overlying Major and Minor Aquifers are head, clay-with-flints, brickearth, peat, river terrace deposits and marine and estuarine alluvium Map Sheet: Sheet 36 Mid Glamorgan Scale: 1:100,000	A13NW (E)	0	5	323424 180726
	<b>Bedrock Aquifer Designations</b> Aquifer Designation: Secondary Aquifer - A	A13NW (E)	0	2	323424 180726
	<b>Superficial Aquifer Designations</b> Aquifer Designation: Unproductive Strata	A13NW (E)	0	2	323424 180726
	<b>Extreme Flooding from Rivers or Sea without Defences</b> None				
	<b>Flooding from Rivers or Sea without Defences</b> None				
	<b>Areas Benefiting from Flood Defences</b> None				



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Flood Water Storage Areas</b> None				
	<b>Flood Defences</b> None				
31	<b>Detailed River Network Lines</b> River Type: Extended Culvert (greater than 50m) River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A13SE (SE)	0	5	323504 180660
32	<b>Detailed River Network Lines</b> River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A13SW (S)	0	5	323430 180666
33	<b>Detailed River Network Lines</b> River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A13SW (SW)	0	5	323373 180701
34	<b>Detailed River Network Lines</b> River Type: Extended Culvert (greater than 50m) River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A13NW (W)	0	5	323343 180736
35	<b>Detailed River Network Lines</b> River Type: Extended Culvert (greater than 50m) River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A13SE (SE)	25	5	323493 180580

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
36	<b>Detailed River Network Lines</b> River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A13SW (S)	60	5	323384 180494
37	<b>Detailed River Network Lines</b> River Type: Extended Culvert (greater than 50m) River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A13SE (E)	104	5	323633 180644
38	<b>Detailed River Network Lines</b> River Type: Secondary River River Name: Faendre Reen Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A18SW (N)	200	5	323430 181101
39	<b>Detailed River Network Lines</b> River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A12NE (W)	260	5	323047 180772
40	<b>Detailed River Network Lines</b> River Type: Extended Culvert (greater than 50m) River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A8NE (S)	280	5	323504 180308
41	<b>Detailed River Network Lines</b> River Type: Secondary River River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A8NE (SE)	296	5	323621 180340

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
42	<b>Detailed River Network Lines</b> River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A14NW (E)	303	5	323886 180855
43	<b>Detailed River Network Lines</b> River Type: Secondary River River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A12NE (W)	362	5	322948 180812
44	<b>Detailed River Network Lines</b> River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A12NE (W)	367	5	322943 180816
45	<b>Detailed River Network Lines</b> River Type: Extended Culvert (greater than 50m) River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A8NE (SE)	387	5	323661 180259
46	<b>Detailed River Network Lines</b> River Type: Extended Culvert (greater than 50m) River Name: Drain Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Below Surface Drain Feature: Drain (ditch, Reen, Rhyne, Drain) Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A14NW (E)	441	5	324026 180867
47	<b>Detailed River Network Lines</b> River Type: Tertiary River River Name: Not Supplied Hydrographic Area: D008 River Flow Type: Primary Flow Path River Surface Level: Surface Drain Feature: Not a Drain Flood Risk: Other Rivers Management Status: Water Course: Not Supplied Name: Water Course: Not Supplied Reference:	A9NW (SE)	493	5	323799 180226

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
48	<b>Detailed River Network Offline Drainage</b> River Type: Tertiary River Hydrographic Area: D008	A18SW (NW)	430	5	323141 181267
49	<b>Detailed River Network Offline Drainage</b> River Type: Tertiary River Hydrographic Area: D008	A18SW (NW)	457	5	323116 181283
50	<b>Detailed River Network Offline Drainage</b> River Type: Tertiary River Hydrographic Area: D008	A17SE (NW)	490	5	323109 181318

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
51	<b>Historical Landfill Sites</b> Licence Holder: Not Supplied Location: St.Mellons, Cardiff Name: William Nicholls Home Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15223 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste: Deposited Waste included Inert Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6815/0116 BGS Ref: Not Supplied Other Ref: Not Supplied	A18NW (N)	716	3	323214 181597
52	<b>Historical Landfill Sites</b> Licence Holder: Cardicot and Wentros Location: St. Mellons, Cardiff Name: Pll-Du-Lake Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD14145 First Input Date: 31st December 1966 Last Input Date: 31st December 1990 Specified Waste: Deposited Waste included Inert Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6815/0085 BGS Ref: Not Supplied Other Ref: Not Supplied	A14NE (E)	785	3	324382 180724
53	<b>Historical Landfill Sites</b> Licence Holder: Trowbridge Corporation Location: Cardiff Name: Trowbridge Mawr Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15254 First Input Date: 31st December 1959 Last Input Date: 31st December 1963 Specified Waste: Deposited Waste included Commercial and Household Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6815/0106 BGS Ref: Not Supplied Other Ref: Not Supplied	A7SE (S)	826	3	323103 179758
	<b>Local Authority Landfill Coverage</b> Name: Cardiff Council - Has no landfill data to supply		0	6	323424 180726
54	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A13SW (W)	61	-	323268 180708
55	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A13SW (SW)	124	-	323186 180554
56	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A13NW (NW)	150	-	323176 180832
57	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A8NW (S)	233	-	323342 180313
58	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A18SW (N)	235	-	323276 181113
59	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1886	A18SW (N)	247	-	323293 181132
60	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A18SE (N)	267	-	323555 181100

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
61	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A8NW (SW)	286	-	323178 180317
62	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A14NW (E)	292	-	323889 180752
63	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A18SE (NE)	312	-	323599 181120
64	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A18SE (N)	336	-	323561 181181
65	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A8NW (S)	400	-	323400 180148
66	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A14NE (E)	539	-	324137 180762
67	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A14NE (E)	636	-	324234 180754
68	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A19SW (NE)	658	-	323878 181357
69	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A7SE (SW)	729	-	322890 179978
70	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A7SE (SW)	821	-	322826 179912
71	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A14SE (E)	834	-	324396 180521
72	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A14SE (E)	848	-	324429 180593
73	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A14SE (E)	869	-	324457 180631
74	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A15NW (E)	889	-	324487 180750
75	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A7SE (SW)	889	-	322831 179823
76	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A15SW (E)	914	-	324504 180646
77	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A19NW (NE)	916	-	324042 181563
78	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1947	A9SE (SE)	938	-	324127 179921
79	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1947	A9SW (SE)	957	-	323963 179775
80	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A7SW (SW)	958	-	322731 179813
81	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A11SE (W)	971	-	322337 180686

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
82	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A11NE (W)	971	-	322335 180778
83	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964	A19NE (NE)	977	-	324181 181549
84	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1947	A4NW (S)	979	-	323803 179676
85	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1947	A4NW (SE)	987	-	323868 179693
86	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1947	A4NW (S)	991	-	323855 179684
87	<b>Potentially Infilled Land (Water)</b> Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1947	A3NE (S)	999	-	323735 179623



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS 1:625,000 Solid Geology</b> Description: Lower Devonian Rocks (Undifferentiated)	A13NW (E)	0	2	323424 180726
	<b>BGS Estimated Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg	A13NW (E)	0	2	323424 180726
	<b>BGS Measured Urban Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Grid: 323230, 180770 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 9.90 mg/kg Cadmium Measured Concentration: 0.70 mg/kg Chromium Measured Concentration: 67.40 mg/kg Lead Measured Concentration: 59.50 mg/kg Nickel Measured Concentration: 24.20 mg/kg	A13NW (W)	77	2	323230 180770
	<b>BGS Measured Urban Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Grid: 323770, 180750 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 15.60 mg/kg Cadmium Measured Concentration: 0.40 mg/kg Chromium Measured Concentration: 81.60 mg/kg Lead Measured Concentration: 56.20 mg/kg Nickel Measured Concentration: 31.70 mg/kg	A13NE (E)	173	2	323770 180750
	<b>BGS Measured Urban Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Grid: 323240, 180250 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 11.40 mg/kg Cadmium Measured Concentration: 0.10 mg/kg Chromium Measured Concentration: 73.50 mg/kg Lead Measured Concentration: 65.00 mg/kg Nickel Measured Concentration: 24.30 mg/kg	A8NW (S)	316	2	323240 180250
	<b>BGS Measured Urban Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Grid: 323270, 181270 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 10.50 mg/kg Cadmium Measured Concentration: 1.20 mg/kg Chromium Measured Concentration: 78.10 mg/kg Lead Measured Concentration: 70.70 mg/kg Nickel Measured Concentration: 22.90 mg/kg	A18SW (N)	386	2	323270 181270

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<p><b>BGS Measured Urban Soil Chemistry</b></p> <p>Source: British Geological Survey, National Geoscience Information Service  Grid: 323760, 180250  Soil Sample Type: Topsoil  Sample Area: Cardiff  Arsenic Measured 14.40 mg/kg  Concentration:  Cadmium Measured 1.10 mg/kg  Concentration:  Chromium Measured 65.70 mg/kg  Concentration:  Lead Measured 92.50 mg/kg  Concentration:  Nickel Measured 21.70 mg/kg  Concentration:</p>	A8NE (SE)	449	2	323760 180250
	<p><b>BGS Measured Urban Soil Chemistry</b></p> <p>Source: British Geological Survey, National Geoscience Information Service  Grid: 323750, 181250  Soil Sample Type: Topsoil  Sample Area: Cardiff  Arsenic Measured 10.80 mg/kg  Concentration:  Cadmium Measured 0.80 mg/kg  Concentration:  Chromium Measured 70.90 mg/kg  Concentration:  Lead Measured 66.80 mg/kg  Concentration:  Nickel Measured 20.20 mg/kg  Concentration:</p>	A18SE (NE)	504	2	323750 181250
	<p><b>BGS Measured Urban Soil Chemistry</b></p> <p>Source: British Geological Survey, National Geoscience Information Service  Grid: 322740, 180740  Soil Sample Type: Topsoil  Sample Area: Cardiff  Arsenic Measured 13.60 mg/kg  Concentration:  Cadmium Measured 0.50 mg/kg  Concentration:  Chromium Measured 67.30 mg/kg  Concentration:  Lead Measured 61.20 mg/kg  Concentration:  Nickel Measured 27.50 mg/kg  Concentration:</p>	A12NW (W)	566	2	322740 180740
	<p><b>BGS Measured Urban Soil Chemistry</b></p> <p>Source: British Geological Survey, National Geoscience Information Service  Grid: 324240, 180750  Soil Sample Type: Topsoil  Sample Area: Cardiff  Arsenic Measured 9.70 mg/kg  Concentration:  Cadmium Measured 0.50 mg/kg  Concentration:  Chromium Measured 73.90 mg/kg  Concentration:  Lead Measured 48.50 mg/kg  Concentration:  Nickel Measured 22.20 mg/kg  Concentration:</p>	A14NE (E)	642	2	324240 180750
	<p><b>BGS Measured Urban Soil Chemistry</b></p> <p>Source: British Geological Survey, National Geoscience Information Service  Grid: 322760, 180230  Soil Sample Type: Topsoil  Sample Area: Cardiff  Arsenic Measured 10.90 mg/kg  Concentration:  Cadmium Measured 0.20 mg/kg  Concentration:  Chromium Measured 64.80 mg/kg  Concentration:  Lead Measured 39.00 mg/kg  Concentration:  Nickel Measured 24.00 mg/kg  Concentration:</p>	A7NW (SW)	666	2	322760 180230

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>BGS Measured Urban Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Grid: 322750, 181260 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 11.00 mg/kg Concentration: Cadmium Measured 0.80 mg/kg Concentration: Chromium Measured 68.30 mg/kg Concentration: Lead Measured 66.10 mg/kg Concentration: Nickel Measured 25.00 mg/kg Concentration:	A17SW (NW)	695	2	322750 181260
	<b>BGS Measured Urban Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Grid: 323250, 179760 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 18.90 mg/kg Concentration: Cadmium Measured 0.50 mg/kg Concentration: Chromium Measured 90.60 mg/kg Concentration: Lead Measured 66.30 mg/kg Concentration: Nickel Measured 38.20 mg/kg Concentration:	A8SW (S)	792	2	323250 179760
	<b>BGS Measured Urban Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Grid: 324240, 181250 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 26.30 mg/kg Concentration: Cadmium Measured 1.30 mg/kg Concentration: Chromium Measured 96.10 mg/kg Concentration: Lead Measured 78.40 mg/kg Concentration: Nickel Measured 22.60 mg/kg Concentration:	A19SE (NE)	807	2	324240 181250
	<b>BGS Measured Urban Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Grid: 324250, 180250 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 10.00 mg/kg Concentration: Cadmium Measured 0.30 mg/kg Concentration: Chromium Measured 93.20 mg/kg Concentration: Lead Measured 36.00 mg/kg Concentration: Nickel Measured 44.60 mg/kg Concentration:	A9NE (SE)	829	2	324250 180250
	<b>BGS Measured Urban Soil Chemistry</b> Source: British Geological Survey, National Geoscience Information Service Grid: 323280, 181750 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 13.10 mg/kg Concentration: Cadmium Measured 0.80 mg/kg Concentration: Chromium Measured 64.80 mg/kg Concentration: Lead Measured 90.80 mg/kg Concentration: Nickel Measured 26.50 mg/kg Concentration:	A23SW (N)	856	2	323280 181750

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<p><b>BGS Measured Urban Soil Chemistry</b></p> <p>Source: British Geological Survey, National Geoscience Information Service  Grid: 323730, 179770  Soil Sample Type: Topsoil  Sample Area: Cardiff  Arsenic Measured 20.70 mg/kg  Concentration:  Cadmium Measured 0.80 mg/kg  Concentration:  Chromium Measured 96.00 mg/kg  Concentration:  Lead Measured 66.70 mg/kg  Concentration:  Nickel Measured 38.00 mg/kg  Concentration:</p>	A8SE (S)	863	2	323730 179770
	<p><b>BGS Measured Urban Soil Chemistry</b></p> <p>Source: British Geological Survey, National Geoscience Information Service  Grid: 323750, 181750  Soil Sample Type: Topsoil  Sample Area: Cardiff  Arsenic Measured 11.60 mg/kg  Concentration:  Cadmium Measured 1.40 mg/kg  Concentration:  Chromium Measured 73.20 mg/kg  Concentration:  Lead Measured 81.10 mg/kg  Concentration:  Nickel Measured 25.50 mg/kg  Concentration:</p>	A23SE (N)	929	2	323750 181750
	<p><b>BGS Measured Urban Soil Chemistry</b></p> <p>Source: British Geological Survey, National Geoscience Information Service  Grid: 322760, 179760  Soil Sample Type: Topsoil  Sample Area: Cardiff  Arsenic Measured 13.80 mg/kg  Concentration:  Cadmium Measured 0.50 mg/kg  Concentration:  Chromium Measured 55.90 mg/kg  Concentration:  Lead Measured 39.10 mg/kg  Concentration:  Nickel Measured 18.60 mg/kg  Concentration:</p>	A7SW (SW)	982	2	322760 179760
	<p><b>BGS Urban Soil Chemistry Averages</b></p> <p>Source: British Geological Survey, National Geoscience Information Service  Sample Area: Cardiff  Count Id: 506  Arsenic Minimum 6.00 mg/kg  Concentration:  Arsenic Average 18.00 mg/kg  Concentration:  Arsenic Maximum 149.00 mg/kg  Concentration:  Cadmium Minimum 0.10 mg/kg  Concentration:  Cadmium Average 0.90 mg/kg  Concentration:  Cadmium Maximum 100.60 mg/kg  Concentration:  Chromium Minimum 28.00 mg/kg  Concentration:  Chromium Average 86.00 mg/kg  Concentration:  Chromium Maximum 2933.00 mg/kg  Concentration:  Lead Minimum 20.00 mg/kg  Concentration:  Lead Average 190.00 mg/kg  Concentration:  Lead Maximum 8158.00 mg/kg  Concentration:  Nickel Minimum 8.00 mg/kg  Concentration:  Nickel Average 35.00 mg/kg  Concentration:  Nickel Maximum 482.00 mg/kg  Concentration:</p>	A13NW (E)	0	2	323424 180726

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	<b>Coal Mining Affected Areas</b> In an area that might not be affected by coal mining				
	<b>Non Coal Mining Areas of Great Britain</b> Risk: Rare Source: British Geological Survey, National Geoscience Information Service	A13NW (E)	0	2	323424 180726
	<b>Potential for Collapsible Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (E)	0	2	323424 180726
	<b>Potential for Compressible Ground Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (E)	0	2	323424 180726
	<b>Potential for Ground Dissolution Stability Hazards</b> Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (E)	0	2	323424 180726
	<b>Potential for Landslide Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (E)	0	2	323424 180726
	<b>Potential for Running Sand Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (E)	0	2	323424 180726
	<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (E)	0	2	323424 180726
	<b>Radon Potential - Radon Affected Areas</b> Affected Area: The property is in a lower probability radon area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13NW (E)	0	2	323424 180726
	<b>Radon Potential - Radon Protection Measures</b> Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13NW (E)	0	2	323424 180726

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
88	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: A1 Caravan Repair Specialists            Location: 163 Trowbridge Green, Rumney, Cardiff, South Glamorgan, CF3 1RD            Classification: Caravans - Servicing &amp; Repairs            Status: <b>Inactive</b>            Positional Accuracy: Manually positioned to the address or location</p>	A13SW (SW)	98	-	323264 180658
89	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Clockwork Orange            Location: 3, Bodnant Close, St. Mellons, Cardiff, CF3 0JL            Classification: Cleaning Services - Domestic            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A13SE (E)	118	-	323690 180689
90	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: K K Graphics &amp; Signs            Location: 16, James Court, St. Mellons, Cardiff, CF3 0FA            Classification: T-Shirts            Status: <b>Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A13NE (NE)	168	-	323663 180917
91	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Tesco Petrol Filling Station            Location: Crickhowell Road, St. Mellons, Cardiff, CF3 0EF            Classification: Petrol Filling Stations            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A18SE (N)	360	-	323565 181207
92	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Dot1 Print Ltd            Location: Unit 2, St. Mellons Community Enterprise Workshops, Crickhowell Road, St. Mellons, Cardiff, CF3 0EX            Classification: Printers            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A18SE (NE)	365	-	323762 181087
93	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Mister Loft Ladder            Location: 1, Ellwood Close, St. Mellons, Cardiff, CF3 0HT            Classification: Ladder Manufacturers            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A14NW (NE)	375	-	323930 180937
94	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Orifoane Cosmetics            Location: 40, Cemaes Crescent, Rumney, CARDIFF, CF3 1TA            Classification: Cosmetic Manufacturers            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A8NW (S)	419	-	323374 180128
95	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Kalamazoo Security Prints            Location: Womanby Court, 21, Crickhowell Road, St. Mellons, Cardiff, CF3 0EF            Classification: Printers            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A18SE (NE)	473	-	323705 181242
96	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Fast Fabrications Ltd            Location: 10, Soarel Close, St. Mellons, Cardiff, CF3 0PP            Classification: Metal Products - Fabricated            Status: <b>Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A9NW (SE)	491	-	323911 180354
97	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Bioclinical Services Ltd            Location: 1/6, Willowbrook Laboratory Units, Crickhowell Road, St. Mellons, Cardiff, CF3 0EF            Classification: Medical &amp; Dental Laboratories            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A18SE (N)	493	-	323622 181328
97	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Neem Biotech            Location: Unit 1-3, Willowbrook Laboratory Units, Crickhowell Road, St. Mellons, Cardiff, CF3 0EF            Classification: Pharmaceutical Manufacturers &amp; Distributors            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A18SE (N)	499	-	323615 181339

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
98	<b>Contemporary Trade Directory Entries</b> Name: Uniquewoodcare Location: 36, Caernarvon Way, Rumney, Cardiff, CF3 1RY Classification: French Polishing <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A7NE (SW)	515	-	322920 180258
99	<b>Contemporary Trade Directory Entries</b> Name: E C H A Microbiology Location: Unit 22-23, Crickhowell Road, St. Mellons, Cardiff, CF3 0EF Classification: Laboratories <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18SE (NE)	517	-	323715 181292
100	<b>Contemporary Trade Directory Entries</b> Name: Body Perfections Location: 950, Newport Road, St. Mellons, Cardiff, CF3 5UA Classification: Garage Services <b>Status: Inactive</b> Positional Accuracy: Automatically positioned in the proximity of the address	A17SE (NW)	532	-	323063 181338
100	<b>Contemporary Trade Directory Entries</b> Name: St Mellons Cars Ltd Location: 950, Newport Road, St. Mellons, Cardiff, CF3 5UA Classification: Car Dealers - Used <b>Status: Inactive</b> Positional Accuracy: Automatically positioned in the proximity of the address	A17SE (NW)	532	-	323063 181338
101	<b>Contemporary Trade Directory Entries</b> Name: Printingwales.Com Location: Harrison Drive, St. Mellons, Cardiff, CF3 0PJ Classification: Printers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14SW (SE)	535	-	323989 180398
102	<b>Contemporary Trade Directory Entries</b> Name: Wayne The Welder Location: 950, Newport Road, St. Mellons, Cardiff, South Glamorgan, CF3 5UA Classification: Wrought Ironwork <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the address or location	A17SE (NW)	540	-	322945 181255
102	<b>Contemporary Trade Directory Entries</b> Name: A J Reid Location: Newport Rd, St Mellons, Cardiff, South Glamorgan, CF3 5UA Classification: Car Body Repairs <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location	A17SE (NW)	562	-	322907 181246
102	<b>Contemporary Trade Directory Entries</b> Name: Cardiff 4 X 4 Centre Location: 145 Newport Rd, St. Mellons, Cardiff, South Glamorgan, CF3 5UN Classification: Car Dealers <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the road within the address or location	A17SE (NW)	575	-	322927 181285
103	<b>Contemporary Trade Directory Entries</b> Name: Wr Construction Location: 58, Willowbrook Gardens, St. Mellons, Cardiff, CF3 0BF Classification: Damp & Dry Rot Control <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A19SW (NE)	553	-	323800 181280
104	<b>Contemporary Trade Directory Entries</b> Name: Texaco Location: Newport Road, Old St. Mellons, Cardiff, CF3 5UG Classification: Petrol Filling Stations <b>Status: Active</b> Positional Accuracy: Manually positioned within the geographical locality	A17SE (NW)	554	-	322976 181300
104	<b>Contemporary Trade Directory Entries</b> Name: Philog St Mellons Location: St. Mellons Garage, Newport Road, St. Mellons, Cardiff, South Glamorgan, CF3 5UA Classification: Car Dealers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A17SE (NW)	554	-	322976 181300



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
104	<b>Contemporary Trade Directory Entries</b> Name: St Mellons Location: Newport Road, St. Mellons, Cardiff, South Glamorgan, CF3 5UG Classification: Petrol Filling Stations <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A17SE (NW)	554	-	322976 181300
104	<b>Contemporary Trade Directory Entries</b> Name: St Mellons Cars Location: St. Mellons Garage, Newport Road, St. Mellons, Cardiff, South Glamorgan, CF3 5UA Classification: Car Dealers - Used <b>Status: Inactive</b> Positional Accuracy: Manually positioned to the address or location	A17SE (NW)	554	-	322976 181300
105	<b>Contemporary Trade Directory Entries</b> Name: Printing Wales.Com Location: 100, Harrison Drive, St. Mellons, Cardiff, CF3 0PJ Classification: Printers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A9NW (SE)	573	-	323973 180299
106	<b>Contemporary Trade Directory Entries</b> Name: Lastminutecleaners Location: 107, Matthysens Way, St. Mellons, Cardiff, CF3 0PL Classification: Commercial Cleaning Services <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A9NW (SE)	611	-	323894 180152
107	<b>Contemporary Trade Directory Entries</b> Name: My Printed Merchandise Location: 31, Fieldfare Drive, St. Mellons, Cardiff, CF3 0PB Classification: Printers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	635	-	324212 180920
108	<b>Contemporary Trade Directory Entries</b> Name: Keith Fowler Location: 21, Fulmar Close, St. Mellons, Cardiff, CF3 0DE Classification: Washing Machines - Servicing & Repairs <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A18NE (N)	637	-	323559 181510
108	<b>Contemporary Trade Directory Entries</b> Name: Specialist Tuning Services Location: 12, Fulmar Close, St. Mellons, Cardiff, CF3 0DE Classification: Car Engine Tuning & Diagnostic Services <b>Status: Active</b> Positional Accuracy: Automatically positioned to the address	A18NE (N)	655	-	323585 181521
109	<b>Contemporary Trade Directory Entries</b> Name: Fleet Mobile Tyres Location: 53, Harrison Drive, St. Mellons, Cardiff, South Glamorgan, CF3 0PJ Classification: Tyre Dealers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A9NW (SE)	663	-	324117 180349
110	<b>Contemporary Trade Directory Entries</b> Name: Pin & Tack Location: 3, Wren Close, St. Mellons, Cardiff, CF3 0PD Classification: Soft Furnishings - Manufacturers <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A14NE (E)	676	-	324262 180885
111	<b>Contemporary Trade Directory Entries</b> Name: Gary Pinkard Mobile Vehicle Repairs Location: 1, Dolgoch Close, Rumney, Cardiff, CF3 1QH Classification: Garage Services <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A7SE (SW)	681	-	322925 180012
111	<b>Contemporary Trade Directory Entries</b> Name: Gary Pinkard Mobile Vehicle Repairs Location: 1, Dolgoch Close, Rumney, Cardiff, CF3 1QH Classification: Car & Commercial Repairs <b>Status: Inactive</b> Positional Accuracy: Automatically positioned to the address	A7SE (SW)	681	-	322925 180012

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
112	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Howard Hughes            Location: 4, Fulmar Close, St. Mellons, Cardiff, South Glamorgan, CF3 0DE            Classification: Washing Machines - Servicing &amp; Repairs            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A18NE (N)	691	-	323582 181559
113	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: G T S Autocare Ltd            Location: St. Andrews House, Newport Road, Old St. Mellons, Cardiff, CF3 5TX            Classification: Tyre Dealers            Status: <b>Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A18NW (N)	695	-	323287 181589
114	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Chem-Dry            Location: 26, Mount Pleasant Avenue, Llanrumney, Cardiff, CF3 5SZ            Classification: Carpet, Curtain &amp; Upholstery Cleaners            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A12SW (W)	726	-	322584 180678
114	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Amazon Cleaning            Location: 26, Mount Pleasant Avenue, Llanrumney, Cardiff, CF3 5SZ            Classification: Carpet, Curtain &amp; Upholstery Cleaners            Status: <b>Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A12SW (W)	726	-	322584 180678
115	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Pristine Clean Cardiff            Location: Melrose, Newport Road, Old St. Mellons, Cardiff, CF3 5TX            Classification: Carpet, Curtain &amp; Upholstery Cleaners            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A18NW (N)	781	-	323425 181679
116	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Owen Pittard            Location: 7, Elgar Crescent, Llanrumney, Cardiff, South Glamorgan, CF3 5RT            Classification: Woodworking Machinery            Status: <b>Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A17SW (NW)	809	-	322611 181250
116	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: J W Collins &amp; Son            Location: 13, Weekes Close, Llanrumney, Cardiff, CF3 5RY            Classification: Coal &amp; Smokeless Fuel Merchants &amp; Distributors            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A17SW (NW)	811	-	322626 181279
117	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: First Domestic            Location: Fortran Road, St Mellons, Cardiff, South Glamorgan, CF3 0WJ            Classification: Sewing Machines - Industrial            Status: <b>Inactive</b>            Positional Accuracy: Manually positioned within the geographical locality</p>	A14NE (E)	814	-	324400 180900
118	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Home &amp; Garden Supplies            Location: 66-68, Countisbury Avenue, Llanrumney, Cardiff, CF3 5SN            Classification: Hardware            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A11NE (W)	891	-	322419 180842
119	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: R M Motors            Location: Mount Pleasant Avenue, Llanrumney, Cardiff, CF3 5SZ            Classification: Mot Testing Centres            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A11SE (W)	898	-	322414 180646
119	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Franks            Location: Mount Pleasant Avenue, Llanrumney, Cardiff, CF3 5SZ            Classification: Garage Services            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A11SE (W)	898	-	322414 180646
120	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Roy Harris            Location: 2, Ty to Maen Close, Old St. Mellons, Cardiff, CF3 5EY            Classification: French Polishing            Status: <b>Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A23SW (N)	924	-	323144 181794

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
121	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Carpet Cleaning Wales            Location: 38, Letterston Road, Rumney, Cardiff, CF3 3PT            Classification: Commercial Cleaning Services  <b>Status: Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A7SW (SW)	925	-	322572 180041
122	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Eyewise            Location: A, 10, Countisbury Avenue, Llanrumney, Cardiff, CF3 5SJ            Classification: Optical Goods - Manufacturers  <b>Status: Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A11SE (W)	939	-	322368 180692
123	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Commumis            Location: Building 3, The Eastern Business Pk, Wern Fawr La, St. Mellons, Cardiff, South Glamorgan, CF3 5EA            Classification: Printers  <b>Status: Inactive</b>            Positional Accuracy: Manually positioned to the address or location</p>	A23SW (N)	972	-	323419 181870
123	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Advanced Secure Technologies            Location: Building 1, The Eastern Business Park, Wern Fawr Lane, Old St. Mellons, Cardiff, CF3 5EA            Classification: Printers  <b>Status: Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A23SW (N)	973	-	323420 181871
124	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Cml Property Maintenance &amp; Cleaning (Uk) Ltd            Location: 221, Greenway Road, Rumney, Cardiff, CF3 3PJ            Classification: Commercial Cleaning Services  <b>Status: Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A7SW (SW)	973	-	322592 179932
125	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Eastend Laundry            Location: 87, Harris Avenue, Rumney, Cardiff, CF3 1QB            Classification: Dry Cleaners  <b>Status: Inactive</b>            Positional Accuracy: Automatically positioned to the address</p>	A7SW (SW)	976	-	322649 179865
126	<p><b>Contemporary Trade Directory Entries</b></p> <p>Name: Ace Refridgeration &amp; Air Conditioning Ltd            Location: 1, Cleddau Close, St. Mellons, Cardiff, CF3 0SG            Classification: Air Conditioning &amp; Refrigeration Contractors  <b>Status: Active</b>            Positional Accuracy: Automatically positioned to the address</p>	A15NW (E)	1000	-	324556 181047
127	<p><b>Fuel Station Entries</b></p> <p>Name: Tesco St Mellons            Location: Crickhowell Road, St Mellons, Cardiff, South Glamorgan, CF3 0EF            Brand: TESCO            Premises Type: Hypermarket  <b>Status: Open</b>            Positional Accuracy: Manually positioned to the address or location</p>	A18SW (N)	411	-	323450 181304
128	<p><b>Fuel Station Entries</b></p> <p>Name: St Mellons Service Station            Location: Newport Road, St. Mellons, Cardiff, CF3 5UG            Brand: TEXACO            Premises Type: Petrol Station  <b>Status: Open</b>            Positional Accuracy: Automatically positioned to the address</p>	A17SE (NW)	554	-	322976 181300
129	<p><b>Fuel Station Entries</b></p> <p>Name: Mount Pleasant Garage            Location: Mount Pleasant Garage, Mount Pleasant Avenue, Mount Pleasant Lane, Llanrumney,, CARDIFF, South Glamorgan, CF3 5SZ            Brand: Obsolete            Premises Type: Not Applicable  <b>Status: Obsolete</b>            Positional Accuracy: Manually positioned to the road within the address or location</p>	A11SE (W)	904	-	322411 180626
130	<p><b>Points of Interest - Commercial Services</b></p> <p>Name: St. Mellons &amp; Trowbridge Community Transport Ltd            Location: 1 Sanderling Drive, St. Mellons, Cardiff, CF3 0DA            Category: Transport, Storage and Delivery            Class Code: Distribution and Haulage            Positional Accuracy: Positioned to address or location</p>	A18SE (N)	495	7	323502 181379

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
131	<b>Points of Interest - Commercial Services</b> Name: James W Holt & Co Location: 950 Newport Road, St. Mellons, Cardiff, CF3 5UA Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A17SE (NW)	540	7	322945 181255
131	<b>Points of Interest - Commercial Services</b> Name: James W Holt & Co Location: 950 Newport Road, St. Mellons, Cardiff, CF3 5UA Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A17SE (NW)	540	7	322945 181255
131	<b>Points of Interest - Commercial Services</b> Name: Wayne the Welder Location: 950 Newport Road, St. Mellons, Cardiff, CF3 5UA Category: Construction Services Class Code: Metalworkers Including Blacksmiths Positional Accuracy: Positioned to address or location	A17SE (NW)	540	7	322945 181255
131	<b>Points of Interest - Commercial Services</b> Name: St Mellons Garage James W Holt & Co Location: 950 Newport Road, St. Mellons, Cardiff, CF3 5UA Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A17SE (NW)	540	7	322945 181255
131	<b>Points of Interest - Commercial Services</b> Name: Car Wash Location: Newport Road, St. Mellons, Cardiff, CF3 5UG Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A17SE (NW)	554	7	322976 181300
132	<b>Points of Interest - Commercial Services</b> Name: Specialist Tuning Services Location: 12 Fulmar Close, St. Mellons, Cardiff, CF3 0DE Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18NE (N)	656	7	323586 181521
132	<b>Points of Interest - Commercial Services</b> Name: Specialist Tuning Services Location: 12 Fulmar Close, St. Mellons, Cardiff, CF3 0DE Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A18NE (N)	656	7	323586 181521
133	<b>Points of Interest - Commercial Services</b> Name: S J C Motors Location: Mount Pleasant Avenue, Llanrumney, Cardiff, CF3 5SZ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A11SE (W)	895	7	322417 180646
133	<b>Points of Interest - Commercial Services</b> Name: R M Motors Location: Mount Pleasant Avenue, Llanrumney, Cardiff, CF3 5SZ Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A11SE (W)	898	7	322414 180646
134	<b>Points of Interest - Commercial Services</b> Name: Car Solutions Location: 4 Cresswell Close, St. Mellons, Cardiff, CF3 0LN Category: Repair and Servicing Class Code: Vehicle Repair, Testing and Servicing Positional Accuracy: Positioned to address or location	A19NE (NE)	918	7	324225 181432
135	<b>Points of Interest - Commercial Services</b> Name: Cory Brothers Location: Building 1 The Eastern Business Park, Wern Fawr Lane, St. Mellons, Cardiff, CF3 5EA Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A23SW (N)	973	7	323420 181871

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
135	<p><b>Points of Interest - Commercial Services</b></p> <p>Name: Cory Location: Building 1 The Eastern Business Park, Wern Fawr Lane, St. Mellons, Cardiff, CF3 5EA Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location</p>	A23SW (N)	973	7	323420 181871
136	<p><b>Points of Interest - Manufacturing and Production</b></p> <p>Name: Anglo Celtic Stone Ltd Location: Unit 1 St Mellons Community Enterprise Workshops, 31 Crickhowell Road, St Mellons, Cardiff, CF3 0EX Category: Extractive Industries Class Code: Stone Quarrying and Preparation Positional Accuracy: Positioned to address or location</p>	A18SE (NE)	364	7	323762 181087
136	<p><b>Points of Interest - Manufacturing and Production</b></p> <p>Name: Workshops Location: CF3 Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location</p>	A18SE (NE)	371	7	323759 181096
136	<p><b>Points of Interest - Manufacturing and Production</b></p> <p>Name: Workshops Location: Not Supplied Category: Industrial Features Class Code: Unspecified Works Or Factories Positional Accuracy: Positioned to an adjacent address or location</p>	A18SE (NE)	374	7	323766 181096
137	<p><b>Points of Interest - Manufacturing and Production</b></p> <p>Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location</p>	A8NW (S)	481	7	323258 180074
138	<p><b>Points of Interest - Manufacturing and Production</b></p> <p>Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location</p>	A23SW (N)	934	7	323367 181833
139	<p><b>Points of Interest - Manufacturing and Production</b></p> <p>Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location</p>	A23SE (N)	992	7	323667 181848
140	<p><b>Points of Interest - Public Infrastructure</b></p> <p>Name: Tesco Petrol Filling Station Location: Crickhowell Road, St. Mellons, Cardiff, CF3 0EF Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location</p>	A18SE (N)	360	7	323565 181207
140	<p><b>Points of Interest - Public Infrastructure</b></p> <p>Name: St. Mellons Police Station Location: Police Station, Crickhowell Road, St. Mellons, Cardiff, CF3 0EF Category: Central and Local Government Class Code: Police Stations Positional Accuracy: Positioned to address or location</p>	A18SE (NE)	421	7	323660 181212
141	<p><b>Points of Interest - Public Infrastructure</b></p> <p>Name: Tesco St Mellons Location: Crickhowell Road, St Mellons, Cardiff, CF3 0EF Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location</p>	A18SW (N)	411	7	323450 181304
142	<p><b>Points of Interest - Public Infrastructure</b></p> <p>Name: Burial Ground Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location</p>	A12NE (NW)	477	7	322889 181060

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
142	<b>Points of Interest - Public Infrastructure</b> Name: Burial Ground Location: CF3 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A12NE (NW)	477	7	322889 181060
143	<b>Points of Interest - Public Infrastructure</b> Name: St Mellons Service Station Location: Newport Road, St. Mellons, Cardiff, CF3 5UG Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17SE (NW)	554	7	322976 181300
143	<b>Points of Interest - Public Infrastructure</b> Name: St Mellons Service Station Location: Newport Road, St. Mellons, Cardiff, CF3 5UG Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17SE (NW)	554	7	322976 181300
143	<b>Points of Interest - Public Infrastructure</b> Name: St Mellons Sstn Location: Newport Road, St. Mellons, Cardiff, CF3 5UG Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17SE (NW)	554	7	322976 181300
143	<b>Points of Interest - Public Infrastructure</b> Name: St Mellons Service Station Location: Newport Road, St. Mellons, Cardiff, CF3 5UG Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17SE (NW)	554	7	322976 181300
144	<b>Points of Interest - Public Infrastructure</b> Name: Weir Location: CF3 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A19SW (NE)	592	7	324067 181122
145	<b>Points of Interest - Public Infrastructure</b> Name: Burial Ground Location: Not Supplied Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A17NE (NW)	668	7	322959 181433
145	<b>Points of Interest - Public Infrastructure</b> Name: Burial Ground Location: CF3 Category: Infrastructure and Facilities Class Code: Cemeteries and Crematoria Positional Accuracy: Positioned to an adjacent address or location	A17NE (NW)	669	7	322959 181434
146	<b>Points of Interest - Public Infrastructure</b> Name: Sewage Works Location: CF3 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A19NW (NE)	752	7	323913 181445
146	<b>Points of Interest - Public Infrastructure</b> Name: Sewage Works Location: CF3 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	A19NW (NE)	804	7	323960 181480
147	<b>Points of Interest - Public Infrastructure</b> Name: Texaco Location: Newport Road, Old St. Mellons, Cardiff, CF3 5UG Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A23SE (N)	985	7	323651 181846
147	<b>Points of Interest - Public Infrastructure</b> Name: St Mellons Garage Location: St. Mellons Garage 950, Newport Road, Old St. Mellons, Cardiff, CF3 5UA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A23SE (N)	985	7	323651 181846



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
148	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13NW (NW)	186	7	323142 180848
148	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Trefaser Crescent, CF3 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A13NW (NW)	186	7	323142 180848
149	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A12NE (NW)	273	7	323070 180964
149	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Cath Cob Close, CF3 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A12NE (NW)	273	7	323070 180964
150	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Wern Gethin Lane, CF3 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	290	7	323880 180698
150	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	297	7	323888 180699
151	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14SW (E)	433	7	323981 180560
152	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A18SW (NW)	459	7	323149 181303
152	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Greenway Road, CF3 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A18SW (NW)	465	7	323132 181302
153	<b>Points of Interest - Recreational and Environmental</b> Name: Play Area Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A19SW (NE)	576	7	323993 181180
153	<b>Points of Interest - Recreational and Environmental</b> Name: Play Area Location: Rogerstone Close, CF3 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A19SW (NE)	578	7	323996 181181
154	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: (Heol Maes Eiwrg), CF3 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A14NE (E)	594	7	324186 180844

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
154	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A14NE (E)	597	7	324189 180842
155	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A18NE (NE)	786	7	323782 181573
155	<b>Points of Interest - Recreational and Environmental</b> Name: Playground Location: Willowbrook Drive, CF3 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A18NE (NE)	786	7	323782 181574
156	<b>Points of Interest - Recreational and Environmental</b> Name: Play Area Location: Tealham Drive, CF3 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A20SW (E)	994	7	324507 181164
156	<b>Points of Interest - Recreational and Environmental</b> Name: Play Area Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A20SW (E)	996	7	324509 181163



Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
157	<p><b>Sites of Special Scientific Interest</b></p> <p>Name: Gwent Levels - Rumney And Peterstone            Multiple Areas: N            Total Area (m2): 9770859.54            Source: Natural Resources Wales            Reference: 112233wet            Designation Details: Biological            Designation Date: 13th October 1993            Date Type: Notified</p>	A8NE (S)	506	3	323602 180104

Agency & Hydrological	Version	Update Cycle
<b>Contaminated Land Register Entries and Notices</b> Caerphilly County Borough Council - Environmental Health Department Newport City Council - Public Protection and Environmental Services Cardiff Council - Pollution Control Division	August 2013 January 2015 September 2014	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Discharge Consents</b> Environment Agency - Welsh Region Natural Resources Wales	August 2014 January 2016	Quarterly Quarterly
<b>Enforcement and Prohibition Notices</b> Environment Agency - Welsh Region	March 2013	As notified
<b>Integrated Pollution Controls</b> Environment Agency - Welsh Region	October 2008	Not Applicable
<b>Integrated Pollution Prevention And Control</b> Environment Agency - Welsh Region Natural Resources Wales	January 2016 October 2015	Quarterly Quarterly
<b>Local Authority Integrated Pollution Prevention And Control</b> Caerphilly County Borough Council - Environmental Health Department Newport City Council - Public Protection and Environmental Services Cardiff Council - Pollution Control Division	February 2013 June 2014 March 2016	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Local Authority Pollution Prevention and Controls</b> Newport City Council - Public Protection and Environmental Services Cardiff Council - Pollution Control Division Caerphilly County Borough Council - Environmental Health Department	June 2014 March 2016 September 2014	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Local Authority Pollution Prevention and Control Enforcements</b> Newport City Council - Public Protection and Environmental Services Cardiff Council - Pollution Control Division Caerphilly County Borough Council - Environmental Health Department	June 2014 March 2016 September 2014	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Nearest Surface Water Feature</b> Ordnance Survey	July 2012	Quarterly
<b>Pollution Incidents to Controlled Waters</b> Environment Agency - Welsh Region	December 1998	Not Applicable
<b>Prosecutions Relating to Authorised Processes</b> Environment Agency - Welsh Region Natural Resources Wales	March 2013 March 2013	As notified As notified
<b>Prosecutions Relating to Controlled Waters</b> Environment Agency - Welsh Region Natural Resources Wales	March 2013 March 2013	As notified As notified
<b>River Quality</b> Environment Agency - Head Office	November 2001	Not Applicable
<b>River Quality Biology Sampling Points</b> Environment Agency - Head Office	July 2012	Annually
<b>River Quality Chemistry Sampling Points</b> Environment Agency - Head Office	July 2012	Annually
<b>Substantiated Pollution Incident Register</b> Environment Agency Wales - South East Area Natural Resources Wales	January 2016 January 2016	Quarterly Quarterly
<b>Water Abstractions</b> Natural Resources Wales Environment Agency - Welsh Region Natural Resources Wales	April 2015 January 2016 January 2016	Quarterly Quarterly Quarterly
<b>Water Industry Act Referrals</b> Environment Agency - Welsh Region Natural Resources Wales	January 2016 October 2015	Quarterly Quarterly

Agency & Hydrological	Version	Update Cycle
<b>Groundwater Vulnerability</b> Environment Agency - Head Office	April 2015	Not Applicable
<b>Drift Deposits</b> Environment Agency - Head Office	January 1999	Not Applicable
<b>Bedrock Aquifer Designations</b> British Geological Survey - National Geoscience Information Service	August 2015	As notified
<b>Superficial Aquifer Designations</b> British Geological Survey - National Geoscience Information Service	August 2015	As notified
<b>Source Protection Zones</b> Environment Agency - Head Office Natural Resources Wales	January 2016 July 2015	Quarterly Quarterly
<b>Extreme Flooding from Rivers or Sea without Defences</b> Environment Agency - Head Office Natural Resources Wales	February 2016 January 2015	Quarterly Quarterly
<b>Flooding from Rivers or Sea without Defences</b> Environment Agency - Head Office Natural Resources Wales	February 2016 January 2015	Quarterly Quarterly
<b>Areas Benefiting from Flood Defences</b> Environment Agency - Head Office Natural Resources Wales	February 2016 January 2015	Quarterly Quarterly
<b>Flood Water Storage Areas</b> Environment Agency - Head Office	February 2016	Quarterly
<b>Flood Defences</b> Environment Agency - Head Office	February 2016	Quarterly
<b>Detailed River Network Lines</b> Environment Agency - Head Office	March 2012	Annually
<b>Detailed River Network Offline Drainage</b> Environment Agency - Head Office	March 2012	Annually
<b>Surface Water 1 in 30 year Flood Extent</b> Natural Resources Wales	October 2013	As notified
<b>Surface Water 1 in 100 year Flood Extent</b> Natural Resources Wales	October 2013	As notified
<b>Surface Water 1 in 1000 year Flood Extent</b> Natural Resources Wales	October 2013	As notified
<b>Surface Water Suitability</b> Natural Resources Wales	October 2013	As notified
<b>BGS Groundwater Flooding Susceptibility</b> British Geological Survey - National Geoscience Information Service	May 2013	Annually

Waste	Version	Update Cycle
<b>BGS Recorded Landfill Sites</b> British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
<b>Historical Landfill Sites</b> Natural Resources Wales	March 2016	Quarterly
<b>Integrated Pollution Control Registered Waste Sites</b> Environment Agency - Welsh Region	October 2008	Not Applicable
<b>Licensed Waste Management Facilities (Landfill Boundaries)</b> Environment Agency Wales - South East Area	February 2016	Quarterly
<b>Licensed Waste Management Facilities (Locations)</b> Environment Agency Wales - South East Area Natural Resources Wales	January 2016 October 2015	Quarterly Quarterly
<b>Local Authority Landfill Coverage</b> Caerphilly County Borough Council - Environmental Health Department Cardiff Council Newport City Council	May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable
<b>Local Authority Recorded Landfill Sites</b> Caerphilly County Borough Council - Environmental Health Department Cardiff Council Newport City Council	May 2000 May 2000 May 2000	Not Applicable Not Applicable Not Applicable
<b>Potentially Infilled Land (Non-Water)</b> Landmark Information Group Limited	December 1999	Not Applicable
<b>Potentially Infilled Land (Water)</b> Landmark Information Group Limited	December 1999	Not Applicable
<b>Registered Landfill Sites</b> Environment Agency Wales - South East Area	March 2003	Not Applicable
<b>Registered Waste Transfer Sites</b> Environment Agency Wales - South East Area	March 2003	Not Applicable
<b>Registered Waste Treatment or Disposal Sites</b> Environment Agency Wales - South East Area	March 2003	Not Applicable
Hazardous Substances	Version	Update Cycle
<b>Control of Major Accident Hazards Sites (COMAH)</b> Health and Safety Executive	February 2016	Bi-Annually
<b>Explosive Sites</b> Health and Safety Executive	February 2016	Bi-Annually
<b>Notification of Installations Handling Hazardous Substances (NIHHS)</b> Health and Safety Executive	November 2000	Not Applicable
<b>Planning Hazardous Substance Enforcements</b> Caerphilly County Borough Council - Planning Department Cardiff Council - Regulatory Services Newport City Council - Planning Department	February 2016 October 2015 October 2015	Annual Rolling Update Annual Rolling Update Annual Rolling Update
<b>Planning Hazardous Substance Consents</b> Caerphilly County Borough Council - Planning Department Cardiff Council - Regulatory Services Newport City Council - Planning Department	February 2016 October 2015 October 2015	Annual Rolling Update Annual Rolling Update Annual Rolling Update

Geological	Version	Update Cycle
<b>BGS 1:625,000 Solid Geology</b> British Geological Survey - National Geoscience Information Service	January 2009	Not Applicable
<b>BGS Estimated Soil Chemistry</b> British Geological Survey - National Geoscience Information Service	October 2015	Annually
<b>BGS Recorded Mineral Sites</b> British Geological Survey - National Geoscience Information Service	November 2015	Bi-Annually
<b>BGS Urban Soil Chemistry</b> British Geological Survey - National Geoscience Information Service	October 2015	Annually
<b>BGS Urban Soil Chemistry Averages</b> British Geological Survey - National Geoscience Information Service	October 2015	Annually
<b>Coal Mining Affected Areas</b> The Coal Authority - Property Searches	March 2014	As notified
<b>Mining Instability</b> Ove Arup & Partners	October 2000	Not Applicable
<b>Non Coal Mining Areas of Great Britain</b> British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
<b>Potential for Collapsible Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	June 2015	Annually
<b>Potential for Compressible Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	June 2015	Annually
<b>Potential for Ground Dissolution Stability Hazards</b> British Geological Survey - National Geoscience Information Service	June 2015	Annually
<b>Potential for Landslide Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	June 2015	Annually
<b>Potential for Running Sand Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	June 2015	Annually
<b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b> British Geological Survey - National Geoscience Information Service	June 2015	Annually
<b>Radon Potential - Radon Affected Areas</b> British Geological Survey - National Geoscience Information Service	July 2011	As notified
<b>Radon Potential - Radon Protection Measures</b> British Geological Survey - National Geoscience Information Service	July 2011	As notified

Industrial Land Use	Version	Update Cycle
<b>Contemporary Trade Directory Entries</b> Thomson Directories	March 2016	Quarterly
<b>Fuel Station Entries</b> Catalist Ltd - Experian	November 2015	Quarterly
<b>Gas Pipelines</b> National Grid	July 2014	Quarterly
<b>Points of Interest - Commercial Services</b> PointX	March 2016	Quarterly
<b>Points of Interest - Education and Health</b> PointX	March 2016	Quarterly
<b>Points of Interest - Manufacturing and Production</b> PointX	March 2016	Quarterly
<b>Points of Interest - Public Infrastructure</b> PointX	March 2016	Quarterly
<b>Points of Interest - Recreational and Environmental</b> PointX	March 2016	Quarterly
<b>Underground Electrical Cables</b> National Grid	January 2016	Bi-Annually

Sensitive Land Use	Version	Update Cycle
<b>Ancient Woodland</b> Natural Resources Wales	January 2014	Bi-Annually
<b>Areas of Adopted Green Belt</b> Cardiff Council Newport City Council	January 2016 January 2016	As notified As notified
<b>Areas of Unadopted Green Belt</b> Cardiff Council Newport City Council	November 201 November 201	As notified As notified
<b>Areas of Outstanding Natural Beauty</b> Natural Resources Wales	October 2015	Bi-Annually
<b>Environmentally Sensitive Areas</b> The National Assembly for Wales - GI Services (Department of Planning & Countryside)	August 2008	Annually
<b>Forest Parks</b> Forestry Commission	April 1997	Not Applicable
<b>Local Nature Reserves</b> Caerphilly County Borough Council Cardiff Council Newport City Council	October 2015 October 2015 October 2015	Bi-Annually Bi-Annually Bi-Annually
<b>Marine Nature Reserves</b> Natural Resources Wales	October 2015	Bi-Annually
<b>National Nature Reserves</b> Natural Resources Wales	October 2015	Bi-Annually
<b>Nitrate Sensitive Areas</b> Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	October 2015	Not Applicable
<b>Nitrate Vulnerable Zones</b> The National Assembly for Wales - GI Services (Department of Planning & Countryside)	October 2005	Annually
<b>Ramsar Sites</b> Natural Resources Wales	October 2015	Bi-Annually
<b>Sites of Special Scientific Interest</b> Natural Resources Wales	October 2015	Bi-Annually
<b>Special Areas of Conservation</b> Natural Resources Wales	October 2015	Bi-Annually
<b>Special Protection Areas</b> Natural Resources Wales	October 2015	Bi-Annually

A selection of organisations who provide data within this report

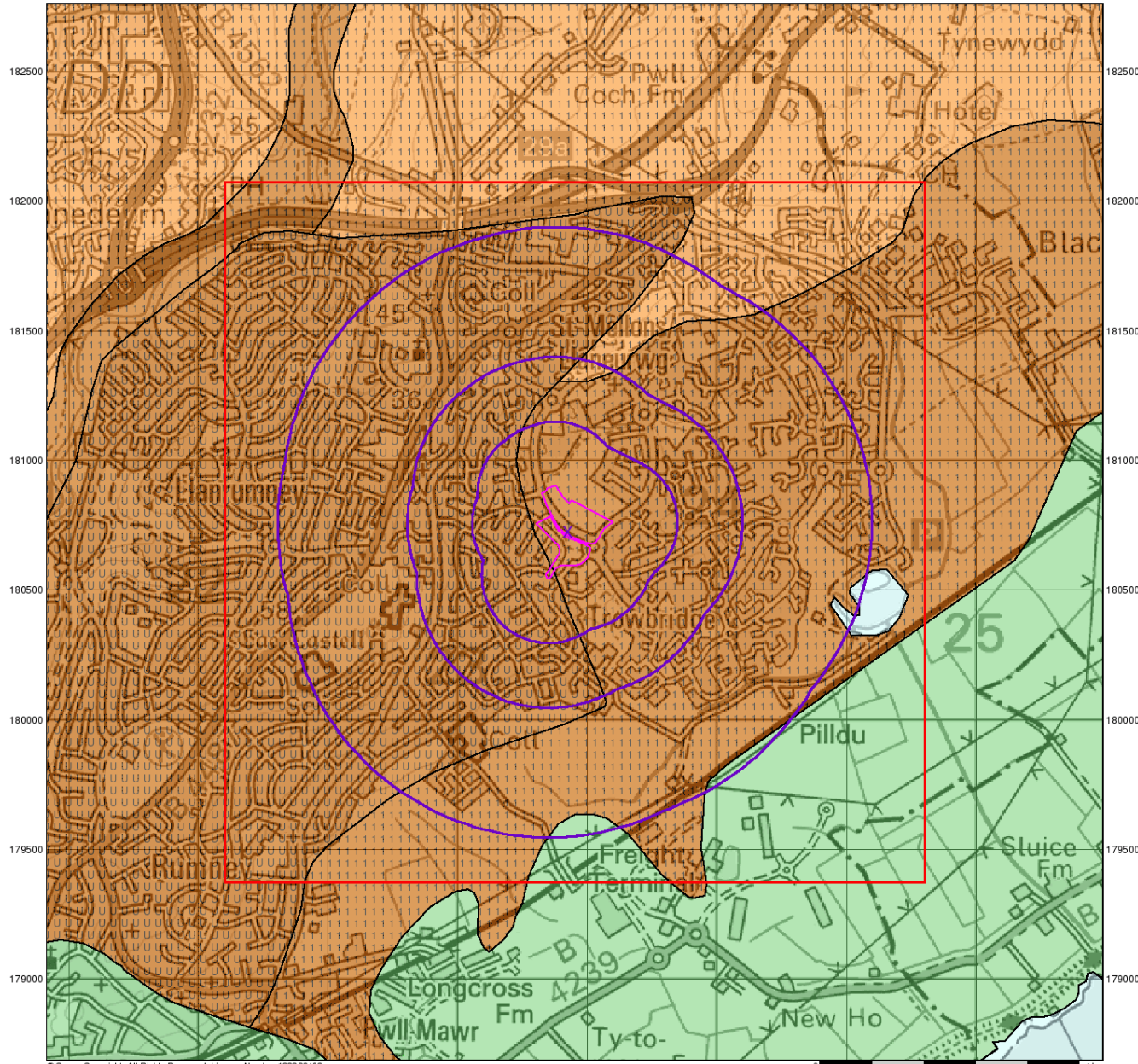
Data Supplier	Data Supplier Logo
Ordnance Survey	
Environment Agency	
Scottish Environment Protection Agency	
The Coal Authority	
British Geological Survey	 <p><b>British Geological Survey</b> NATURAL ENVIRONMENT RESEARCH COUNCIL</p>
Centre for Ecology and Hydrology	 <p><b>Centre for Ecology &amp; Hydrology</b> NATURAL ENVIRONMENT RESEARCH COUNCIL</p>
Natural Resources Wales	
Scottish Natural Heritage	
Natural England	
Public Health England	
Ove Arup	
Peter Brett Associates	



Contact	Name and Address	Contact Details
2	<b>British Geological Survey - Enquiry Service</b> British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
3	<b>Natural Resources Wales</b> Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP	Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk
4	<b>Cardiff Council - Pollution Control Division</b> Regulatory Services, City Hall, Cardiff, Mid Glamorgan, CF10 3ND	Telephone: 029 20872000 Fax: 01222 873212 Website: www.cardiff.gov.uk
5	<b>Environment Agency - National Customer Contact Centre (NCCC)</b> PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk
6	<b>Cardiff Council</b> County Hall, Atlantic Wharf, Cardiff, Mid Glamorgan, CF1 5UW	Telephone: 029 2087 2000 Fax: 029 2087 3212 Website: www.cardiff.gov.uk
7	<b>PointX</b> 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY	Website: www.pointx.co.uk
8	<b>Newport City Council</b> Civic Centre, Newport, South Wales, NP9 4UR	Telephone: 01633 656656 Fax: 01633 244721 Website: www.newport.gov.uk
-	<b>Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards</b> Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org
-	<b>Landmark Information Group Limited</b> Imperium, Imperial Way, Reading, Berkshire, RG2 0TD	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / Natural Resources Wales / SEPA have a charging policy in place for enquiries.

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## Groundwater Vulnerability

### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

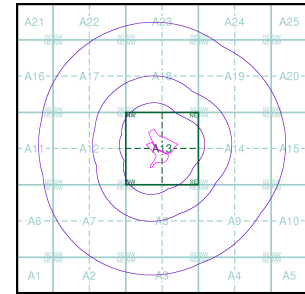
### Agency and Hydrological

#### Geological Classes

- Major Aquifer (Highly Permeable)**
  - High (H) 1, 2, 3, U
  - Intermediate (I) 1, 2
  - Low
- Minor Aquifer (Variably Permeable)**
  - High (H) 1, 2, 3, U
  - Intermediate (I) 1, 2
  - Low
- Non Aquifer (Negligibly Permeable)**
  -
- Water or Sea**
  -
- Drift Deposit**
  -

#### Soil Classes

### Site Sensitivity Context Map - Slice A



### Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

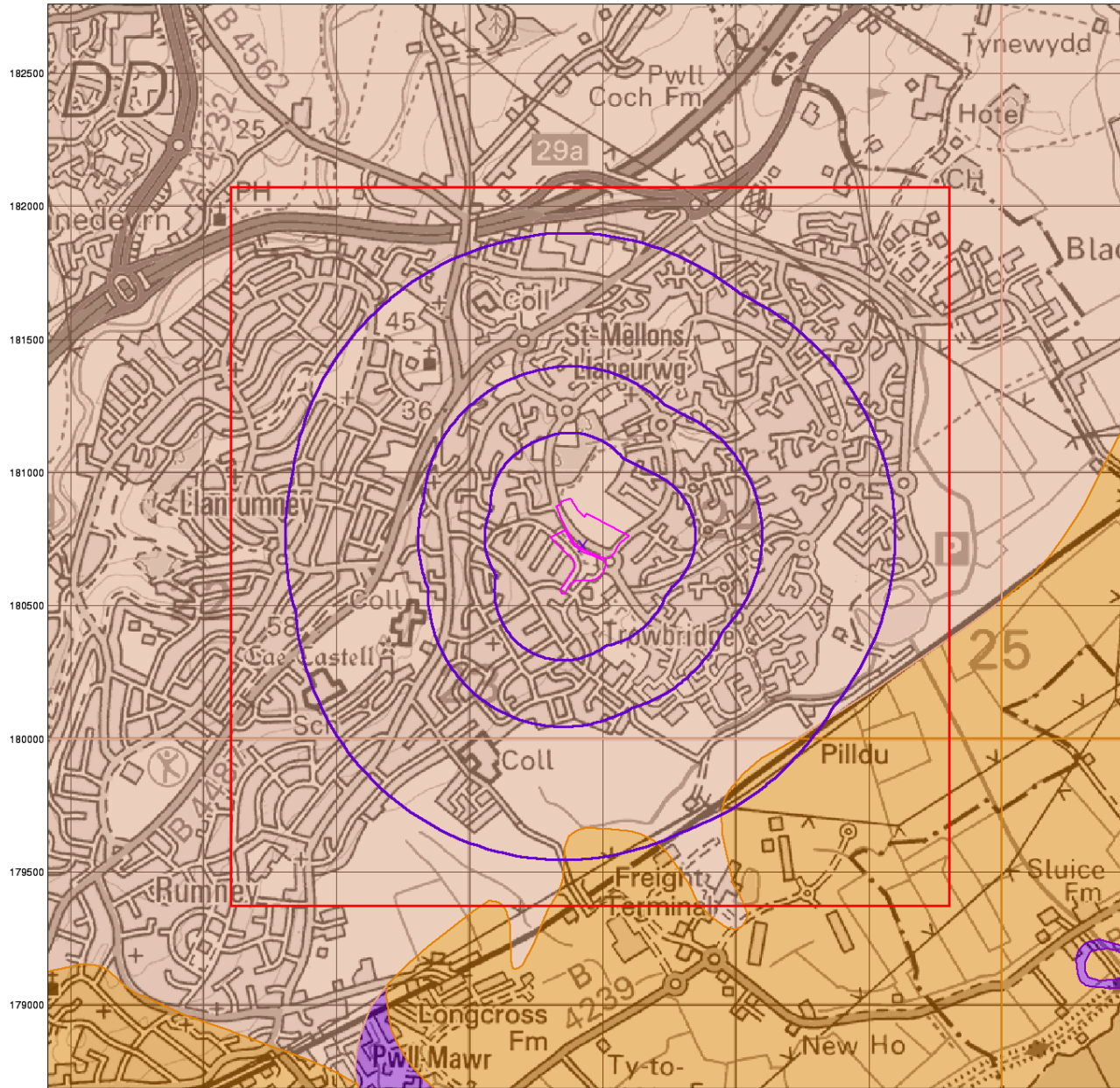
Site at 323440, 180740



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



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## Bedrock Aquifer Designation

### General

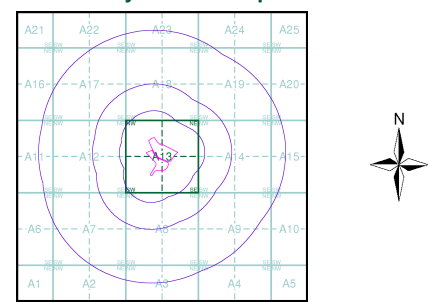
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

### Agency and Hydrological

#### Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

### Site Sensitivity Context Map - Slice A



### Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

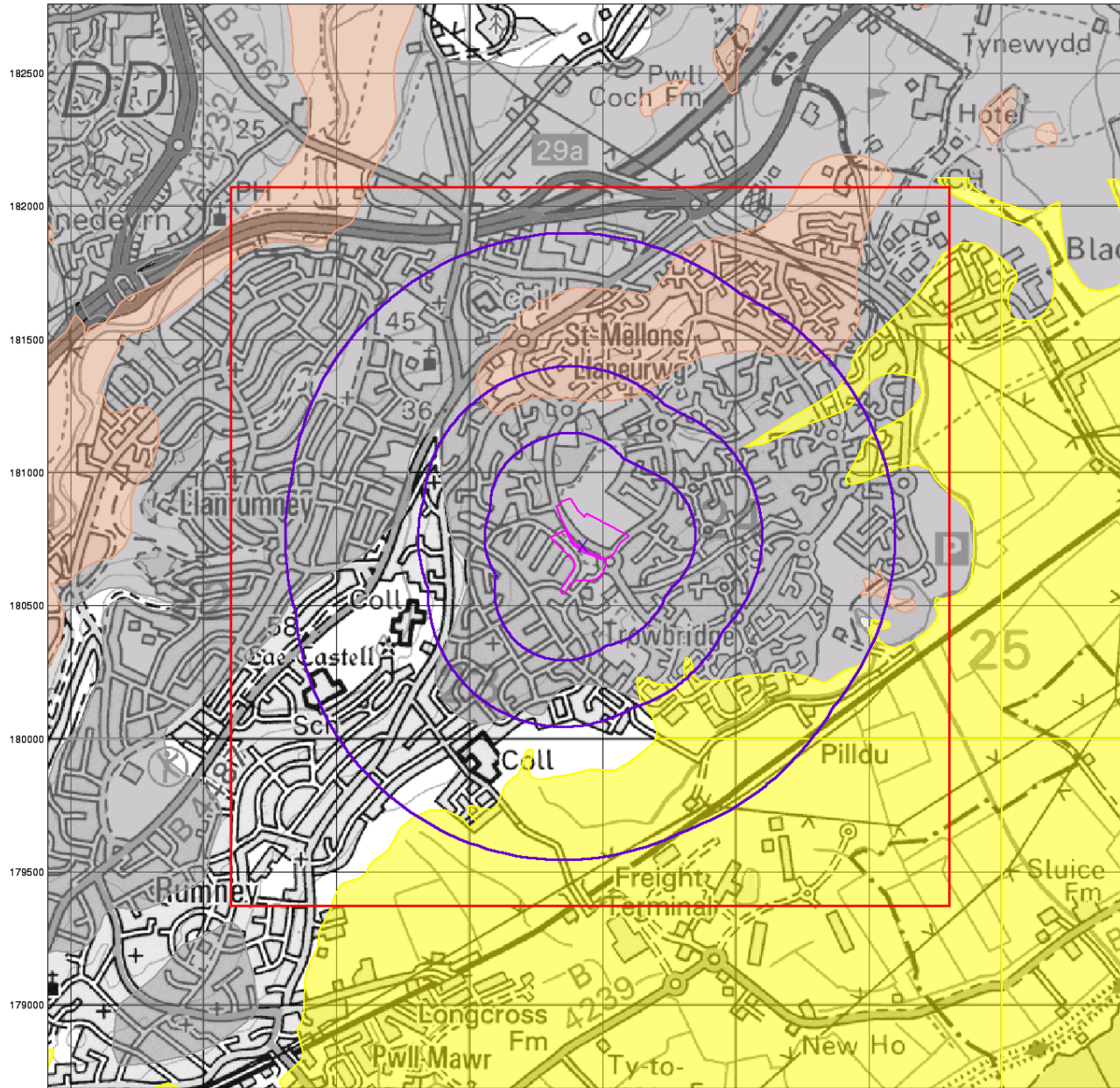
### Site Details

Site at 323440, 180740



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 Web: www.envirocheck.co.uk

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## Superficial Aquifer Designation

### General

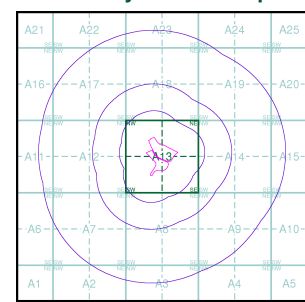
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

### Agency and Hydrological

#### Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown
- Unknown (Lakes and Landslip)

### Site Sensitivity Context Map - Slice A



### Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

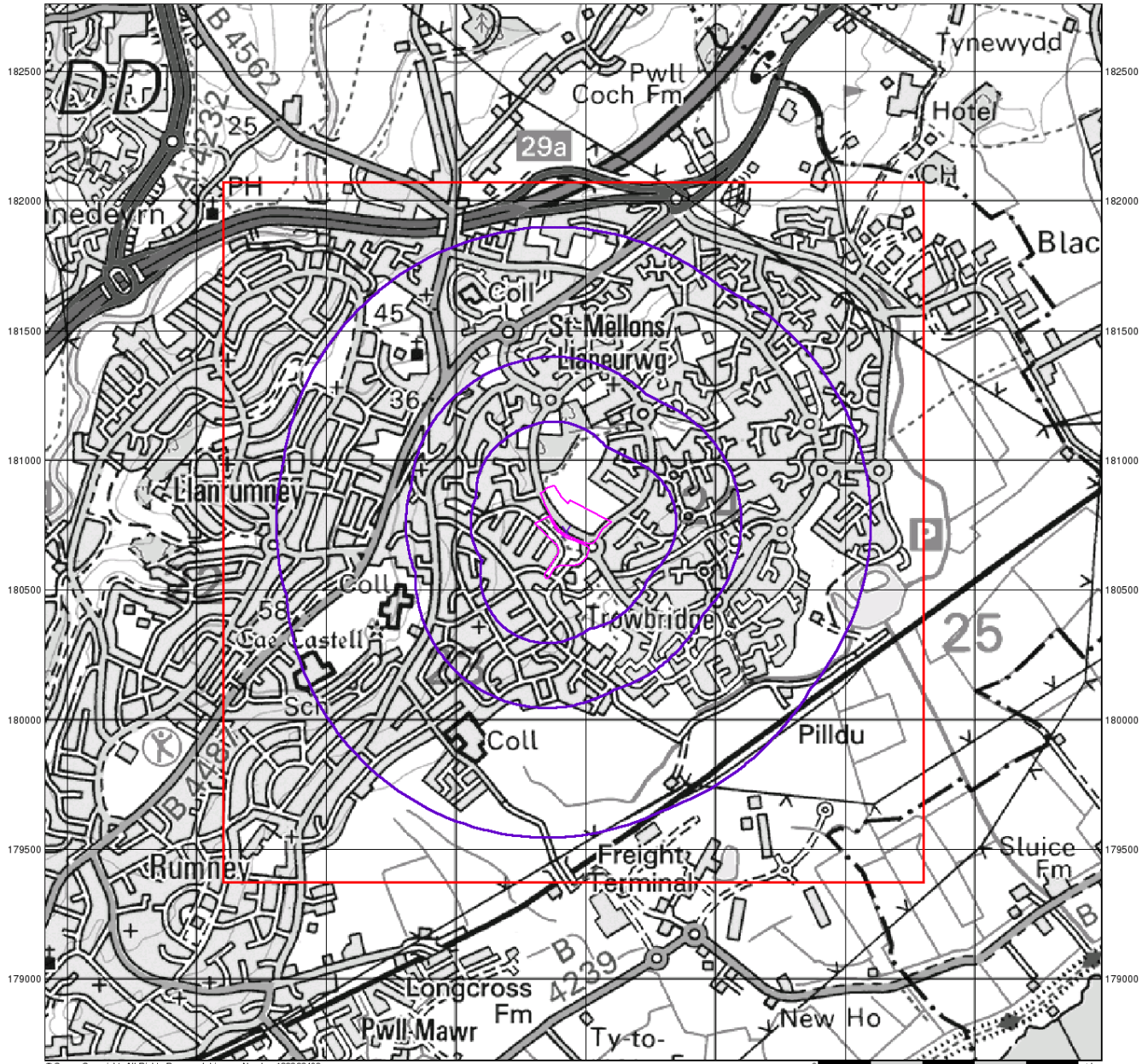
Site at 323440, 180740



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## Source Protection Zones

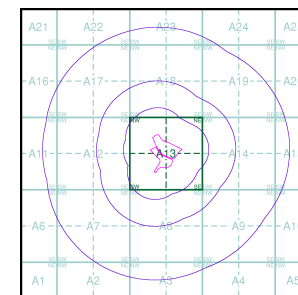
### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

### Agency and Hydrological

- Inner zone (Zone 1)
- Inner zone - subsurface activity only (Zone 1c)
- Outer zone (Zone 2)
- Outer zone - subsurface activity only (Zone 2c)
- Total catchment (Zone 3)
- Total catchment - subsurface activity only (Zone 3c)
- Special interest (Zone 4)
- Source Protection Zone Borehole

### Site Sensitivity Context Map - Slice A



### Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

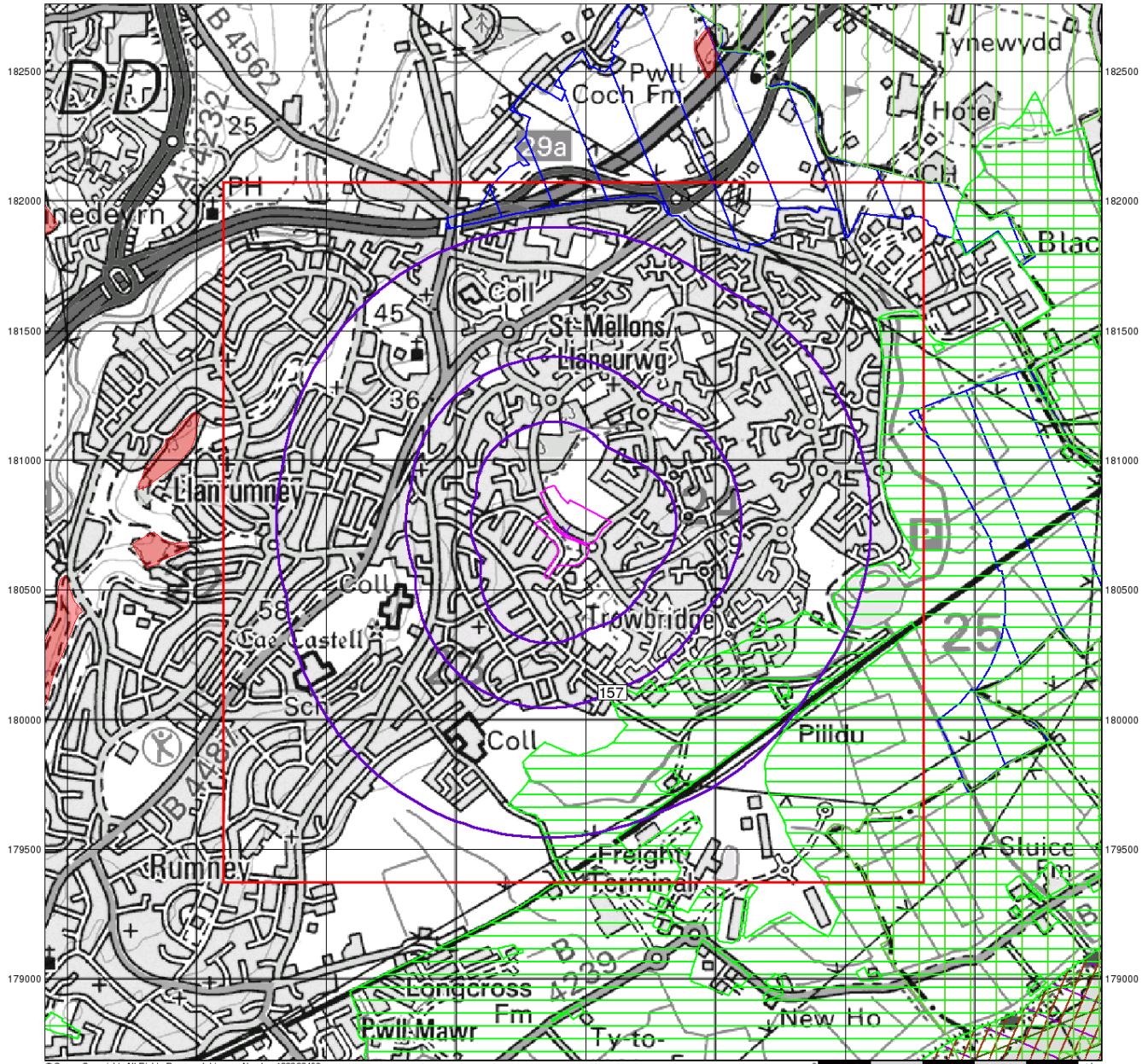
Site at 323440, 180740



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 Fax: 0844 844 9951  
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0 1 km

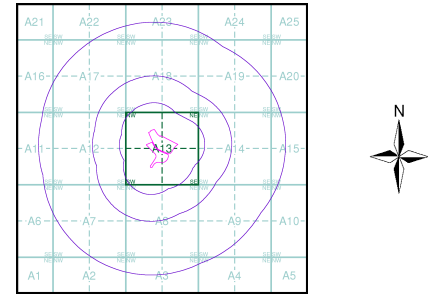


### Sensitive Land Uses

- General**
- Specified Site
  - Specified Buffer(s)
  - Bearing Reference Point
  - Slice
  - Map ID

- Sensitive Land Uses**
- Ancient Woodland
  - Area of Adopted Green Belt
  - Area of Unadopted Green Belt
  - Area of Outstanding Natural Beauty
  - Environmentally Sensitive Area
  - Forest Park
  - Local Nature Reserve
  - Marine Nature Reserve
  - National Nature Reserve
  - National Park
  - Nitrate Sensitive Area
  - Nitrate Vulnerable Zone
  - Ramsar Site
  - Site of Special Scientific Interest
  - Special Area of Conservation
  - Special Protection Area
  - World Heritage Sites

### Site Sensitivity Context Map - Slice A



**Order Details**

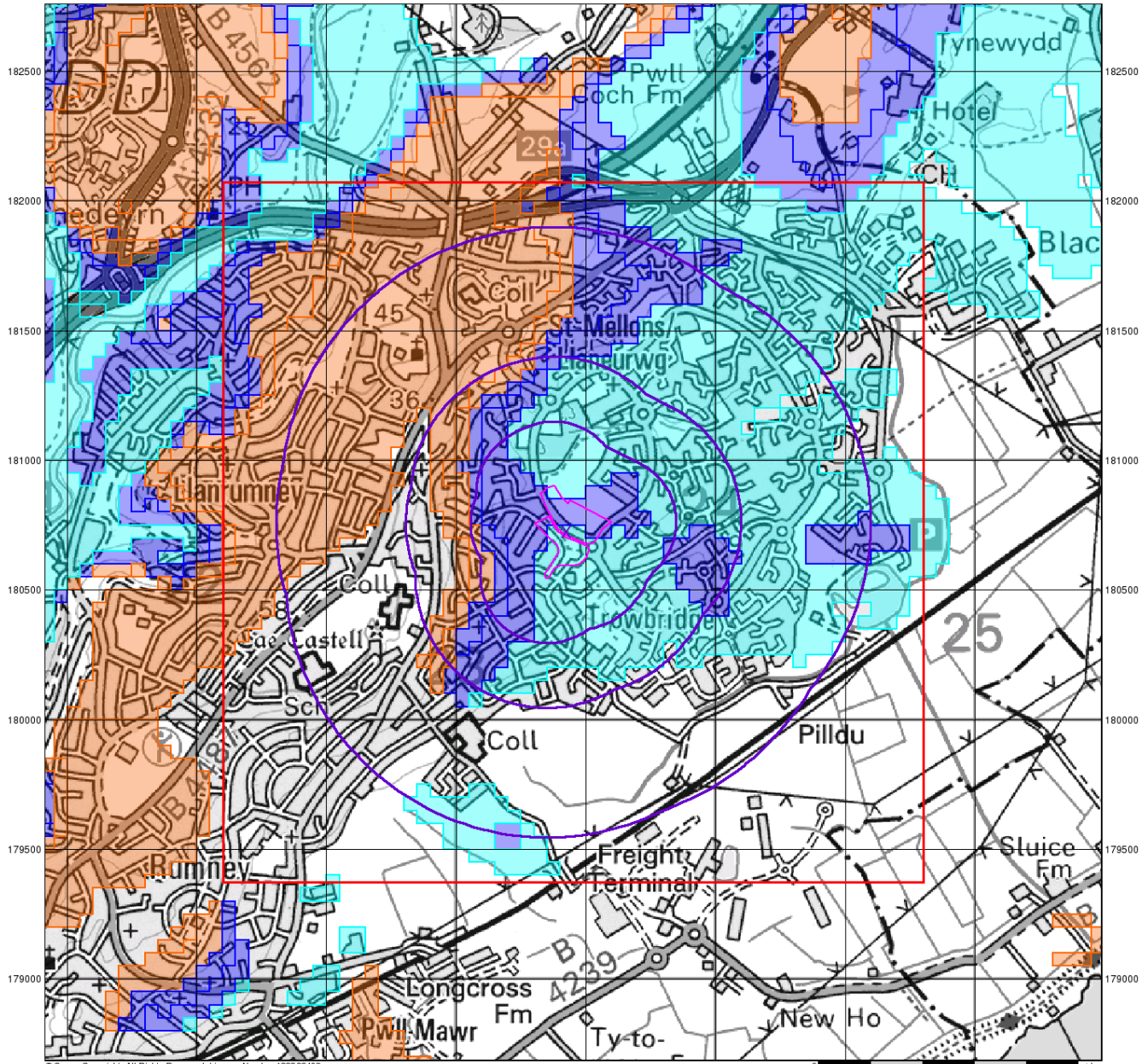
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

**Site Details**  
 Site at 323440, 180740





321500 322000 322500 323000 323500 324000 324500 325000



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0 1 km



**BGS Flood GFS Data**

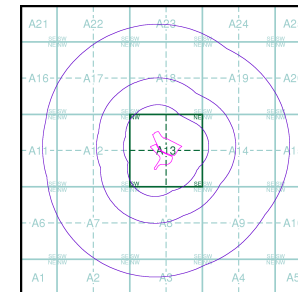
**General**

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice

**Agency and Hydrological (Flood)**

- Limited Potential for Groundwater Flooding to Occur
- Potential for Groundwater Flooding of Property Situated Below Ground Level
- Potential for Groundwater Flooding to Occur at Surface

**Site Sensitivity Context Map - Slice A**



**Order Details**

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

**Site Details**

Site at 323440, 180740



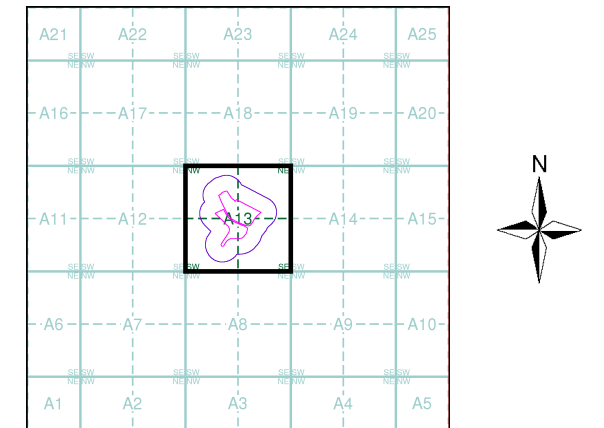
Tel: 0844 844 9952  
 Fax: 0844 844 9951  
 Web: www.envirocheck.co.uk



**General**

- Specified Site
  - Specified Buffer(s)
  - Bearing Reference Point
  - Map ID
  - Several of Type at Location
  - Pylon
  - Overhead Transmission Line
- Agency and Hydrological**
- Contaminated Land Register Entry or Notice (Location)
  - Contaminated Land Register Entry or Notice
  - Discharge Consent
  - Enforcement or Prohibition Notice
  - Integrated Pollution Control
  - Integrated Pollution Prevention Control
  - Local Authority Integrated Pollution Prevention and Control
  - Local Authority Pollution Prevention and Control Enforcement
  - Pollution Incident to Controlled Waters
  - Prosecution Relating to Authorised Processes
  - Prosecution Relating to Controlled Waters
  - Registered Radioactive Substance
  - River Network or Water Feature
  - River Quality Sampling Point
  - Substantiated Pollution Incident Register
  - Water Abstraction
  - Water Industry Act Referral
- Hazardous Substances**
- COMAH Site
  - Explosive Site
  - NIHHS Site
  - Planning Hazardous Substance Consent
  - Planning Hazardous Substance Enforcement
  - BGS Recorded Mineral Site
- Waste**
- BGS Recorded Landfill Site (Location)
  - BGS Recorded Landfill Site
  - EA Historic Landfill (Buffered Point)
  - EA Historic Landfill (Polygon)
  - Integrated Pollution Control Registered Waste Site
  - Licensed Waste Management Facility (Landfill Boundary)
  - Licensed Waste Management Facility (Location)
  - Local Authority Recorded Landfill Site (Location)
  - Local Authority Recorded Landfill Site
  - Potentially Infilled Land (Non-water)
  - Potentially Infilled Land (Non-water)
  - Potentially Infilled Land (Non-water)
  - Potentially Infilled Land (Water)
  - Potentially Infilled Land (Water)
  - Potentially Infilled Land (Water)
  - Registered Landfill Site
  - Registered Landfill Site (Location)
  - Registered Landfill Site (Point Buffered to 100m)
  - Registered Landfill Site (Point Buffered to 250m)
  - Registered Waste Transfer Site (Location)
  - Registered Waste Transfer Site
  - Registered Waste Treatment or Disposal Site (Location)
  - Registered Waste Treatment or Disposal Site

**Site Sensitivity Map - Segment A13**

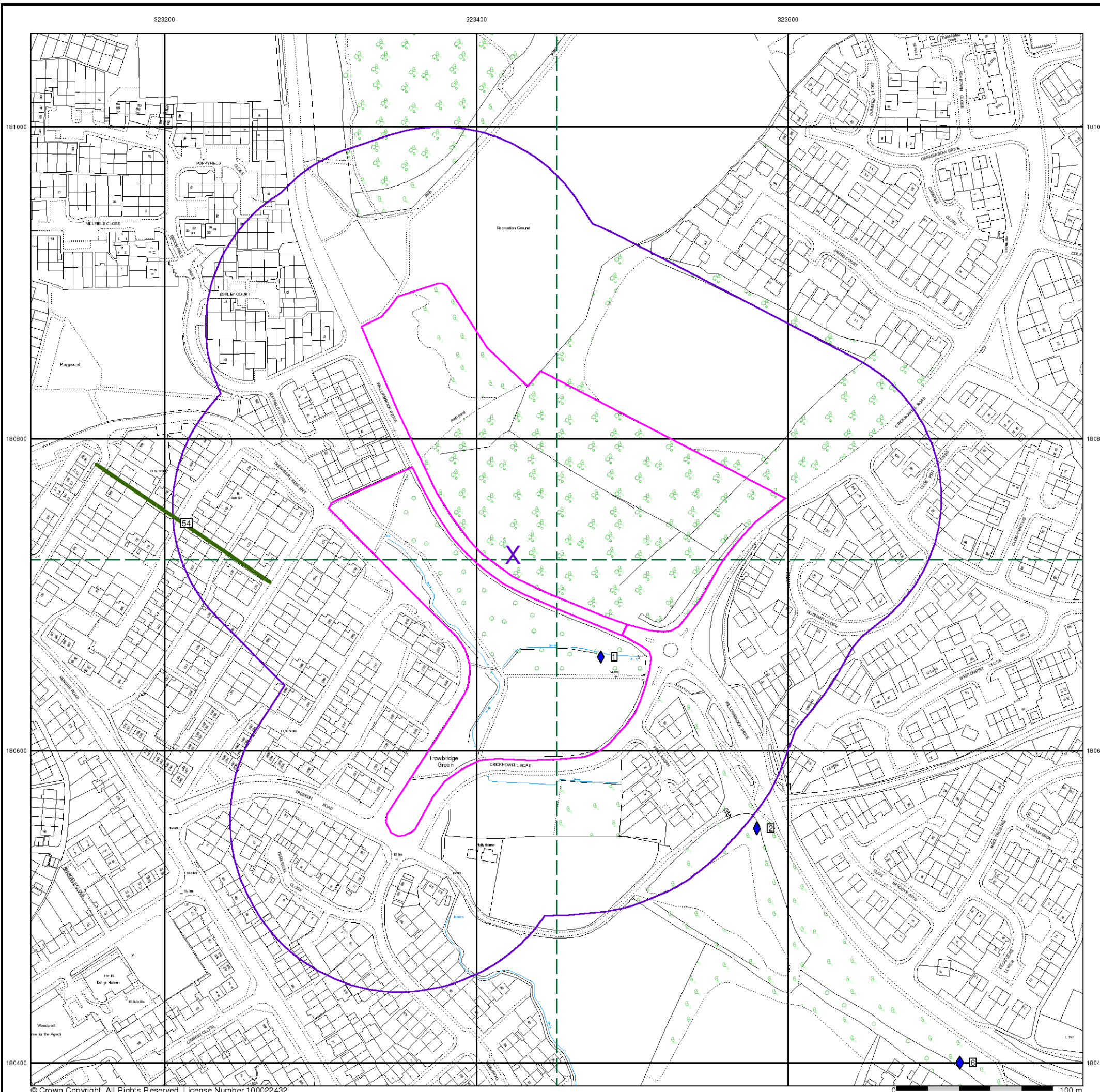


**Order Details**

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Plot Buffer (m): 100

**Site Details**

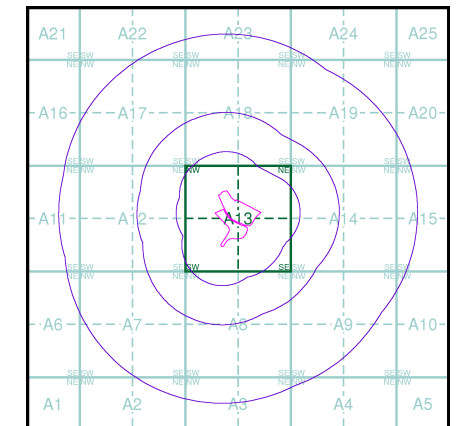
Site at 323440, 180740





- General**
- Specified Site
  - Specified Buffer(s)
  - Bearing Reference Point
  - Map ID
  - Several of Type at Location
- Agency and Hydrological**
- Contaminated Land Register Entry or Notice (Location)
  - Contaminated Land Register Entry or Notice
  - Discharge Consent
  - Enforcement or Prohibition Notice
  - Integrated Pollution Control
  - Integrated Pollution Prevention and Control
  - Local Authority Integrated Pollution Prevention and Control
  - Local Authority Pollution Prevention and Control Enforcement
  - Pollution Incident to Controlled Waters
  - Prosecution Relating to Authorised Processes
  - Prosecution Relating to Controlled Waters
  - Registered Radioactive Substance
  - River Network or Water Feature
  - River Quality Sampling Point
  - Substantiated Pollution Incident Register
  - Water Abstraction
  - Water Industry Act Referral
- Hazardous Substances**
- COMAH Site
  - Explosive Site
  - NIHNS Site
  - Planning Hazardous Substance Consent
  - Planning Hazardous Substance Enforcement
  - BGS Recorded Mineral Site
- Waste**
- BGS Recorded Landfill Site (Location)
  - BGS Recorded Landfill Site
  - EA Historic Landfill (Buffered Point)
  - EA Historic Landfill (Polygon)
  - Integrated Pollution Control Registered Waste Site
  - Licensed Waste Management Facility (Landfill Boundary)
  - Licensed Waste Management Facility (Location)
  - Local Authority Recorded Landfill Site (Location)
  - Local Authority Recorded Landfill Site
  - Potentially Infilled Land (Non-water)
  - Potentially Infilled Land (Non-water)
  - Potentially Infilled Land (Non-water)
  - Potentially Infilled Land (Water)
  - Potentially Infilled Land (Water)
  - Potentially Infilled Land (Water)
  - Registered Landfill Site
  - Registered Landfill Site (Location)
  - Registered Landfill Site (Point Buffered to 100m)
  - Registered Landfill Site (Point Buffered to 250m)
  - Registered Waste Transfer Site (Location)
  - Registered Waste Transfer Site
  - Registered Waste Treatment or Disposal Site (Location)
  - Registered Waste Treatment or Disposal Site

### Site Sensitivity Map - Slice A

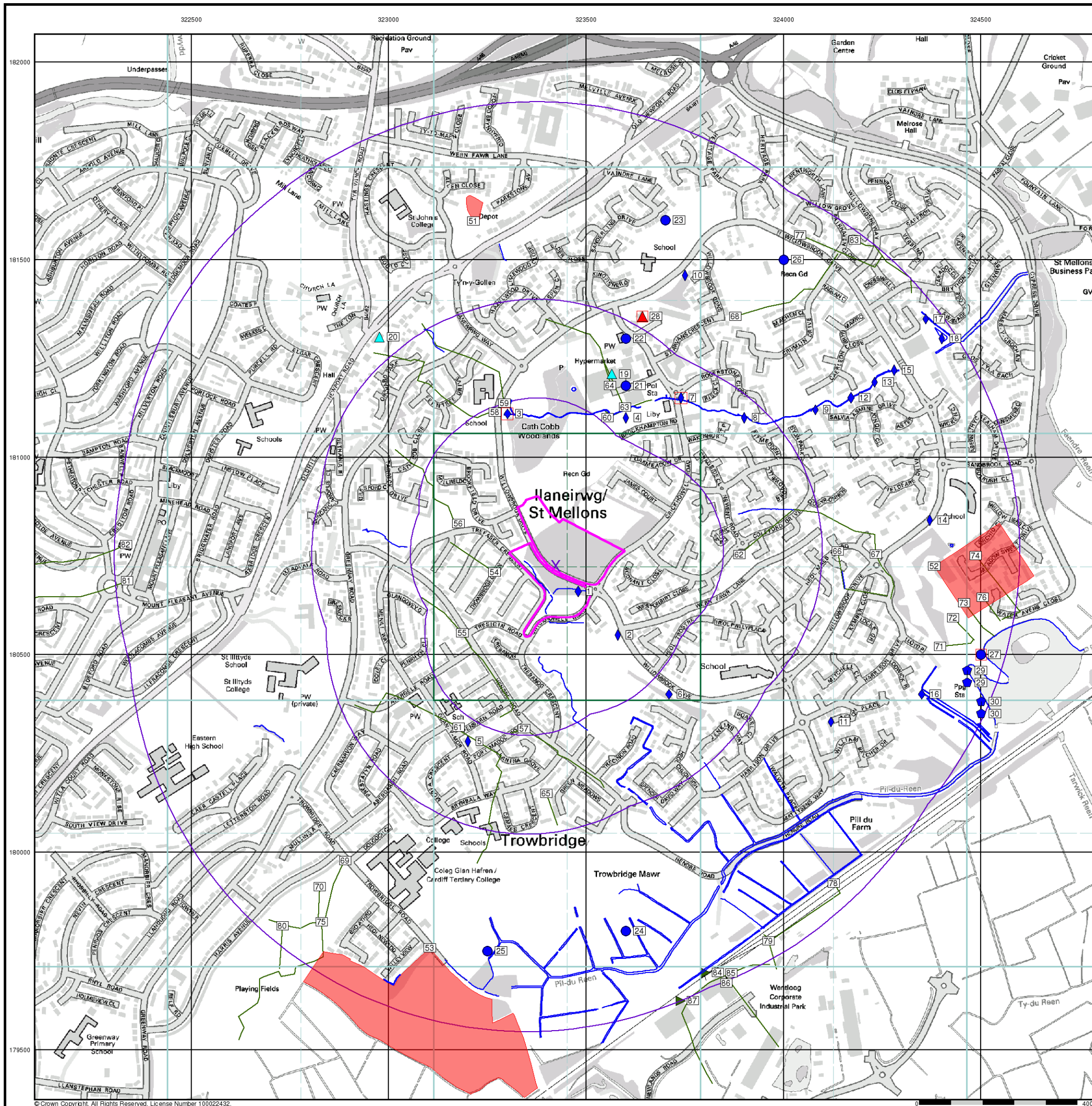


### Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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### Industrial Land Use Map

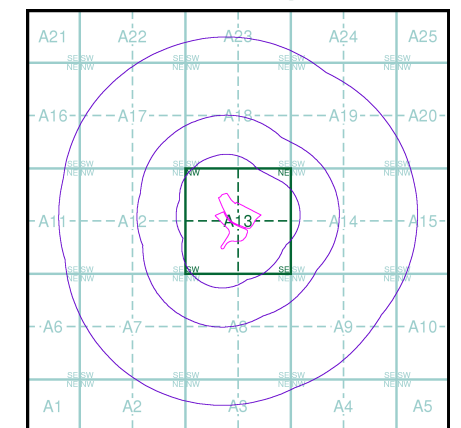
#### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

#### Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry
- Gas Pipeline
- Points of Interest - Commercial Services
- Points of Interest - Education and Health
- Points of Interest - Manufacturing and Production
- Points of Interest - Public Infrastructure
- Points of Interest - Recreational and Environmental
- Underground Electrical Cables

### Industrial Land Use Map - Slice A



#### Order Details

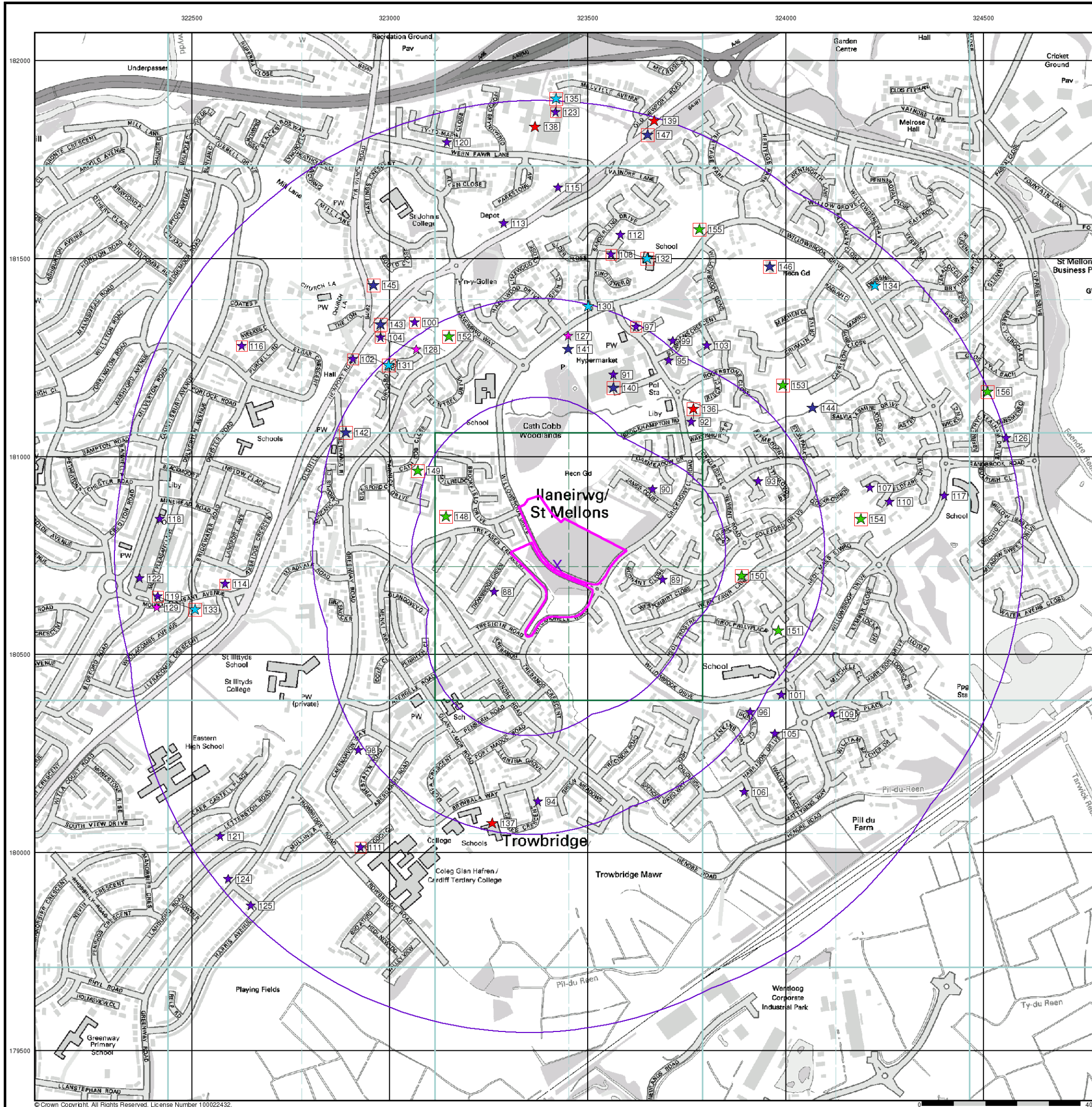
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

#### Site Details

Site at 323440, 180740






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








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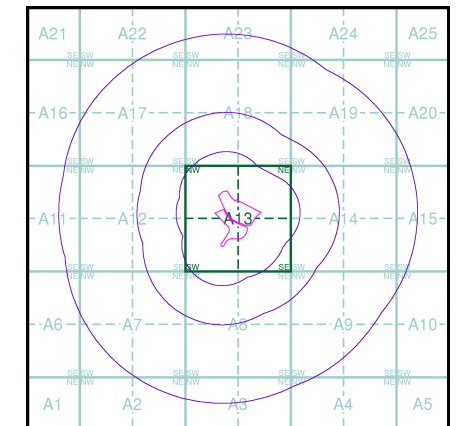
**General**

-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point

**Agency and Hydrological (Flood)**

-  Extreme Flooding from Rivers or Sea without Defences (Zone 2)
-  Flooding from Rivers or Sea without Defences (Zone 3)
-  Area Benefiting from Flood Defence
-  Flood Water Storage Areas
-  Flood Defence

**Flood Map - Slice A**

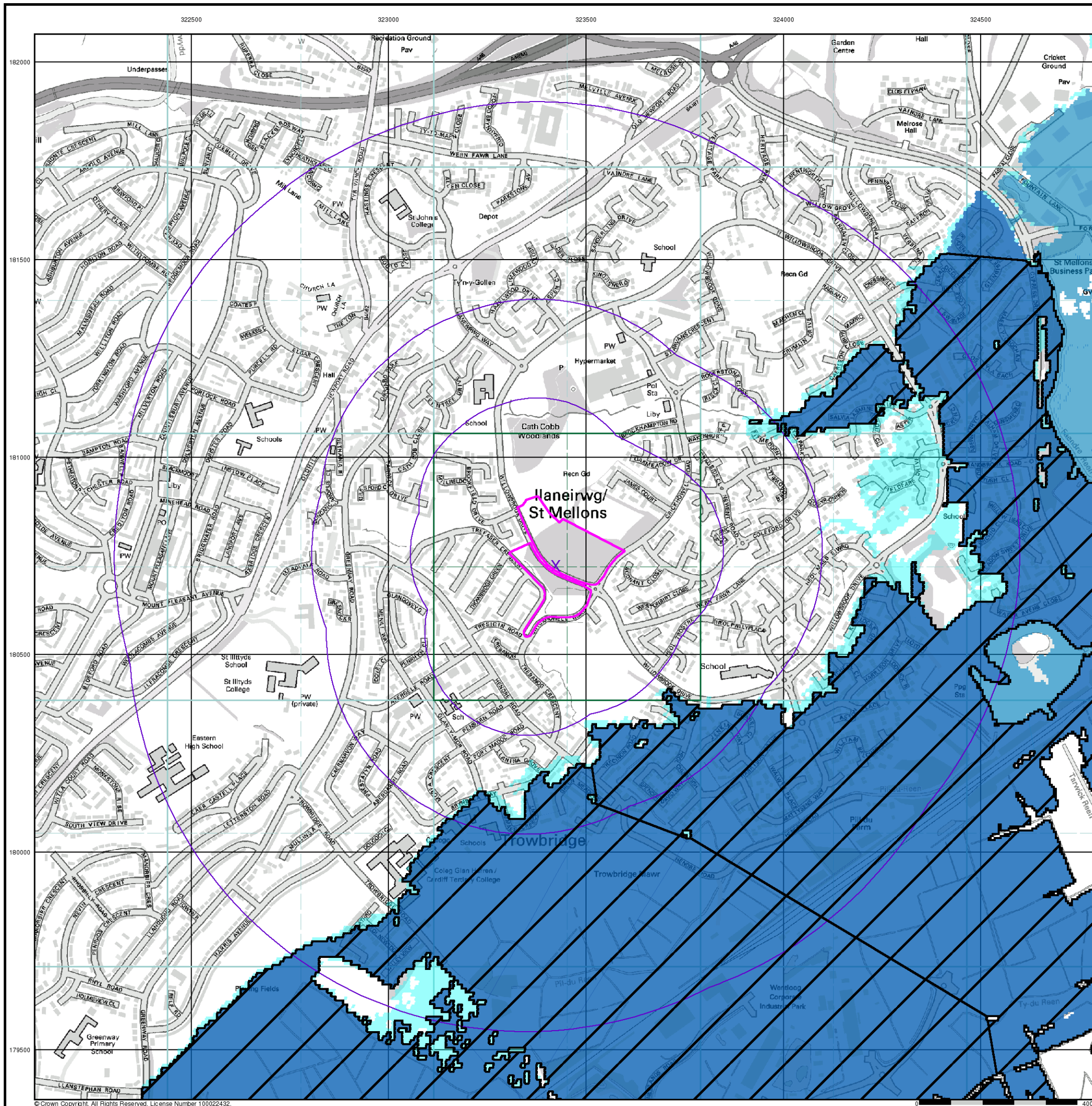


**Order Details**

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

**Site Details**

Site at 323440, 180740



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**General**

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

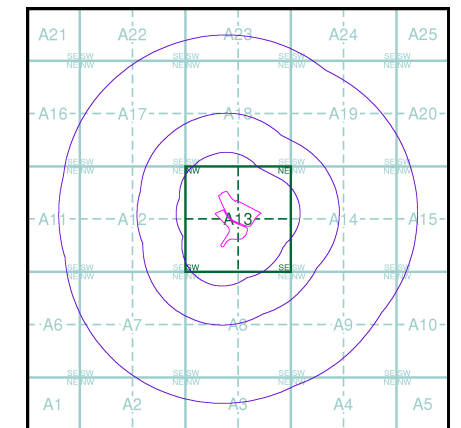
**Agency and Hydrological (Boreholes)**

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of [www.envirocheck.co.uk](http://www.envirocheck.co.uk).

**Borehole Map - Slice A**

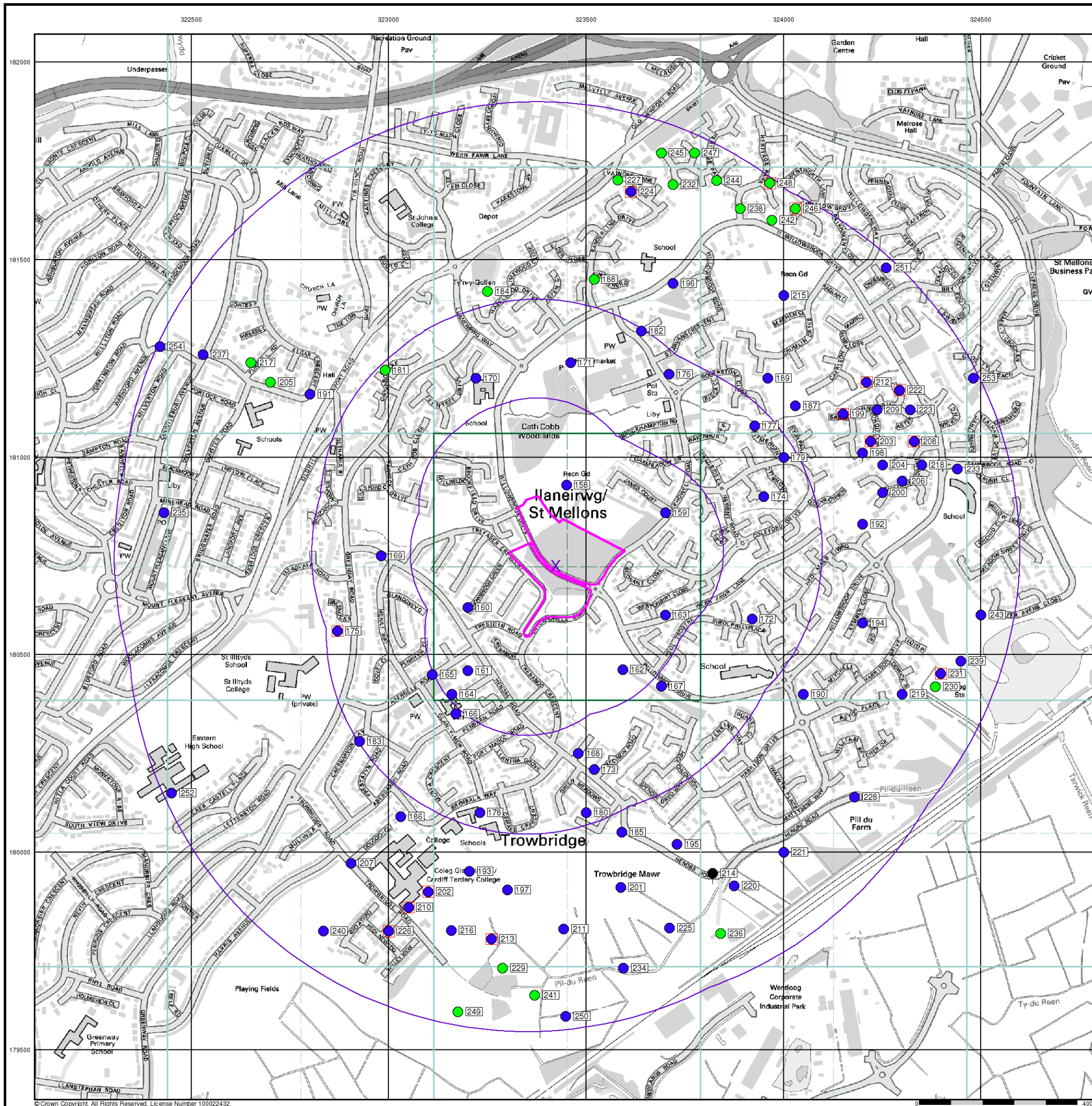


**Order Details**

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

**Site Details**

Site at 323440, 180740



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### General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID

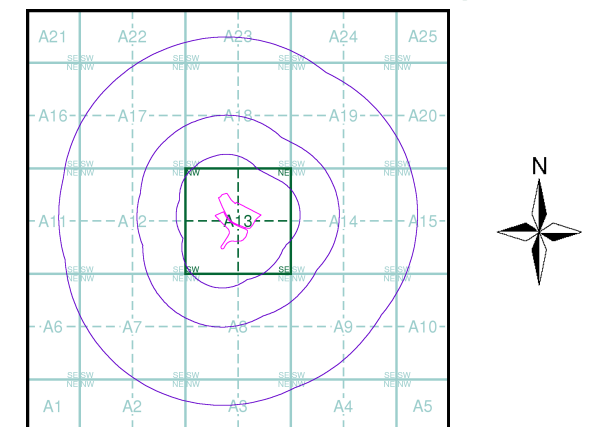
### Detailed River Network Data

- Primary River
- Secondary River
- Tertiary River
- Canal
- Canal Tunnel
- Undefined River
- Lake/Reservoir
- Offline Drainage Feature
- Extended Culvert (greater than 50m)
- Underground River (inferred)
- Underground River (local knowledge)
- Downstream of High Water Mark
- Downstream of Seaward Extension
- Not assigned River feature

### Contours (height in metres)

- Standard Contour 105
- Master Contour 100
- Spot Height \*167.3
- MLW Mean Low Water
- MHW Mean High Water

### EANRW Detailed River Network Map - Slice A

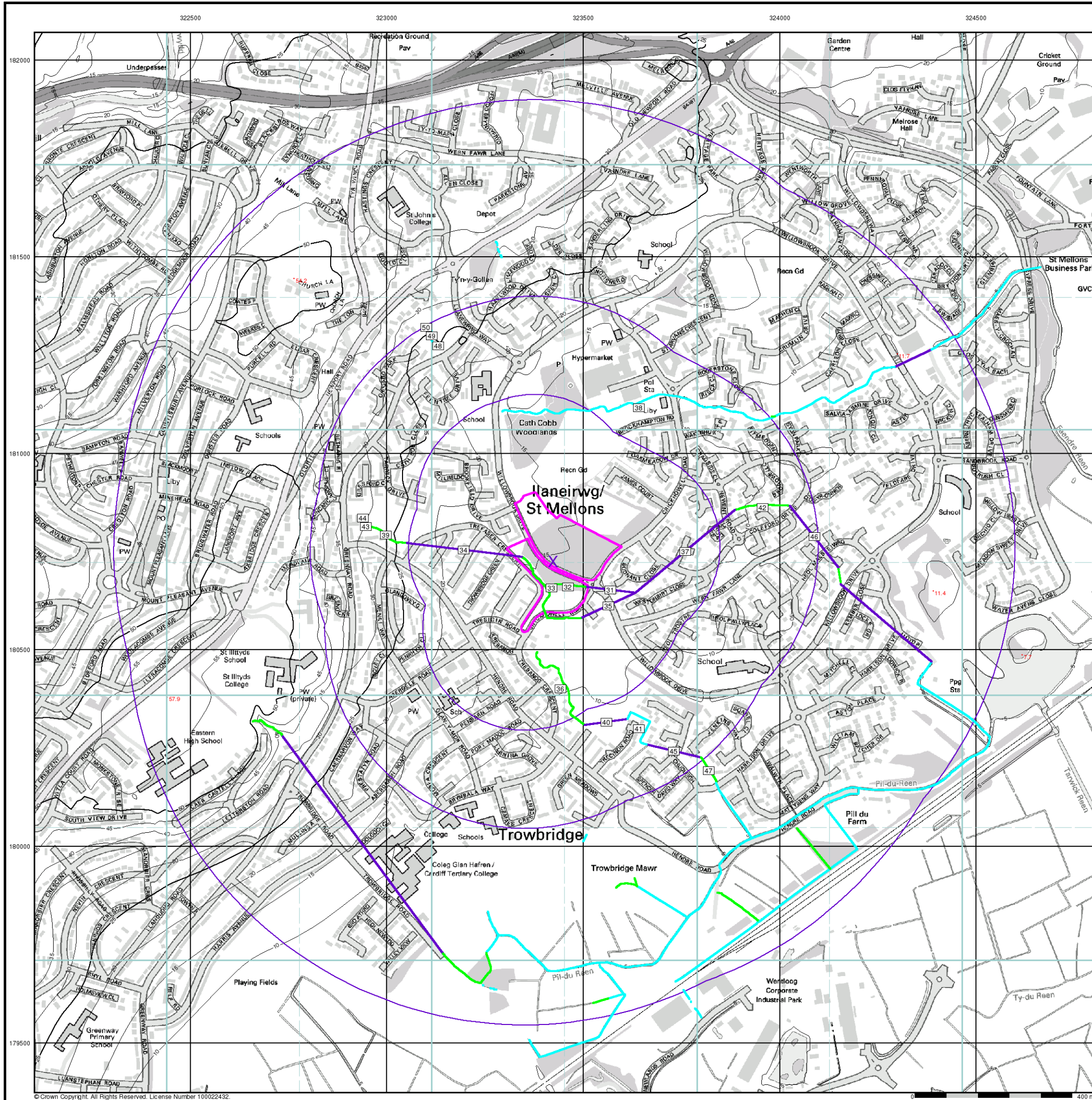


### Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000


### Site Details

Site at 323440, 180740






**General**

-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point

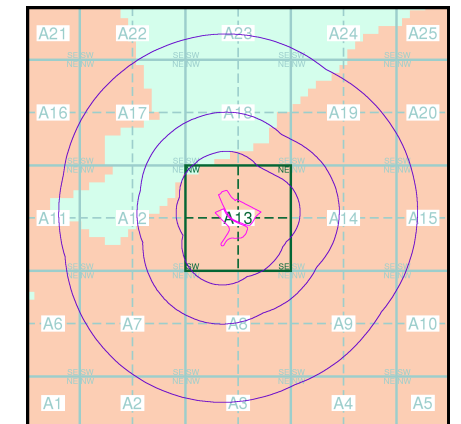
**Risk of Flooding from Surface Water**

-  High - 30 Year Return
-  Medium - 100 Year Return
-  Low - 1000 Year Return

**Suitability**

- See the suitability map below
-  National to county
  -  County to town
  -  Town to street
  -  Street to parcels of land
  -  Property

**EANRW Suitability Map - Slice A**

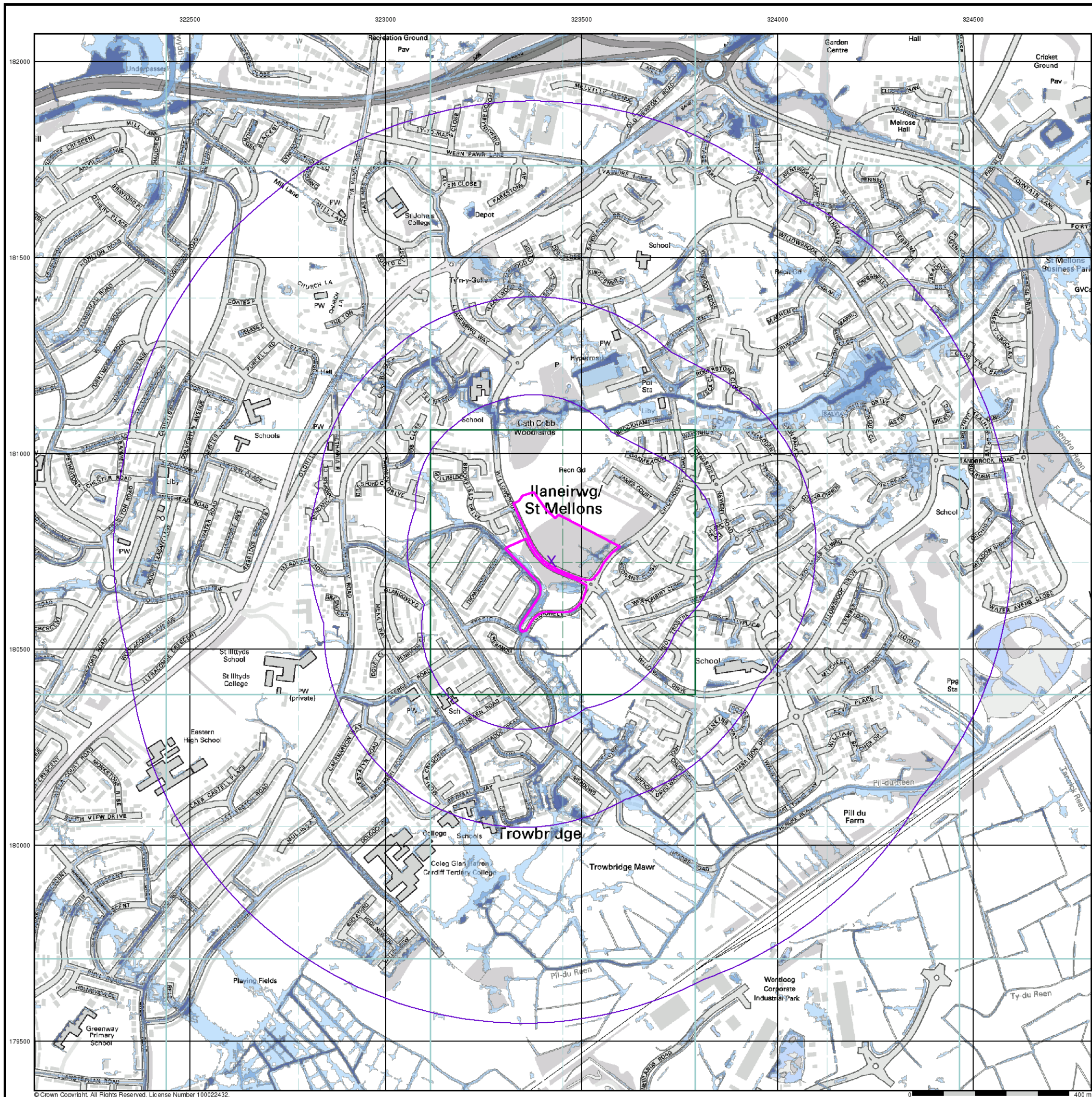


**Order Details**

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

**Site Details**

Site at 323440, 180740



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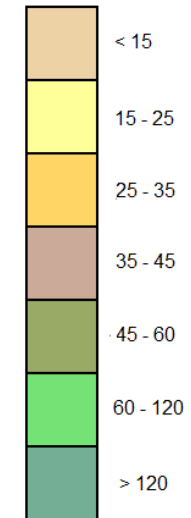
**General**

- ⬭ Specified Site
- ⬭ Specified Buffer(s)
- X Bearing Reference Point

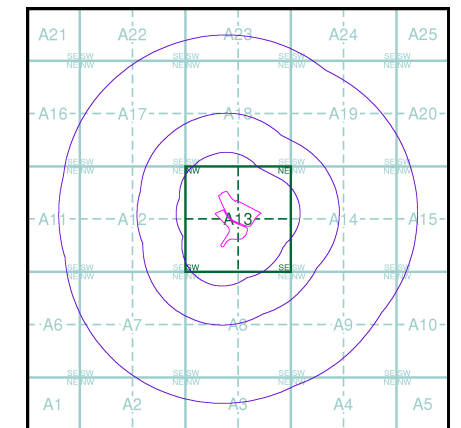
**Urban Soil Chemistry Arsenic**

- BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Arsenic Concentrations mg/kg



**Urban Soil Chemistry Arsenic - Slice A**

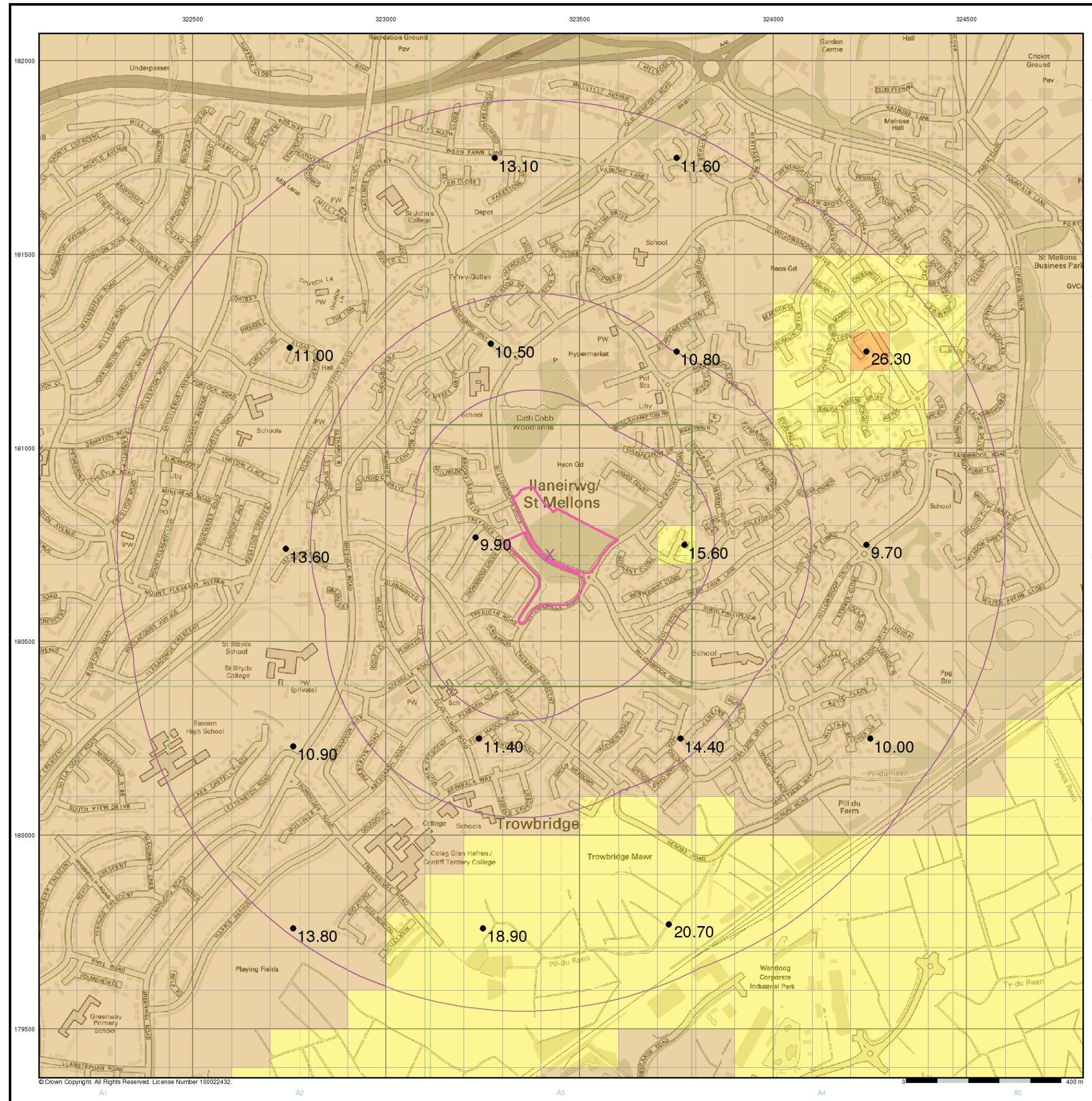


**Order Details**

Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**




Site at 323440, 180740



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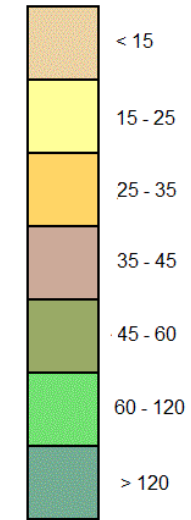


**General**

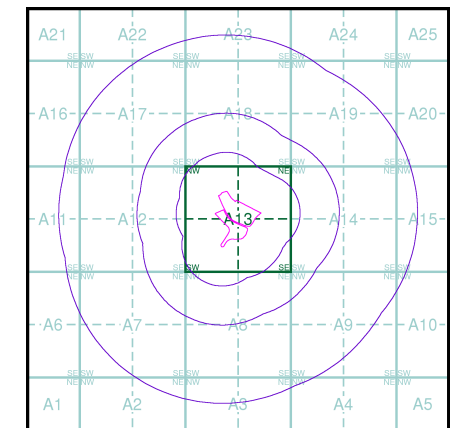
-  Specified Site
-  Specified Buffer(s)
-  Bearing Reference Point

**Estimated Soil Chemistry Arsenic**

Arsenic Concentrations mg/kg



**Estimated Soil Chemistry Arsenic - Slice A**

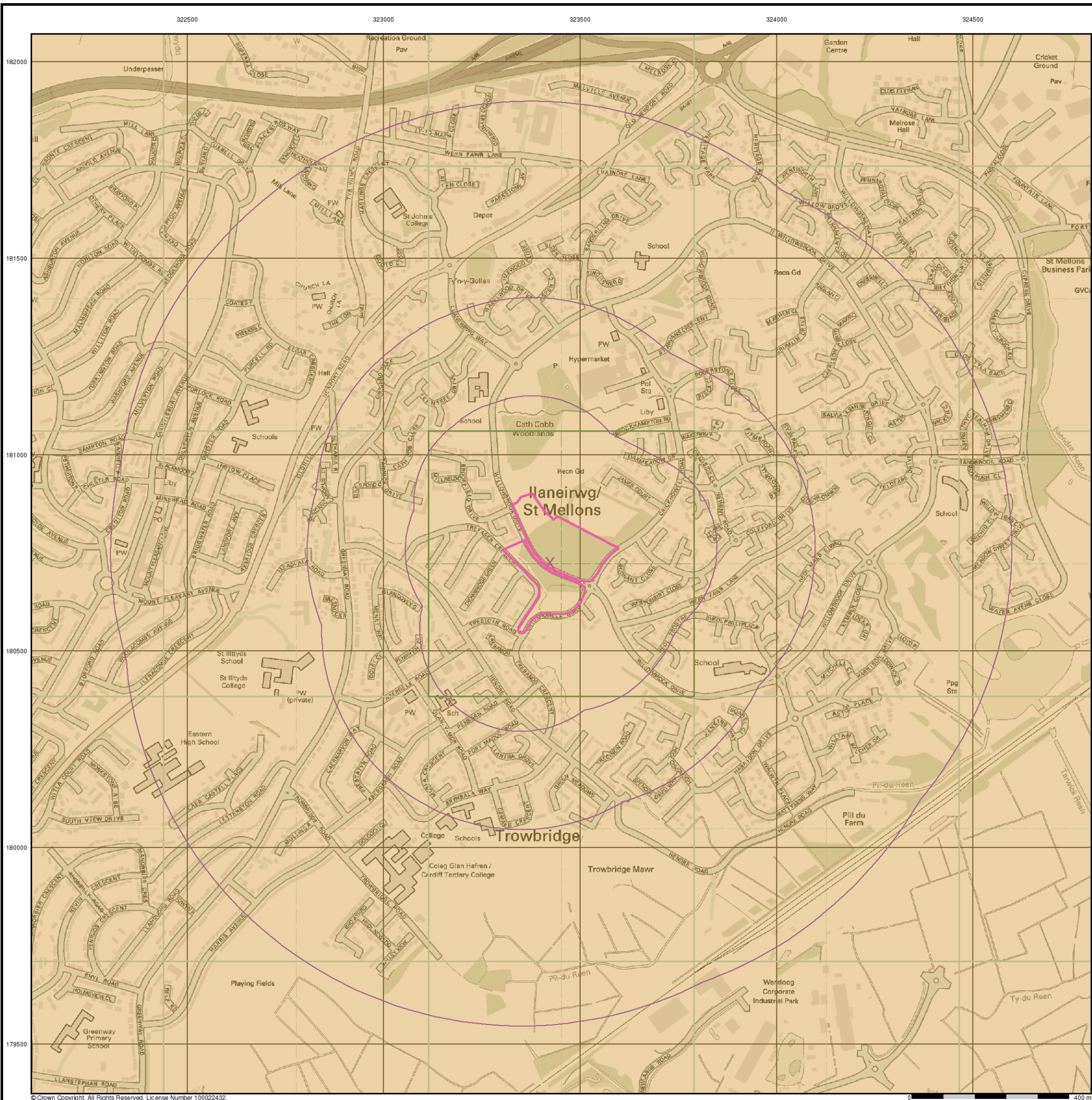


**Order Details**

Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**

Site at 323440, 180740



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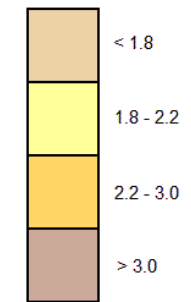
**General**

- Specified Site
- Specified Buffer(s)
- x Bearing Reference Point

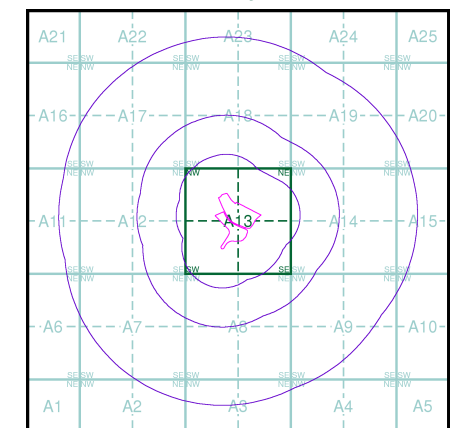
**Urban Soil Chemistry Cadmium**

● BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Cadmium Concentrations mg/kg



**Urban Soil Chemistry Cadmium - Slice A**

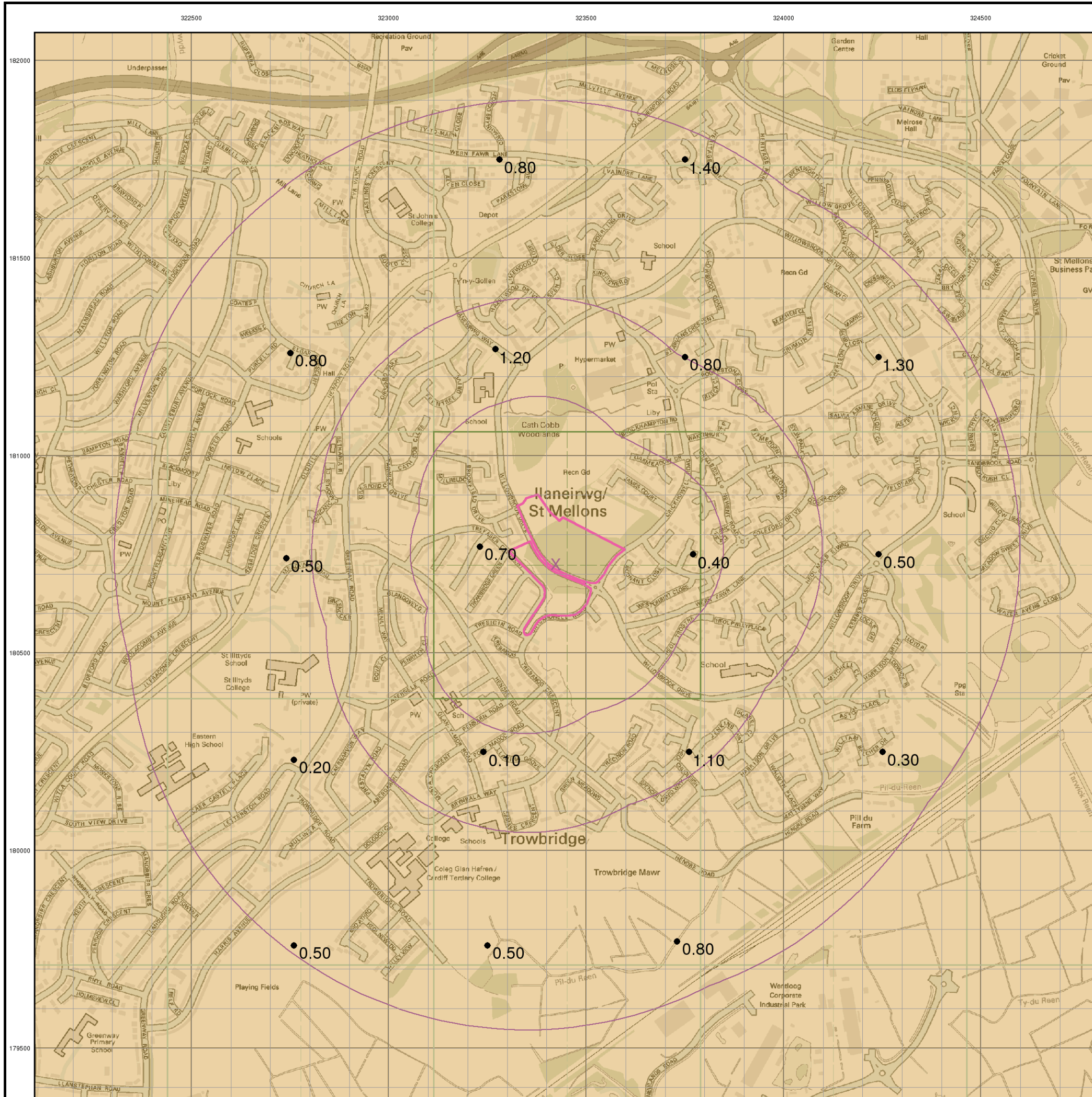


**Order Details**

Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**

Site at 323440, 180740





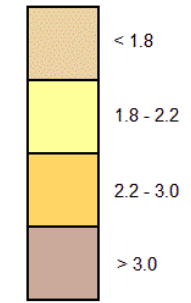


**General**

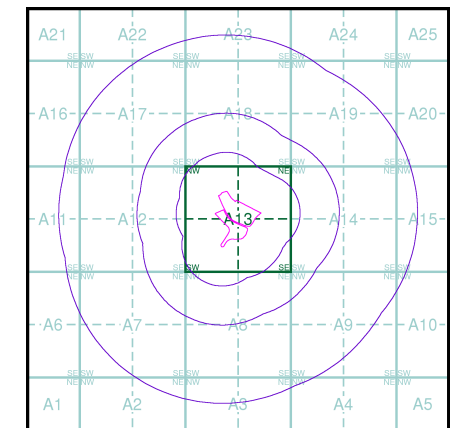
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

**Estimated Soil Chemistry Cadmium**

Cadmium Concentrations mg/kg



**Estimated Soil Chemistry Cadmium - Slice A**



**Order Details**

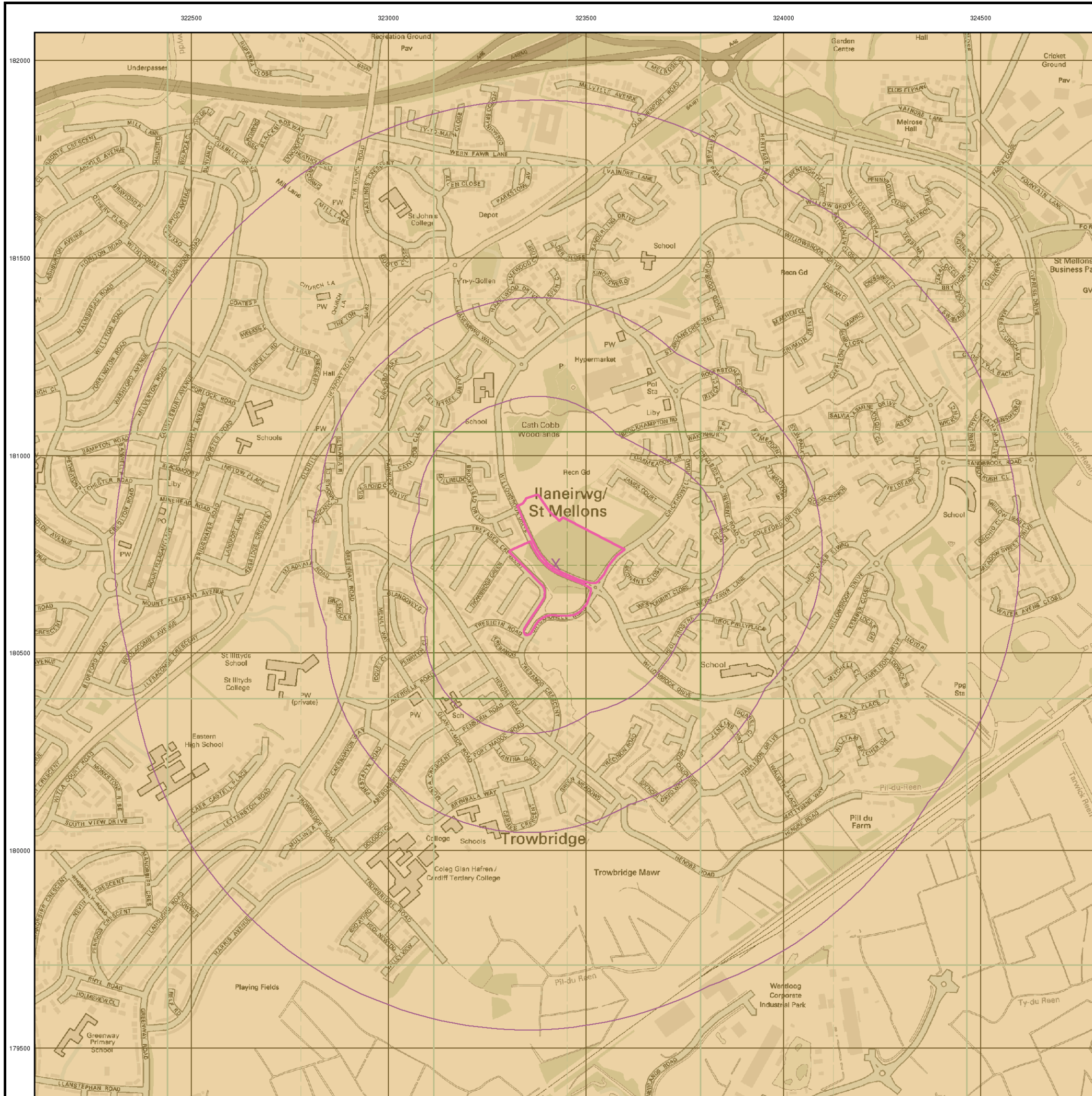
Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**

Site at 323440, 180740



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





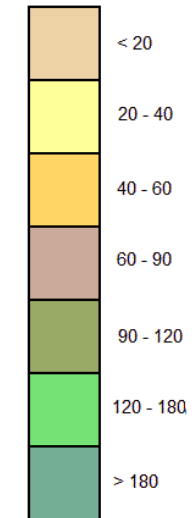
**General**

- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

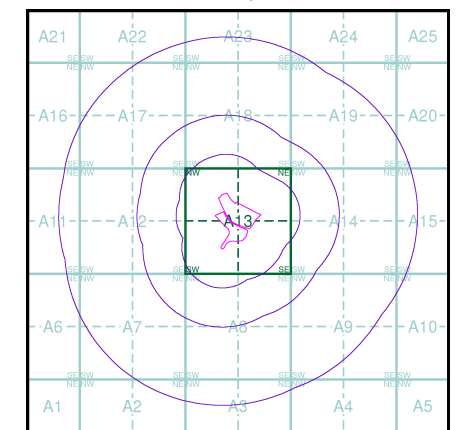
**Urban Soil Chemistry Chromium**

● BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Chromium Concentrations mg/kg



**Urban Soil Chemistry Chromium - Slice A**

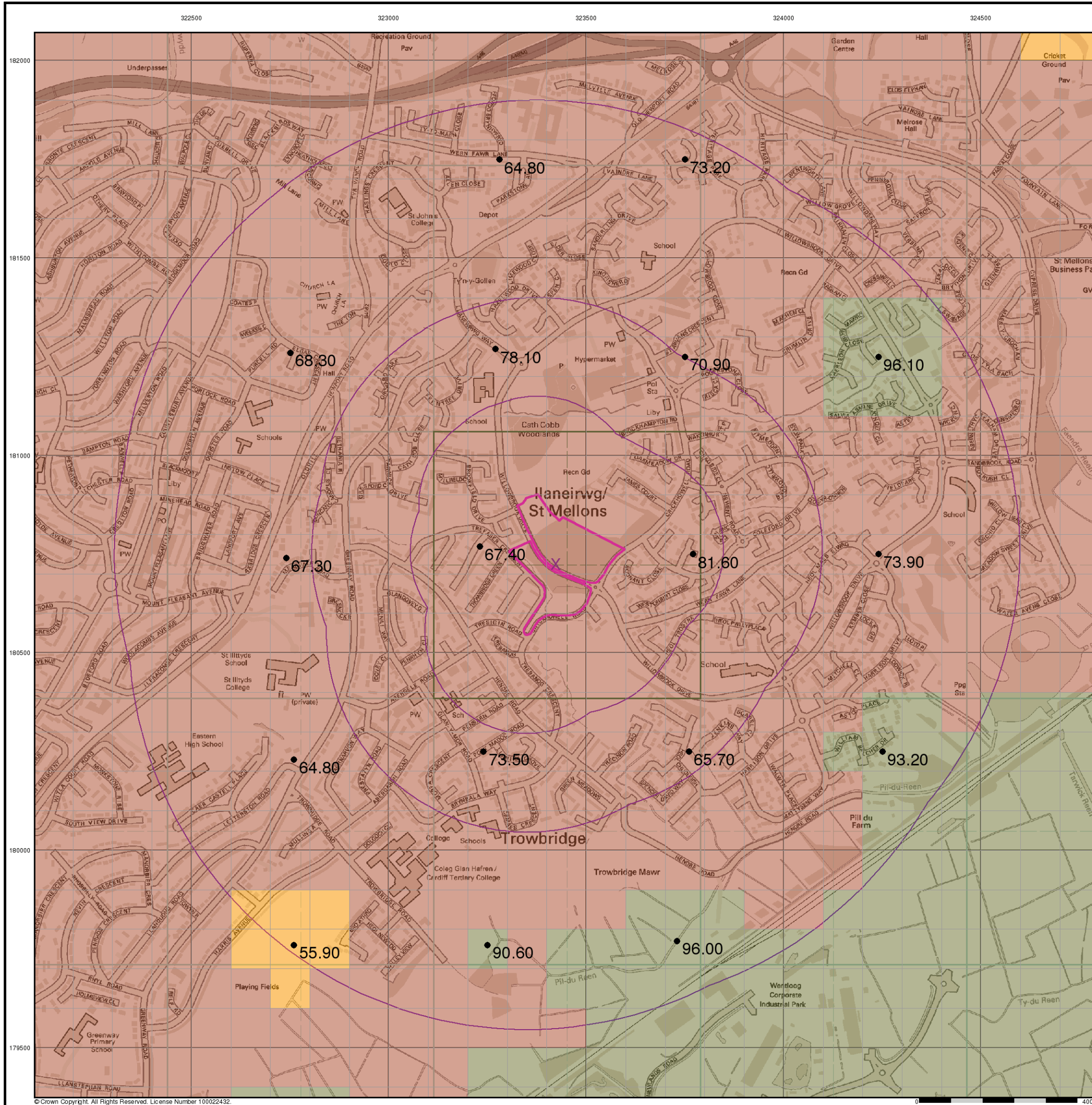


**Order Details**

Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**

Site at 323440, 180740





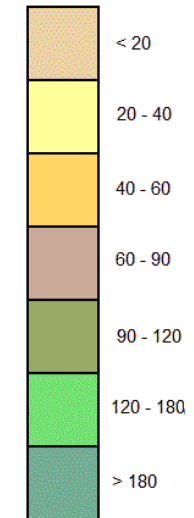


**General**

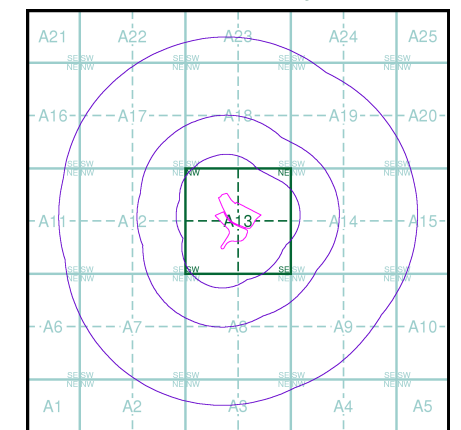
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point

**Estimated Soil Chemistry Chromium**

Chromium Concentrations mg/kg



**Estimated Soil Chemistry Chromium - Slice A**



**Order Details**

Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**

Site at 323440, 180740



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





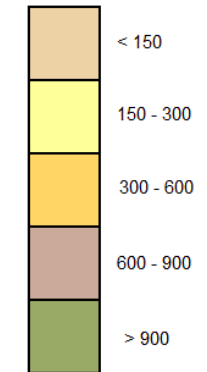
**General**

- ⬮ Specified Site
- ⬮ Specified Buffer(s)
- X Bearing Reference Point

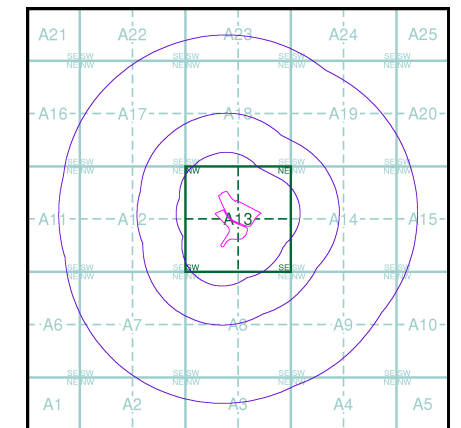
**Urban Soil Chemistry Lead**

● BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Lead Concentrations mg/kg



**Urban Soil Chemistry Lead - Slice A**



**Order Details**

Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**

Site at 323440, 180740



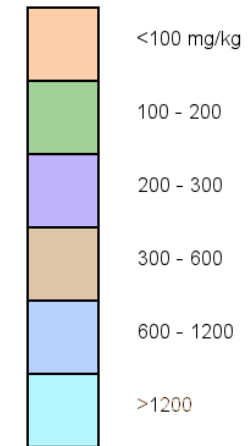


**General**

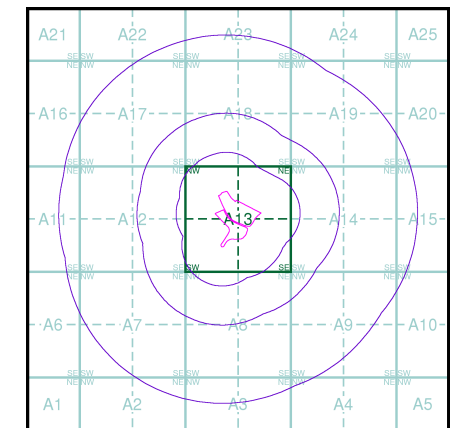
- Specified Site
- Specified Buffer(s)
- x Bearing Reference Point

**Estimated Soil Chemistry Lead**

Lead Concentrations mg/kg



**Estimated Soil Chemistry Lead - Slice A**

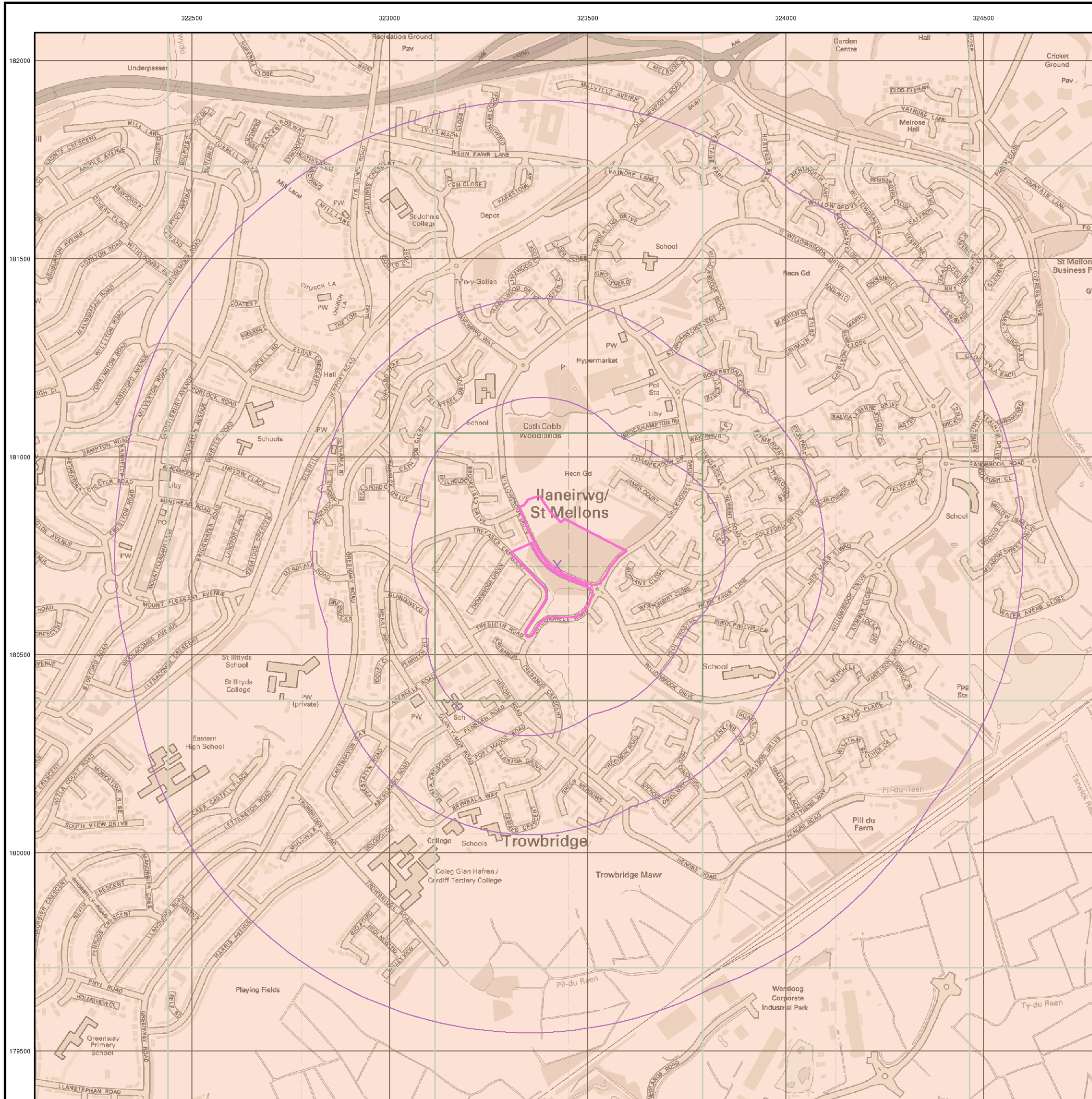


**Order Details**

Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**

Site at 323440, 180740





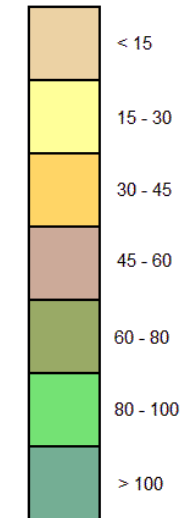
**General**

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

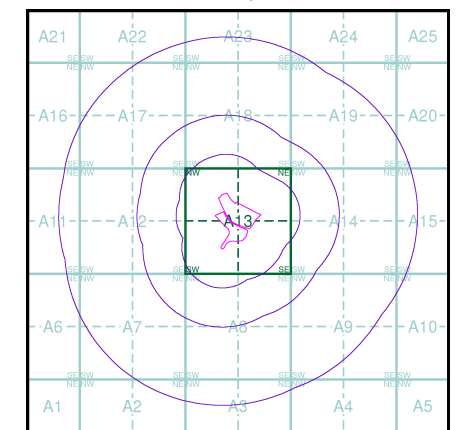
**Urban Soil Chemistry Nickel**

● BGS Urban Soil Chemistry Measured Concentration Values (mg/kg)

Nickel Concentrations mg/kg



**Urban Soil Chemistry Nickel - Slice A**

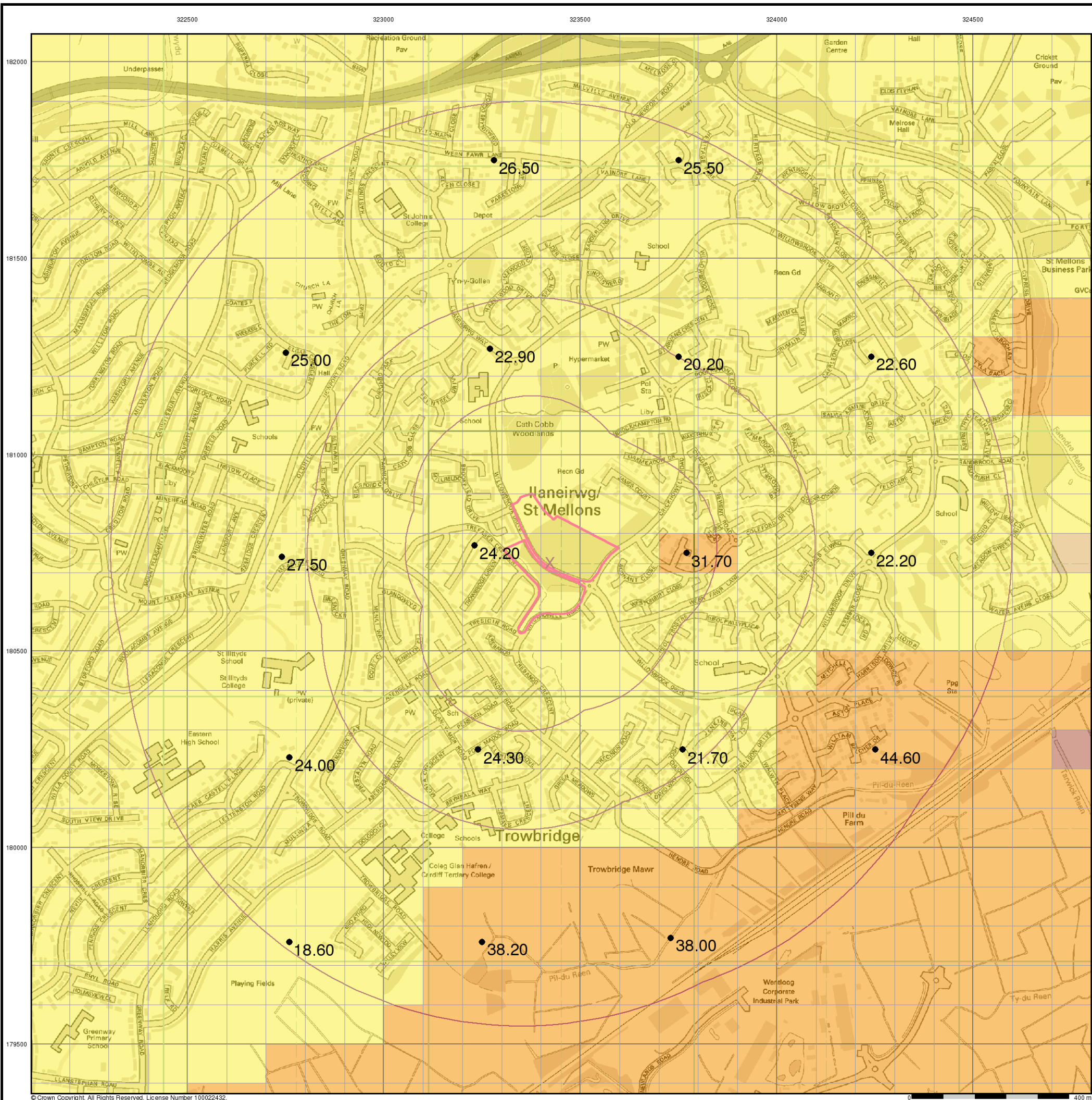


**Order Details**

Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**

Site at 323440, 180740



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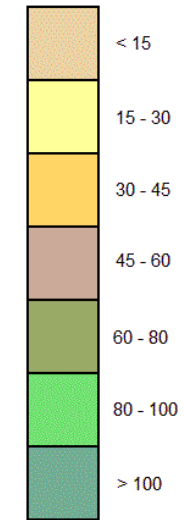


**General**

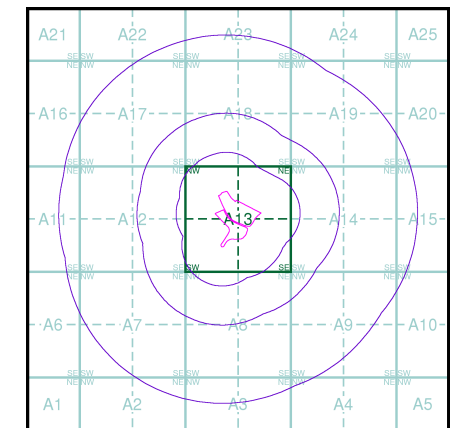
- Specified Site
- Specified Buffer(s)
- x Bearing Reference Point

**Estimated Soil Chemistry Nickel**

Nickel Concentrations mg/kg



**Estimated Soil Chemistry Nickel - Slice A**



**Order Details**

Order Details: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search buffer (m): 1000

**Site Details**

Site at 323440, 180740





# Historical Mapping Legends

## Ordnance Survey County Series 1:10,560

- Gravel Pit
- Sand Pit
- Other Pits
- Quarry
- Shingle
- Orchard
- Osiers
- Reeds
- Marsh
- Mixed Wood
- Deciduous
- Brushwood
- Fir
- Furze
- Rough Pasture
- Arrow denotes flow of water
- Trigonometrical Station
- Site of Antiquities
- Bench Mark
- Pump, Guide Post, Signal Post
- Well, Spring, Boundary Post
- 285** Surface Level
- Sketched Contour
- Instrumental Contour
- Main Roads
- Minor Roads
- Sunken Road
- Raised Road
- Road over Railway
- Railway over River
- Railway over Road
- Level Crossing
- Road over River or Canal
- Road over Stream
- Road over Stream
- County Boundary (Geographical)
- County & Civil Parish Boundary
- Administrative County & Civil Parish Boundary
- County Borough Boundary (England)
- County Burgh Boundary (Scotland)
- Rural District Boundary
- Civil Parish Boundary

## Ordnance Survey Plan 1:10,000

- Chalk Pit, Clay Pit or Quarry
- Gravel Pit
- Sand Pit
- Disused Pit or Quarry
- Refuse or Slag Heap
- Lake, Loch or Pond
- Dunes
- Boulders
- Coniferous Trees
- Non-Coniferous Trees
- Orchard
- Scrub
- Coppice
- Bracken
- Heath
- Rough Grassland
- Marsh
- Reeds
- Saltings
- Building
- Glasshouse
- Sloping Masonry
- Pylon
- Electricity Transmission Line
- Pole
- Cutting
- Embankment
- Standard Gauge Multiple Track
- Standard Gauge Single Track
- Siding, Tramway or Mineral Line
- Narrow Gauge
- Geographical County
- Administrative County, County Borough or County of City
- Municipal Borough, Urban or Rural District, Burgh or District Council
- Borough, Burgh or County Constituency  
Shown only when not coincident with other boundaries
- Civil Parish  
Shown alternately when coincidence of boundaries occurs
- BP, BS Boundary Post or Stone
- Ch Church
- CH Club House
- F E Sta Fire Engine Station
- FB Foot Bridge
- Fn Fountain
- GP Guide Post
- MP Mile Post
- MS Mile Stone
- Pol Sta Police Station
- PO Post Office
- PC Public Convenience
- PH Public House
- SB Signal Box
- Spr Spring
- TCB Telephone Call Box
- TCP Telephone Call Post
- W Well

## 1:10,000 Raster Mapping

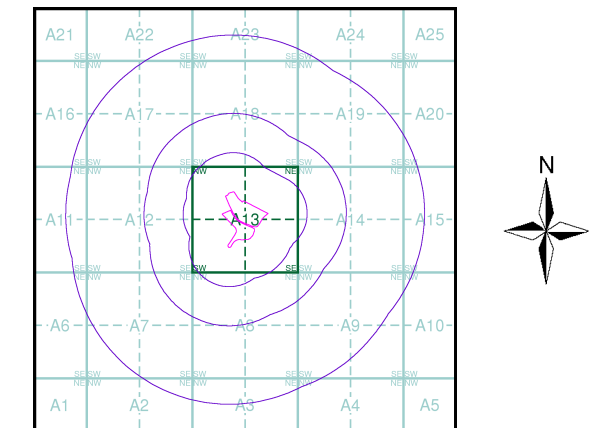
- Gravel Pit
- Rock
- Boulders
- Shingle
- Sand
- Slopes
- General detail
- Overhead detail
- Multi-track railway
- County boundary (England only)
- District, Unitary, Metropolitan, London Borough boundary
- Area of wooded vegetation
- Non-coniferous trees (scattered)
- Coniferous trees (scattered)
- Orchard
- Rough Grassland
- Scrub
- Water feature
- MHW(S) Mean high water (springs)
- Telephone line (where shown)
- Bench mark (where shown)
- Point feature (e.g. Guide Post or Mile Stone)
- Site of (antiquity)
- General Building
- Refuse tip or slag heap
- Rock (scattered)
- Boulders (scattered)
- Mud
- Sand Pit
- Top of cliff
- Underground detail
- Narrow gauge railway
- Single track railway
- Civil, parish or community boundary
- Constituency boundary
- Non-coniferous trees
- Coniferous trees
- Positioned tree
- Coppice or Osiers
- Heath
- Marsh, Salt Marsh or Reeds
- Flow arrows
- MLW(S) Mean low water (springs)
- Electricity transmission line (with poles)
- Triangulation station
- Pylon, flare stack or lighting tower
- Glasshouse
- Important Building



## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Monmouthshire	1:10,560	1885 - 1887	3
Glamorganshire	1:10,560	1886	4
Monmouthshire	1:10,560	1887	5
Glamorganshire	1:10,560	1901	6
Monmouthshire	1:10,560	1902	7
Glamorganshire	1:10,560	1922	8
Glamorganshire	1:10,560	1938 - 1953	9
Historical Aerial Photography	1:10,560	1947	10
Historical Aerial Photography	1:10,560	1947	11
Glamorganshire	1:10,560	1952 - 1954	12
Ordnance Survey Plan	1:10,000	1964 - 1965	13
Ordnance Survey Plan	1:10,000	1972 - 1975	14
Cardiff	1:10,000	1982	15
Ordnance Survey Plan	1:10,000	1983 - 1989	16
Ordnance Survey Plan	1:10,000	1993	17
10K Raster Mapping	1:10,000	1999	18
Historical Aerial Photography	1:10,000	2000	19
10K Raster Mapping	1:10,000	2006	20
VectorMap Local	1:10,000	2016	21

## Historical Map - Slice A



## Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

## Site Details

Site at 323440, 180740



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

# 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-fireproof Building (non-dwelling)
	Factory, mill, and flour mill, with chimneys		Factory, mill, and flour mill, without 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
	Pit		Oil Deposit or Well
	Oil Seepage		Natural Gas Tank
	Tailings Pile		Fuel Storage Tanks
	Bench Mark		Drill Hole
	Burial Mound		Triangulation Point on Burial Mound
	Single-track Railroad		Double-track Railroad
	Railroad and Station Building		Small Bridge
	Pipe (Culvert)		Tunnel
	Coniferous Forest		Deciduous Forest
	Mixed Forest		Lawns
	Citrus Orchard		Wet Ground
	Scattered Vegetation		

**243,8** Values for prominent elevations  
**186.0** Numbers for spot elevations, depth soundings, contour lines, etc.  
**0,2** Velocity of the current, width of river bed, depth of river  
**180/12** Fractional terms: length and capacity of bridges; depth of 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)

<b>А а (A)</b>	<b>З з (Z)</b>	<b>П п (P)</b>	<b>Ч ч (CH)</b>
<b>Б б (B)</b>	<b>И и (I)</b>	<b>Р р (R)</b>	<b>Ш ш (SH)</b>
<b>В в (V)</b>	<b>Й й (Y)</b>	<b>С с (S)</b>	<b>Щ щ (SHCH)</b>
<b>Г г (G)</b>	<b>К к (K)</b>	<b>Т т (T)</b>	<b>Ъ (-)</b>
<b>Д д (D)</b>	<b>Л л (L)</b>	<b>У у (U)</b>	<b>Ы (Y)</b>
<b>Е е (E)</b>	<b>М м (M)</b>	<b>Ф ф (F)</b>	<b>Ь (')</b>
<b>Ё ё (YO)</b>	<b>Н н (N)</b>	<b>Х х (KH)</b>	<b>Э э (E)</b>
<b>Ж ж (ZH)</b>	<b>О о (O)</b>	<b>Ц ц (TS)</b>	<b>Ю ю (YU or IU)</b>
			<b>Я я (YA or IA)</b>

## 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, Fireproof		Ruins of an Individual Dwelling
	Factory or Mill Chimney		Factory or Mill with Chimney
	Factory or Mill without Chimney		Salt Mine
	Mine or Open Pit Mine		Tailings Pile
	Operating Shaft or Mine		Non-Operating Shaft or Mine
	Pit		Stone Quarry
	Gas Pump or Service Station		Fuel Storage or Natural Gas Tank
	Oil or Natural Gas Derrick		Small Hydroelectric Power Station
	Power Station		Transformer Station
	Cemetery		Burial Mound (height in metres)
	Triangulation Point on Burial Mound		Triangulation Point
	Bench Mark		Bench Mark (monumented)
	Telegraph Office		Telephone Station
	Radio Station		Radio Tower
	Airfield or Seaplane Base		Landing Strip
	Cut		Fill
	Km Post		Plantings
	Telegraph/Telephone Lines		Main Highway
	Highway under Construction		Improved Dirt Road (former truck road)
	Small Bridge		Pipe (Culvert)
	Tunnel		Dismantled Railroad
	Double-track Railroad with First Class Station		Railroad Under Construction
	Shore Embankment		River or Ditch with Embankment
	Water Reservoir or Rain Water Pit		Spring
	Isobath with value		Water Gauge
	Direction and velocity of current		Water Level Mark
	Well		Contour Line and Value
	Half Contour Line		Spot Elevation Value
	Coniferous		Deciduous
	Mixed		Scrub

## Key to Numbers on Mapping

### ST28SW\_Cardiff

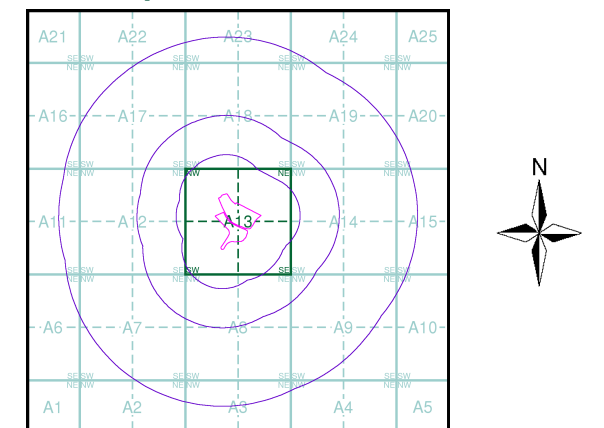
No.	Description
36	Factory (Metal Works)



## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Monmouthshire	1:10,560	1885 - 1887	3
Glamorganshire	1:10,560	1886	4
Monmouthshire	1:10,560	1887	5
Glamorganshire	1:10,560	1901	6
Monmouthshire	1:10,560	1902	7
Glamorganshire	1:10,560	1922	8
Glamorganshire	1:10,560	1938 - 1953	9
Historical Aerial Photography	1:10,560	1947	10
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Ordnance Survey Plan	1:10,000	1964 - 1965	13
Ordnance Survey Plan	1:10,000	1972 - 1975	14
Cardiff	1:10,000	1982	15
Ordnance Survey Plan	1:10,000	1983 - 1989	16
Ordnance Survey Plan	1:10,000	1993	17
10K Raster Mapping	1:10,000	1999	18
Historical Aerial Photography	1:10,000	2000	19
10K Raster Mapping	1:10,000	2006	20
VectorMap Local	1:10,000	2016	21

## Russian Map - Slice A



## Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

## Site Details

Site at 323440, 180740



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### Monmouthshire

Published 1885 - 1887

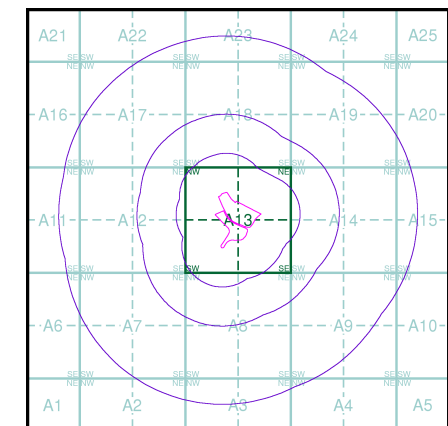
Source map scale - 1:10,560

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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)

03200 1885 1:10,560	03300 1887 1:10,560
	03800 1886 1:10,560

### Historical Map - Slice A



### Order Details

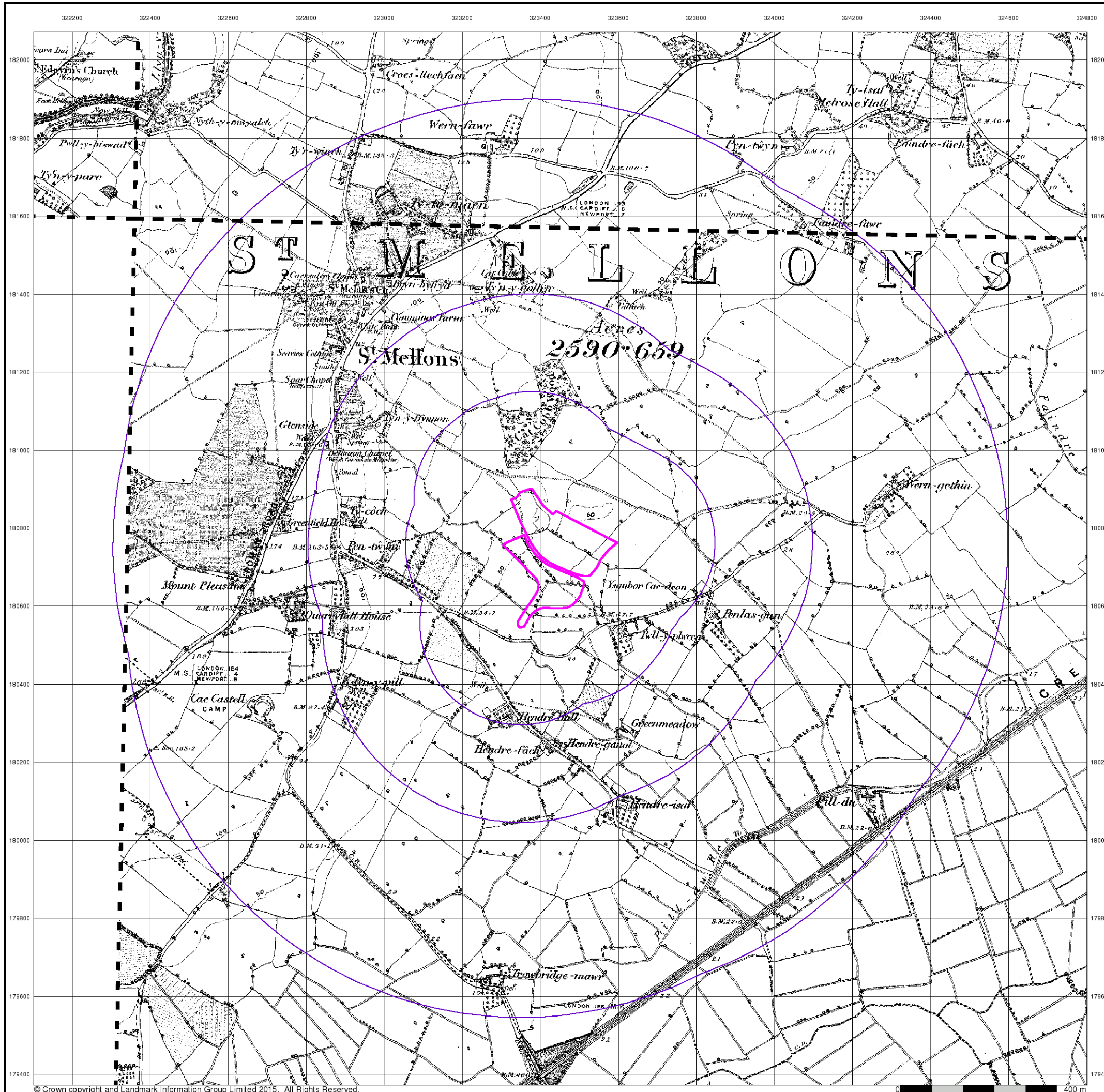
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 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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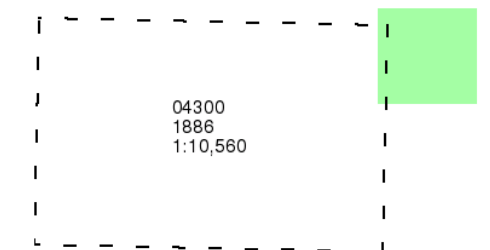
## Glamorganshire

Published 1886

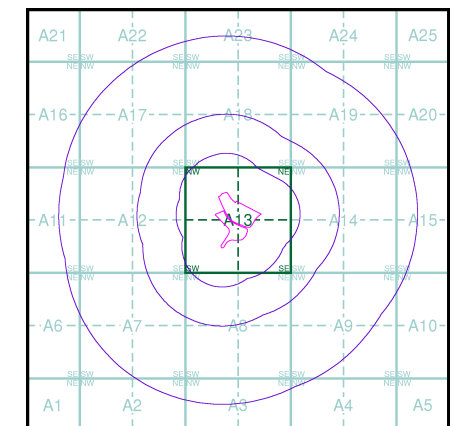
Source map scale - 1:10,560

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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

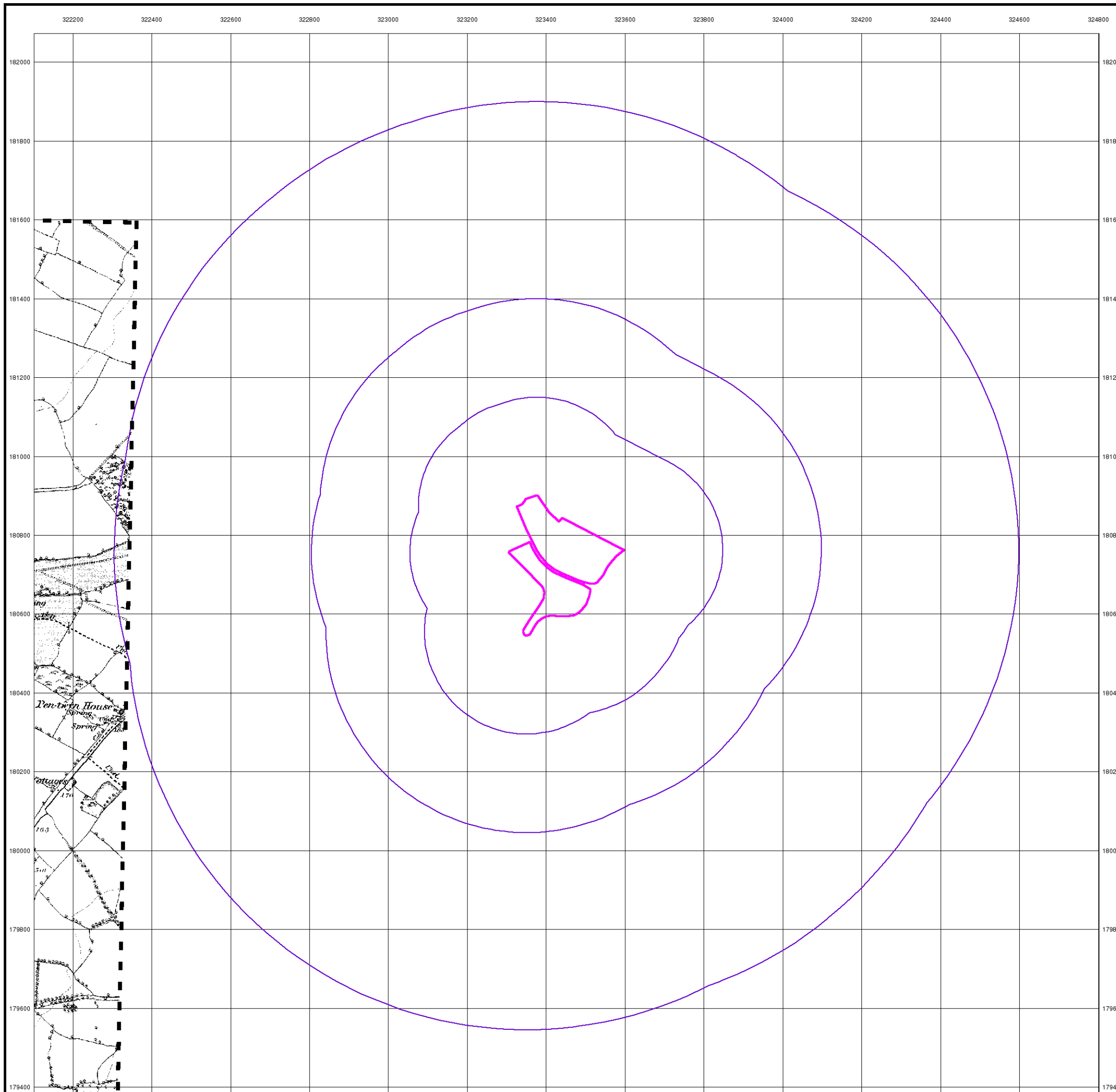
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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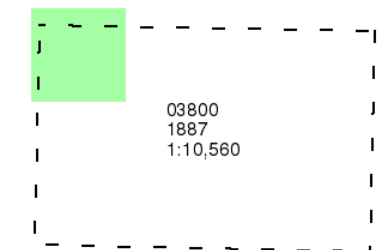
## Monmouthshire

Published 1887

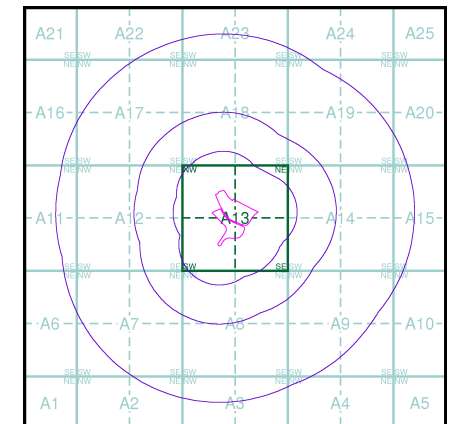
Source map scale - 1:10,560

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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

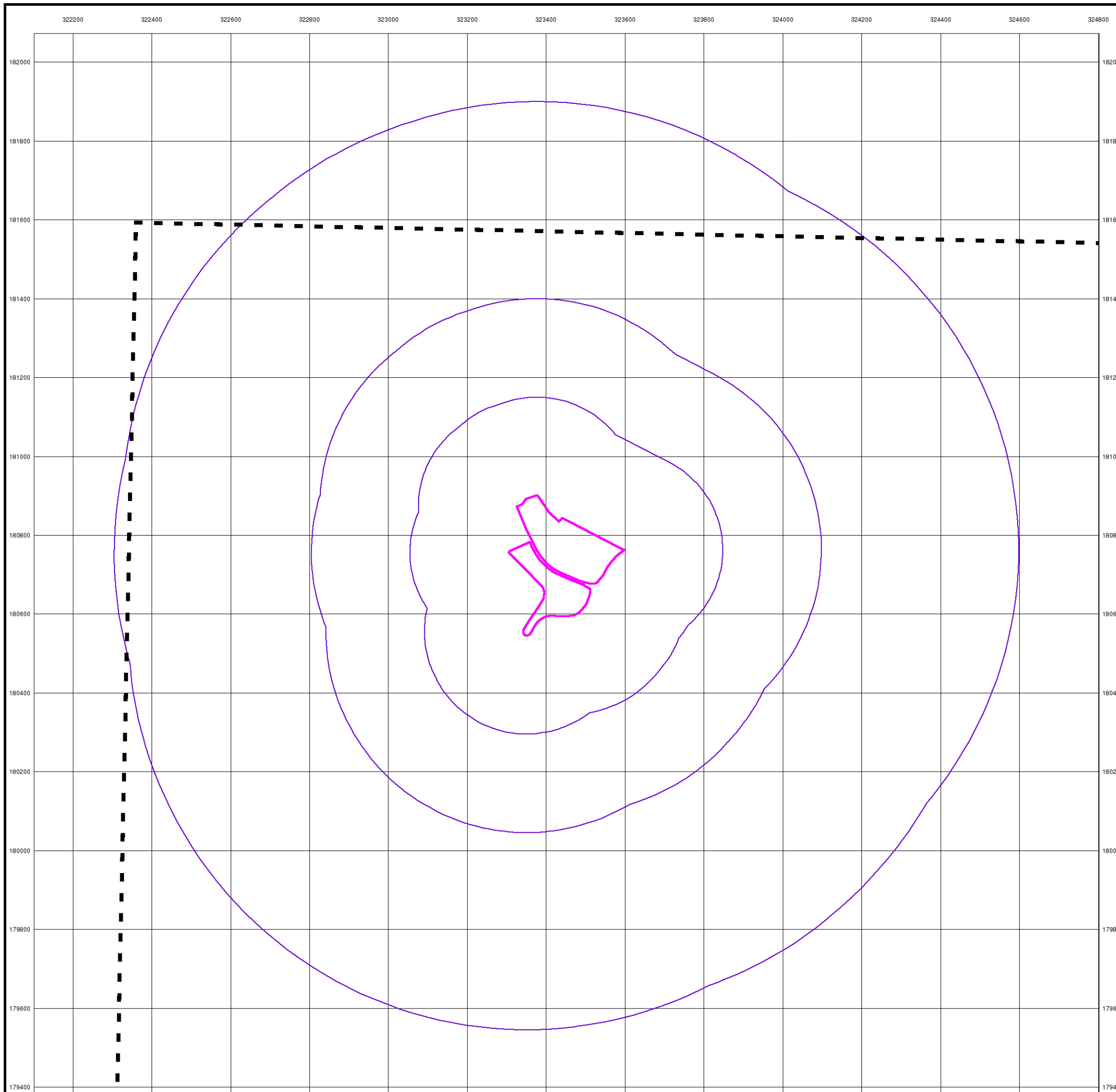
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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### Glamorganshire

Published 1901

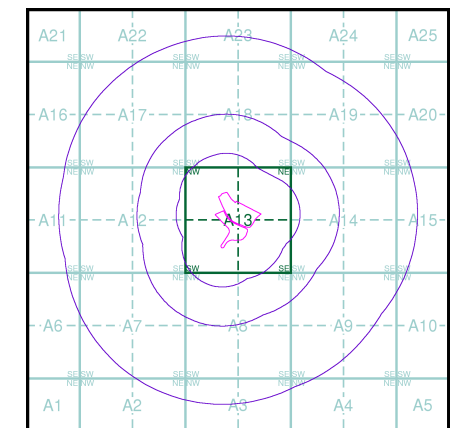
Source map scale - 1:10,560

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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)

037SE 1901 1:10,560	038SW 1901 1:10,560
043NE 1901 1:10,560	

### Historical Map - Slice A



### Order Details

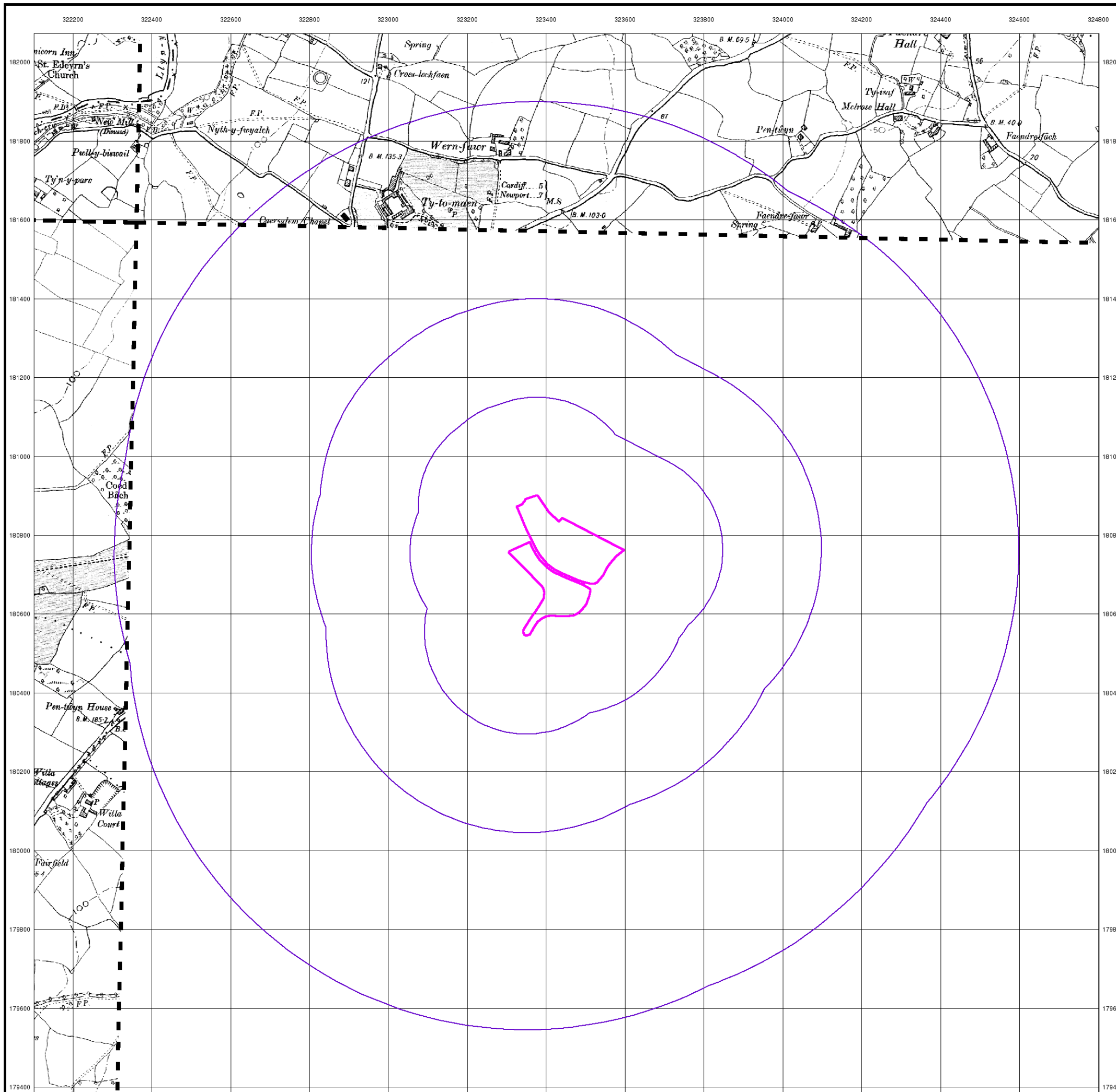
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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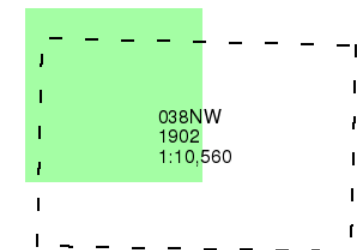
### Monmouthshire

Published 1902

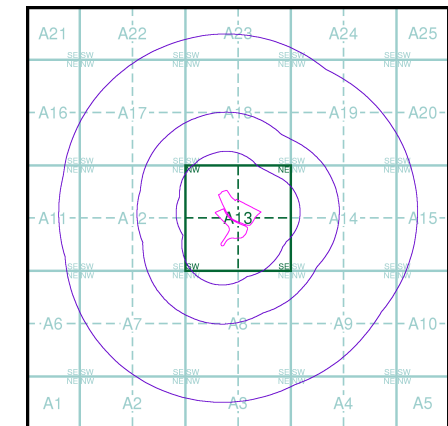
Source map scale - 1:10,560

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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

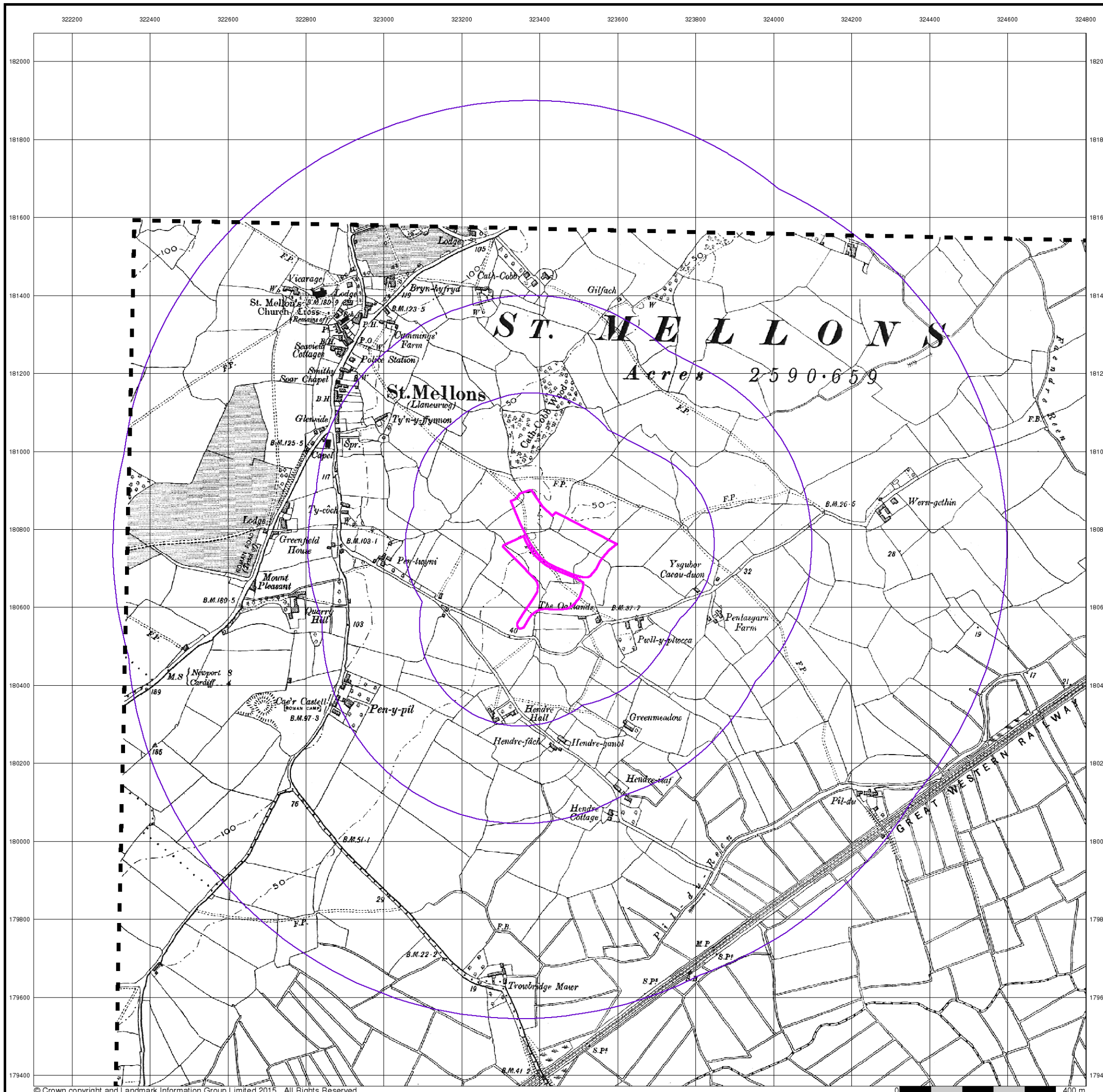
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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







### Glamorganshire

Published 1922

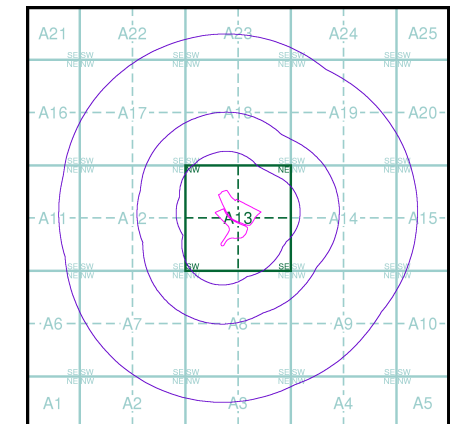
Source map scale - 1:10,560

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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)

037SE	038SW
1922	1922
1:10,560	1:10,560
043NE	043A00
1922	1922
1:10,560	1:10,560

### Historical Map - Slice A



### Order Details

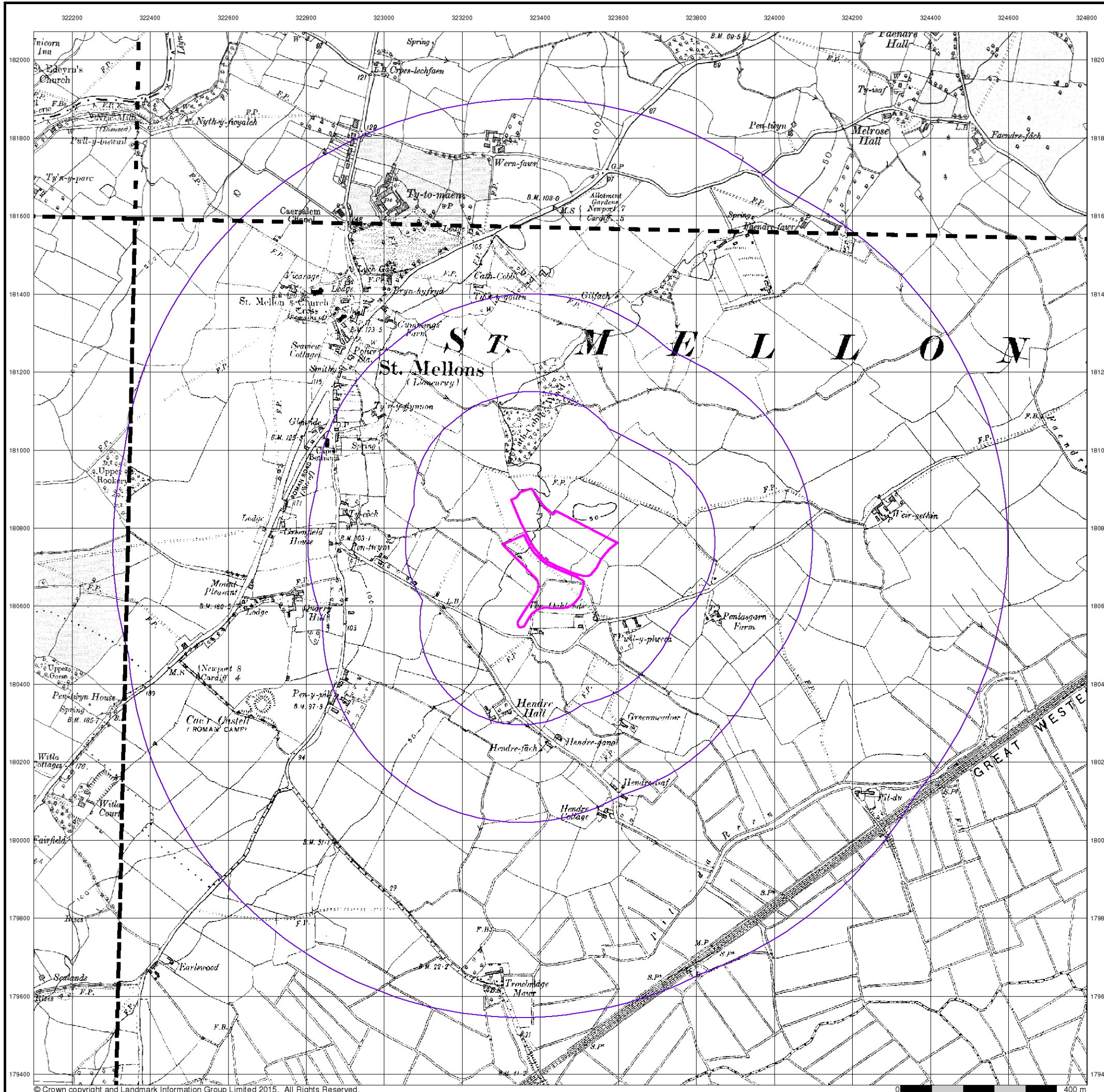
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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 Fax: 0844 844 9951  
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### Glamorganshire

Published 1938 - 1953

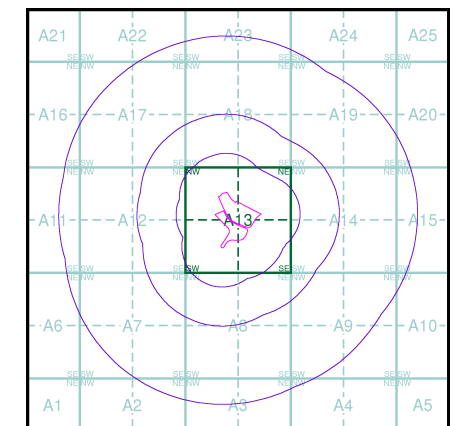
Source map scale - 1:10,560

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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)

037SE	038SW
1938	1953
1:10,560	1:10,560
043NE	043A00
1938	1947
1:10,560	1:10,560

### Historical Map - Slice A



### Order Details

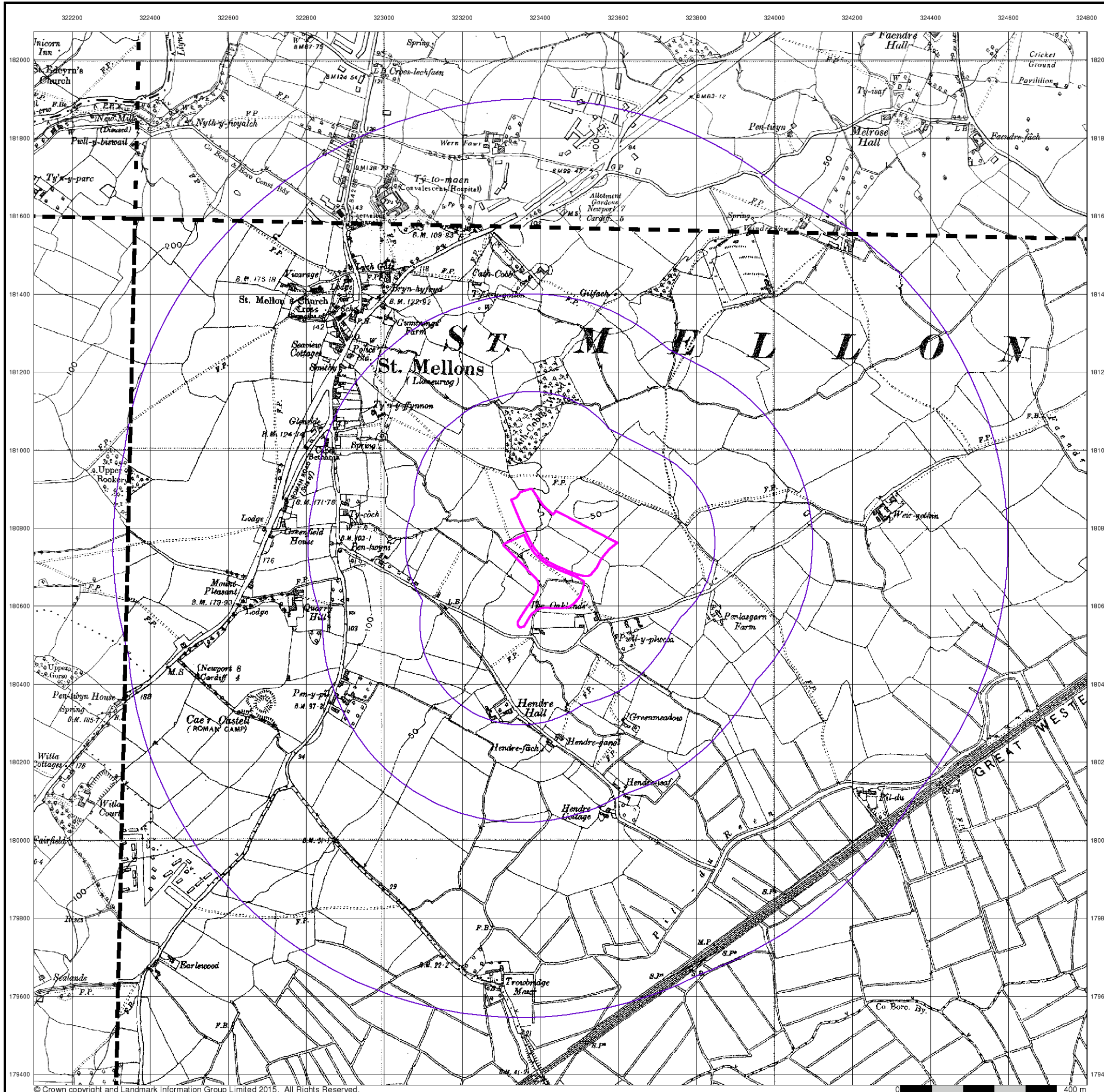
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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







## Historical Aerial Photography

Published 1947

Source map scale - 1:10,560

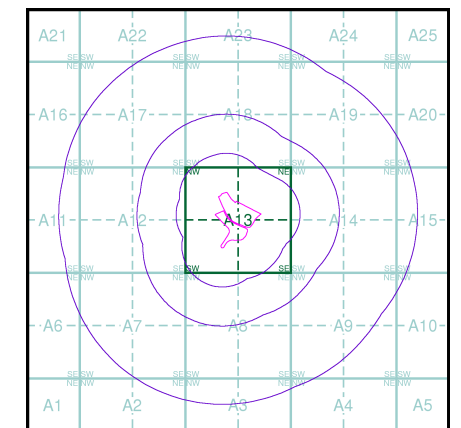
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.

© Landmark Information Group and/or Data Suppliers 2010.

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

ST28SW
1947
1:10,560
ST27NW
1947
1:10,560

### Historical Aerial Photography - Slice A



### Order Details

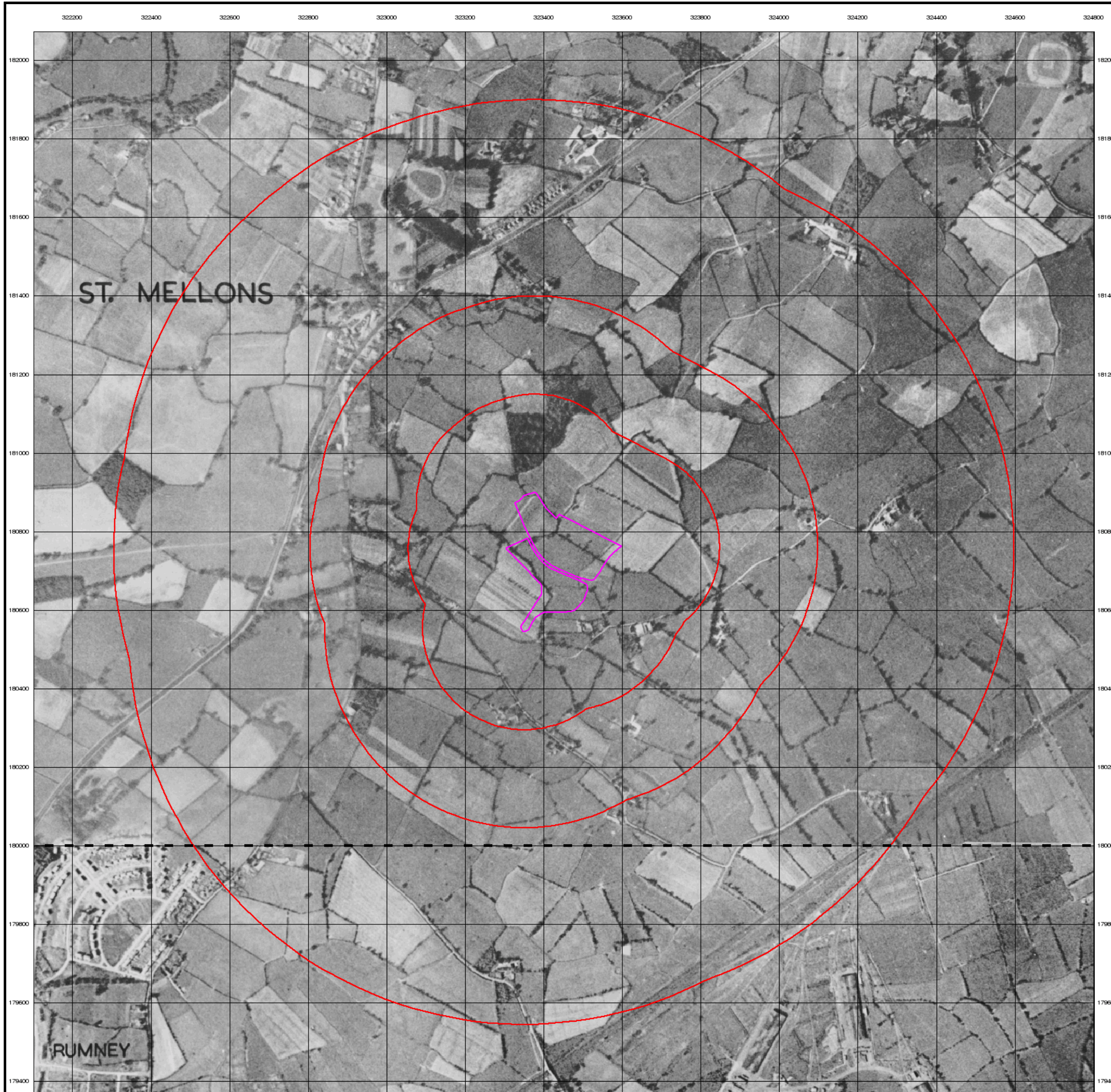
Order Number:	84845006_1_1
Customer Ref:	13601
National Grid Reference:	323420, 180730
Slice:	A
Site Area (Ha):	4.5
Search Buffer (m):	1000

### Site Details

Site at 323440, 180740



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







## Historical Aerial Photography

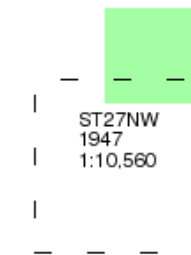
Published 1947

Source map scale - 1:10,560

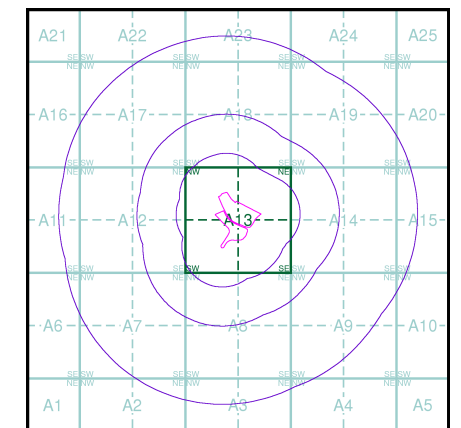
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 1950's meant that every photograph was re-checked for potentially unsafe information with security sites replaced by fake fields or clouds. The original editions were withdrawn and only later made available after a period of fifty years although due to the accuracy of the editing, without viewing both revisions it is not easy to spot the edits. Where available Landmark have included both revisions.

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



### Historical Aerial Photography - Slice A



### Order Details

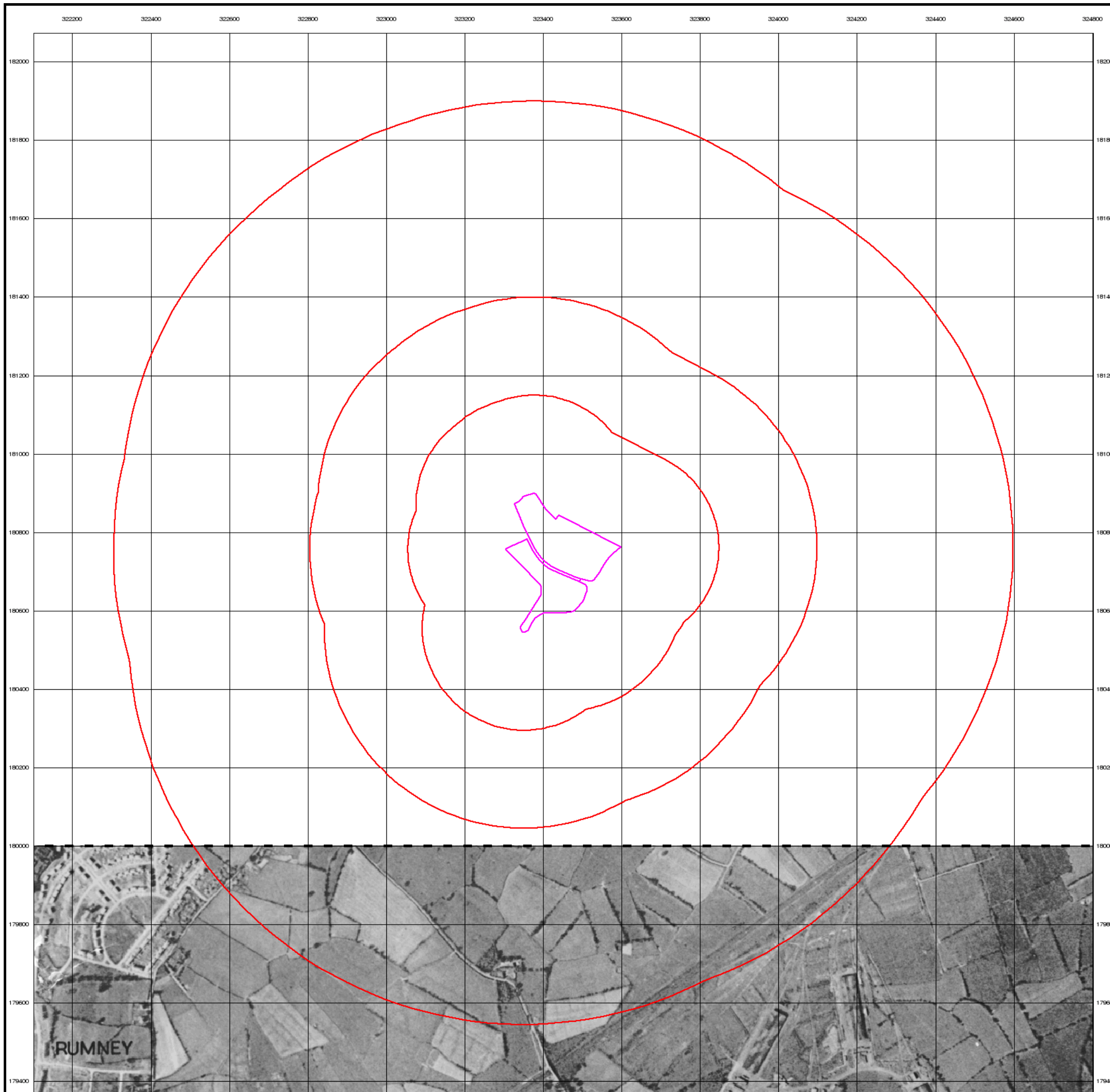
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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### Ordnance Survey Plan

Published 1964 - 1965

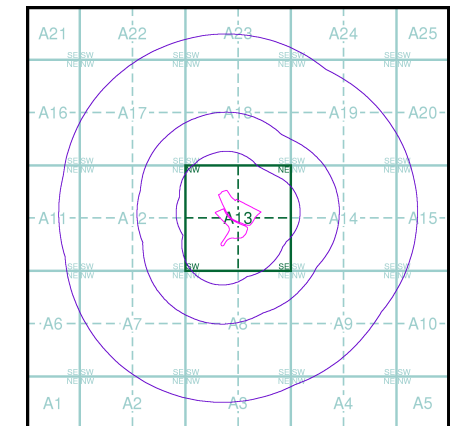
Source map scale - 1:10,000

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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)

ST28SW	1964
1:10,560	
ST27NW	1965
1:10,560	

### Historical Map - Slice A



### Order Details

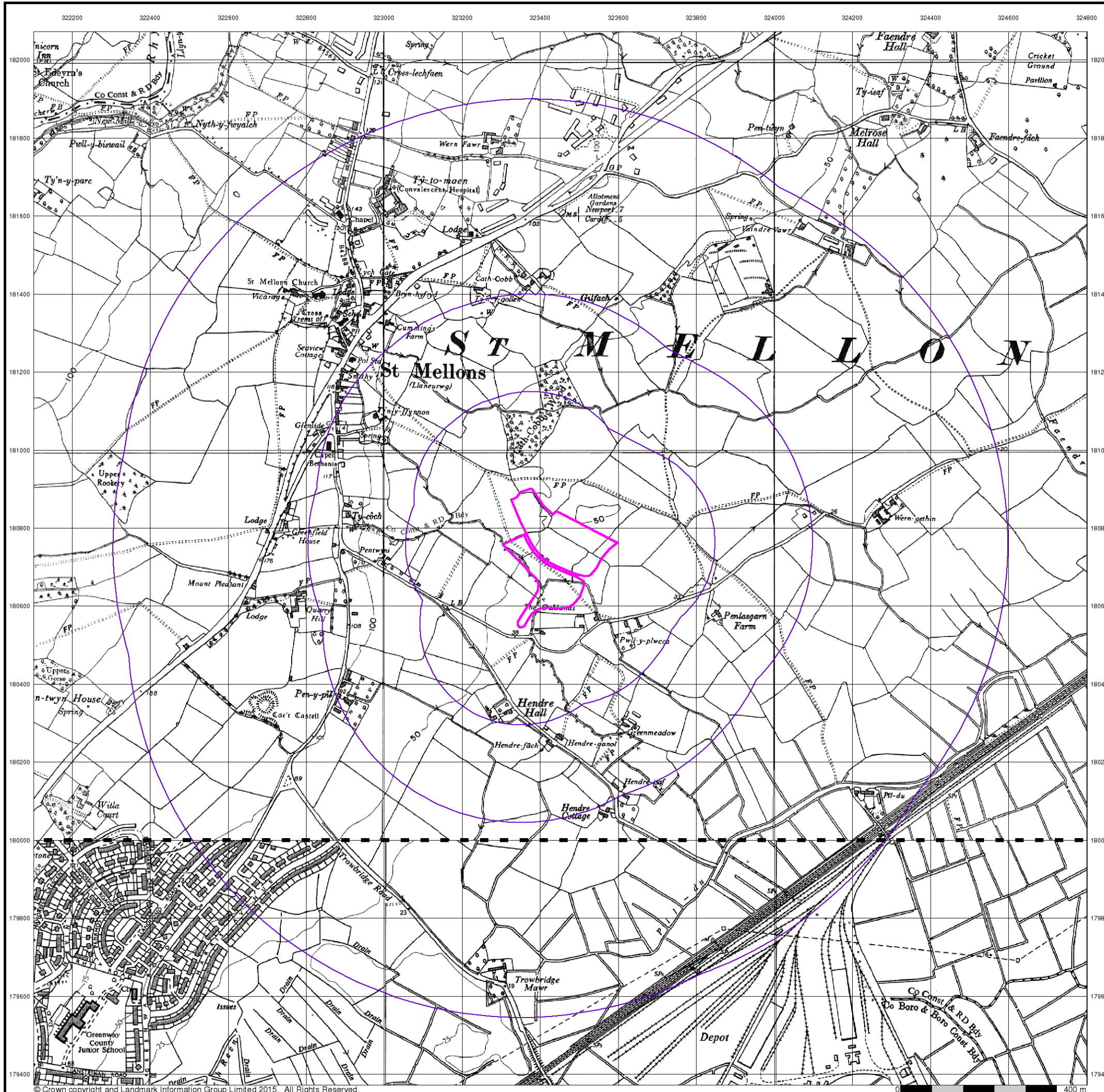
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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







### Ordnance Survey Plan

Published 1972 - 1975

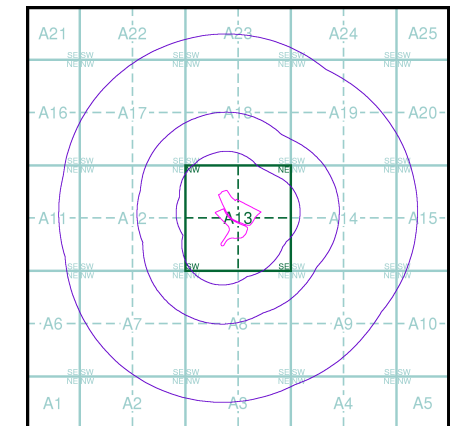
Source map scale - 1:10,000

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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)

ST28SW	1972
1:10,000	
ST27NW	1975
1:10,000	

### Historical Map - Slice A



### Order Details

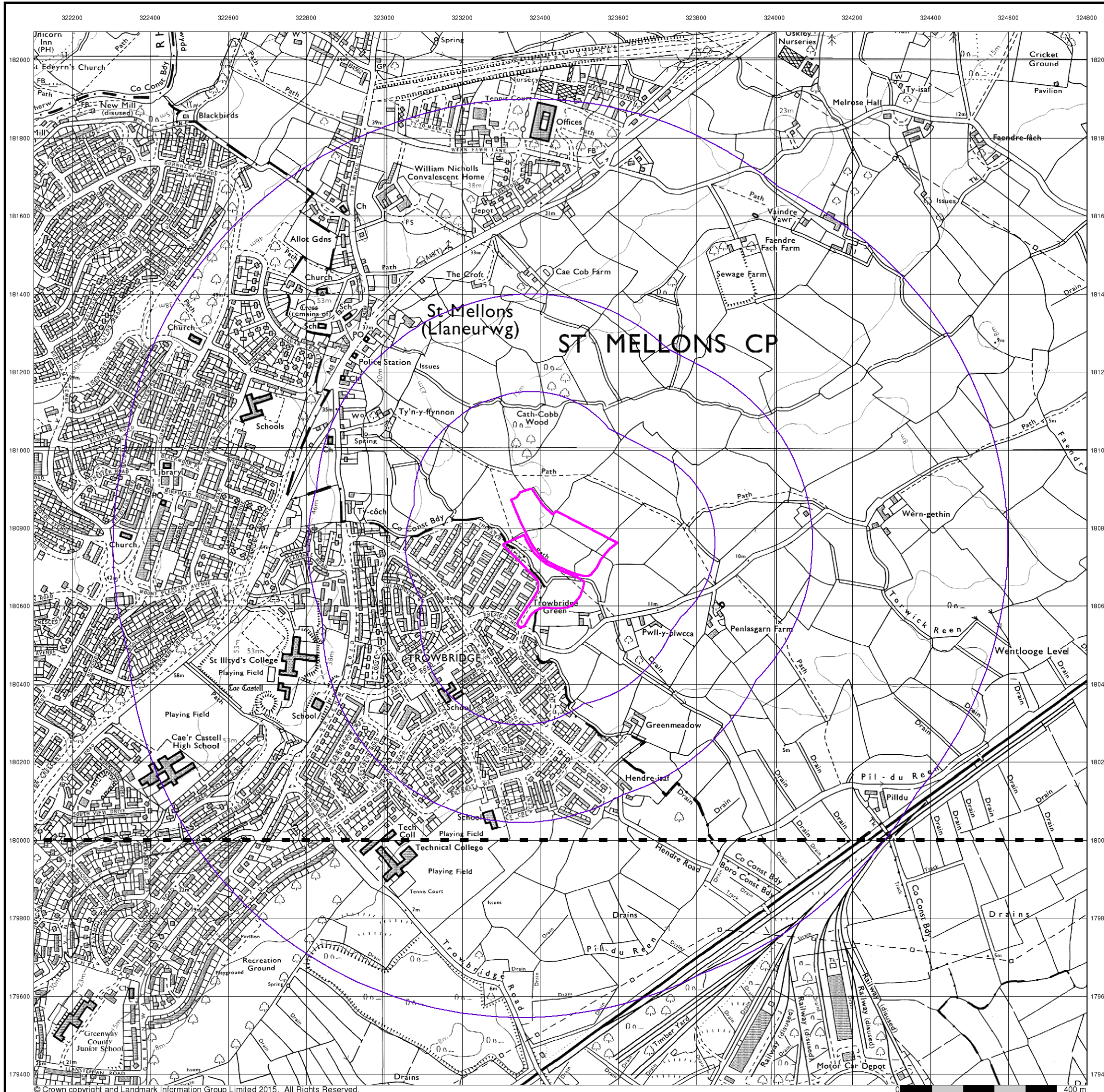
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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







### Cardiff

Published 1982

Source map scale - 1:10,000

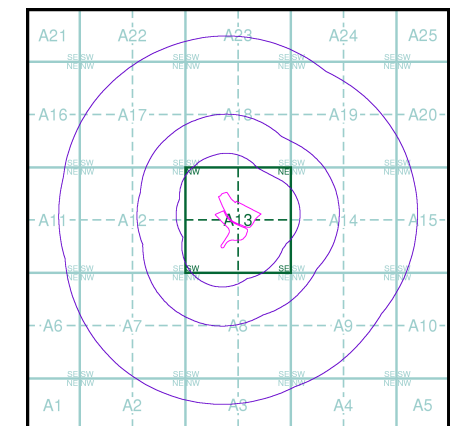
These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important 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)

ST28SW  
1982  
1:10,000  
ST27NW  
1982  
1:10,000

### Russian Map - Slice A



### Order Details

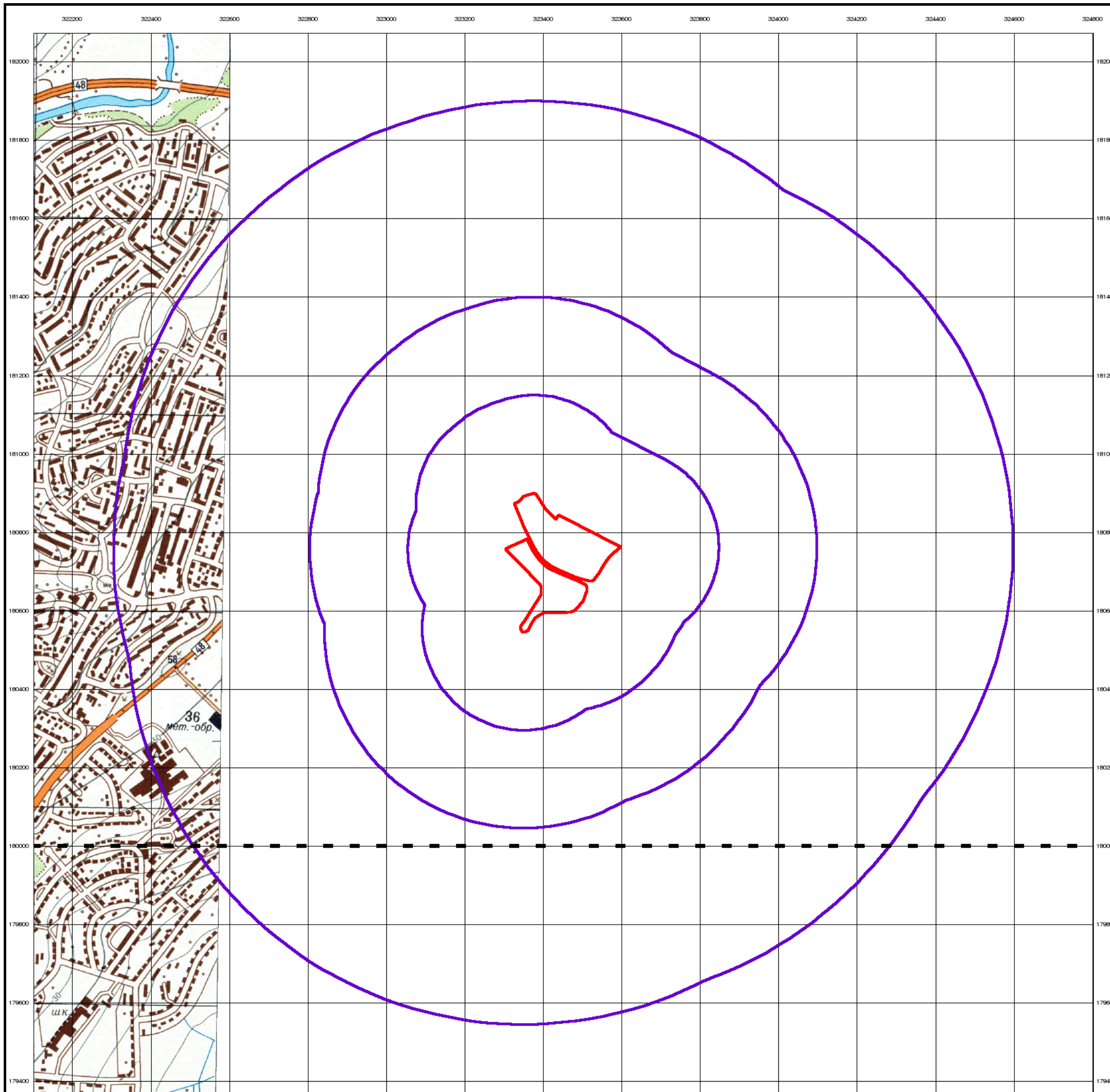
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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Web: www.envirocheck.co.uk







### Ordnance Survey Plan

Published 1983 - 1989

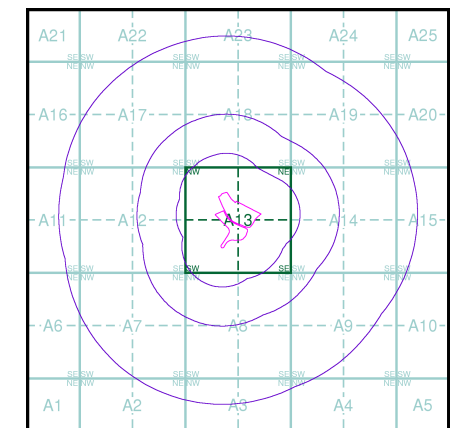
Source map scale - 1:10,000

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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)

ST28SW	1983
1:10,000	
ST27NW	1989
1:10,000	

### Historical Map - Slice A



### Order Details

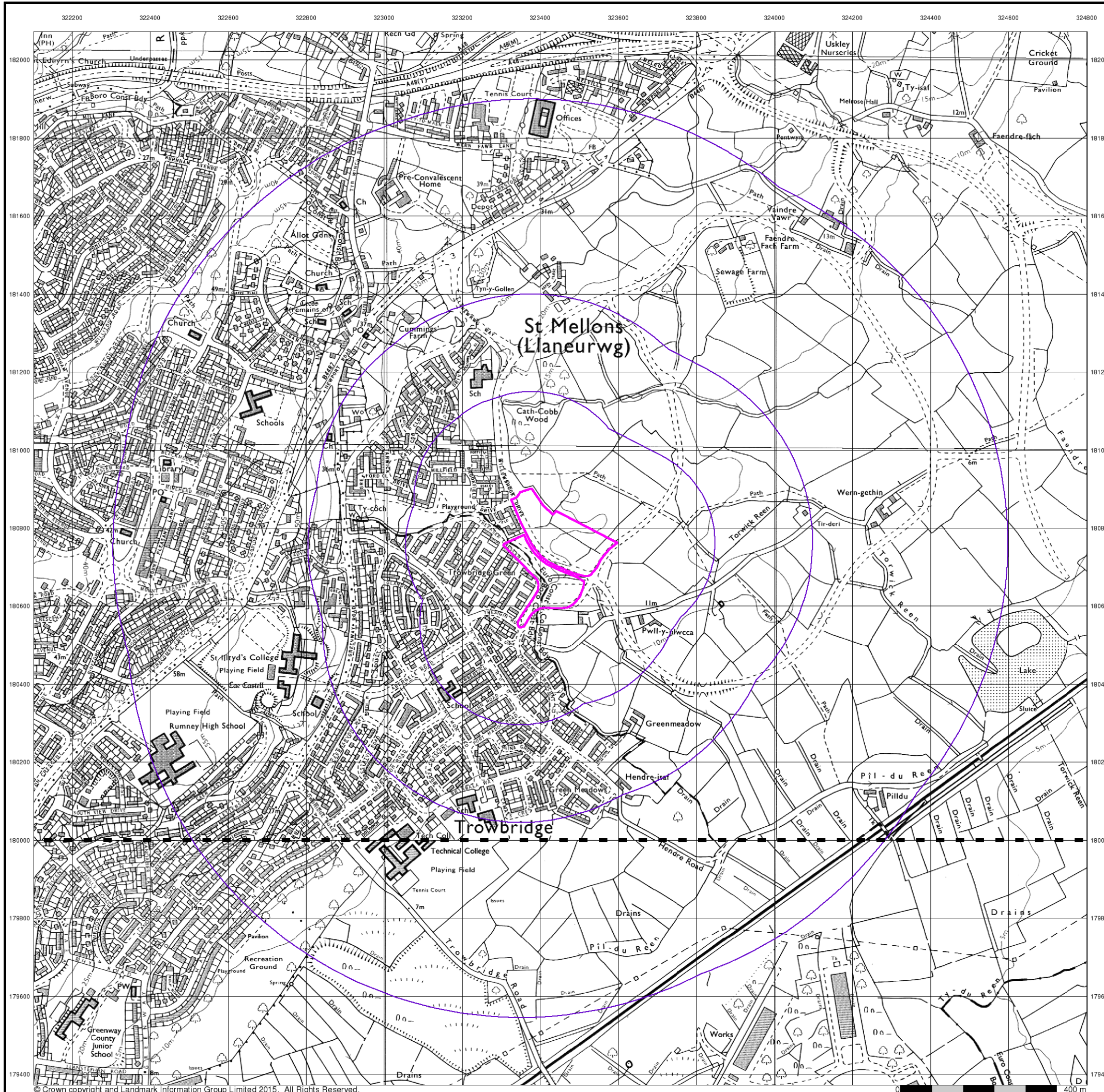
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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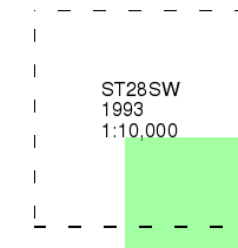
### Ordnance Survey Plan

Published 1993

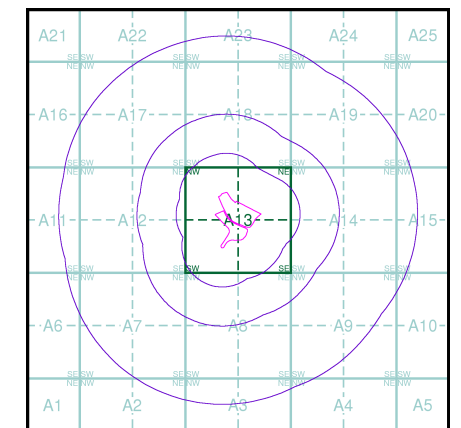
Source map scale - 1:10,000

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; these maps were used to update the 1:10,560 maps. The published date given therefore 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. 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: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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### 10k Raster Mapping

Published 1999

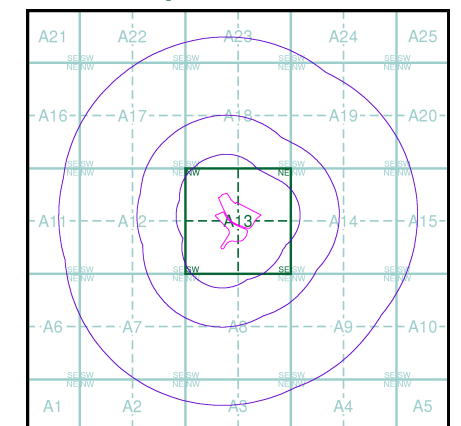
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

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

ST28SW	1999	1:10,000
ST27NW	1999	1:10,000

#### Historical Map - Slice A



#### Order Details

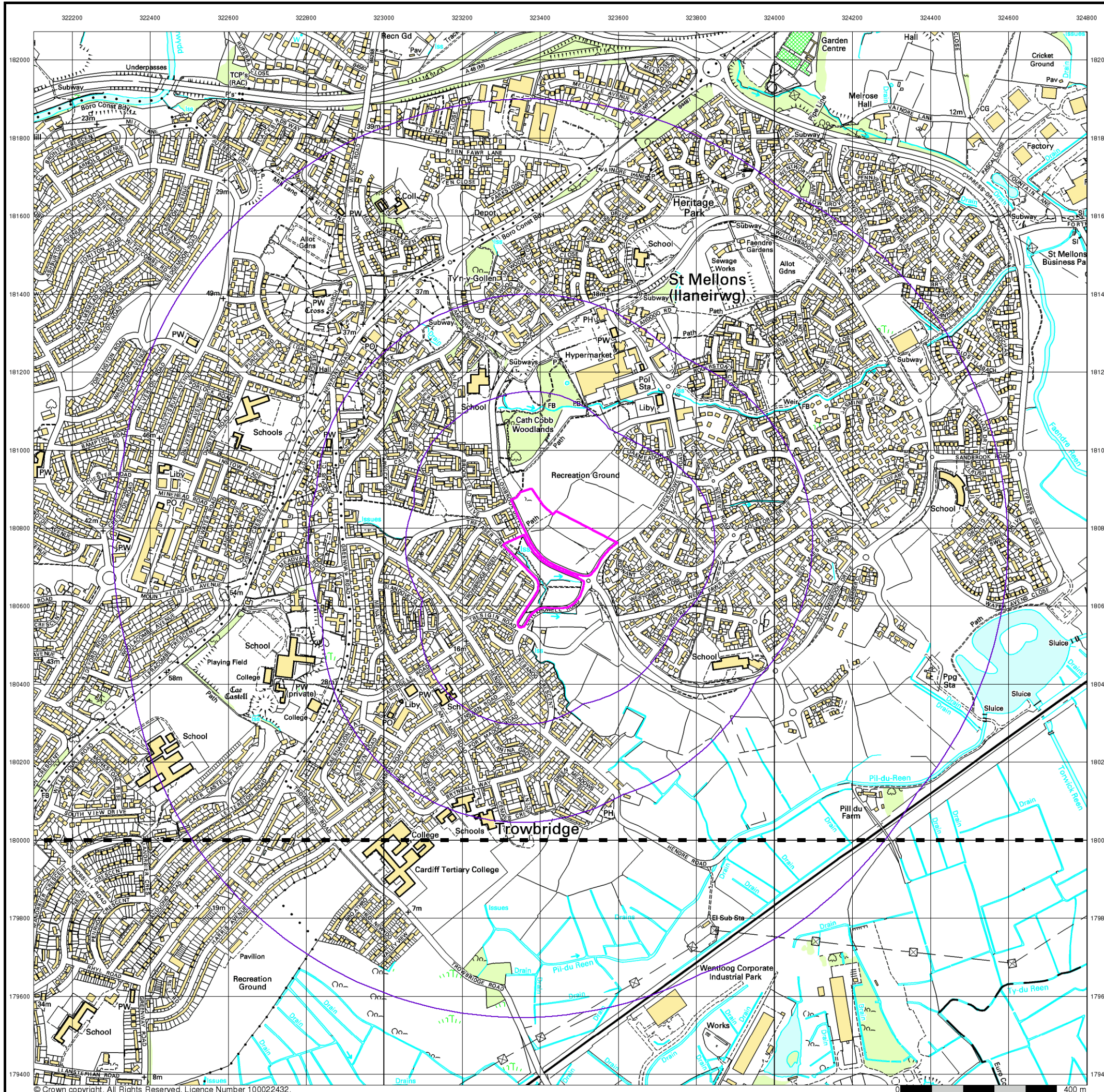
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

#### Site Details

Site at 323440, 180740



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322200 322400 322600 322800 323000 323200 323400 323600 323800 324000 324200 324400 324600 324800

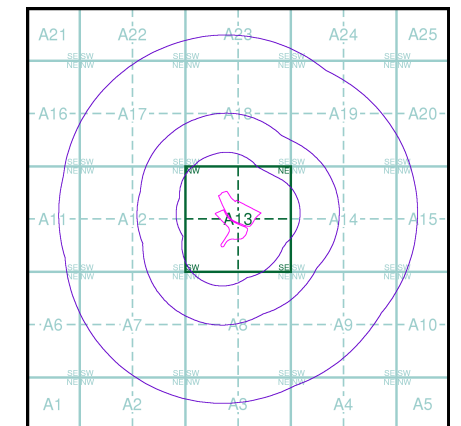


## Historical Aerial Photography

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 - Slice A



### Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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 Fax: 0844 844 9951  
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### 10k Raster Mapping

Published 2006

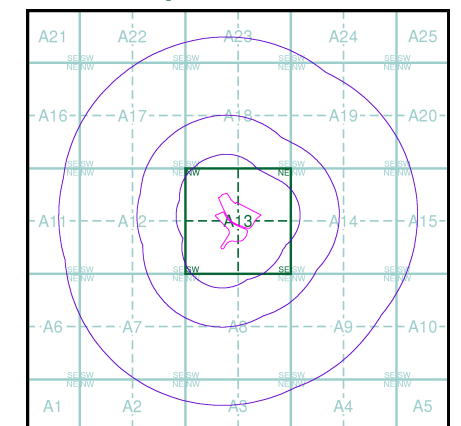
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from Landplan which replaced the old 1:10,000 maps originally published in 1970. The data is highly detailed showing buildings, fences and field boundaries as well as all roads, tracks and paths. Road names are also included together with the relevant road number and classification. Boundary information depiction includes county, unitary authority, district, civil parish and constituency.

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

ST28SW	2006
1:10,000	
ST27NW	2006
1:10,000	

### Historical Map - Slice A



### Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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 Web: www.envirocheck.co.uk







### VectorMap Local

Published 2016

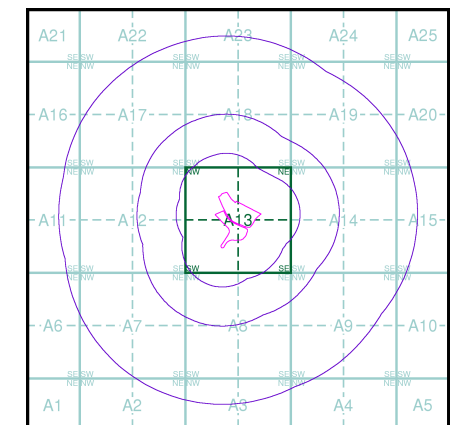
Source map scale - 1:10,000

VectorMap Local (Raster) is Ordnance Survey's highest detailed 'backdrop' mapping product. These maps are produced from OS's VectorMap Local, a simple vector dataset at a nominal scale of 1:10,000, covering the whole of Great Britain, that has been designed for creating graphical mapping. OS VectorMap Local is derived from large-scale information surveyed at 1:1250 scale (covering major towns and cities), 1:2500 scale (smaller towns, villages and developed rural areas), and 1:10 000 scale (mountain, moorland and river estuary areas).

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

- ST28SW | 2016 | Variable
- ST27NW | 2016 | Variable

### Historical Map - Slice A



### Order Details

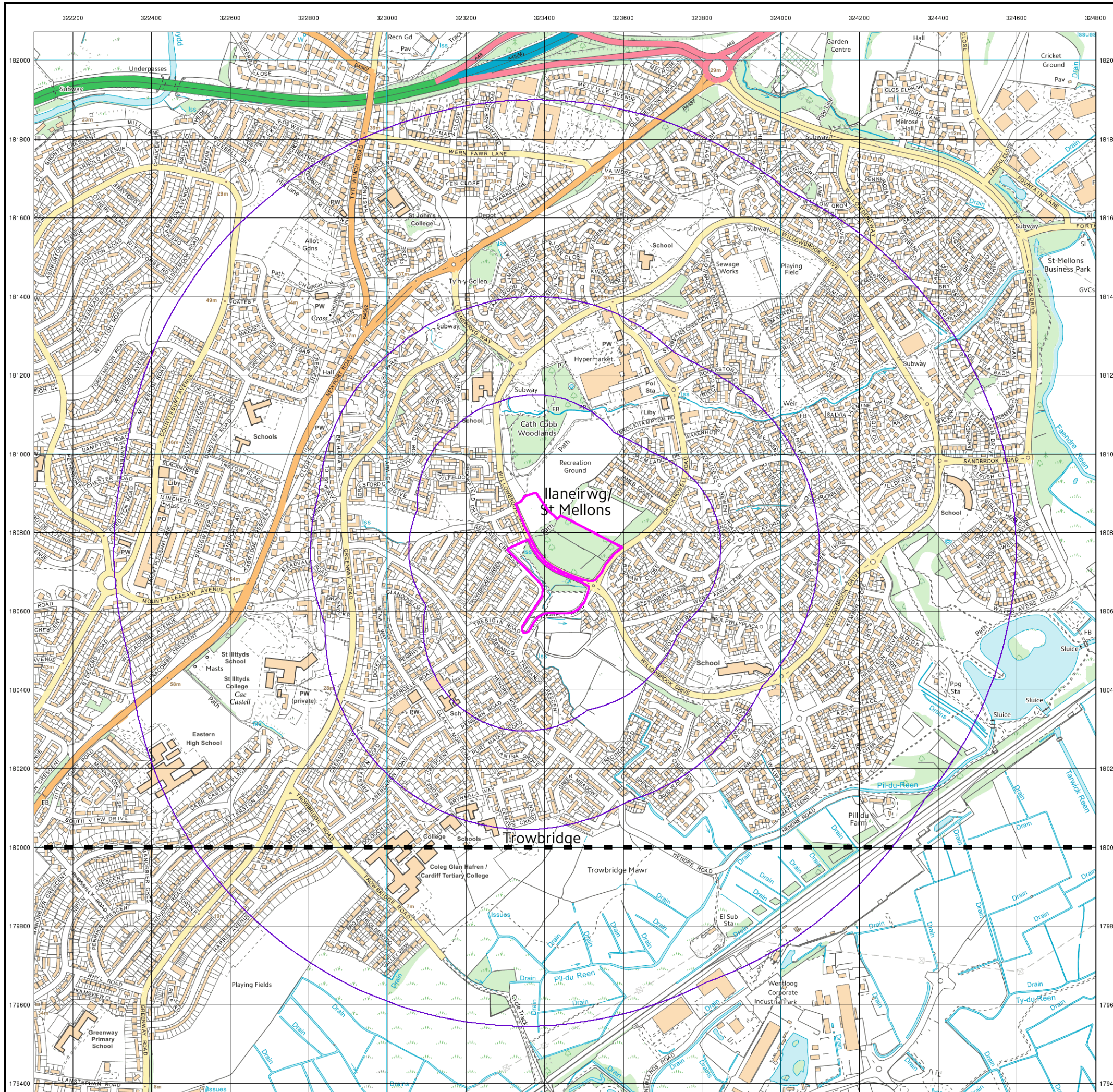
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 1000

### Site Details

Site at 323440, 180740



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# Historical Mapping Legends

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

**Quarry** **Gravel Pit** **Sand Pit**  
**Clay Pit** **Shingle** **Refuse Heap**  
**Sloping Masonry** **Flat Rock**  
**Marsh** **Reeds** **Osiers**  
**Rough Pasture** **Furze** **Wood**  
**Mixed Wood** **Brushwood** **Orchard**  
**Fir** **Ford** **Stepping Stones**  
**Ferry** **Waterfall** **Lock**  
**Trig. Station** **Altitude at Trig. Station**  
**B.M. 325.9** **Bench Mark** **Surface Level**  
**Arrow denotes flow of water** **Antiquities (site of)**  
**Cutting** **Embankment**  
**Railway crossing Road** **Level Crossing** **Road crossing Railway**  
**Railway crossing River or Canal** **Road over single stream** **Road over River or Canal**  
**County Boundary (Geographical)**  
**County & Civil Parish Boundary**  
**Administrative County & Civil Parish Boundary**  
**County Borough Boundary (England)**  
**County Burgh Boundary (Scotland)**  
**Boundary Post or Stone** **Police Call Box**  
**B.R. Bridle Road** **Pump**  
**E.P. Electricity Pylon** **S.P. Signal Post**  
**F.B. Foot Bridge** **Sluice**  
**F.P. Foot Path** **Spring**  
**G.P. Guide Post or Board** **T.C.B. Telephone Call Box**  
**M.S. Mile Stone** **Trough**  
**M.P. M.R. Mooring Post or Ring** **Well**

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

**Inactive Quarry, Chalk Pit or Clay Pit** **Active Quarry, Chalk Pit or Clay Pit**  
**Rock** **Boulders**  
**Cliff** **Slopes** **Top**  
**Roofed Building** **Glazed Roof Building**  
**Sloping Masonry** **Archway**  
**Non-Coniferous Tree (surveyed)** **Coniferous Tree (surveyed)**  
**Non-Coniferous Trees (not surveyed)** **Coniferous Trees (not surveyed)**  
**Orchard Tree** **Scrub** **Bracken**  
**Coppice, Osier** **Reeds** **Marsh, Saltings**  
**Rough Grassland** **Heath** **Culvert**  
**Direction of water flow** **Bench Mark** **Antiquity (site of)**  
**Cave Entrance** **Triangulation Station** **Electricity Pylon**  
**Electricity Transmission Line**  
**County Boundary (Geographical)**  
**County & Civil Parish Boundary**  
**Civil Parish Boundary**  
**Admin. County or County Bor. Boundary**  
**London Borough Boundary**  
**Symbol marking point where boundary mereing changes**  
**BH Beer House** **P Pillar, Pole or Post**  
**BP, BS Boundary Post or Stone** **PO Post Office**  
**Cn, C Capstan, Crane** **PC Public Convenience**  
**Chy Chimney** **PH Public House**  
**D Fn Drinking Fountain** **Pp Pump**  
**EI P Electricity Pillar or Post** **SB, S Br Signal Box or Bridge**  
**FAP Fire Alarm Pillar** **SP, SL Signal Post or Light**  
**FB Foot Bridge** **Spr Spring**  
**GP Guide Post** **Tk Tank or Track**  
**H Hydrant or Hydraulic** **TCB Telephone Call Box**  
**LC Level Crossing** **TCP Telephone Call Post**  
**MH Manhole** **Tr Trough**  
**MP Mile Post or Mooring Post** **Wr Pt, Wr T Water Point, Water Tap**  
**MS Mile Stone** **W Well**  
**NTL Normal Tidal Limit** **Wd Pp Wind Pump**

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

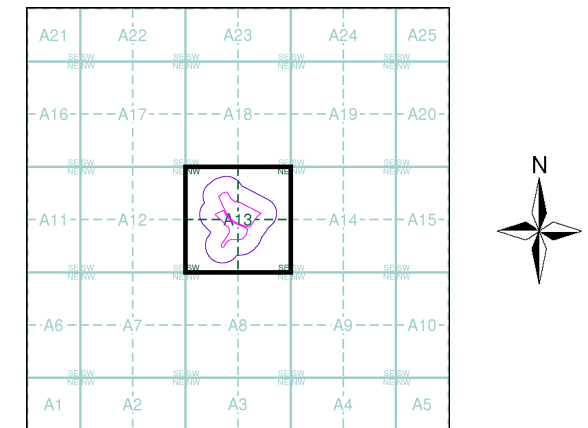
**Cliff** **Slopes** **Top**  
**Rock** **Rock (scattered)**  
**Boulders** **Boulders (scattered)**  
**Positioned Boulder** **Scree**  
**Non-Coniferous Tree (surveyed)** **Coniferous Tree (surveyed)**  
**Non-Coniferous Trees (not surveyed)** **Coniferous Trees (not surveyed)**  
**Orchard Tree** **Scrub** **Bracken**  
**Coppice, Osier** **Reeds** **Marsh, Saltings**  
**Rough Grassland** **Heath** **Culvert**  
**Direction of water flow** **Triangulation Station** **Antiquity (site of)**  
**Electricity Transmission Line** **Electricity Pylon**  
**Bench Mark** **Buildings with Building Seed**  
**Roofed Building** **Glazed Roof Building**  
**Civil parish/community boundary**  
**District boundary**  
**County boundary**  
**Boundary post/stone**  
**Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)**  
**Bks Barracks** **P Pillar, Pole or Post**  
**Bty Battery** **PO Post Office**  
**Cemy Cemetery** **PC Public Convenience**  
**Chy Chimney** **Pp Pump**  
**Cis Cistern** **Ppg Sta Pumping Station**  
**Dismtd Rly Dismantled Railway** **PW Place of Worship**  
**EI Gen Sta Electricity Generating Station** **Sewage Ppg Sta Sewage Pumping Station**  
**EI P Electricity Pole, Pillar** **SB, S Br Signal Box or Bridge**  
**EI Sub Sta Electricity Sub Station** **SP, SL Signal Post or Light**  
**FB Filter Bed** **Spr Spring**  
**Fn / D Fn Fountain / Drinking Ftn.** **Tk Tank or Track**  
**Gas Gov Gas Valve Compound** **Tr Trough**  
**GVC Gas Governor** **Wd Pp Wind Pump**  
**GP Guide Post** **Wr Pt, Wr T Water Point, Water Tap**  
**MH Manhole** **Wks Works (building or area)**  
**MP, MS Mile Post or Mile Stone** **W Well**



## Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Monmouthshire	1:2,500	1882	2
Monmouthshire	1:2,500	1901	3
Monmouthshire	1:2,500	1919	4
Ordnance Survey Plan	1:2,500	1968 - 1970	5
Ordnance Survey Plan	1:1,250	1969 - 1992	6
Supply of Unpublished Survey Information	1:2,500	1973	7
Additional SIMs	1:2,500	1977	8
Additional SIMs	1:1,250	1983 - 1992	9
Additional SIMs	1:1,250	1988 - 1989	10
Ordnance Survey Plan	1:1,250	1990	11
Large-Scale National Grid Data	1:1,250	1992	12
Large-Scale National Grid Data	1:1,250	1996	13

## Historical Map - Segment A13



## Order Details

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 100

## Site Details

Site at 323440, 180740



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 Web: www.envirocheck.co.uk





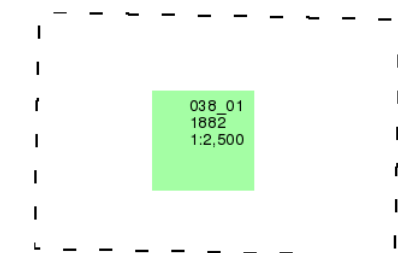
### Monmouthshire

Published 1882

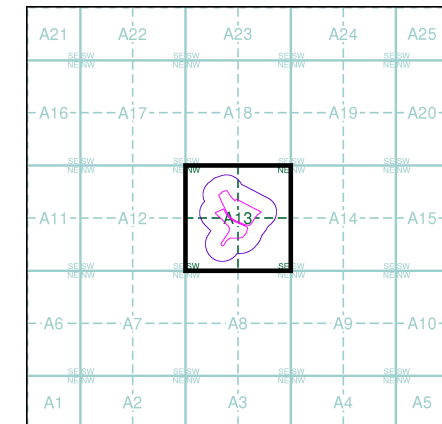
Source map scale - 1:2,500

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

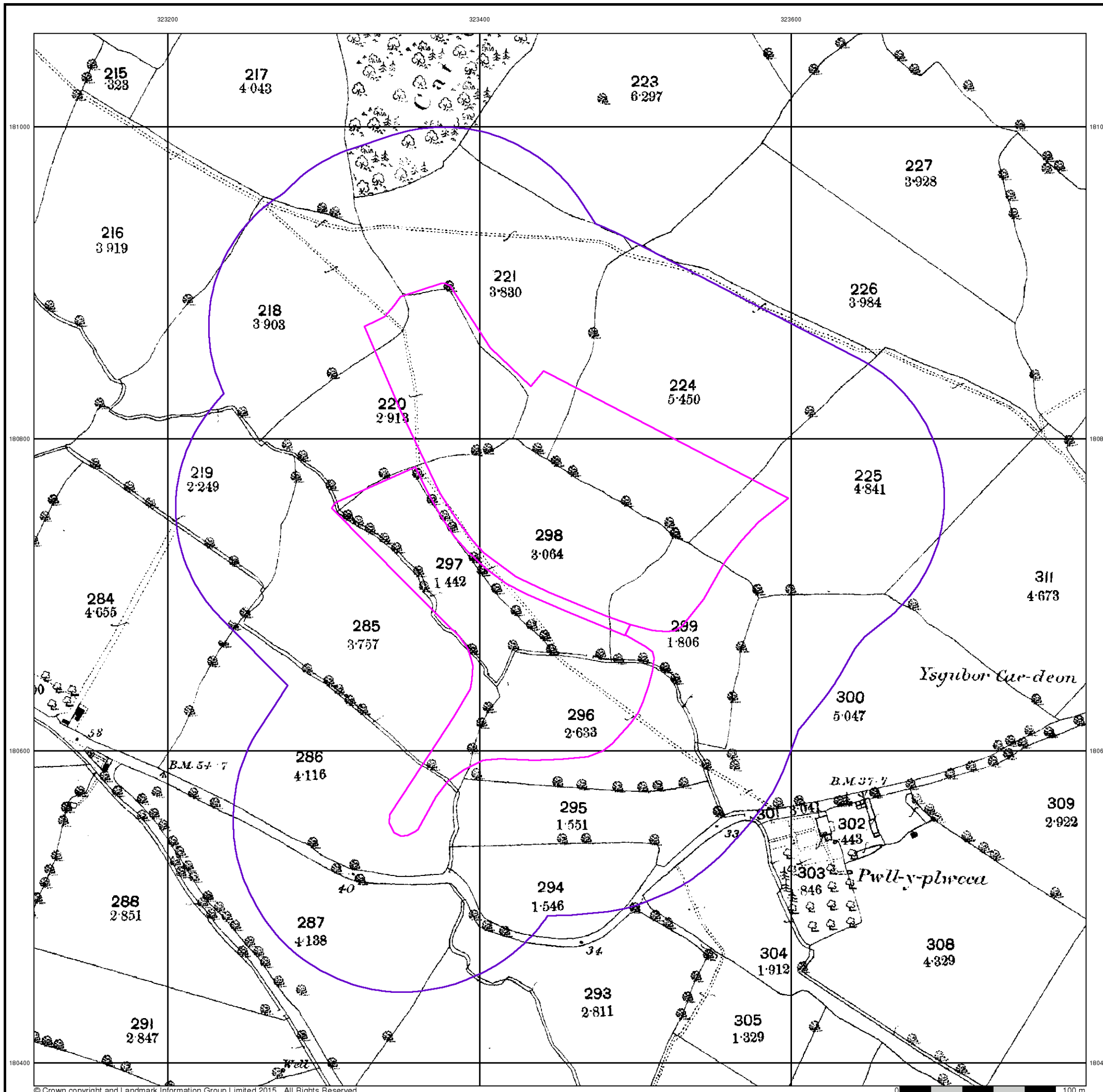
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 100

### Site Details

Site at 323440, 180740



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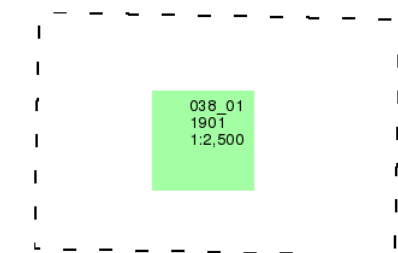
Monmouthshire

Published 1901

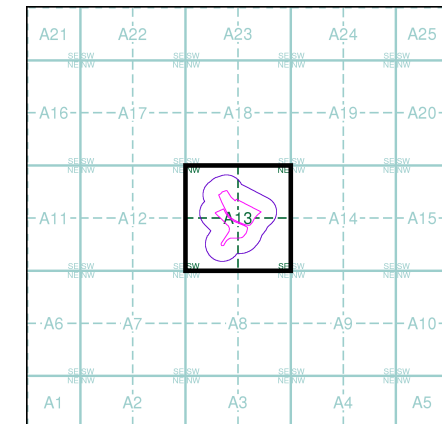
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered 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

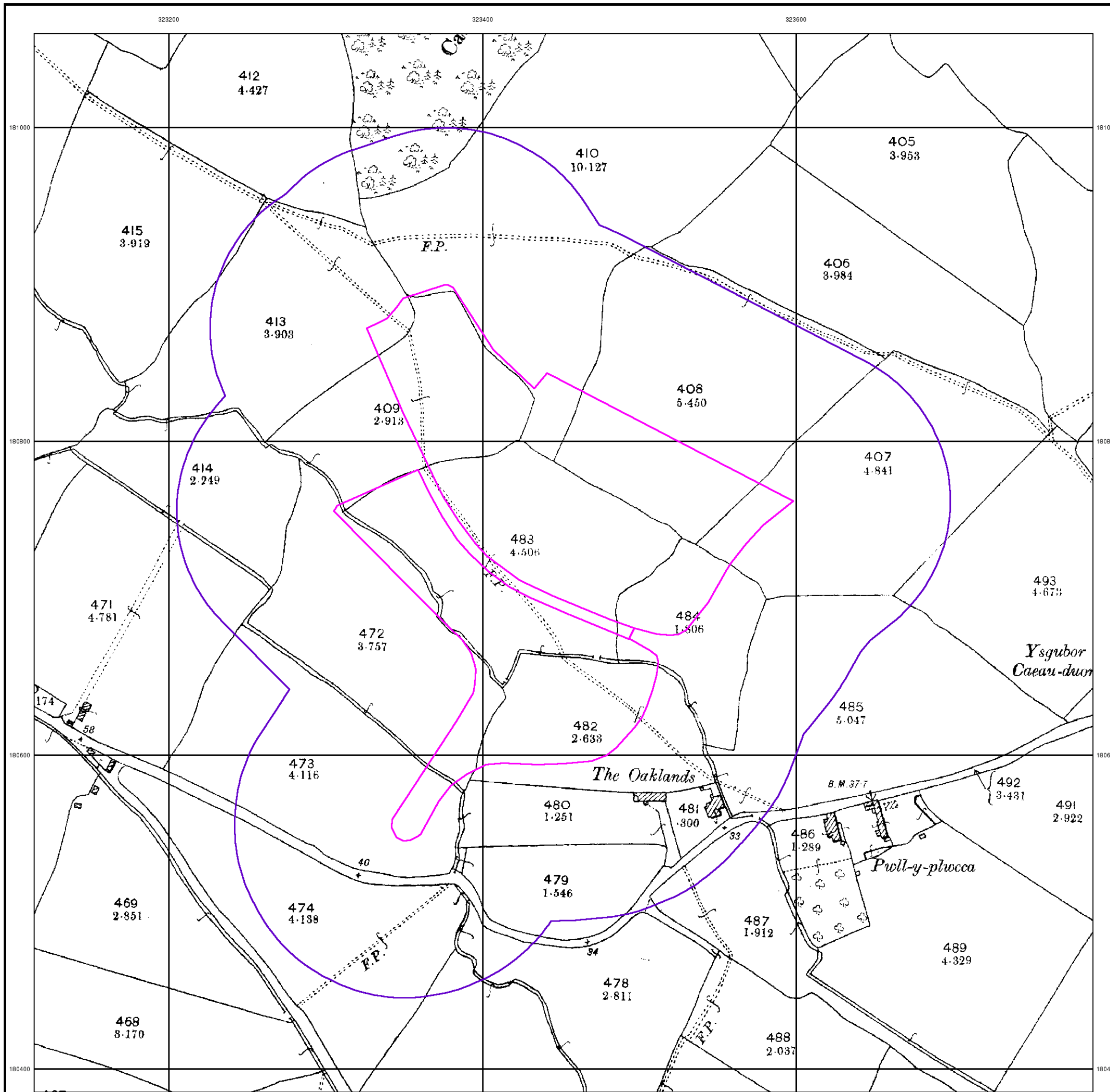
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 100

Site Details

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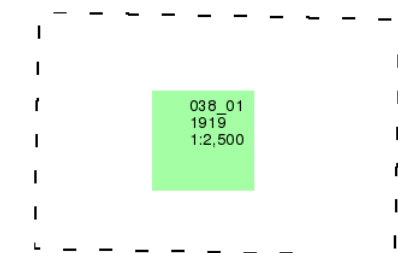
### Monmouthshire

Published 1919

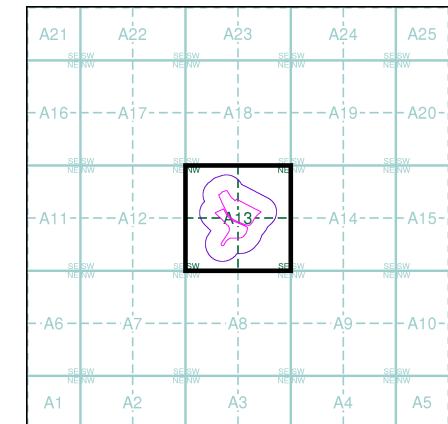
Source map scale - 1:2,500

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

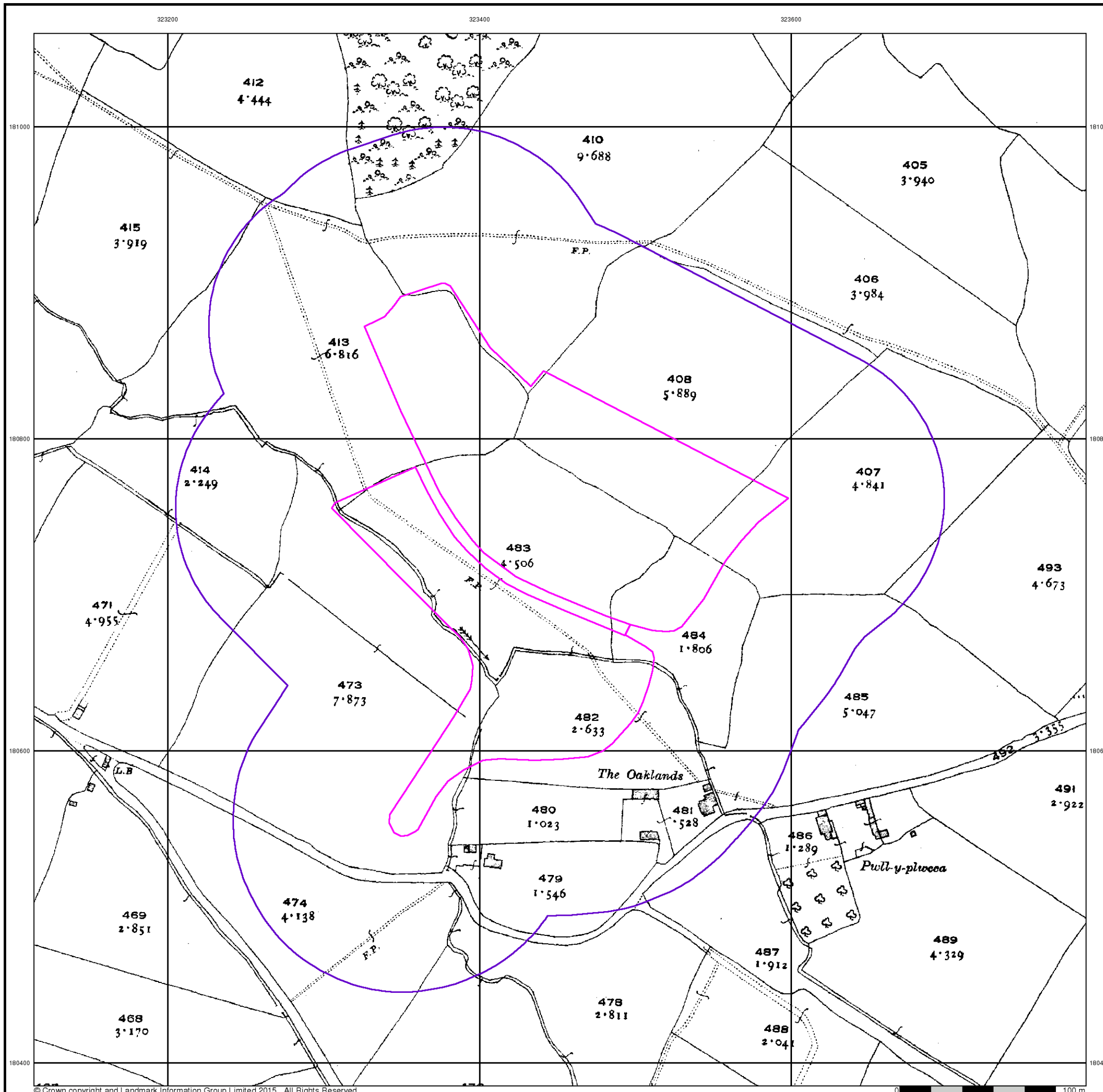
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 100

### Site Details

Site at 323440, 180740



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### Ordnance Survey Plan

Published 1968 - 1970

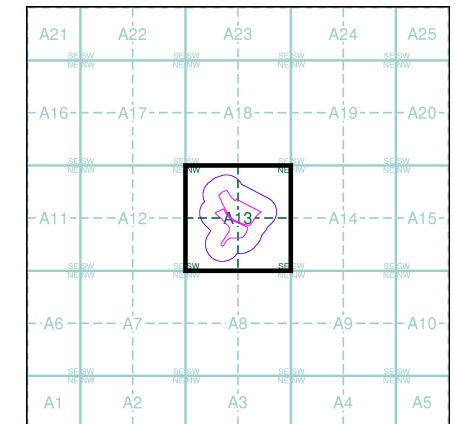
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The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered 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)

ST2381	1968	1:2,500
ST2380	1970	1:2,500

### Historical Map - Segment A13



### Order Details

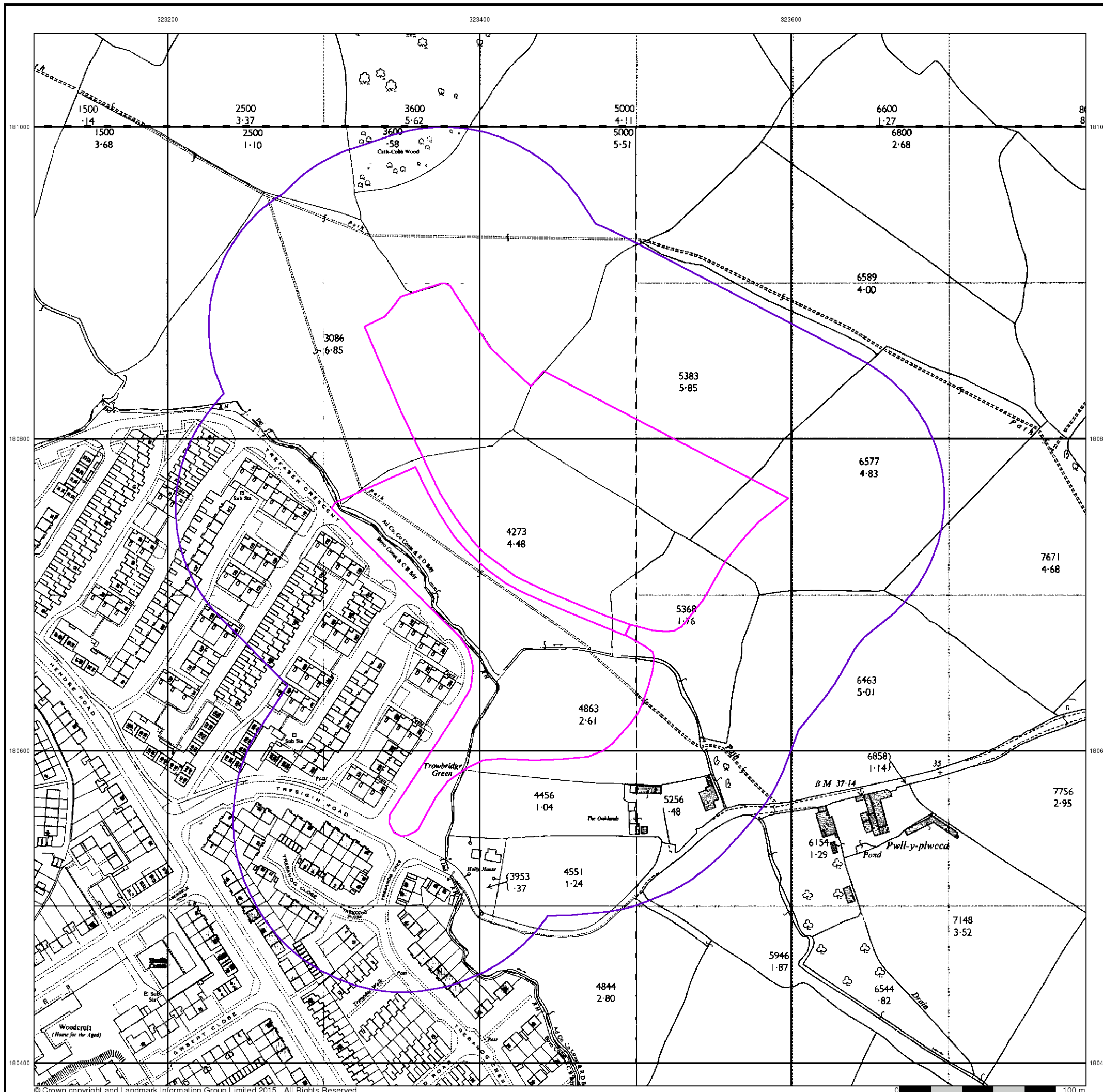
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 100

### Site Details

Site at 323440, 180740



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### Ordnance Survey Plan

Published 1969 - 1992

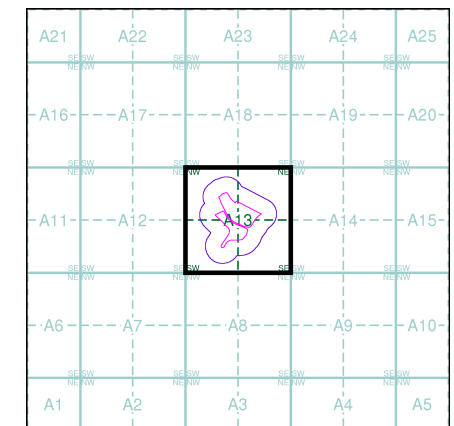
Source map scale - 1:1,250

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)

T2381SV	T2381SE
1983	1986
1:1,250	1:1,250
T2380NV	T2380NE
1969	1992
1:1,250	1:1,250
T2380SW	T2380SE
1969	1992
1:1,250	1:1,250

### Historical Map - Segment A13



### Order Details

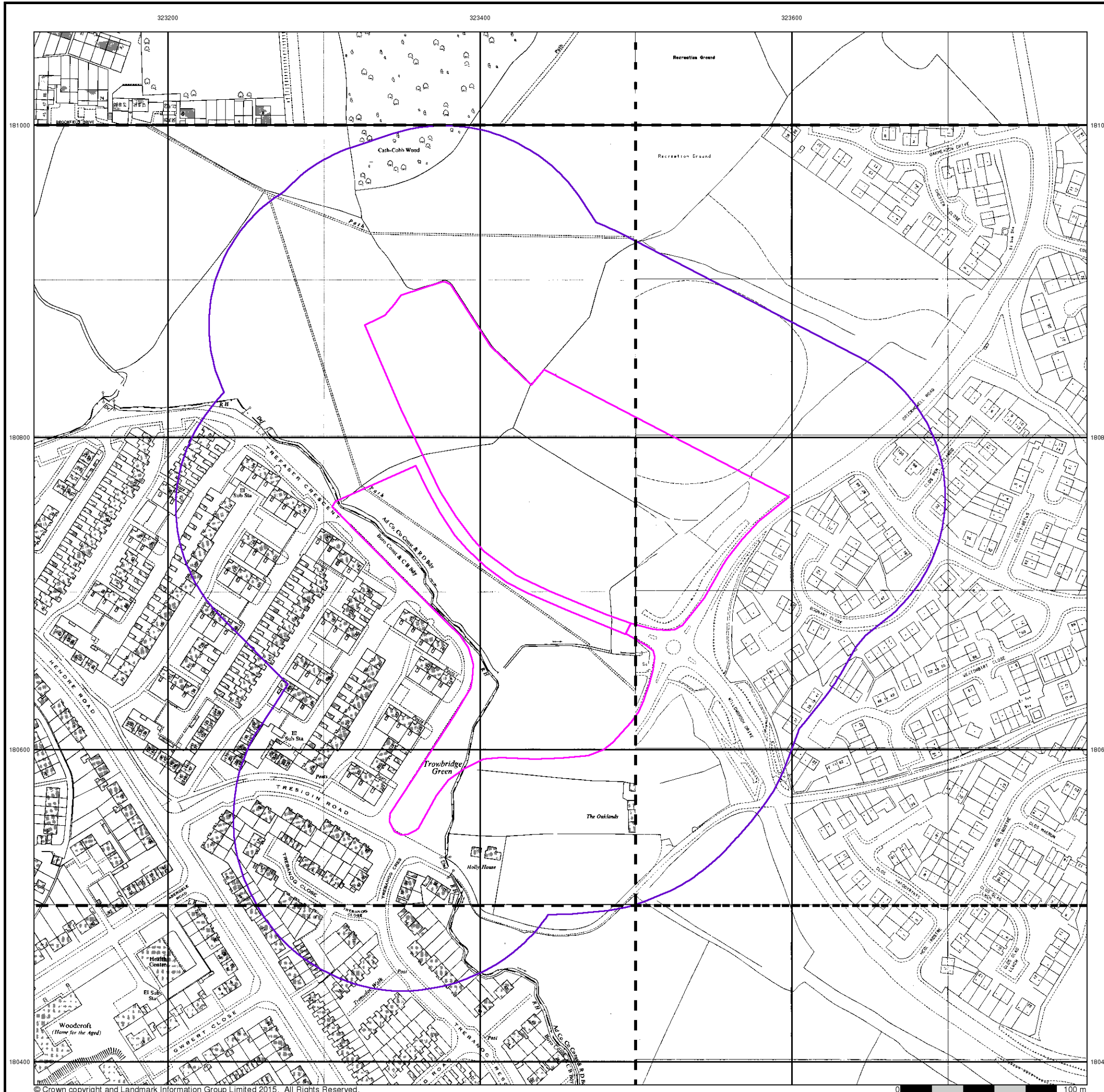
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 100

### Site Details

Site at 323440, 180740



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 Web: www.envirocheck.co.uk





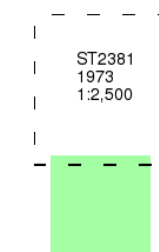
## Supply of Unpublished Survey Information

Published 1973

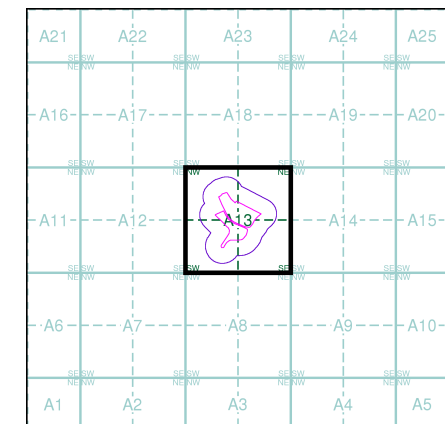
Source map scale - 1:2,500

SUSI maps (Supply of Unpublished Survey Information) were produced between 1972 and 1977, mainly for internal use at Ordnance Survey. These were more of a 'work-in-progress' plan as they showed updates of individual areas on a map. These maps were unpublished, and they do not represent a single moment in time. They were produced at both 1:2,500 and 1:1,250 scales.

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



### Historical Map - Segment A13



### Order Details

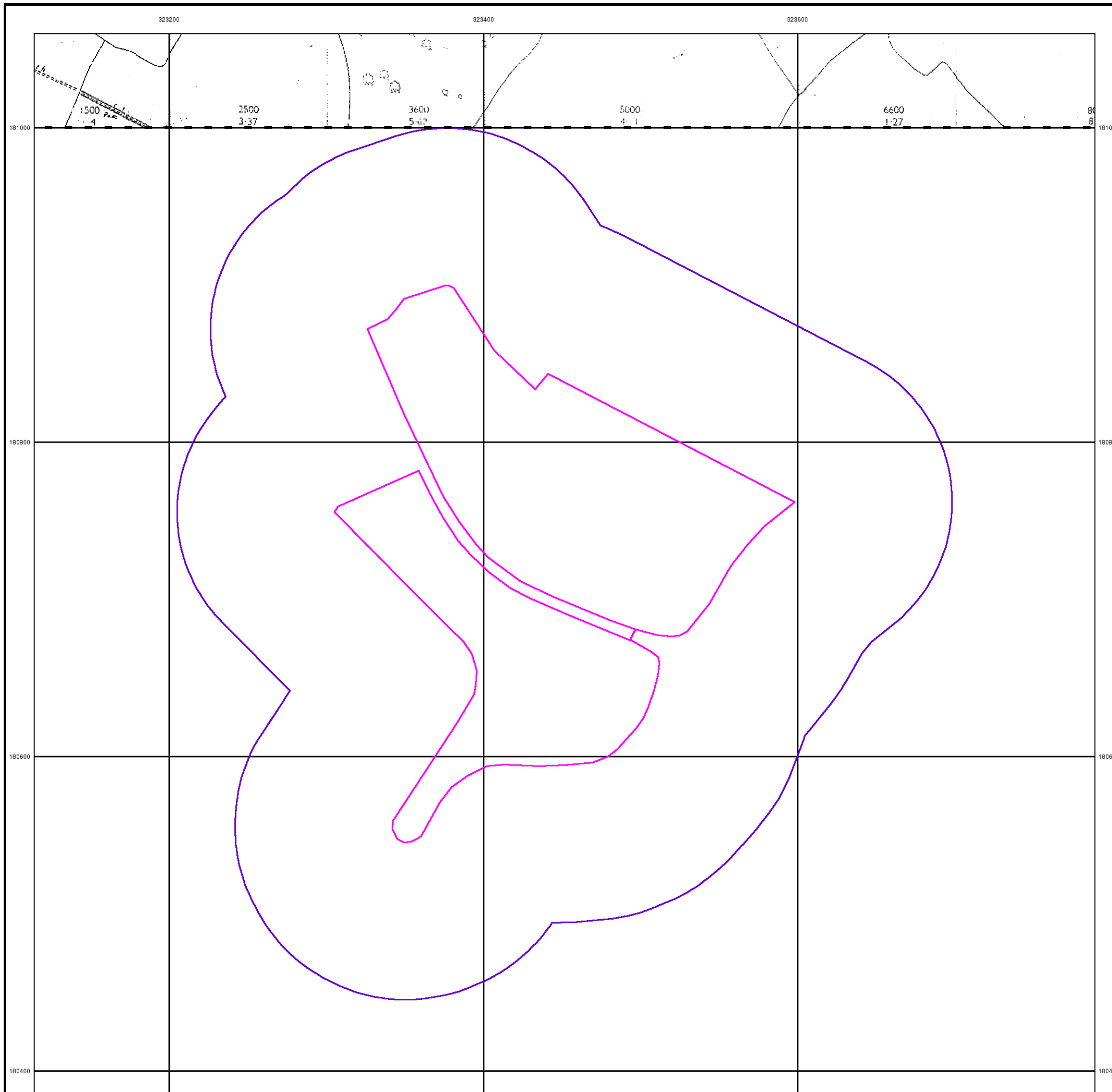
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 100

### Site Details

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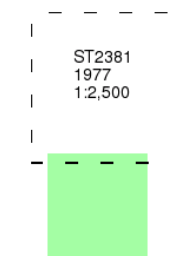
### Additional SIMs

Published 1977

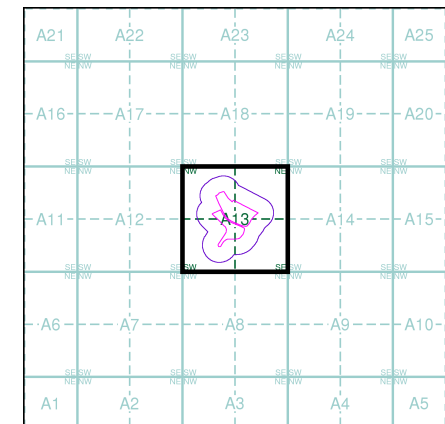
Source map scale - 1:2,500

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

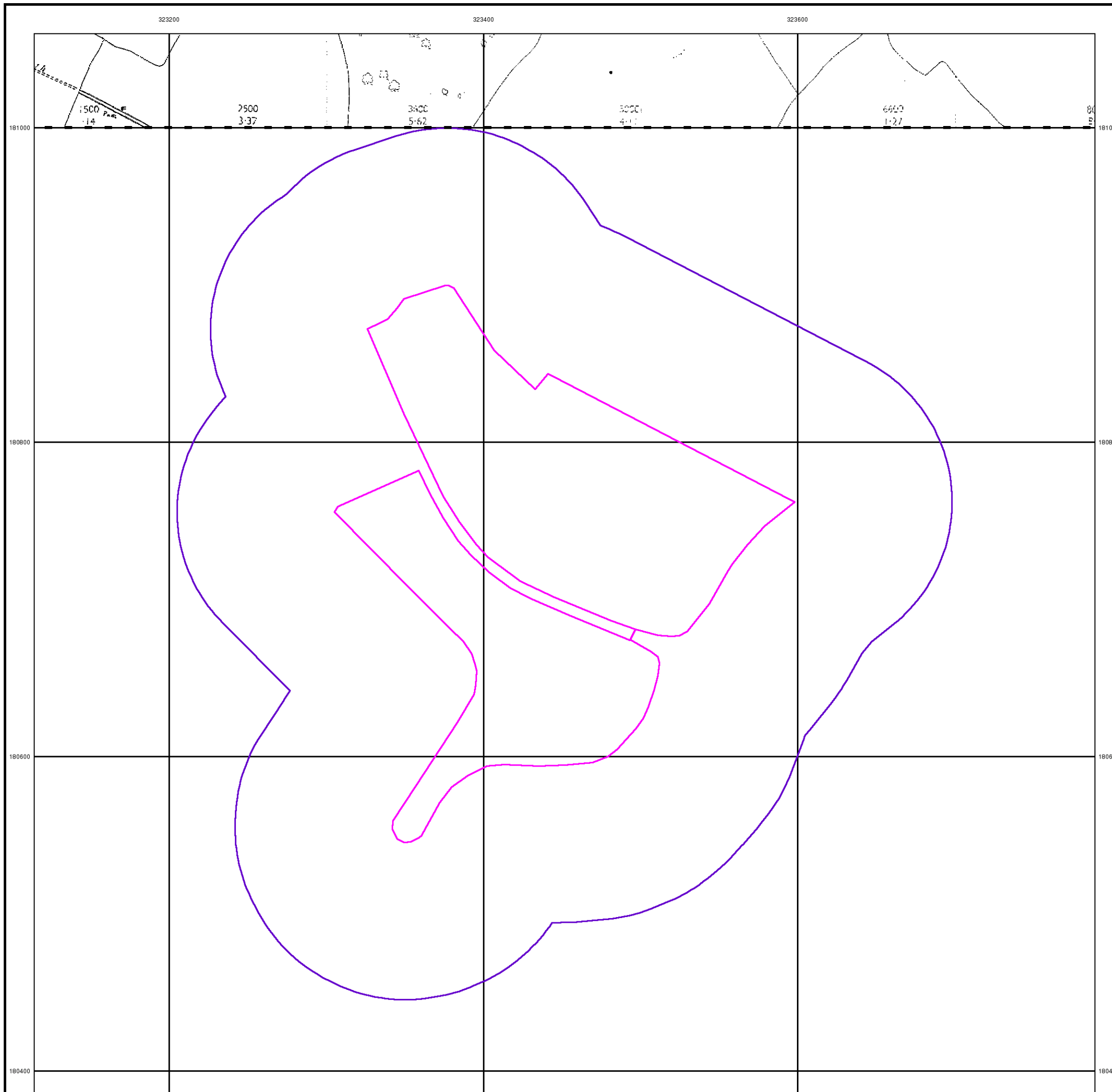
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Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 100

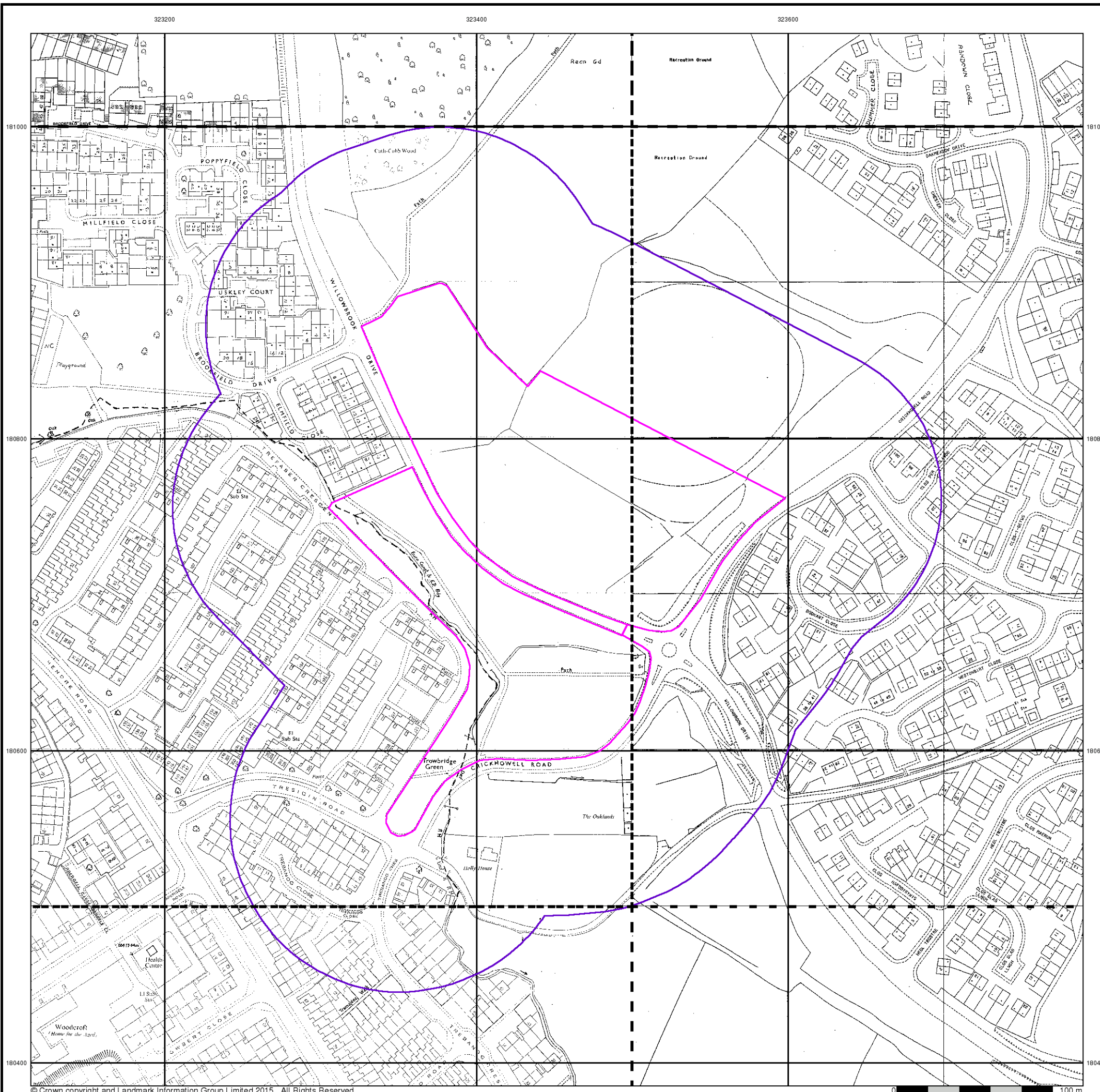
### Site Details

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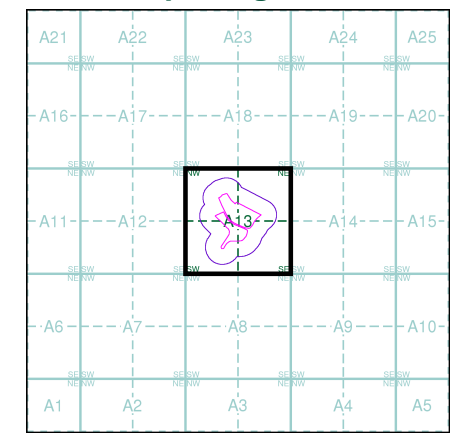
**Additional SIMs**  
**Published 1983 - 1992**  
**Source map scale - 1:1,250**

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)**

BT2381SV	BT2381SE
1983	1988
1:1,250	1:1,250
BT2380NV	BT2380NE
1983	1992
1:1,250	1:1,250
BT2380SV	BT2380SE
1987	1992
1:1,250	1:1,250

**Historical Map - Segment A13**



**Order Details**

Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 100

**Site Details**

Site at 323440, 180740



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### Additional SIMs

Published 1988 - 1989

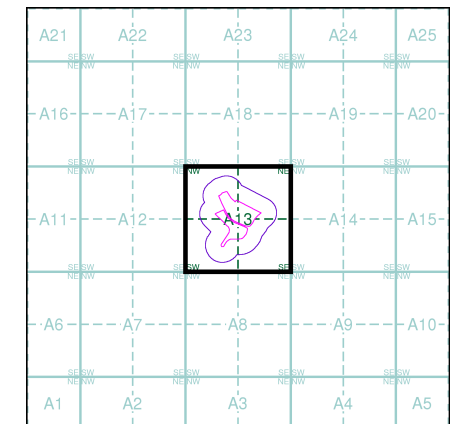
Source map scale - 1:1,250

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)

BT2381SW	BT2381SE
1989	1989
1:1,250	1:1,250
	
BT2380SW	
1988	
1:1,250	

### Historical Map - Segment A13



### Order Details

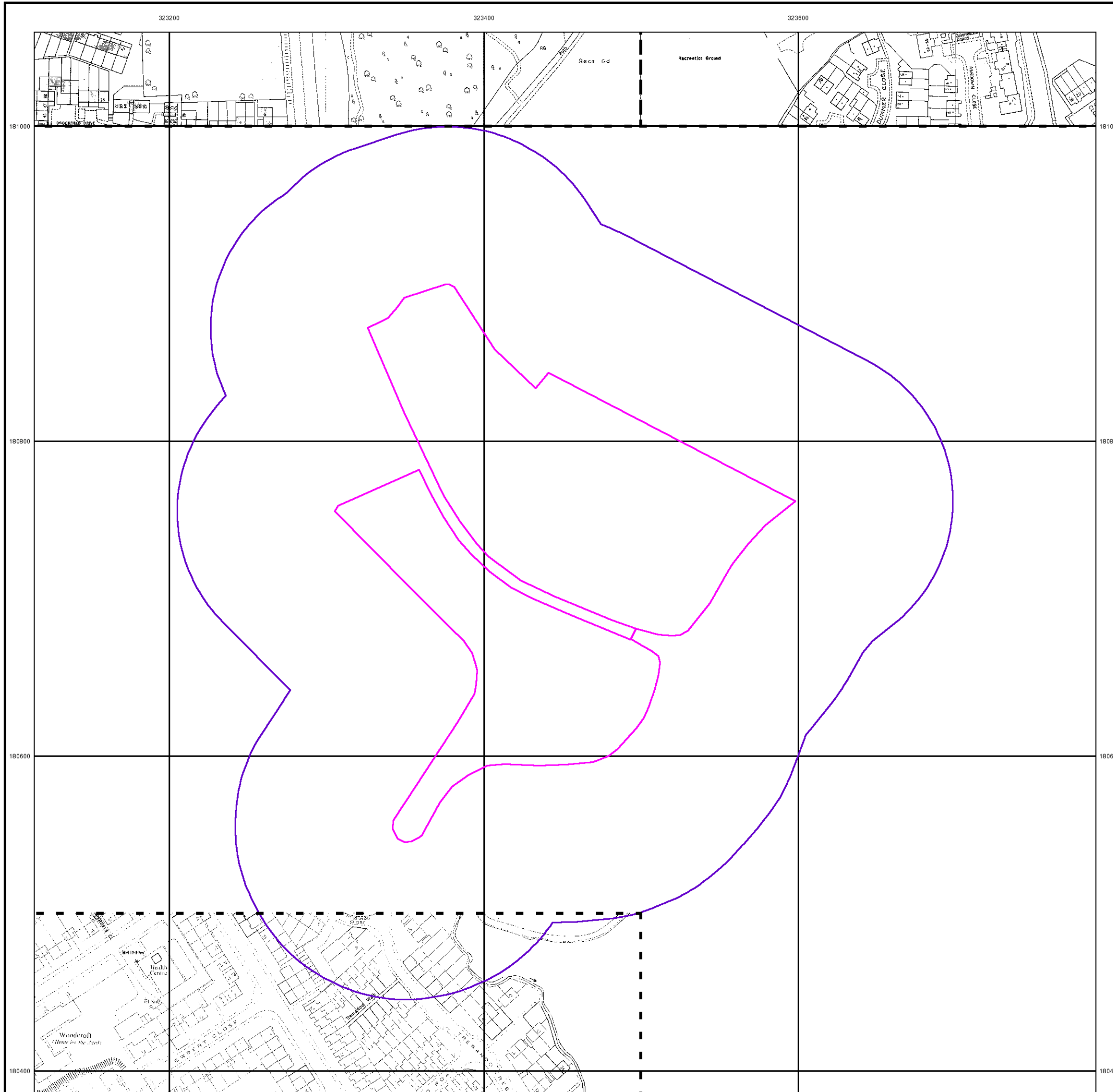
Order Number: 84845006\_1\_1  
 Customer Ref: 13601  
 National Grid Reference: 323420, 180730  
 Slice: A  
 Site Area (Ha): 4.5  
 Search Buffer (m): 100

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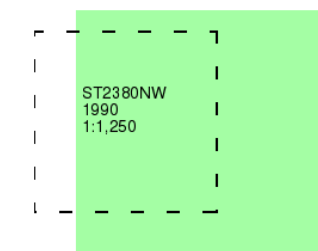
### Ordnance Survey Plan

Published 1990

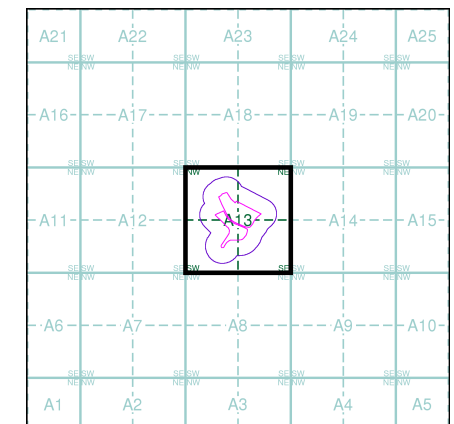
Source map scale - 1:1,250

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)



### Historical Map - Segment A13



### Order Details

Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
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### Site Details

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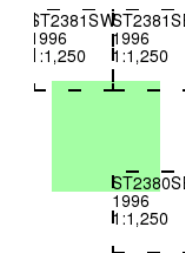
## Large-Scale National Grid Data

Published 1996

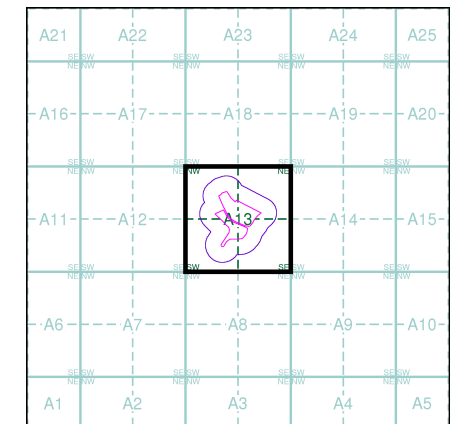
Source map scale - 1:1,250

'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)



### Historical Map - Segment A13



### Order Details

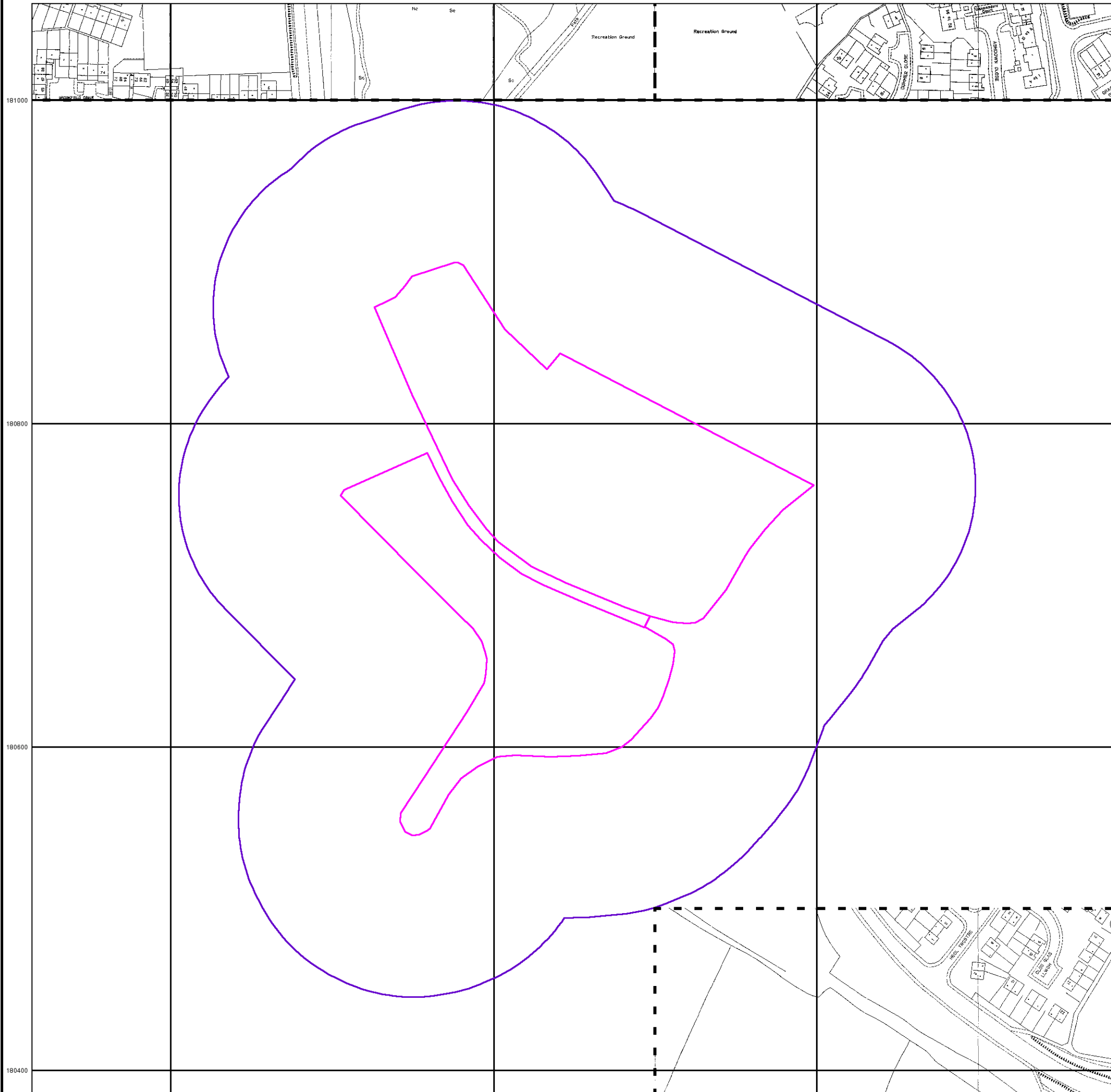
Order Number: 84845006\_1\_1  
Customer Ref: 13601  
National Grid Reference: 323420, 180730  
Slice: A  
Site Area (Ha): 4.5  
Search Buffer (m): 100

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**ANNEX B**  
**Risk Assessment Definitions**

## Risk Assessment Definitions

Environmental risk assessment evaluates the risk to receptors via an analysis of the 'source-pathway-receptor' linkage.

- (1) A **CONTAMINANT** (hazard) - a substance that is in, on or under the land and has the potential to cause harm or to cause pollution of controlled waters
- (2) A **RECEPTOR** (target) - something which could be adversely affected by a contaminant
- (3) A **PATHWAY** - a route or means which either allows the contaminant to cause significant harm to that receptor, or that there is a significant possibility of such harm being caused to the receptor, or that pollution of controlled waters is being or likely to be caused.

The term 'Risk' is widely used in different contexts and situations, but a prescriptive definition is given by the Guidelines for Environmental Risk Assessment and Management (DEFRA *et al*, 2000):

*'Risk is a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequences of the occurrence'.*

A 'Hazard' is defined as 'a property or situation that in particular circumstances could lead to harm'.

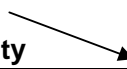
The classification of consequences and probability and determining the risk category are defined in the following sections.

<b>Table 1 Classification of Consequence</b>	
<b>Classification</b>	<b>Definition</b>
Severe	<ul style="list-style-type: none"> <li>• Short term (acute) risk to human health likely to result in significant harm</li> <li>• Short term risk to controlled waters</li> <li>• Catastrophic damage to buildings/structures</li> <li>• Short term risk to an ecosystem or organism within the particular ecosystem</li> </ul>
Medium	<ul style="list-style-type: none"> <li>• Chronic damage to human health (long term risk)</li> <li>• Pollution of a sensitive water resource</li> <li>• A significant change in an ecosystem or organism within the ecosystem</li> </ul>
Mild	<ul style="list-style-type: none"> <li>• Pollution of non-sensitive water resources</li> <li>• Significant damage to buildings/structures</li> </ul>
Negligible	<ul style="list-style-type: none"> <li>• Harm (not necessarily significant) which may result in financial loss</li> <li>• Non permanent health effects to humans (easily prevented by PPE for example)</li> <li>• Easily repairable effects of structural (building) damage</li> </ul>



<b>Table 2 Classification of Probability</b>	
<b>Classification</b>	<b>Definition</b>
High	<ul style="list-style-type: none"> <li>• There is a complete pollution linkage and an event appears very likely to occur in the short term and is inevitable in the long term.</li> <li>• Evidence of harm to the receptor</li> </ul>
Medium	<ul style="list-style-type: none"> <li>• There is a complete pollution linkage which means that it is probable that an event will occur</li> <li>• The event is not inevitable but possible in short term and likely in the long term</li> </ul>
Low	<ul style="list-style-type: none"> <li>• There is a complete pollution linkage and circumstances are possible under which an event could occur</li> <li>• It is not certain that an event will occur in the long term, and it is less likely to occur in the short term</li> </ul>
Negligible	<ul style="list-style-type: none"> <li>• There is a complete pollution linkage but circumstances are such that it is improbable that an event would occur even in the long term</li> </ul>

By comparing the consequences of a risk and the probability of the risk of a pollution linkage, the likely risk category can be determined as shown in **Table 3** below.

<b>Table 3 Risk Assessment Matrix</b>					
<b>Increasing acceptability</b> 		<b>Consequence</b>			
		<b>Severe</b>	<b>Medium</b>	<b>Mild</b>	<b>Negligible</b>
<b>Probability</b>	<b>High</b>	High	High	Medium / Low	Near zero
	<b>Medium</b>	High	Medium	Low	Near zero
	<b>Low</b>	High / medium	Medium / Low	Low	Near zero
	<b>Negligible</b>	High / medium / Low	Medium / Low	Low	Near zero

### **High Risk**

There is a high probability that severe harm could risk a receptor, or there is evidence that a receptor is being harmed. The risk if realised is likely to result in liability, and urgent investigation or remediation will be required.

### **Medium Risk**

It is probable that harm will arise to a receptor. However it is relatively unlikely that such harm would be severe, or if harm does occur the harm is likely to be relatively mild. Investigation will be required to determine the liability, and some remedial works may be required in the long term.

### **Low Risk**

It is possible that harm may arise to a receptor, but it is likely that the harm would be mild.

### **Near Zero Risk**

There is a very low risk of harm to the receptor. In the event of harm being realised the harm is

**ANNEX C**  
**Trial Pit Logs**





Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP01**  
 Sheet 1 of 1

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
---------------------------------	-------------------	----------------------	------------------

Location: Willowbrook Drive, St Mellons	Dimensions: 2.50	Scale: 1:25
Client: Cardiff Council	Depth 2.20	Logged: JRW

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼	0.50 - 0.60	ES		0.20			Grass over very soft dark brown slightly sandy silty CLAY with frequent rootlets.
				0.90			(Medium dense?) dark reddish brown slightly clayey slightly gravelly silty fine to coarse SAND with a low cobble content. Gravel is subangular and subrounded fine to coarse sandstone and siltstone.
				2.00			Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is angular to rounded fine to coarse sandstone and siltstone.
				2.20			End of Pit at 2.200m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater seepage encountered at 2.00m. On completion, trial pit backfilled with materials arising.



Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP02**  
 Sheet 1 of 1

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
---------------------------------	-------------------	----------------------	------------------

Location: Willowbrook Drive, St Mellons	Dimensions: 2.00	Scale: 1:25
Client: Cardiff Council	Depth 0.70 <span style="border: 1px solid black; display: inline-block; width: 40px; height: 20px; vertical-align: middle;"></span>	Logged: JRW
	3.20	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼	0.30 - 0.40 0.30 - 0.40	ES D		0.20			Grass over very soft dark brown slightly sandy silty CLAY with frequent rootlets.
				1.00			Very stiff light orangish brown slightly sandy clayey SILT.
				2.00			Firm dark reddish brown slightly sandy slightly gravelly silty CLAY. Gravel is angular and subangular fine to coarse sandstone.
				3.00			(Medium dense?) dark reddish brown slightly clayey slightly gravelly silty fine to coarse SAND with a low cobble and boulder content. Gravel is subangular and subrounded fine to coarse sandstone and siltstone.
				3.20			Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is angular to rounded fine to coarse sandstone and siltstone.
							End of Pit at 3.200m

Stability: Trial pit walls spalled 0.70-2.20m.

Remarks: Groundwater seepage encountered at 2.00m. On completion, trial pit backfilled with materials arising.





Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP03**  
 Sheet 1 of 1

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
---------------------------------	-------------------	----------------------	------------------

Location: Willowbrook Drive, St Mellons	Dimensions: 2.30	Scale: 1:25
Client: Cardiff Council	Depth 2.00	Logged: JRW


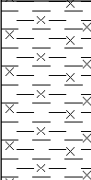

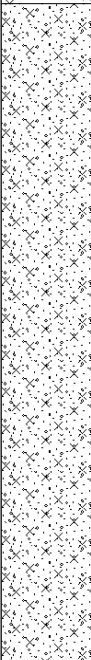

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20 - 0.30	ES		0.20			Grass over very soft dark brown slightly sandy silty CLAY with frequent rootlets.
	0.20 - 0.30	D					Stiff dark orangish brown slightly sandy slightly gravelly silty CLAY. Gravel is angular to rounded fine to coarse sandstone and siltstone.
				0.70			Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is subangular and subrounded fine to coarse sandstone and siltstone.
				2.00			End of Pit at 2.000m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater not encountered. On completion, trial pit backfilled with materials arising.

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 2.30 Depth 3.20	0.70 	Scale: 1:25 Logged: JRW
Client: Cardiff Council			

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.40 - 0.50	ES		0.30			Vegetation over very soft dark brown slightly sandy silty CLAY with frequent roots and rootlets.
							Firm grey mottled light orangish brown silty CLAY.
							Orange ceramic pipe (100mm diam).
				0.90			(Medium dense?) dark reddish brown slightly clayey gravelly silty fine to coarse SAND with a low cobble content. Gravel is angular to subrounded fine to coarse sandstone and siltstone.
				3.10			(Medium dense?) dark reddish brown silty fine and medium SAND.
				3.20			End of Pit at 3.200m

Stability: Trial pit wall spalling 1.30-2.60m.

Remarks: Groundwater encountered at 2.70m. Trial pit terminated at 3.20m due to spalling. On completion, trial pit backfilled with materials arising.





Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP05**  
 Sheet 1 of 1

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 2.20	Scale: 1:25
Client: Cardiff Council	Depth 2.60	Logged: JRW


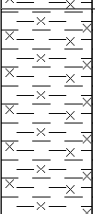
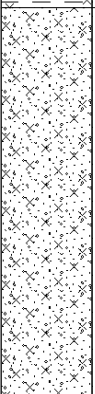

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.30 - 0.40	ES		0.30			Vegetation over very soft dark brown slightly sandy silty CLAY with frequent roots and rootlets.
				1.80			Firm to stiff light orangish brown mottled light grey slightly gravelly sandy CLAY with a low cobble content. Gravel is angular and subangular fine to coarse sandstone and siltstone.
				2.40			(Medium dense?) dark reddish brown slightly gravelly silty fine and medium SAND with a low cobble content. Gravel is subangular and subrounded fine to coarse sandstone and siltstone.
				2.60			Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is angular to rounded fine to coarse sandstone and siltstone.
							End of Pit at 2.600m

Stability: Trial pit wall spalled 1.20-2.20m.

Remarks: Groundwater seepage encountered at 1.60m. Trial pit terminated at 2.60m due to spalling. On completion, trial pit backfilled with materials arising.

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 2.10	Scale: 1:25
Client: Cardiff Council	Depth 2.40	Logged: JRW

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼	0.30 - 0.40	ES		0.20		 Vegetation over very soft dark brown slightly sandy silty CLAY with frequent rootlets.	1
				0.90		 Firm dark orangish brown slightly sandy slightly gravelly silty CLAY with a low cobble content. Gravel is angular and subangular fine to coarse sandstone and siltstone.	2
				2.20		 (Medium dense?) dark reddish brown silty gravelly fine to coarse SAND with a low cobble content. Gravel is subangular to rounded fine to coarse sandstone and siltstone.	3
				2.40		 Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is subangular and subrounded fine to coarse sandstone and siltstone.	4
						End of Pit at 2.400m	5

Stability: Trial pit walls spalled 0.5-1.90m.

Remarks: Groundwater seepage encountered at 1.30m. On completion, trial pit backfilled with materials arising.





Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP07**  
 Sheet 1 of 1

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 2.30	Scale: 1:25
Client: Cardiff Council	Depth 0.70 <input type="text"/>	Logged: JRW

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼				0.30			Vegetation over very soft dark brown slightly sandy silty CLAY with frequent rootlets.
				0.50			Firm dark orangish brown mottled dark grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular and subrounded fine to coarse sandstone and siltstone.
				1.70			(Dense?) dark reddish brown clayey gravelly fine to coarse SAND. Gravel is angular to rounded fine to coarse sandstone and siltstone.
				2.50			End of Pit at 2.500m

Stability: Trial pit walls spalled 1.30-2.50m.

Remarks: Groundwater seepage encountered at 1.70m. On completion, trial pit backfilled with materials arising.



Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP08**  
 Sheet 1 of 1

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 2.20	Scale: 1:25
Client: Cardiff Council	Depth 0.70 <input type="text"/>	Logged: JRW
	2.30	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.20			Grass over very soft dark brown slightly sandy silty CLAY with frequent rootlets.
				0.80			Firm dark orangish brown and dark grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular and subrounded fine to coarse sandstone.
	0.80 - 0.90	D		0.80			Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is subangular to rounded fine to coarse sandstone and siltstone.
				2.30			End of Pit at 2.300m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater not encountered. On completion, trial pit backfilled with materials arising.





Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP09**  
 Sheet 1 of 1

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 2.20	Scale: 1:25
Client: Cardiff Council	Depth 2.40	Logged: JRW

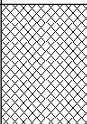

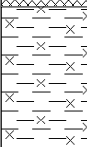
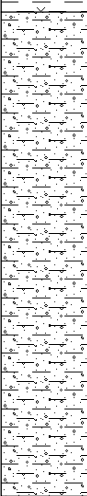
Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20 - 0.30	ES		0.30			Grass over very soft dark brown slightly sandy silty CLAY with frequent rootlets. (MADE GROUND)
				0.50			Very stiff dark greyish brown slightly sandy clayey SILT. (MADE GROUND)
				2.00			Firm dark orangish brown mottled dark brown and dark grey slightly sandy slightly gravelly silty CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse sandstone and siltstone.
				2.40			Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse sandstone and siltstone.
							End of Pit at 2.400m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater not encountered. On completion, trial pit backfilled with materials arising.

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 27/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 2.20	Scale: 1:25
Client: Cardiff Council	Depth 2.70	Logged: JRW

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.30 - 0.40	ES		0.40			Grass over very soft dark brown slightly sandy silty CLAY with frequent rootlets. (MADE GROUND)
				0.60			Firm dark greyish brown mottled dark orangish brown slightly sandy clayey SILT. (MADE GROUND)
				1.10			Firm light orangish brown mottled dark grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular to rounded fine to coarse sandstone and siltstone.
				2.70			Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is angular to rounded fine to coarse sandstone and siltstone.
							End of Pit at 2.700m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater not encountered. On completion, trial pit backfilled with materials arising.





Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP11**  
 Sheet 1 of 1

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 28/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 1.60	Scale: 1:25
Client: Cardiff Council	Depth 1.75	Logged: JRW

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20 - 0.30	ES		0.30			Vegetation over very soft dark brown slightly sandy silty CLAY with frequent rootlets.
				0.70			Very stiff light brownish grey slightly sandy clayey SILT.
				1.10			Stiff light orangish brown mottled light grey slightly sandy slightly gravelly silty CLAY. Gravel is subangular to rounded fine to coarse sandstone and siltstone.
				1.60			(Medium dense?) dark reddish brown slightly gravelly clayey fine and medium SAND with a low cobble content. Gravel is subangular and subrounded fine to coarse sandstone and siltstone.
				1.75			Stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble and boulder content. Gravel is angular to subrounded fine to coarse sandstone and siltstone.
							End of Pit at 1.750m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater not encountered. On completion, trial pit backfilled with materials arising.



Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP12**  
 Sheet 1 of 1

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 28/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 1.90	Scale: 1:25
Client: Cardiff Council	Depth 1.80	Logged: JRW






Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.30 - 0.40	ES		0.40			Vegetation over very soft dark brown slightly sandy silty CLAY with frequent roots and rootlets.
				1.60			Firm light orangish brown slightly sandy slightly gravelly silty CLAY with a low cobble content and with lenses (up to 500mm) of silty fine sand. Gravel is subangular and subrounded fine to coarse sandstone and siltstone.
				1.80			Stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is subangular to rounded fine to coarse sandstone and siltstone.
							End of Pit at 1.800m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater not encountered. On completion, trial pit backfilled with materials arising.

Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 28/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 2.00	Scale: 1:25
Client: Cardiff Council	Depth 0.70 	Logged: JRW

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
	0.20 - 0.30	ES		0.20			Grass over very soft dark brown slightly sandy silty CLAY with frequent rootlets. (MADE GROUND)
				0.90			Firm dark greyish brown slightly gravelly sandy silty CLAY with low brick cobble content. Gravel is angular to rounded fine to coarse sandstone, siltstone, concrete and brick. (MADE GROUND)
				1.10			Firm dark grey slightly sandy organic clayey SILT. (RELICT TOPSOIL?)
				1.70			Firm dark orangish brown mottled dark grey sandy silty CLAY.
	1.90 - 2.00	D		1.70			Stiff to very stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is angular to rounded fine to coarse sandstone and siltstone.
				2.30			End of Pit at 2.300m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater not encountered. On completion, trial pit backfilled with materials arising.



Project Name: Willowbrook Drive	Project No: 13601	Co-ords: - Level:	Date: 28/04/2016
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Location: Willowbrook Drive, St Mellons	Dimensions: 1.90	Scale: 1:25
Client: Cardiff Council	Depth 0.70	Logged: JRW
	2.50	

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
▼	0.40 - 0.50	ES		0.20			Grass over very soft dark brown slightly sandy silty CLAY with frequent rootlets. (MADE GROUND)
				1.10			Firm dark greyish brown slightly sandy slightly gravelly silty CLAY with a low cobble content. Gravel is angular to subrounded fine to coarse sandstone and siltstone. (MADE GROUND)
				1.30			Yellow plastic pipe fragment (500x50mm diam)
				2.30			Firm dark grey slightly sandy organic clayey SILT. (RELICT TOPSOIL?)
				2.50			Firm light orangish brown and greyish brown sandy clayey SILT.
							Stiff dark reddish brown slightly sandy slightly gravelly CLAY with a low cobble content. Gravel is angular to rounded fine to coarse sandstone and siltstone. End of Pit at 2.500m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater seepage encountered at 2.10m. On completion, trial pit backfilled with materials arising.



Tel: 02920 735354  
 info@terrafirmawales.co.uk  
 www.terrafirmawales.co.uk

Terra Firma (Wales) Limited  
 5 Deryn Court, Wharfedale Road  
 Pentwyn, Cardiff  
 CF23 7HA

Trial Pit No:  
**TP15**  
 Sheet 1 of 1

Project Name: Willowbrook Drive      Project No: 13601      Co-ords: -      Date: 28/04/2016  
 Level:      Scale: 1:25

Location: Willowbrook Drive, St Mellons      Dimensions: 1.90m x 0.70m      Logged: JRW

Client: Cardiff Council

Water Strike	Samples & In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
	Depth	Type	Results				
				0.20			Grass over very soft dark brown slightly sandy silty CLAY with frequent rootlets. (MADE GROUND)
				1.60			Firm dark greyish brown slightly gravelly sandy silty CLAY with a low cobble content and with rare fragments of glass, wire, timber and plastic. Gravel is angular to rounded fine to coarse brick, sandstone, siltstone and concrete. (MADE GROUND)
				1.90			Firm dark grey mottled black slightly sandy organic silty CLAY. (RELICT TOPSOIL?)
							Terminated at 1.90m due to suspected service, pea gravel retrieved in excavator bucket. End of Pit at 1.900m

Stability: Trial pit remained stable and vertical.

Remarks: Groundwater not encountered. Terminated at 1.90m due to suspected service in pit. On completion, trial pit backfilled with materials arising.

**ANNEX D**  
**Soakaway Results**



# SOAKAWAY TEST



Client: Cardiff Council  
 Site Name: Willowbrook Drive  
 Project Number: 13601  
 Date: 28/4/2016

Trial Pit: **TP11**

<p><b>TEST 1</b></p> <p>Length <span style="float: right;">1.60 m</span>                      Breadth <span style="float: right;">0.70 m</span>                      Depth <span style="float: right;">1.75 m</span>                      Fill Level <span style="float: right;">1.20 m</span></p> <p><math>V_{p75-25}</math> <span style="float: right;">0.308 m<sup>3</sup></span>  <math>a_{p50}</math> <span style="float: right;">2.385 m<sup>2</sup></span>  <math>t_{p75-25}</math> <span style="float: right;">0 minutes</span></p> <p><b>Soil Infiltration Rate, f</b> <span style="float: right;"><b>NIL</b> ms<sup>-1</sup></span>                      Too little water take to calculate permeability</p>	<p style="text-align: center;"><b>Time (minutes)</b></p>
<p><b>TEST 2</b></p> <p>Length <span style="float: right;">m</span>                      Breadth <span style="float: right;">m</span>                      Depth <span style="float: right;">m</span>                      Fill Level <span style="float: right;">m</span></p> <p><math>V_{p75-25}</math> <span style="float: right;">0 m<sup>3</sup></span>  <math>a_{p50}</math> <span style="float: right;">0 m<sup>2</sup></span>  <math>t_{p75-25}</math> <span style="float: right;">0 minutes</span></p> <p><b>Soil Infiltration Rate, f</b> <span style="float: right;">ms<sup>-1</sup></span></p>	<p style="text-align: center;"><b>Time (minutes)</b></p>
<p><b>TEST 3</b></p> <p>Length <span style="float: right;">m</span>                      Breadth <span style="float: right;">m</span>                      Depth <span style="float: right;">m</span>                      Fill Level <span style="float: right;">m</span></p> <p><math>V_{p75-25}</math> <span style="float: right;">0 m<sup>3</sup></span>  <math>a_{p50}</math> <span style="float: right;">0 m<sup>2</sup></span>  <math>t_{p75-25}</math> <span style="float: right;">0 minutes</span></p> <p><b>Soil Infiltration Rate, f</b> <span style="float: right;">ms<sup>-1</sup></span></p>	<p style="text-align: center;"><b>Time (minutes)</b></p>
<p><b>REMARKS:</b>                      Test carried out in general accordance with BRE DIGEST 365 (2007)</p>	

# SOAKAWAY TEST



Client: Cardiff Council  
 Site Name: Willowbrook Drive  
 Project Number: 13601  
 Date: 28/4/2016

Trial Pit: **TP12**

<p><b>TEST 1</b></p> <p>Length <span style="float: right;">1.90 m</span>                      Breadth <span style="float: right;">0.70 m</span>                      Depth <span style="float: right;">1.80 m</span>                      Fill Level <span style="float: right;">1.08 m</span></p> <p><math>V_{p75-25}</math> <span style="float: right;">0.479 m<sup>3</sup></span>  <math>a_{p50}</math> <span style="float: right;">3.202 m<sup>2</sup></span>  <math>t_{p75-25}</math> <span style="float: right;">0 minutes</span></p> <p><b>Soil Infiltration Rate, f</b> <span style="float: right;"><b>NIL</b> ms<sup>-1</sup></span>                      Too little water take to calculate permeability</p>	<p style="text-align: center;"><b>Time (minutes)</b></p>
<p><b>TEST 2</b></p> <p>Length <span style="float: right;">m</span>                      Breadth <span style="float: right;">m</span>                      Depth <span style="float: right;">m</span>                      Fill Level <span style="float: right;">m</span></p> <p><math>V_{p75-25}</math> <span style="float: right;">0 m<sup>3</sup></span>  <math>a_{p50}</math> <span style="float: right;">0 m<sup>2</sup></span>  <math>t_{p75-25}</math> <span style="float: right;">0 minutes</span></p> <p><b>Soil Infiltration Rate, f</b> <span style="float: right;">ms<sup>-1</sup></span></p>	<p style="text-align: center;"><b>Time (minutes)</b></p>
<p><b>TEST 3</b></p> <p>Length <span style="float: right;">m</span>                      Breadth <span style="float: right;">m</span>                      Depth <span style="float: right;">m</span>                      Fill Level <span style="float: right;">m</span></p> <p><math>V_{p75-25}</math> <span style="float: right;">0 m<sup>3</sup></span>  <math>a_{p50}</math> <span style="float: right;">0 m<sup>2</sup></span>  <math>t_{p75-25}</math> <span style="float: right;">0 minutes</span></p> <p><b>Soil Infiltration Rate, f</b> <span style="float: right;">ms<sup>-1</sup></span></p>	<p style="text-align: center;"><b>Time (minutes)</b></p>
<p><b>REMARKS:</b>                      Test carried out in general accordance with BRE DIGEST 365 (2007)</p>	

**Annex E**  
**Laboratory Soil Chemical Test Results**





## Certificate of Analysis

Certificate Number 16-65146

09-May-16

*Client* Terra Firma (Wales) Ltd  
5 Deryn Court  
Wharfdale Road  
Pentwyn  
Cardiff  
CF23 7HB

*Our Reference* 16-65146

*Client Reference* 13601

*Order No* (not supplied)

*Contract Title* Willowbrook Drive

*Description* 12 Soil samples.

*Date Received* 03-May-16

*Date Started* 03-May-16

*Date Completed* 09-May-16

*Test Procedures* Identified by prefix DETSn (details on request).

*Notes* Opinions and interpretations are outside the scope of UKAS accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. Observations and interpretations are outside the scope of ISO 17025. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

*Approved By*

A handwritten signature in black ink, appearing to read 'Rob Brown'.

Rob Brown  
Business Manager



2139

## Summary of Chemical Analysis

### Matrix Descriptions

*Our Ref* 16-65146

*Client Ref* 13601

*Contract Title* Willowbrook Drive

Sample ID	Depth	Lab No	Completed	Matrix Description
TP01	0.50-0.60	980915	09/05/2016	Brown slightly gravelly, sandy CLAY
TP02	0.30-0.40	980916	09/05/2016	Brown slightly gravelly, sandy CLAY
TP03	0.20-0.30	980917	09/05/2016	Brown slightly gravelly, sandy CLAY
TP04	0.40-0.50	980918	09/05/2016	Brown slightly gravelly, sandy CLAY
TP05	0.30-0.40	980919	09/05/2016	Brown slightly gravelly, sandy CLAY
TP06	0.30-0.40	980920	09/05/2016	Brown slightly gravelly, sandy CLAY
TP09	0.20-0.30	980921	09/05/2016	Brown slightly gravelly, sandy CLAY
TP10	0.30-0.40	980922	09/05/2016	Brown slightly gravelly, sandy CLAY
TP11	0.20-0.30	980923	09/05/2016	Brown slightly gravelly, sandy CLAY
TP12	0.20-0.40	980924	09/05/2016	Brown slightly gravelly, sandy CLAY
TP13	0.20-0.30	980925	09/05/2016	Brown slightly gravelly, sandy CLAY
TP14	0.40-0.50	980926	09/05/2016	Brown slightly gravelly, sandy CLAY

# Summary of Chemical Analysis

## Soil Samples

Our Ref 16-65146  
 Client Ref 13601  
 Contract Title Willowbrook Drive

Lab No	980915	980916	980917	980918	980919	980920
Sample ID	TP01	TP02	TP03	TP04	TP05	TP06
Depth	0.50-0.60	0.30-0.40	0.20-0.30	0.40-0.50	0.30-0.40	0.30-0.40
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	27/04/16	27/04/16	27/04/16	27/04/16	27/04/16	27/04/16
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
<b>Metals</b>									
Arsenic	DETSC 2301#	0.2	mg/kg	5.3	8.4	4.0	9.0	5.9	11
Cadmium	DETSC 2301#	0.1	mg/kg	1.3	0.6	0.2	0.4	0.6	1.7
Chromium	DETSC 2301#	0.15	mg/kg	11	22	22	27	22	19
Chromium III	DETSC 2301*	0.15	mg/kg	11	22	22	27	22	19
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	8.9	11	15	9.8	15	6.7
Lead	DETSC 2301#	0.3	mg/kg	36	19	16	23	32	28
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	DETSC 2301#	1	mg/kg	15	18	23	23	21	19
Selenium	DETSC 2301#	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5	< 0.5	2.5
Zinc	DETSC 2301#	1	mg/kg	99	75	60	73	85	100
<b>Inorganics</b>									
pH	DETSC 2008#			8.5	7.4	7.3	6.6	6.4	6.3
Cyanide, Total	DETSC 2130#	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	0.2	0.2
Organic matter	DETSC 2002#	0.1	%	0.3	1.0	0.3	0.5	1.4	1.1
Sulphate as SO <sub>4</sub> , Total	DETSC 2321#	0.01	%	0.07	0.03	0.02	0.03	0.08	0.07
<b>Petroleum Hydrocarbons</b>									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg						
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg						
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg						
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg						
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg						
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg						
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg						
Aliphatic C5-C35	DETSC 3072*	10	mg/kg						
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg						
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg						
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg						
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg						
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg						
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg						
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg						
Aromatic C5-C35	DETSC 3072*	10	mg/kg						
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg						



# Summary of Chemical Analysis

## Soil Samples

Our Ref 16-65146

Client Ref 13601

Contract Title Willowbrook Drive

<b>Lab No</b>	980915	980916	980917	980918	980919	980920
<b>Sample ID</b>	TP01	TP02	TP03	TP04	TP05	TP06
<b>Depth</b>	0.50-0.60	0.30-0.40	0.20-0.30	0.40-0.50	0.30-0.40	0.30-0.40
<b>Other ID</b>						
<b>Sample Type</b>	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
<b>Sampling Date</b>	27/04/16	27/04/16	27/04/16	27/04/16	27/04/16	27/04/16
<b>Sampling Time</b>	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
<b>PAHs</b>									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10	< 0.10
<b>Phenols</b>									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	0.4	0.5	0.6	< 0.3	1.0	0.5

# Summary of Chemical Analysis

## Soil Samples

Our Ref 16-65146  
 Client Ref 13601  
 Contract Title Willowbrook Drive

Lab No	980921	980922	980923	980924	980925	980926
Sample ID	TP09	TP10	TP11	TP12	TP13	TP14
Depth	0.20-0.30	0.30-0.40	0.20-0.30	0.20-0.40	0.20-0.30	0.40-0.50
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	27/04/16	27/04/16	28/04/16	28/04/16	28/04/16	28/04/16
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
<b>Metals</b>									
Arsenic	DETSC 2301#	0.2	mg/kg	8.1	8.5	8.4	7.9	8.8	8.9
Cadmium	DETSC 2301#	0.1	mg/kg	0.6	0.8	1.2	0.7	1.6	1.1
Chromium	DETSC 2301#	0.15	mg/kg	16	16	17	15	21	45
Chromium III	DETSC 2301*	0.15	mg/kg	16	16	17	15	21	45
Chromium, Hexavalent	DETSC 2204*	1	mg/kg	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Copper	DETSC 2301#	0.2	mg/kg	11	16	14	8.0	25	19
Lead	DETSC 2301#	0.3	mg/kg	44	48	49	42	48	58
Mercury	DETSC 2325#	0.05	mg/kg	< 0.05	0.06	< 0.05	< 0.05	0.06	0.06
Nickel	DETSC 2301#	1	mg/kg	13	15	16	12	19	20
Selenium	DETSC 2301#	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.9	< 0.5	1.4
Zinc	DETSC 2301#	1	mg/kg	100	110	130	100	140	140
<b>Inorganics</b>									
pH	DETSC 2008#			6.4	7.1	7.1	6.9	7.7	7.9
Cyanide, Total	DETSC 2130#	0.1	mg/kg	0.2	0.2	0.2	0.2	0.2	0.1
Organic matter	DETSC 2002#	0.1	%	2.1	2.9	2.3	2.2	2.4	2.0
Sulphate as SO <sub>4</sub> , Total	DETSC 2321#	0.01	%	0.07	0.08	0.08	0.09	0.09	0.05
<b>Petroleum Hydrocarbons</b>									
Aliphatic C5-C6	DETSC 3321*	0.01	mg/kg					< 0.01	< 0.01
Aliphatic C6-C8	DETSC 3321*	0.01	mg/kg					< 0.01	< 0.01
Aliphatic C8-C10	DETSC 3321*	0.01	mg/kg					< 0.01	< 0.01
Aliphatic C10-C12	DETSC 3072#	1.5	mg/kg					< 1.5	< 1.5
Aliphatic C12-C16	DETSC 3072#	1.2	mg/kg					< 1.2	< 1.2
Aliphatic C16-C21	DETSC 3072#	1.5	mg/kg					< 1.5	< 1.5
Aliphatic C21-C35	DETSC 3072#	3.4	mg/kg					< 3.4	< 3.4
Aliphatic C5-C35	DETSC 3072*	10	mg/kg					< 10	< 10
Aromatic C5-C7	DETSC 3321*	0.01	mg/kg					< 0.01	< 0.01
Aromatic C7-C8	DETSC 3321*	0.01	mg/kg					< 0.01	< 0.01
Aromatic C8-C10	DETSC 3321*	0.01	mg/kg					< 0.01	< 0.01
Aromatic C10-C12	DETSC 3072#	0.9	mg/kg					< 0.9	< 0.9
Aromatic C12-C16	DETSC 3072#	0.5	mg/kg					< 0.5	< 0.5
Aromatic C16-C21	DETSC 3072#	0.6	mg/kg					4.9	5.1
Aromatic C21-C35	DETSC 3072#	1.4	mg/kg					< 1.4	< 1.4
Aromatic C5-C35	DETSC 3072*	10	mg/kg					< 10	< 10
TPH Ali/Aro Total	DETSC 3072*	10	mg/kg					< 10	< 10

# Summary of Chemical Analysis

## Soil Samples

Our Ref 16-65146  
 Client Ref 13601  
 Contract Title Willowbrook Drive

Lab No	980921	980922	980923	980924	980925	980926
Sample ID	TP09	TP10	TP11	TP12	TP13	TP14
Depth	0.20-0.30	0.30-0.40	0.20-0.30	0.20-0.40	0.20-0.30	0.40-0.50
Other ID						
Sample Type	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
Sampling Date	27/04/16	27/04/16	28/04/16	28/04/16	28/04/16	28/04/16
Sampling Time	n/s	n/s	n/s	n/s	n/s	n/s

Test	Method	LOD	Units						
<b>PAHs</b>									
Naphthalene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Acenaphthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluorene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Phenanthrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Anthracene	DETSC 3303	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.08	< 0.03	< 0.03	< 0.03	< 0.03
Pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	0.06	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Chrysene	DETSC 3303	0.03	mg/kg	< 0.03	0.07	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(b)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	0.06	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(k)fluoranthene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(a)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Indeno(1,2,3-c,d)pyrene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Dibenzo(a,h)anthracene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
Benzo(g,h,i)perylene	DETSC 3303#	0.03	mg/kg	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03	< 0.03
PAH - USEPA 16, Total	DETSC 3303	0.1	mg/kg	< 0.10	0.28	< 0.10	< 0.10	< 0.10	< 0.10
<b>Phenols</b>									
Phenol - Monohydric	DETSC 2130#	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	0.9	0.3



## Summary of Asbestos Analysis Soil Samples

Our Ref 16-65146

Client Ref 13601

Contract Title Willowbrook Drive

Lab No	Sample ID	Material Type	Result	Comment*	Analyst
980925	TP13 0.20-0.30	SOIL	NAD	none	Michael Kay
980926	TP14 0.40-0.50	SOIL	Chrysotile	Bundles of Chrysotile	Michael Kay

Crocidolite = Blue Asbestos, Amosite = Brown Asbestos, Chrysotile = White Asbestos. Anthophyllite, Actinolite and Tremolite are other forms of Asbestos. Samples are analysed by DETSC 1101 using polarised light microscopy in accordance with HSG248 and documented in-house methods. NAD = No Asbestos Detected. Where a sample is NAD, the result is based on analysis of at least 2 sub-samples and should be taken to mean 'no asbestos detected in sample'. Key: \* -not included in laboratory scope of accreditation.

## Information in Support of the Analytical Results

Our Ref 16-65146  
 Client Ref 13601  
 Contract Willowbrook Drive

### Containers Received & Deviating Samples

Lab No	Sample ID	Date Sampled	Containers Received	Holding time exceeded for tests	Inappropriate container for tests
980915	TP01 0.50-0.60 SOIL	27/04/16	GJ 250ml, PT 1L		
980916	TP02 0.30-0.40 SOIL	27/04/16	GJ 250ml, PT 1L		
980917	TP03 0.20-0.30 SOIL	27/04/16	GJ 250ml, PT 1L		
980918	TP04 0.40-0.50 SOIL	27/04/16	GJ 250ml, PT 1L		
980919	TP05 0.30-0.40 SOIL	27/04/16	GJ 250ml, PT 1L		
980920	TP06 0.30-0.40 SOIL	27/04/16	GJ 250ml, PT 1L		
980921	TP09 0.20-0.30 SOIL	27/04/16	GJ 250ml, PT 1L		
980922	TP10 0.30-0.40 SOIL	27/04/16	GJ 250ml, PT 1L		
980923	TP11 0.20-0.30 SOIL	28/04/16	GJ 250ml, PT 1L		
980924	TP12 0.20-0.40 SOIL	28/04/16	GJ 250ml, PT 1L		
980925	TP13 0.20-0.30 SOIL	28/04/16	GJ 250ml, PT 1L		
980926	TP14 0.40-0.50 SOIL	28/04/16	GJ 250ml, PT 1L		

Key: G-Glass P-Plastic J-Jar T-Tub  
 DETS cannot be held responsible for the integrity of samples received whereby the laboratory did not undertake the sampling. In this instance samples received may be deviating. Deviating Sample criteria are based on British and International standards and laboratory trials in conjunction with the UKAS note 'Guidance on Deviating Samples'. All samples received are listed above. However, those samples that have additional comments in relation to hold time, inappropriate containers etc are deviating due to the reasons stated. This means that the analysis is accredited where applicable, but results may be compromised due to sample deviations. If no sampled date (soils) or date+time (waters) has been supplied then samples are deviating. However, if you are able to supply a sampled date (and time for waters) this will prevent samples being reported as deviating where specific hold times are not exceeded and where the container supplied is suitable.

### Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.  
 Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.  
 The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-  
 Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

## Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 2002	Organic matter	%	0.1	Air Dried	No	Yes	Yes
DETS 2003	Loss on ignition	%	0.01	Air Dried	No	Yes	Yes
DETS 2008	pH	pH Units	1	Air Dried	No	Yes	Yes
DETS 2024	Sulphide	mg/kg	10	Air Dried	No	Yes	Yes
DETS 2076	Sulphate Aqueous Extract as SO4	mg/l	10	Air Dried	No	Yes	Yes
DETS 2084	Total Carbon	%	0.5	Air Dried	No	Yes	Yes
DETS 2084	Total Organic Carbon	%	0.5	Air Dried	No	Yes	Yes
DETS 2119	Ammoniacal Nitrogen as N	mg/kg	0.5	Air Dried	No	Yes	Yes
DETS 2130	Cyanide free	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2130	Cyanide total	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2130	Phenol - Monohydric	mg/kg	0.3	Air Dried	No	Yes	Yes
DETS 2130	Thiocyanate	mg/kg	0.6	Air Dried	No	Yes	Yes
DETS 2321	Total Sulphate as SO4	%	0.01	Air Dried	No	Yes	Yes
DETS 2325	Mercury	mg/kg	0.05	Air Dried	No	Yes	Yes
DETS 3049	Sulphur (free)	mg/kg	0.75	Air Dried	No	Yes	Yes
DETS 2123	Boron (water soluble)	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Arsenic	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Barium	mg/kg	1.5	Air Dried	No	Yes	Yes
DETS 2301	Beryllium	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Cadmium Available	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2301	Cadmium	mg/kg	0.1	Air Dried	No	Yes	Yes
DETS 2301	Cobalt	mg/kg	0.7	Air Dried	No	Yes	Yes
DETS 2301	Chromium	mg/kg	0.15	Air Dried	No	Yes	Yes
DETS 2301	Copper	mg/kg	0.2	Air Dried	No	Yes	Yes
DETS 2301	Manganese	mg/kg	20	Air Dried	No	Yes	Yes
DETS 2301	Molybdenum	mg/kg	0.4	Air Dried	No	Yes	Yes
DETS 2301	Nickel	mg/kg	1	Air Dried	No	Yes	Yes
DETS 2301	Lead	mg/kg	0.3	Air Dried	No	Yes	Yes
DETS 2301	Selenium	mg/kg	0.5	Air Dried	No	Yes	Yes
DETS 2301	Zinc	mg/kg	1	Air Dried	No	Yes	Yes
DETS 3072	Ali/Aro C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aliphatic C10-C12	mg/kg	1.5	As Received	No	Yes	Yes
DETS 3072	Aliphatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aliphatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aliphatic C12-C16	mg/kg	1.2	As Received	No	Yes	Yes
DETS 3072	Aliphatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aliphatic C16-C21	mg/kg	1.5	As Received	No	Yes	Yes
DETS 3072	Aliphatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETS 3072	Aliphatic C21-C35	mg/kg	3.4	As Received	No	Yes	Yes
DETS 3072	Aromatic C10-C12	mg/kg	0.9	As Received	No	Yes	Yes
DETS 3072	Aromatic C10-C12	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aromatic C10-C35	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aromatic C12-C16	mg/kg	0.5	As Received	No	Yes	Yes
DETS 3072	Aromatic C12-C16	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aromatic C16-C21	mg/kg	0.6	As Received	No	Yes	Yes
DETS 3072	Aromatic C16-C21	mg/kg	10	As Received	No	Yes	Yes
DETS 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 3072	Aromatic C21-C35	mg/kg	1.4	As Received	No	Yes	Yes
DETS 062	Benzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Ethylbenzene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Toluene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	m+p Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 062	o Xylene	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3311	C10-C24 Diesel Range Organics (DRO)	mg/kg	10	As Received	No	Yes	Yes
DETS 3311	C24-C40 Lube Oil Range Organics (LORO)	mg/kg	10	As Received	No	Yes	Yes
DETS 3311	EPH (C10-C40)	mg/kg	10	As Received	No	Yes	Yes



## Appendix A - Details of Analysis

Method	Parameter	Units	Limit of Detection	Sample Preparation	Sub-Contracted	UKAS	MCERTS
DETS 3303	Acenaphthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Acenaphthylene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(a)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(a)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(b)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(k)fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Benzo(g,h,i)perylene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Dibenzo(a,h)anthracene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Fluoranthene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Indeno(1,2,3-c,d)pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Naphthalene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Phenanthrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3303	Pyrene	mg/kg	0.03	As Received	No	Yes	Yes
DETS 3401	PCB 28 + PCB 31	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 52	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 101	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 118	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 153	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 138	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB 180	mg/kg	0.01	As Received	No	Yes	Yes
DETS 3401	PCB Total	mg/kg	0.01	As Received	No	Yes	Yes

Method details are shown only for those determinands listed in Annex A of the MCERTS standard. Anything not included on this list falls outside the scope of MCERTS. No Recovery Factors are used in the determination of results. Results reported assume 100% recovery. Full method statements are available on request.

**ANNEX F**  
**Soil Plasticity Test Results**



# Laboratory Report



GEO Site & Testing Services Ltd

## Contract Number: 30883

Client's Reference: **13601**

Report Date: **23-05-2016**

Client **Terrafirma Wales Ltd**  
**5 Deryn Court**  
**Wharfedale Road**  
**Pentwyn**  
**Cardiff**  
**CF23 7HB**

Contract Title: **Willowbrook Drive**  
For the attention of: **James Williams**

Date Received: **10-05-2016**  
Date Commenced: **10-05-2016**  
Date Completed: **23-05-2016**

Test Description	Qty
<b>Moisture Content</b> 1377 : 1990 Part 2 : 3.2 - * UKAS	4
<b>4 Point Liquid &amp; Plastic Limit (LL/PL)</b> 1377 : 1990 Part 2 : 4.3 & 5.3 - * UKAS	4
<b>Disposal of Samples on Project</b>	1

**Notes:** Observations and Interpretations are outside the UKAS Accreditation  
\* - denotes test included in laboratory scope of accreditation  
# - denotes test carried out by approved contractor  
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced in full, without the prior written approval of the laboratory.

**Approved Signatories:**

Alex Wynn (Associate Director) - Benjamin Sharp (Contracts Manager) - Emma Sharp (Office Manager)  
Paul Evans (Quality/Technical Manager) - Vaughan Edwards (Managing Director)





Test Report: **Method of the Determination of the plastic limit and plasticity index**  
**BS 1377 : Part 2 : 1990 Method 5**

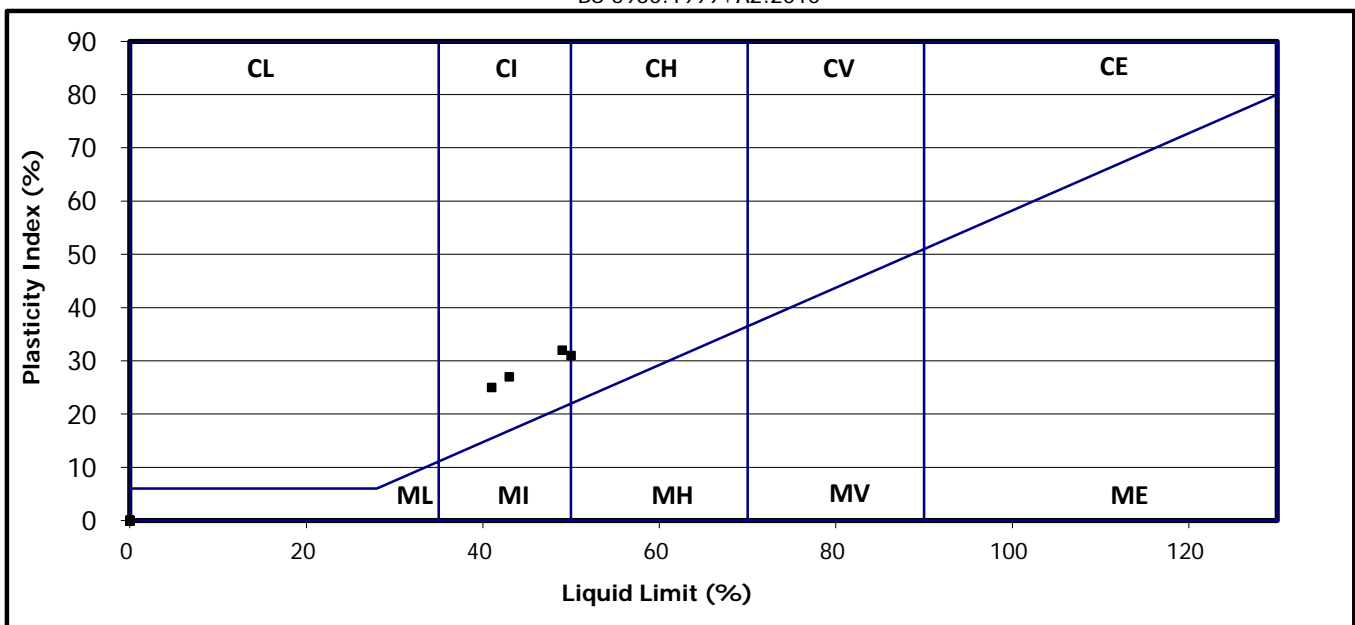
Client ref: **13601**  
 Location: **Willowbrook Drive**  
 Contract Number: **30883-**

Hole/ Sample Number	Sample Type	Depth m	Moisture Content % Cl. 3.2	Liquid Limit % Cl. 4.3/4.4	Plastic Limit % Cl. 5.	Plasticity Index % Cl. 6.	% Passing .425mm	Remarks
TP02		0.30 - 0.40	18	49	17	32	86	CI Intermediate Plasticity
TP03		0.20 - 0.30	14	50	19	31	78	CI/H Inter/High Plasticity
TP08		0.80 - 0.90	15	43	16	27	74	CI Intermediate Plasticity
TP13		1.90 - 2.00	12	41	16	25	73	CI Intermediate Plasticity

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION.

BS 5930:1999+A2:2010



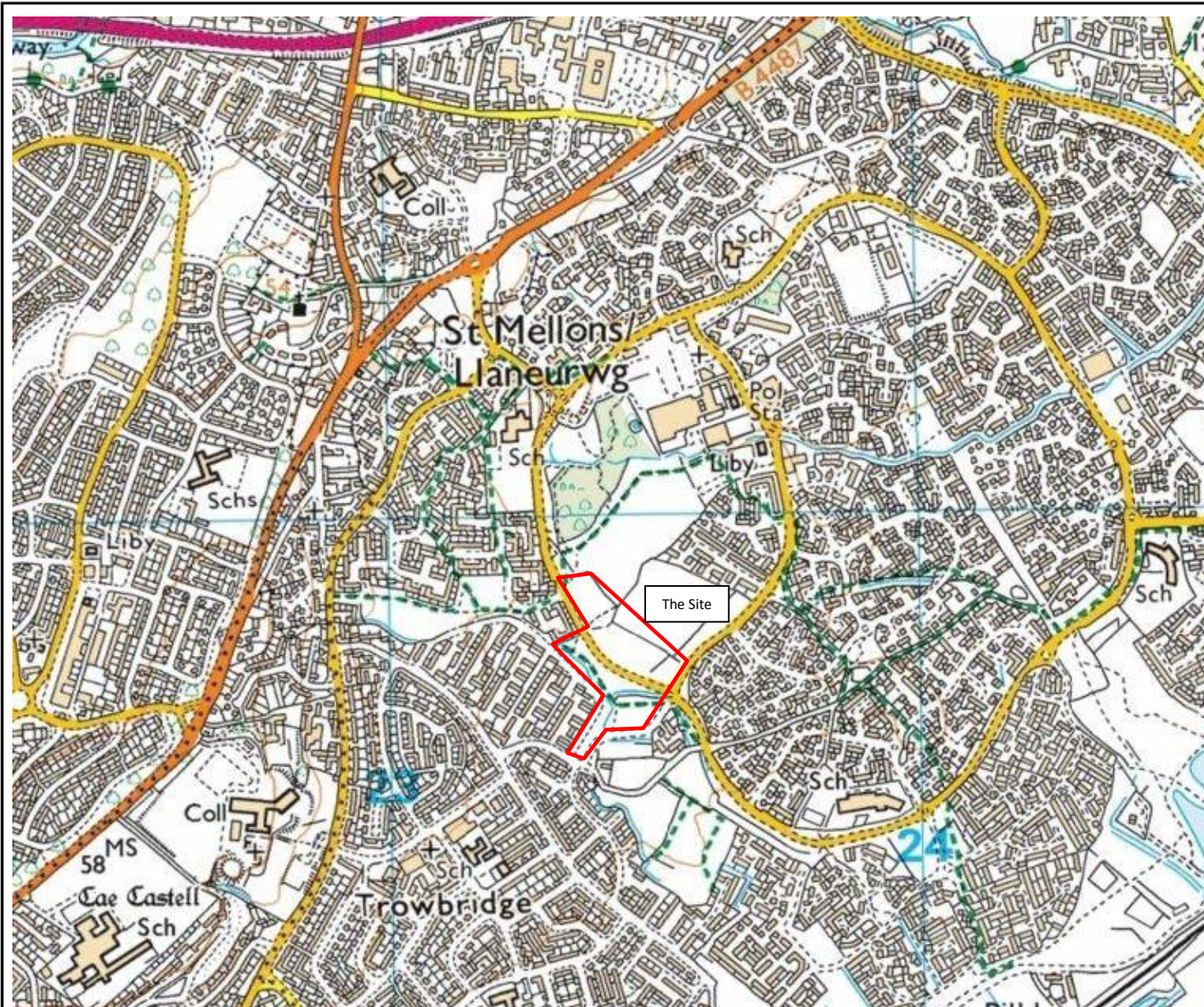
For and behalf of GEO Site & Testing Services Ltd

Authorised By:  
**Emma Sharp (Office Manager)**  
 Date: **23.5.16**



**DRAWINGS**





Job Number:  
13601

Job Title:  
Willowbrook Drive

Drawing Title:  
Site Location

Drawing Number:  
01

Scale:  
Not To Scale



North







**KEY**

-  Trail Pit
- S** Soakaway
-  Vegetation (polygon)



Job Number: 13601

Job Title: Willowbrook Drive

Drawing Title: Existing Site Layout

Drawing Number: 02

Scale: Not To Scale

North

