Andrew Hall

7 TEN ACRE WOOD, MARGAM

Coal Mining Risk Assessment

14283/LP/23/CMRA

Intégral
Géotechnique

CLIENT: **Andrew Hall**

PROJECT: **7 Ten Acre Wood, Margam**

TITLE: **Coal Mining Risk Assessment**

JOB NO: **14283**

DOCUMENT REF: **14283/LP/23/CMRA**

Revision	Purpose Description	Originated	Reviewed	Authorised	Date
0	Final	LP	HP	RB	November 2023

Geotechnical Engineers:

Intégral Géotechnique (Wales) Limited
Integral House
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX

Tel: 029 2080 7991

CONTENTS

1.0 INTRODUCTION

1.1 General
1.2 Proposed Development
1.3 Scope of Works
1.4 Limitations

2.0 THE SITE

2.1 Site Location and Description
2.2 Site Operations
2.3 Surrounding Land Use
2.4 Available Site Investigation Data

3.0 SITE HISTORY

4.0 SITE ENVIRONMENTAL SETTING

4.1 Physical Setting
4.2 Geology
4.3 Mining

5.0 ASSESSMENT OF MINING CONSTRAINTS

5.1 Risks from Mining Legacy
5.2 Risks from Abandoned Mineworkings
5.3 Risks from Abandoned Mine Entries - Shafts
5.4 Risks from Abandoned Mine Entries – Adits
5.5 Coal Mining Geology (Faults and Fissures)
5.6 Record of Past Mine Gas Emissions or Potential
5.7 Recorded Coal Mining Surface Hazard
5.8 Surface Mining (Opencast Workings)
5.9 Development Risk Plan
5.10 Development Precautions

6.0 ENVIRONMENTAL RISK ASSESSMENT

APPENDICES

Appendix A History and Geology Maps
Appendix B Consultants Coal Mining Report from The Coal Authority

FIGURES

Figure 1 Site Location
Figure 2 Site Plan
Figure 3 Geology Plan Extract

1.0 INTRODUCTION

1.1 GENERAL

Mr Andrew Hall is proposing the construction of a new property at 7 Ten Acre Wood in Margam for residential end-use.

In support of the planning submission, Intégral Géotechnique (Wales) Limited have been appointed as the Geotechnical Engineers to undertake a Coal Mining Risk Assessment.

This report presents the findings of the desk study and coal mining searches and sets out the Coal Mining Risk Assessment in line with the Coal Authority's guidelines.

This report (including all appendices to it and any subsequent addendums or correspondence) has been prepared for the sole benefit, use and information of Mr Andrew Hall and no third party is entitled or permitted to rely on it. This report may not be used, reproduced, or circulated (in whole or part) for any purpose without the written consent of Intégral Géotechnique (Wales) Limited. Intégral Géotechnique (Wales) Limited shall not be liable to any third party who does not have such express written permission to rely on the report for any losses they may suffer.

1.2 PROPOSED DEVELOPMENT

The proposed development will comprise the demolition of the existing residential dwelling and the construction of a new property. The development will also include an associated driveway and parking areas.

1.3 SCOPE OF WORKS

The objectives of the coal mining risk assessment are to:

1. Present a desk-based review of all available information within this report on the coal mining issues which are relevant to the site.
2. Use the information obtained to identify and assess the risks to the proposed development from coal mining legacy, including cumulative impact issues.
3. Set out appropriate mitigation measures to address the coal mining legacy issues affecting the site, including any necessary remedial works and/or demonstrate how coal mining issues have influenced the proposed development.

1.3 SCOPE OF WORKS (CONTINUED)

4. Demonstrate to the Local Planning Authority that the application is or can be made safe and stable to meet the requirements of the National Planning Policy Framework and the requirements of the Coal Authority in respect of their determination of planning application consultations.
5. Minimise the risks and effects of land instability on properties, infrastructure, and the public.
6. Help to ensure that various types of development should not be placed in unstable locations without appropriate precautions.
7. Bring unstable land, wherever possible, back into productive use.
8. Assist in safeguarding public and private investment by a proper appreciation of site conditions and necessary precautionary measures.

This report has been prepared in general accordance with the guidance within Section 11 of CIRIA Report C758 - Abandoned Mine Workings Manual and the Mining Risk Assessment Model Report Template and intends to demonstrate to the Local Planning Authority and the Coal Authority that the site is, or can be, made safe and stable, and to meet the requirements of the National Policy Planning Framework (NPPF).

The coal mining risk assessment comprised a review of:

- Old Ordnance Survey maps covering the site,
- Geological maps of the area provided by the British Geological Survey,
- A Consultants Coal Mining Report obtained from The Coal Authority.

1.4 LIMITATIONS

This document is intended to be a working document for further development in discussion with all concerned including the Local Planning Authority and The Coal Authority.

2.0 THE SITE

2.1 SITE LOCATION AND DESCRIPTION

The site is located within an existing residential development known as Ten Acre Wood in Margam, at a National Grid Reference of 279750, 186270, see Figure 1.

The site is irregular in shape and occupies an area of approximately 0.2 hectares. The boundaries of the site are defined by existing residential properties and associated grounds to the north and south, a wooded area to the west and an existing road to the southeast. A site plan is shown on Figure 2.

The site is situated on ground which gently rises to the east from an approximate minimum elevation of 23m AOD in the western area of the site to an approximate maximum elevation of 28m AOD within the eastern corner.

The site is occupied by a detached residential property with pedestrian access from the road to the southeast. There is vehicular access and parking to the north of the property. The remainder of the site is formed by mature gardens including lawns and planting.

2.2 SITE OPERATIONS

The site is currently a residential property with associated grounds.

2.3 SURROUNDING LAND USE

The surrounding areas are developed for residential use within an existing woodland.

2.4 AVAILABLE SITE INVESTIGATION DATA

There is no available site investigation data for the site to our knowledge.

3.0 SITE HISTORY

The recent history of the site has been traced with the aid of the following historical maps which have been presented in Appendix A:

Map Scale	Dates
1:2,500	1877, 1899, 1918, 1963-1964, 1970, 1979-1988, 1991, 1993, 2001 (aerial photo)
1:10,560	1885, 1900, 1921, 1938-1952, 1949 (aerial photo)
1:10,000	1964-1965, 1982-1988, 1990-1993, 1999, 2006, 2023

The earliest edition of the map dated 1877 indicated the site to be located within an undeveloped wooded area. The site and the surrounding areas are covered with mixed coniferous and non-coniferous trees. A gravel pit was indicated to encroach across the northern boundary of the site. An existing road formed the southeast boundary with Margam Park located beyond the road to the east and southeast.

The 1899 edition of the map indicated the site and the surrounding area had remained relatively unchanged apart from the gravel pit which was now indicated to be “old”. The area in which the site was located was now known as Ten Acre Wood.

There were no significant changes to the site or the surrounding areas until the edition of the map dated 1963-1964. By this time a residential property (7 Ten Acre Wood) had been constructed approximately within the centre of the site and the site had been cleared of trees. An additional four detached residential properties had been constructed within a cleared area to the northwest of the site, and a row of garages had been constructed to the north in the vicinity of the old gravel pit.

The 1970 edition of the map indicated that development had continued within Ten Acre Wood. The site remained unchanged but additional properties had been constructed to the northwest and south of the site.

The site and the immediate surrounding areas remained relatively unchanged over the subsequent years and Margan Country Park continued to develop further to the east. The 1979-1988 edition of the map indicated the construction of the M4 and the junction roundabout approximately 100m to the southwest of the site.

The 1991 edition of the map indicated the property on site to have been extended and the large plot had been divided into three plots with two residential properties, known as 7a and 7b, constructed to the northeast.

3.0 SITE HISTORY (CONTINUED)

The site and the surrounding areas have remained relatively unchanged between the 1990's and the present day. The year 2001 aerial photo indicated the residential property located approximately within the centre of the site with large lawned areas around the property and with an access and driveway area.

4.0 SITE ENVIRONMENTAL SETTING

4.1 PHYSICAL SETTING

The site is located within a mixed residential woodland setting on the western edge of Margam Country Park.

The site is situated on ground which gently rises to the east from an approximate minimum elevation of 23m AOD in the western area of the site to an approximate maximum elevation of 28m AOD within the eastern corner.

4.2 GEOLOGY

The 1:50,000 and 1:10,560 scale (Sheet No. SS 78 NE) geological maps of the area indicate the site to be underlain by strata of the South Wales Middle Coal Measures Formation of the Carboniferous period. These rocks typically comprise grey productive coal-bearing mudstones/siltstones, with seatearths and minor sandstones. There are no strata dips in the vicinity of the site, but a northerly dip is confirmed by the information provided by the Generalised Vertical Section (GVS) with dip angles much further to the west of the site indicated to be 19°. The geology map indicates an approximately northwest to southeast trending Conjectural Thrust located 190m to the south of the site.

The conjectural outcrop of the Two Feet Nine seam is indicated on a northwest of southeast orientation approximately through the centre of the site and would therefore underlie the site at shallow depths to the north of the conjectural outcrop. The Upper Four Feet seam conjecturally outcrops approximately 30m south of the site and based on the northerly strata dips this seam would also underlie the site at shallow depths. The conjectural outcrops of the Lower Four Feet and Six Feet seams are indicated approximately 80m and 120m respectively further to the south of the site. These seams would also underlie the site but likely to be at depths greater than 30m.

Due to the location of the conjectural thrust this sequence of seams repeats beyond the thrust approximately 300m to the south of the site.

Superficial Glaciofluvial Deposits of the Quaternary period are indicated to overlie the solid strata. These deposits are variable in nature and typically comprise sand and gravel. Available information from boreholes located to the southwest of the site, associated with the motorway and roundabout construction, suggest that the superficial deposits could be in the order of 15m in thickness.

An extract from the geology map is presented in Figure 3.

4.2 GEOLOGY (CONTINUED)

Made ground or reworked material would be anticipated within the site associated with the construction and subsequent extension of the residential property and associated driveway. Topsoil/subsoil would be expected within the garden areas that have remained undeveloped.

A summary of the anticipated geological succession is given below in Table 1.

Table 1: Summary of Anticipated Site Geology

Geological unit	Horizon	Description
Recent	Topsoil/subsoil with areas of made ground or reworked materials	Various materials
Quaternary	Glaciofluvial Deposits	Variable sand and gravel
Carboniferous	South Wales Middle Coal Measures Formation	Grey productive coal-bearing mudstones/siltstones, with seatearths and minor sandstones

4.3 MINING

The site is located within a coal mining reporting area and therefore a Consultants Coal Mining Report has been obtained from the Coal Authority and a copy is included in Appendix B.

An appraisal of the mining data and its significance is presented below.

Past Underground Coal Mining

The Coal Authority states that there is no past underground mining recorded beneath the site. The Coal Authority Interactive map indicates the nearest recorded workings in the area to be approximately 300m to the southwest.

Probable Unrecorded Shallow Workings

The Coal Authority state that probable unrecorded workings is “none” and there are no recorded shallow roadways. However, this does not mean that shallow workings or roadways do not exist, but rather any information to support this has not come into the possession of the Coal Authority. The Coal Authority indicate the presence of two conjectural outcrops within, or within an influencing distance of, the site.

4.3 MINING (CONTINUED)

As discussed previously, the conjectural outcrop of the Two Feet Nine seam is indicated on a northwest of southeast orientation approximately through the centre of the site and would therefore underlie the site at shallow depths to the north of the conjectural outcrop. The Upper Four Feet seam conjecturally outcrops approximately 30m south of the site and based on the northerly strata dips this seam would also underlie the site at shallow depths. The Coal Authority indicate that both of these seams are considered to be workable. The conjectural outcrops of the Lower Four Feet and Six Feet seams are indicated approximately 80m and 120m respectively further to the south of the site. Based on the information contained on the Generalised Vertical Section (GVS) the Upper Four Feet seam is located approximately 20m below the Two Feet nine seam, which conjecturally outcrops beneath the site, and would therefore underlie the site at shallow depths. The next seam in the sequence is the Lower Four Feet seam which is located approximately 14m further down and would therefore be anticipated at depths of approximately 34m, which is considered to be marginally shallow. The underlying Six Feet seam would be anticipated to be deeper than these seams. The presence of unrecorded shallow workings within the Two Feet Nine and Upper Four Feet seams should not be ruled out at this stage. Unrecorded workings within the Lower Four Feet seam may also be marginally shallow.

Note that the Coal Authority Interactive map indicates the site falls with a development high risk area.

Spine Roadways at Shallow Depth

The Coal Authority have indicated that shallow spine roadways are not recorded at shallow depths. Unrecorded shallow roadways should not be completely ruled out.

Mine Entries

The Coal Authority indicates that there are no mine entries recorded on site or within 100m of the site boundary. Unrecorded features should not be ruled out. The Coal Authority Interactive Map indicates that there are no recorded mine entries within 1km of the site boundary.

Geological Faults, Fissures and Breaklines

The Coal Authority states that there are *"no faults, fissures or breaklines recorded"* within an influencing distance of the site. There are no issues regarding faults affecting the site.

Opencast Mines

The Coal Authority indicates that there are no opencast mines recorded within 500m of the site boundary. There are no issues regarding opencast workings within the site.

4.3 MINING (CONTINUED)

Coal Authority Managed Tips

The Coal Authority states that there are no managed tips recorded within 500m of the site boundary.

The latest guidance published by the Welsh Government and its partners include a Mining and Coal Tip Safety document, published on the 14th of November 2023, which assigns an identification number (UID), a category, and the immediate status of each disused coal tip in Wales. This document also confirms that there are no managed tips within an influencing distance of the site.

Coal Mining Subsidence

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

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

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

There are no recorded instances regarding subsidence within the site.

Mine Gas

The Coal Authority states that with regards to mine gas *"none recorded within 500 metres of the enquiry boundary."*

However, gas evolution from coal seams and accumulated sources such as abandoned tunnels and workings cannot be discounted and will require further assessment conducted in accordance with CL:AIRE document Good Practice for Risk Assessment for Coal Mine Gas Emissions, dated October 2021.

With the potential for unrecorded shallow workings beneath the site a mine gas risk assessment should be undertaken to confirm the level of gas risk within the site.

Future Underground Mining and Section 46 Notices

The Coal Authority does not have any current records relating to future underground mining.

4.3 MINING (CONTINUED)

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

There are no currently understood issues regarding future workings or subsidence.

Overall Assessment

Based on the information provided by the geology maps, and the additional information contained within the Consultants Coal Mining Report, there is potential for unrecorded shallow workings to be present beneath the site. Any unrecorded workings would be associated with the conjectural outcrops indicated both within the site and to the south within the Two Feet Nine and Upper Four Feet seams. Both of these seams are considered to be workable. There is also a risk that there could be unrecorded workings with the Lower Four Feet seam which may also be marginally shallow. The Coal Authority have classified the site as a high-risk development area in the vicinity of the conjectural outcrops and across the site. Our desk-based assessment would agree with this classification. It should be noted that all the outcrops are conjectural and when also considering the presence of the conjectural thrust the conjectural outcrops may not be located as mapped.

Further intrusive investigation in the form of deep rotary boreholes to a depth of 30m to 35m would be required to determine the level of risk to the development, and to define the location of the outcrops and the high-risk area based on-site specific data.

5.0 ASSESSMENT OF MINING CONSTRAINTS

5.1 RISKS FROM MINING LEGACY

The desk study search of the various coal mining information and maps identifies the following site-specific coal mining legacy risks to the site, see Table 2.

Table 2: Mining Legacy Risk Table

Coal Mining Issue	Yes	No	Risk Assessment	
			Rating	Comments
Underground coal mining (recorded at shallow depths)		X	Low risk	No recorded workings beneath the site or within 250m of the site boundary
Underground coal mining (possible at shallow depths)	X		Moderate risk	Unrecorded shallow workings possible beneath the site with conjectural workable outcrops within the site and to the south
Mine entries (shafts)		X	Low risk	No shafts recorded within 100m of the site boundary. Unrecorded features should not be ruled out
Mine entries (adits)		X	Low risk	No adits recorded within 100m of the site boundary. Unrecorded features should not be ruled out
Coal mining geology (faults and fissures)		X	Low risk	No faults indicated within an influencing distance of the site
Record of past mine gas emissions or potential	X		Moderate risk	Potential for unrecorded workings. All mineworkings pose a potential gas risk which should be considered in any future investigations and development.
Recorded coal mining surface hazard		X	Low risk	None recorded.
Surface mining (opencast workings)		X	Low risk	None recorded.

A summary of the risk posed by these features is summarised after thorough analysis of the information sources. Comment on each specific coal mining issue follows below:

5.2 RISKS FROM ABANDONED MINEWORKINGS

Coal mining at depths shallower than 30m to 35m beneath ground level can pose constraints to development in the form of ground stability at the surface. The magnitude of this effect depends upon the exact depth of any workings, the thickness of competent rock cover and the extraction thickness of any coal mine workings.

The Coal Mining Risk Assessment shows that it is possible that shallow unrecorded workings may be present beneath the site.

To ensure that properties constructed over mineworkings are not affected by subsidence associated with past mining, a rock head cover in the order of ten times the maximum void thickness of the workings is generally required depending on the nature of the overlying rock strata. Based on the available information intrusive works would be required to confirm if the required rock head cover is present beneath the site.

5.3 RISKS FROM THE ABANDONED MINE ENTRIES - SHAFTS

No mine shafts have been recorded on site or within 100m of the site boundary. The presence of unrecorded mine entries should not be ruled out.

Until recently, shafts were rarely treated on abandonment to any significant engineering standard. They were typically loosely backfilled, or with inferior capping constructed over them. With time, backfills may settle and caps fail, resulting in significant ground loss. Therefore, if a shaft lies partly or wholly within a site, or within a 20m buffer zone drawn outside the site boundary, then its effect should be considered in the site development. The size of buffer, or no development zone, will depend on the diameter of the shaft the depth to rockhead and an assessment of the shaft's condition.

After the validation of the shaft caps, and, depending on their condition, a 20m radius exclusion zone for buildings should be applied.

If the development constraints require building structures to be constructed within a 15m radius of the shaft position, then pressure grouting of the shaft will be required. On completion and validation of these potential works, details of a reduced radius exclusion zone may be reported to suit the development.

The development site sits within a historical mining area and therefore there is a residual risk of unrecorded mine entries to be present on site. All site operatives should be made aware of this potential risk and a watching brief should be maintained during site works.

5.4 RISKS FROM THE ABANDONED MINE ENTRIES - ADITS

No mine adits have been recorded on site or within 100m of the site boundary. The presence of unrecorded mine entries should not be ruled out.

Until recently, adits were rarely treated on abandonment to any significant engineering standard. Whilst it is likely that an adit entrance itself would have been treated, the remainder of an adit roadway may still be intact. They may have been only loosely backfilled or might be partially collapsed. Therefore, if an adit is located within influencing distance of the surface, then treatment may be required. Normal procedure would be to establish a 20m buffer zone drawn parallel to the feature within a development site. The size of buffer or no development zone, will depend on the diameter of the adit, the depth to rockhead and an assessment of the adit condition.

Hence there will need to be checks on site using drilling techniques to determine the location, form and degree of hazard posed by the feature, if found.

The site sits within an historical mining area and therefore there is a residual risk of unrecorded mine entries to be present on site. All site operatives should be made aware of this potential risk and a watching brief should be maintained during site works.

5.5 COAL MINING GEOLOGY (FAULTS AND FISSURES)

The development site sits upon the bedrock of the South Wales Middle Coal Measures Formation.

The Coal Authority does not indicate any faults within an influencing distance of the site. The conjectural thrust to the south of the site should be considered as it may affect the location of the coal outcrops which are only conjectural on the geology map and within the Consultants Coal Mining Report.

5.6 RECORD OF PAST MINE GAS EMISSIONS OR POTENTIAL

The Coal Authority do not record any mine gas within 500m of the site boundary. It should be noted that coal seams and coal mine workings pose a potential gas risk which should be considered in any future investigations and development.

At development sites with shallow coal workings, possible shallow coal mine workings, or pathway features such as mine entries and geological disturbances on or nearby the site, a more detailed gas risk assessment should be undertaken in accordance with CL:AIRE document Good Practice for Risk Assessment for Coal Mine Gas Emissions, dated October 2021.

5.6 RECORD OF PAST MINE GAS EMISSIONS OR POTENTIAL (CONTINUED)

There are many sources of gas in mine workings including desorption of gas from coal and rocks, oxidation of coal, decomposition of old wood (such as pit props) and acidic mine drainage reacting with carbonate in the rocks around the seam or shaft. These gases, if produced within the old workings, would need a viable pathway to the surface such as a shaft or fractured rock above the workings.

Based on the desk-based research, the potential risk from coal mine gas emissions at the development site is considered below:

Figure 13.1 Decision Support Tool for Mine Gas Risk Assessment, included within CL:AIRE document Good Practice for Risk Assessment for Coal Mine Gas Emissions, dated October 2021 includes a flow chart to aid the risk assessment process and decision making.

Stage 1 of the flow chart asks if the site is within a Coal Authority defined Coal Mining Reporting Area. Since the site is located within a Coal Authority defined Coal Mining Reporting Area the flow chart then asks if all of the following statements are true:

- Mine entries >50m from site boundary,
- Workings >150m depth,
- No faults or other potential pathways connecting surface to deeper unflooded workings,
- Outside area of past or probable shallow workings on Coal Authority viewer.

Based on the information gained from the desk-based research, it is considered that the Stage 1 statements are not true due to the potential presence of shallow unrecorded workings.

Intrusive works are recommended to confirm the level of gas risk. If shallow workings are found beneath the proposed development area, a programme of gas monitoring would become required, and a mine gas risk assessment should be undertaken based on the results. The recommended boreholes would also confirm the thickness of superficial deposits and whether or not the workings are flooded. All these factors would provide a basis for the mine gas risk assessment.

If no workings are found as part of the intrusive works, the site would be classified as being within a “Negligible Risk Zone” with no mine entries recorded, no fault features to form a pathway and with the site outside the area of past or probable shallow workings. Based on a negligible risk classification, mitigation would not be required for the proposed residential development.

5.7 RECORDED COAL MINING SURFACE HAZARD

None recorded.

5.8 SURFACE MINING (OPENCAST WORKINGS)

None recorded within the site or within 500m of the site boundary.

5.9 DEVELOPMENT RISK PLAN

The site is underlain by the conjectural outcrop of one coal seam and with additional conjectural outcrops to the south of the site. There is potential for unrecorded workings within the two workable coal seams as discussed by The Coal Authority (Two Feet Nine and Upper Four Feet seams) and also within the Lower Four Feet seam which may be marginally shallow. Development in areas potentially underlain by shallow mine workings require appropriate site investigation and possibly remedial mitigation measures.

The development high-risk area as defined by the Coal Authority is indicated to follow the conjectural outcrops of the coal seams and extend north across the site. Our desk-based research confirms this high-risk classification.

The depth to any workings beneath the site, the thickness of workings and the thickness of the overlying superficial deposits and rock cover would determine the requirement for any remedial mitigation measures. Appropriate intrusive investigation may be able to lower the risk where shallow workings are not found or are proven to have an acceptable rock cover. Where shallow workings are encountered without appropriate rock cover, mitigation measures can be designed and undertaken. Similar intrusive investigation and potential mitigation measures would have been utilised to successfully develop the surrounding areas and would be appropriate to safely develop this site if any shallow unrecorded workings were found.

The Coal Authority interactive map indicates the site to be located within a high-risk development area. Our desk-based research confirms this assessment due to the outcrops within the site and to the south. It is considered that there is potential for the risk to be lowered or removed by conducting a site investigation. Intrusive works may discount any potential risk or may highlight remediation work which would be required to be undertaken prior to the site being developed.

The coal mining legacy issues outlined in this report, including the potential for shallow unrecorded workings and unrecorded mine entries to be present within the site, will have implications for the proposed development.

5.9 DEVELOPMENT RISK PLAN (CONTINUED)

Therefore, at this early stage, as a minimum precaution against potential localised subsidence over localised remnant voids, for preliminary purposes only, it is recommended that the foundations of the proposed buildings should be reinforced such that they are capable of spanning potential voids of up to 3m diameter, with cantilever effects of 1.5m at the edges/corners.

Although the above-described reinforced foundations would be capable of protecting against potential localised subsidence incidents, they would not be sufficient to protect against more widespread subsidence which could result if more significant or widespread remnant voids are still present beneath the site.

5.10 DEVELOPMENT PRECAUTIONS

Site Investigation and/or Remediation

Due to the potential presence of unrecorded mine workings at shallow depth, an intrusive site investigation will be required. The recommended works should confirm if any unrecorded shallow workings are present beneath the site.

The site investigation works should be carried out in accordance with the guidance Section 12 of CIRIA Report C758 - Abandoned Mine Workings Manual.

The extent, depth and condition of the seams should be proved across the site by drilling a series of boreholes. Where voids/workings are found the degree of extraction can be estimated with more certainty to determine the potential abnormal costs for development.

The site investigations will need to be carried out by a competent contractor, considering the findings of this report. The results should be interpreted by a qualified and competent person so that an appropriate remedial strategy can be developed.

Due to the difficulties in identifying coal related gas hazards and the proximity to other developments, it will be necessary to complete a mine gas risk assessment for the development site by undertaking a programme of gas monitoring if unrecorded workings are found and using the site-specific data to complete a mine gas risk assessment. This may recommend a requirement for gas protection measures to be incorporated within the foundation design, which are resistant to permanent gases (carbon dioxide, methane, carbon monoxide).

5.10 DEVELOPMENT PRECAUTIONS (CONTINUED)

If any of the recommended boreholes should encounter significant voids, then the above assessments may need to be reviewed and drilling and grouting stabilisation measures, or more proof drilling may become required. Bearing in mind the nature of the shallow workings, the most likely ground remediation/stabilisation strategy would be grout injection to fill any mine void spaces that could lead to ground instability in or around the proposed development. This strategy would have to be designed by a qualified and competent engineer and carried out by a qualified and competent contactor.

The occurrence of unrecorded mine entries across the whole of the site cannot be discounted and consequently in areas of new build development a watching brief should be maintained throughout the site works to identify this risk. As a result, all site operatives should be made aware of this potential risk.

Coal Authority Permit

Any intrusive activities, including initial site investigation boreholes and any subsequent treatment of coal mine workings/coal mine entries for ground stability purposes require the prior written permission of the Coal Authority.

6.0 ENVIRONMENTAL RISK ASSESSMENT

There are several environmental hazards associated with the grouting of mine workings and a hazard assessment is presented in Table 3 overleaf.

Risk mitigation measures will need to be implemented to manage groundwater and mine gasses that may be encountered during the works. Consideration will also need to be given to the impact of PFA grouts on groundwater quality. A CIRIA 552 risk assessment table is presented below and demonstrates how these risks can be addressed.

6.0 ENVIRONMENTAL RISK ASSESSMENT (CONTINUED)

Table 3: Preliminary Conceptual Site Model / Conceptual Exposure Model

Source	Pathway	Receptor	Consequence of risk being realised	Probability of risk being realised	Risk Classification	Potential risk management requirements / options
Displacement of groundwater by grout or fill	Mineworkings and fractures / discontinuities	Secondary aquifer	Minor	Unlikely	Very Low risk	Research suggests groundwater constituent monitoring in the Coal Measures has not indicated the presence of contamination. An assessment of groundwater constituent fate and transport may be required. Unlikely that the site is impacting off site receptors. It may be necessary to undertake a programme of physical and chemical groundwater monitoring of voids during and after any grouting works.
		Culverts	Minor	Unlikely	Very Low risk	Research suggests groundwater constituent monitoring in the Coal Measures has not indicated the presence of contamination. An assessment of groundwater constituent fate and transport may be required. Unlikely that the site is impacting off site receptors. It may be necessary to undertake a programme of physical and chemical groundwater monitoring of voids during and after any grouting works.

6.0 ENVIRONMENTAL RISK ASSESSMENT (CONTINUED)

Source	Pathway	Receptor	Consequence of risk being realised	Probability of risk being realised	Risk Classification	Potential risk management requirements / options
PFA based grout	Groundwater	Secondary aquifer	Minor	Unlikely	Very Low risk	Check quality of proposed PFA sources.
Sediment laden drilling flush	Surface water run-off, overland flow	Drains and water courses	Medium	Likely	Moderate risk	The drilling contractor must have a methodology to reduce the risk of overland flow developing to a practical minimum and if overland flow does develop a procedure to stop and or mitigate any harmful impacts
Displacement and or release of mine gases	Boreholes, mineworkings, discontinuities in the rock mass and superficial deposits. Accumulation in enclosed spaces of future buildings on site, or migration to buildings off site, leading to asphyxiation, or risk of explosion. Inhalation	Future site residents/ neighbouring residents	Severe	Medium	Moderate risk	Risk assess in accordance with CL:AIRE document 'Good Practice for Risk Assessment for Coal Mine Gas Emissions dated October 2021
		Construction workers	Severe	Low likelihood	Moderate risk	Personal monitoring to be implemented by site operatives during the investigation and drilling and grouting works. Boundary monitoring in boreholes containing monitoring standpipes.
Shallow soil and groundwater contamination	Dermal contact, ingestion, and inhalation hazardous soil constituents	Construction workers	Medium	Low likelihood	Moderate risk	Gross contamination unlikely on site but precautions in line with those set out in HSG66 and in accordance with a yellow site under BDA guidelines should be followed. All construction workers should be provided with appropriate levels of PPE to mitigate the risk of contact with potentially contaminated soils.

APPENDIX A

HISTORY AND GEOLOGY MAPS

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
Fenced
Un-Fenced
Minor Roads
Fenced
Un-Fenced
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
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)
R.D. Bdy. 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
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Electricity Transmission Line
Pole
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
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	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

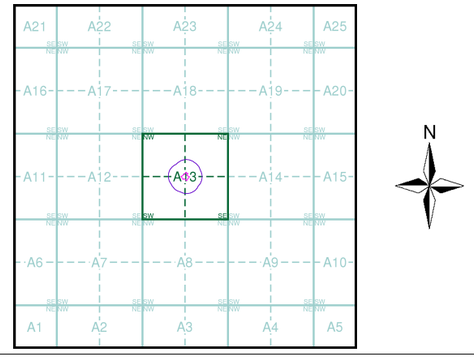
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community boundary
District, Unitary, Metropolitan, London Borough boundary
Constituency boundary
Area of wooded vegetation
Non-coniferous trees
Non-coniferous trees (scattered)
Coniferous trees
Coniferous trees (scattered)
Positioned tree
Orchard
Coppice or Osiers
Rough Grassland
Heath
Scrub
Marsh, Salt Marsh or Reeds
Water feature
Flow arrows
MHW(S) Mean high water (springs)
MLW(S) Mean low water (springs)
Telephone line (where shown)
Electricity transmission line (with poles)
BM 123.45 m Bench mark (where shown)
Triangulation station
Point feature (e.g. Guide Post or Mile Stone)
Pylon, flare stack or lighting tower
Site of (antiquity)
Glasshouse
General Building
Important Building

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:10,560	1885	2
Glamorganshire	1:10,560	1900	3
Glamorganshire	1:10,560	1921	4
Glamorganshire	1:10,560	1938 - 1952	5
Historical Aerial Photography	1:10,560	1949	6
Glamorganshire	1:10,560	1951	7
Ordnance Survey Plan	1:10,000	1964 - 1965	8
Ordnance Survey Plan	1:10,000	1969	9
Ordnance Survey Plan	1:10,000	1982 - 1988	10
Ordnance Survey Plan	1:10,000	1990 - 1993	11
10K Raster Mapping	1:10,000	1999	12
10K Raster Mapping	1:10,000	2006	13
VectorMap Local	1:10,000	2023	14

Historical Map - Slice A



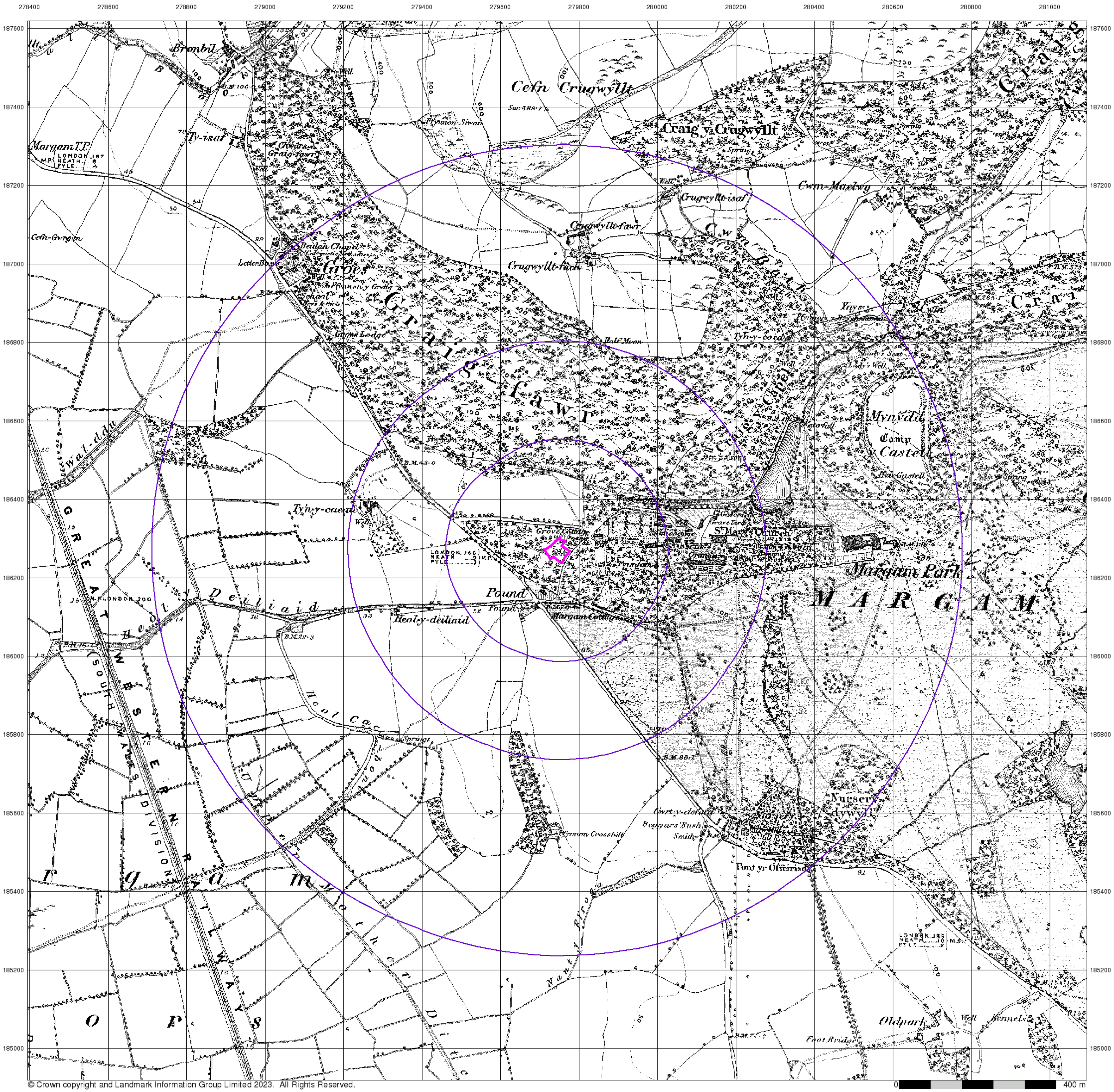
Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

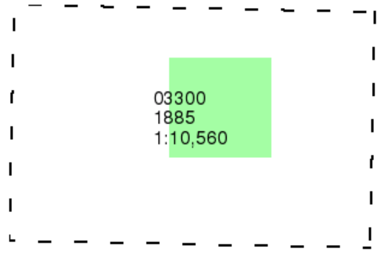
Glamorganshire

Published 1885

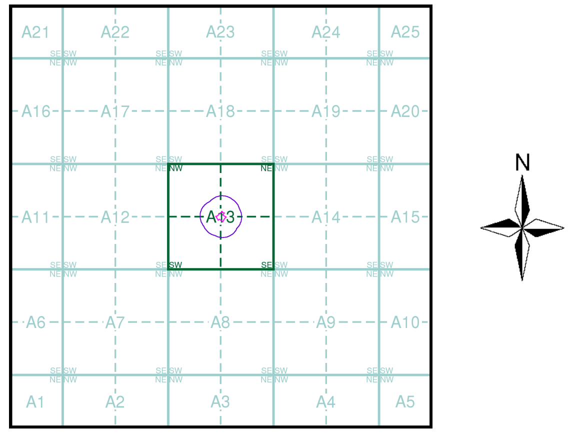
Source map scale - 1:10,560

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

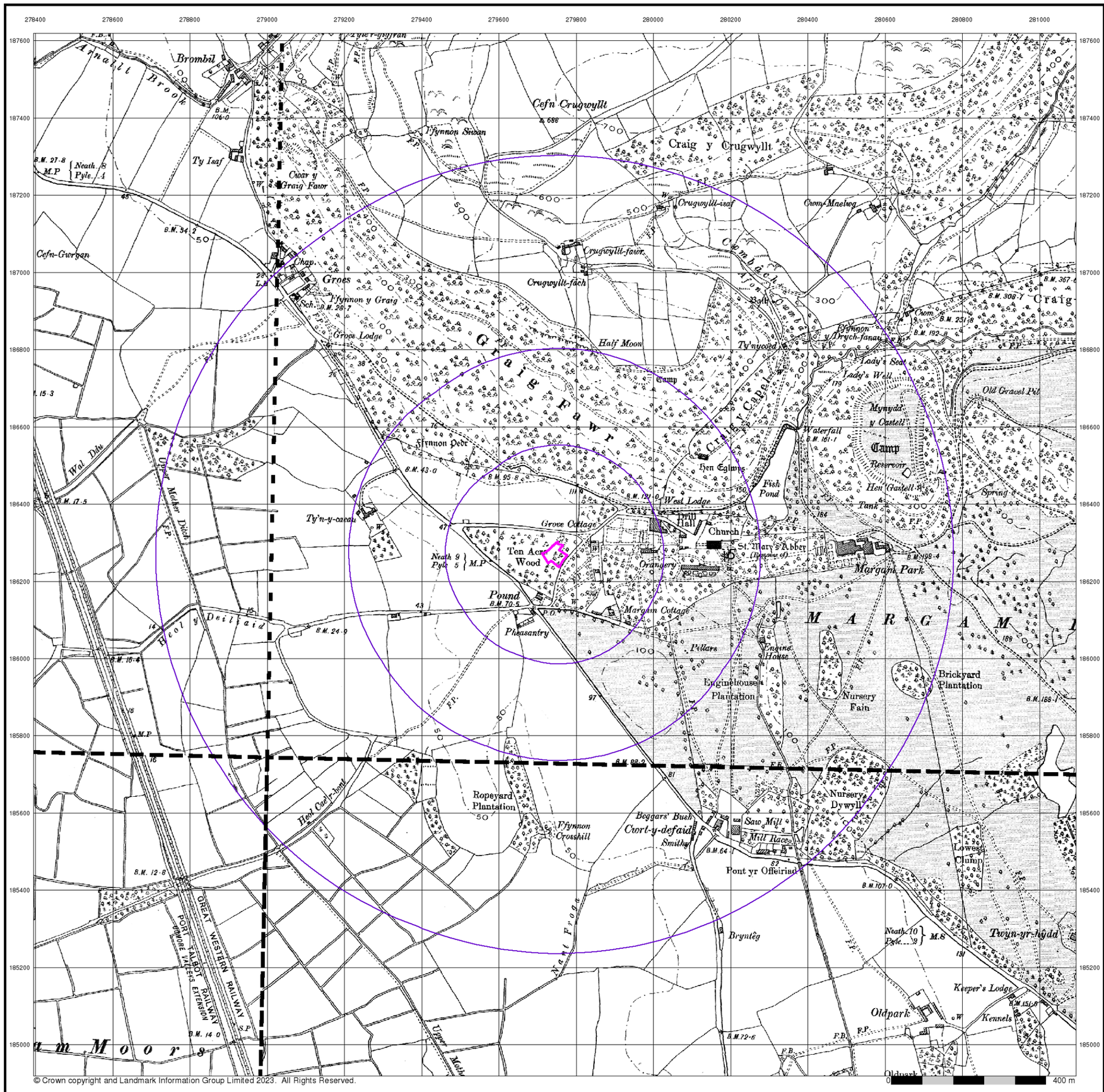
Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

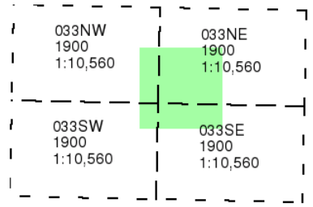
Glamorganshire

Published 1900

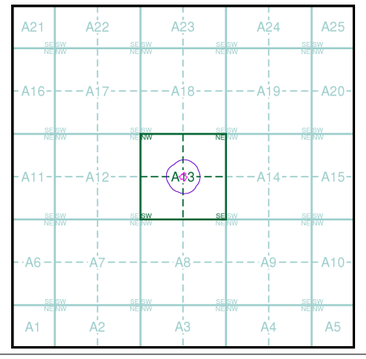
Source map scale - 1:10,560

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



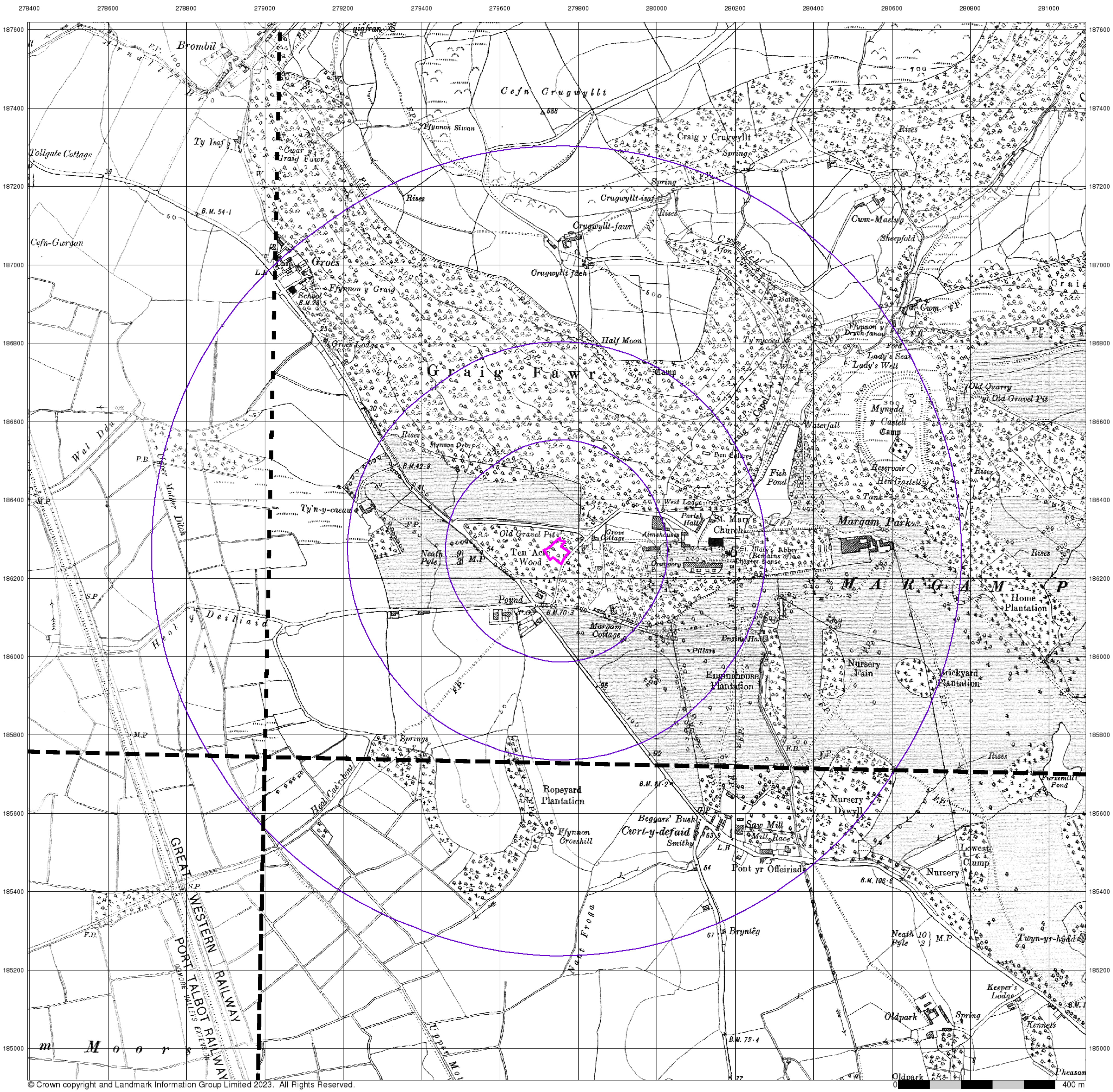
Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

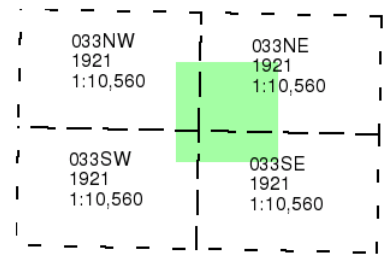
Glamorganshire

Published 1921

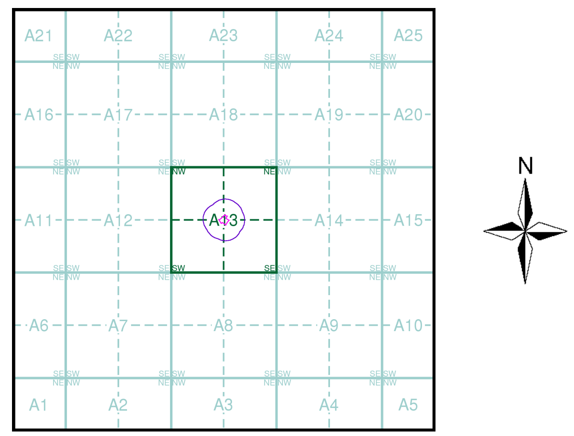
Source map scale - 1:10,560

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

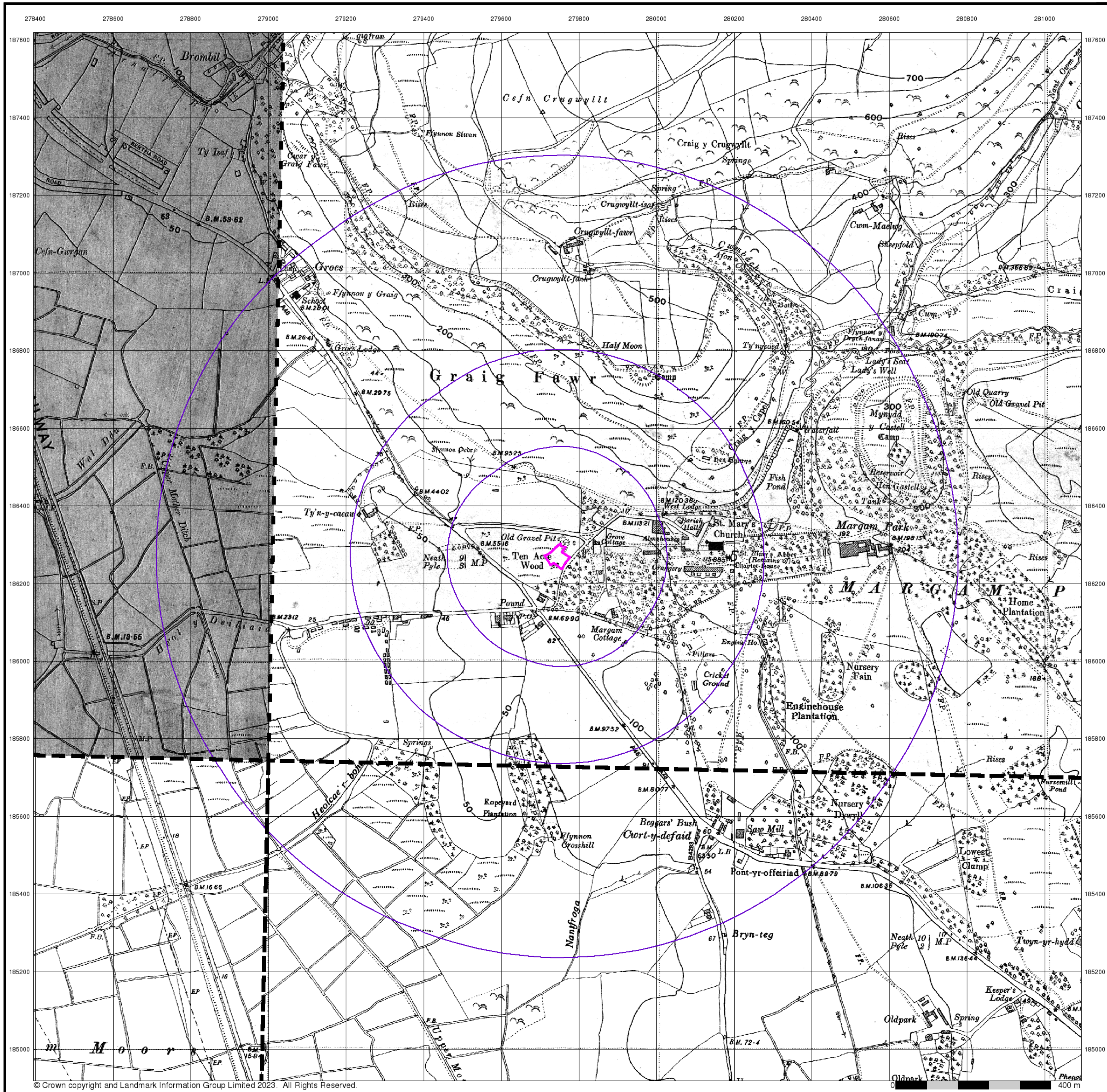
Order Number: 326265277_1_1
Customer Ref: 14283/LP
National Grid Reference: 279750, 186270
Slice: A
Site Area (Ha): 0.21
Search Buffer (m): 1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

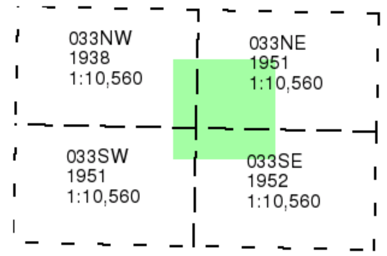
Glamorganshire

Published 1938 - 1952

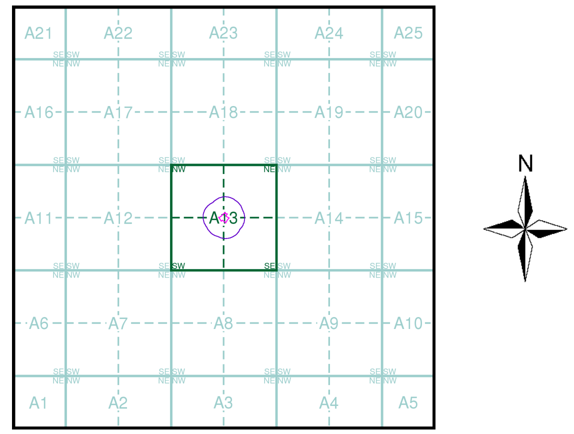
Source map scale - 1:10,560

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



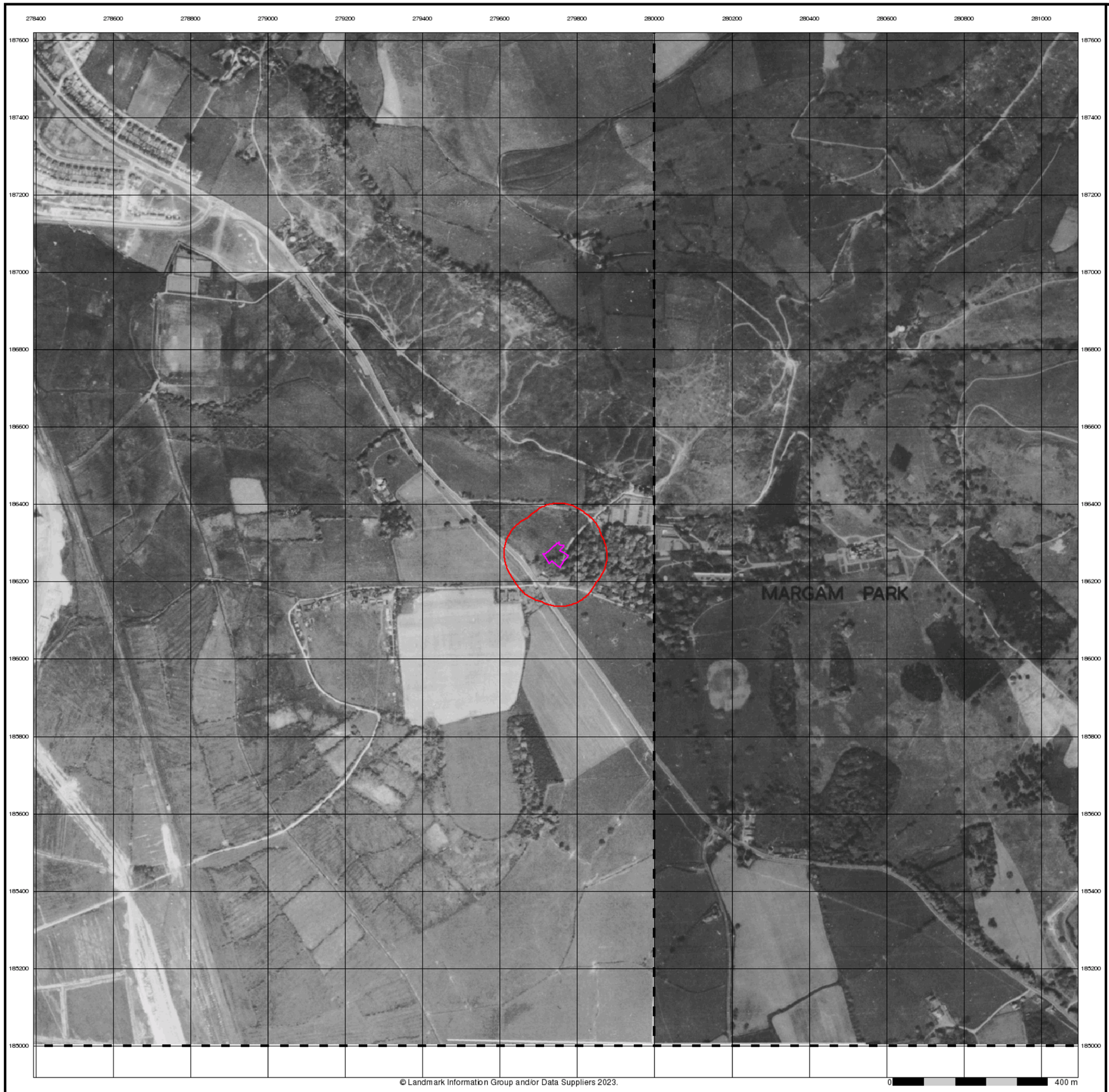
Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



Intégral Géotechnique

Historical Aerial Photography

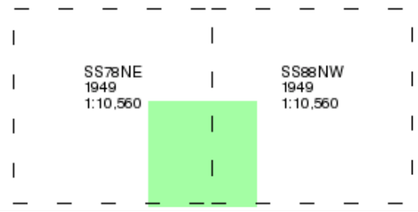
Published 1949

Source map scale - 1:10,560

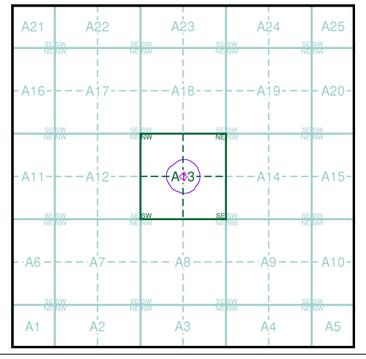
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the 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)



Historical Aerial Photography - Slice A



BRITISH LIBRARY

Order Details

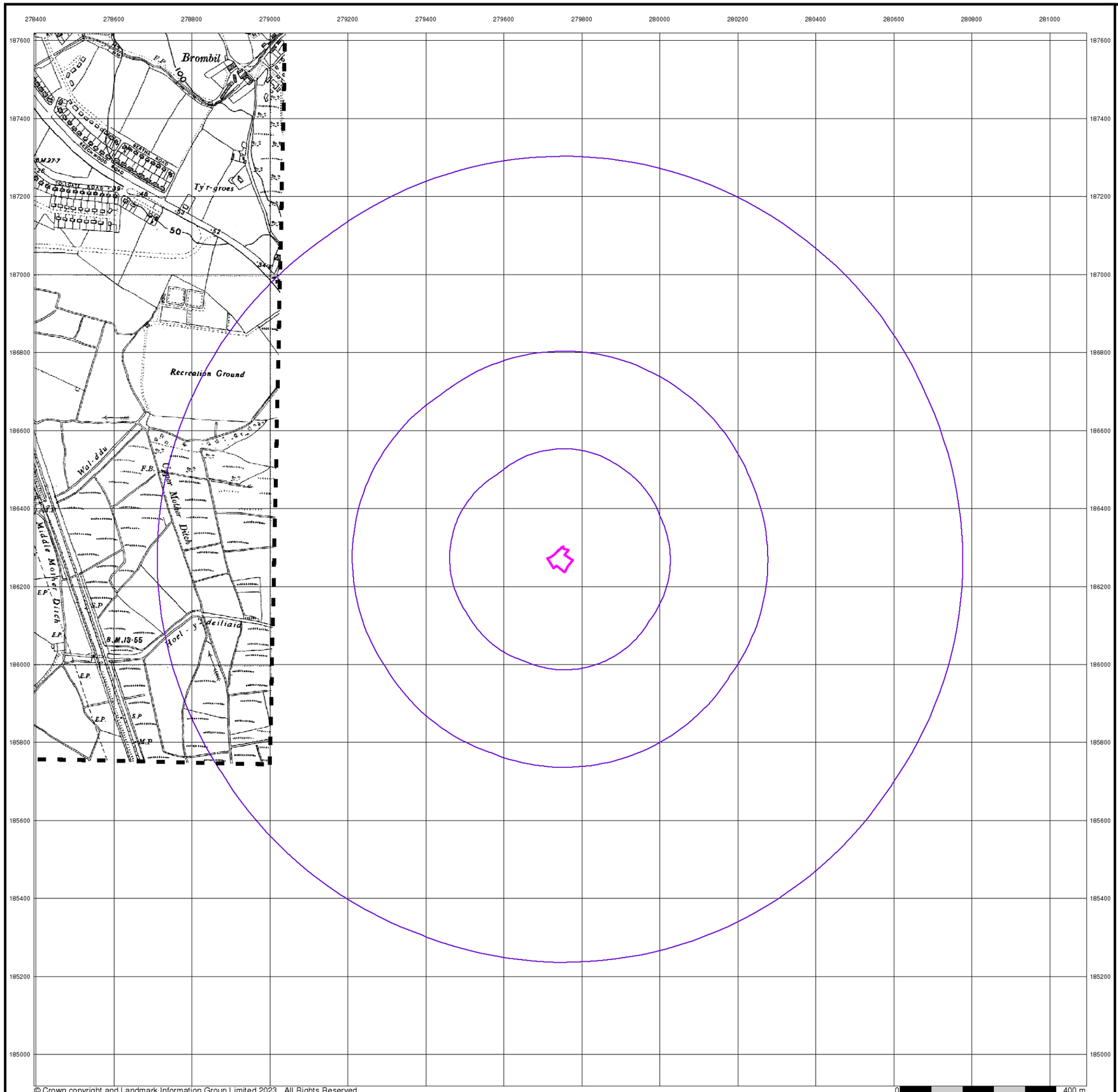
Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

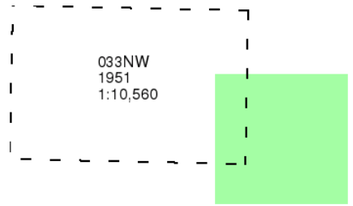
Glamorganshire

Published 1951

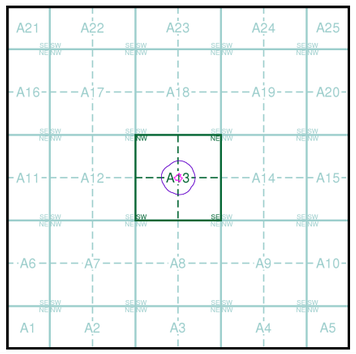
Source map scale - 1:10,560

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

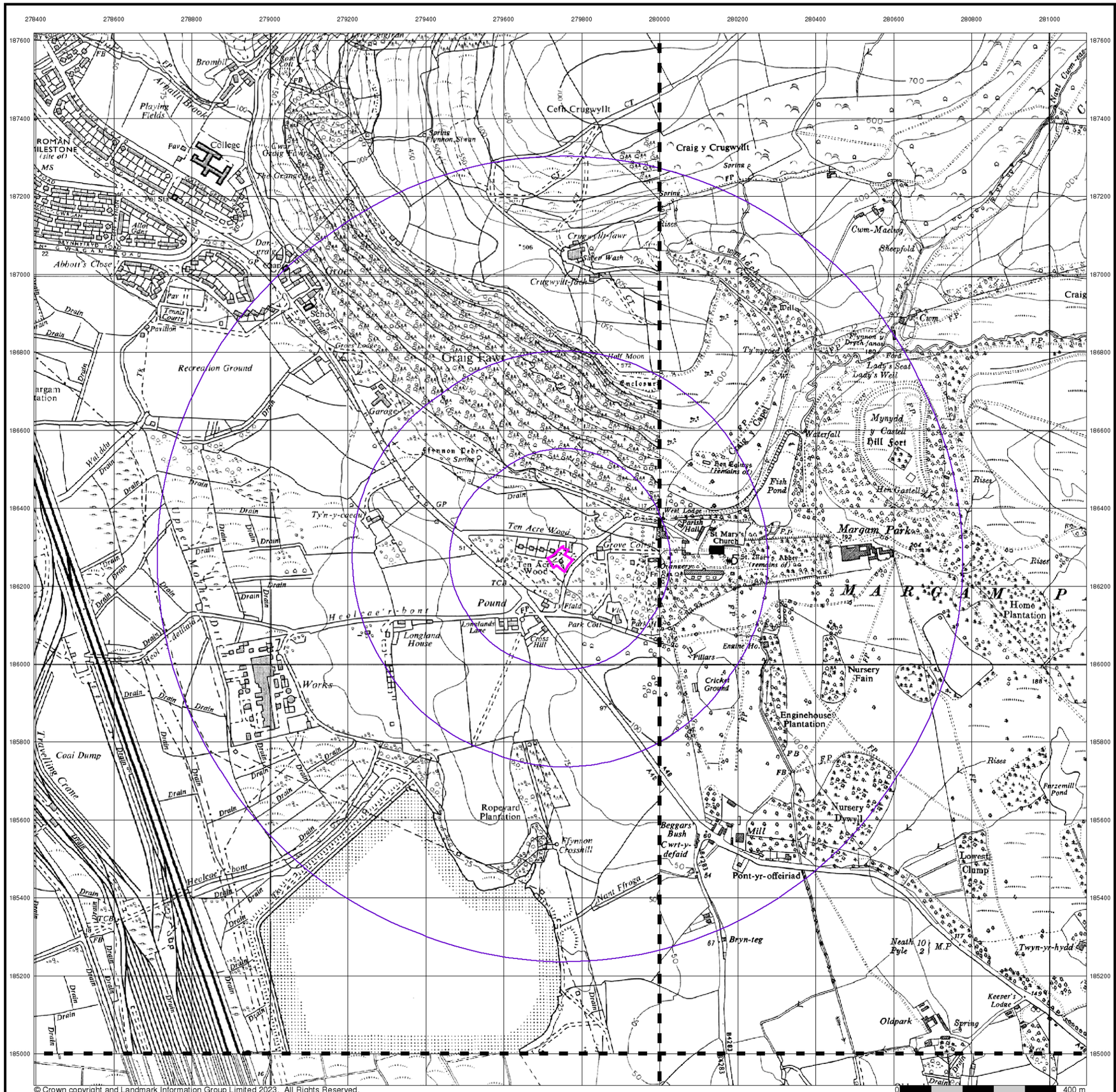
Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

Ordnance Survey Plan

Published 1964 - 1965

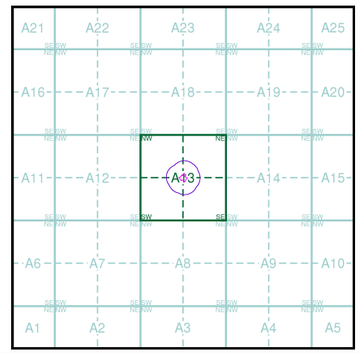
Source map scale - 1:10,000

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)

SS78NE 1965 1:10,560	SS88NW 1964 1:10,560
SS78SE 1964 1:10,560	SS88SW 1965 1:10,560

Historical Map - Slice A



Order Details

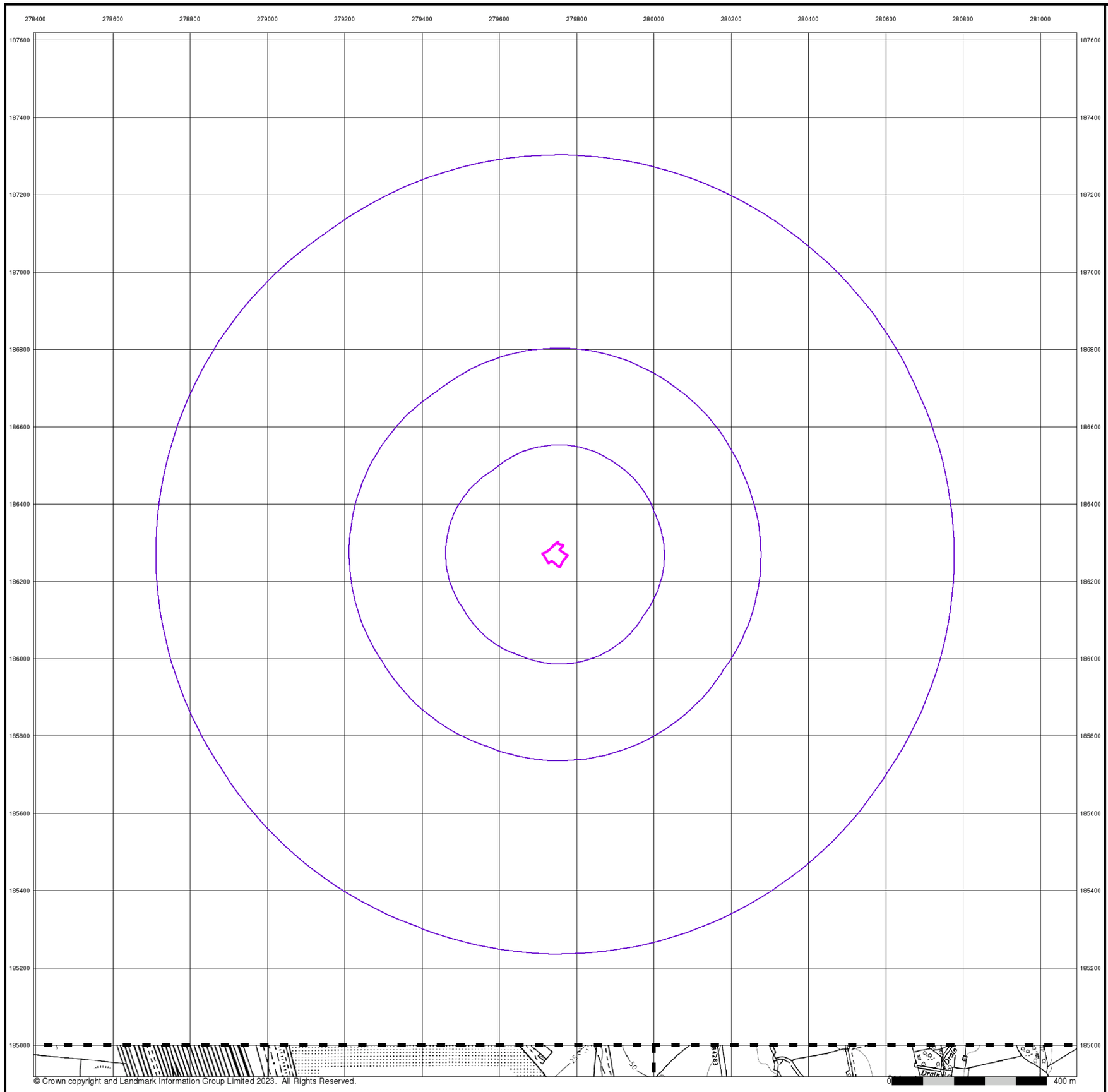
Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

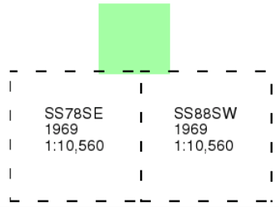
Ordnance Survey Plan

Published 1969

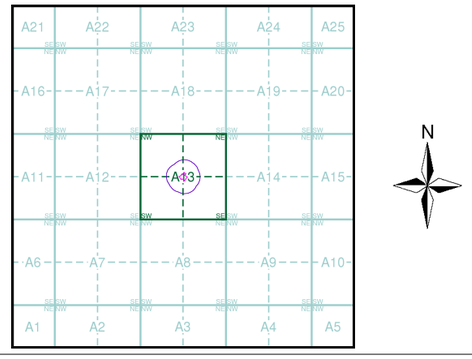
Source map scale - 1:10,000

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

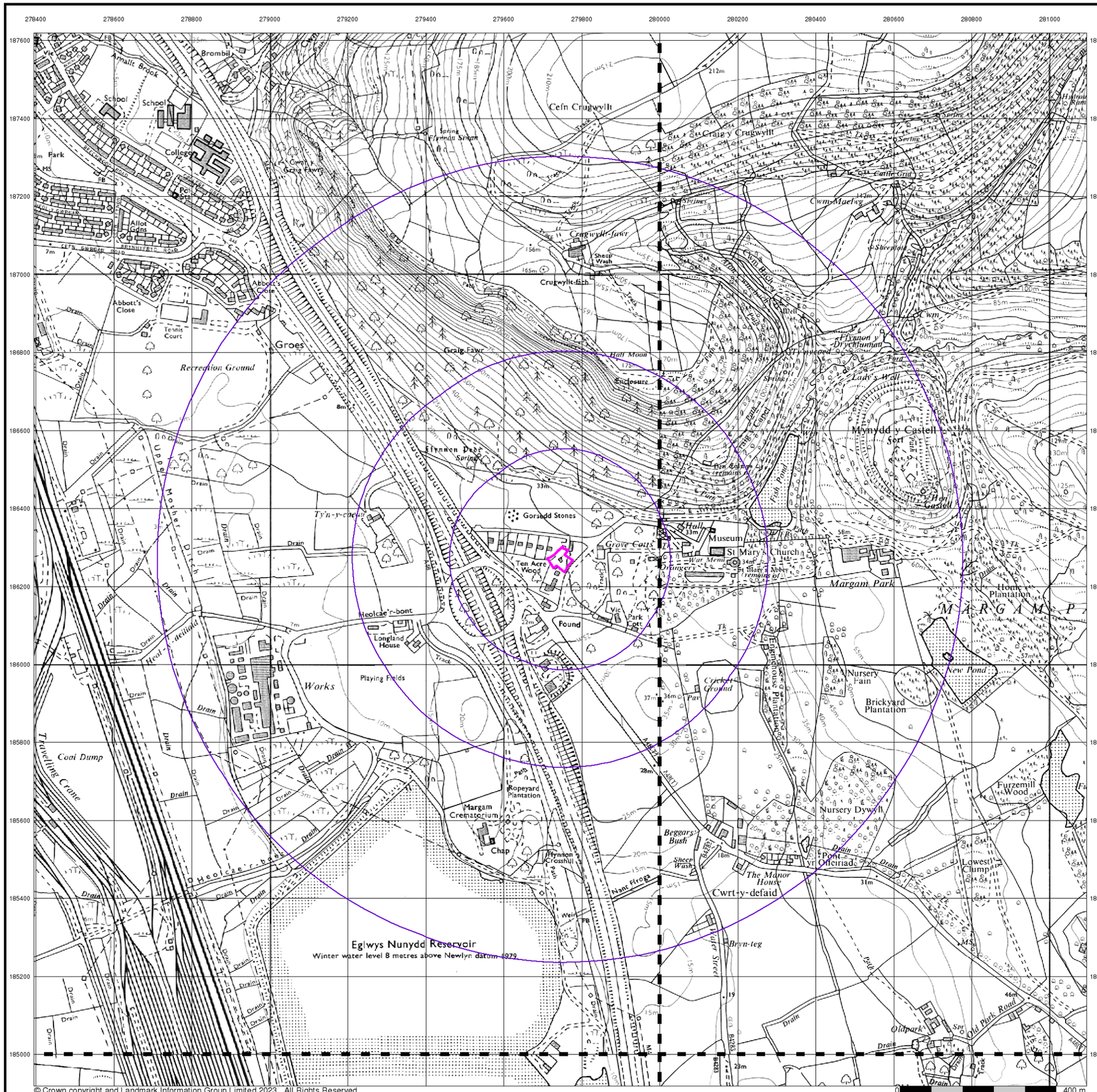
Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

Ordnance Survey Plan

Published 1982 - 1988

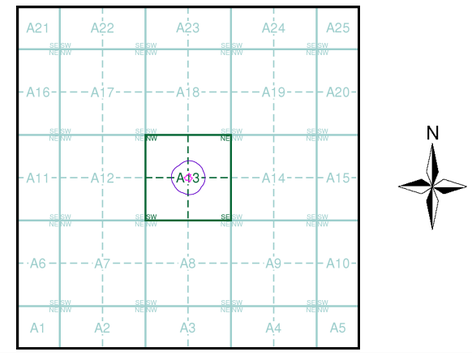
Source map scale - 1:10,000

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)

SS78NE 1982 1:10,000	SS88NW 1988 1:10,000
SS78SE 1988 1:10,000	SS88SW 1987 1:10,000

Historical Map - Slice A



Order Details

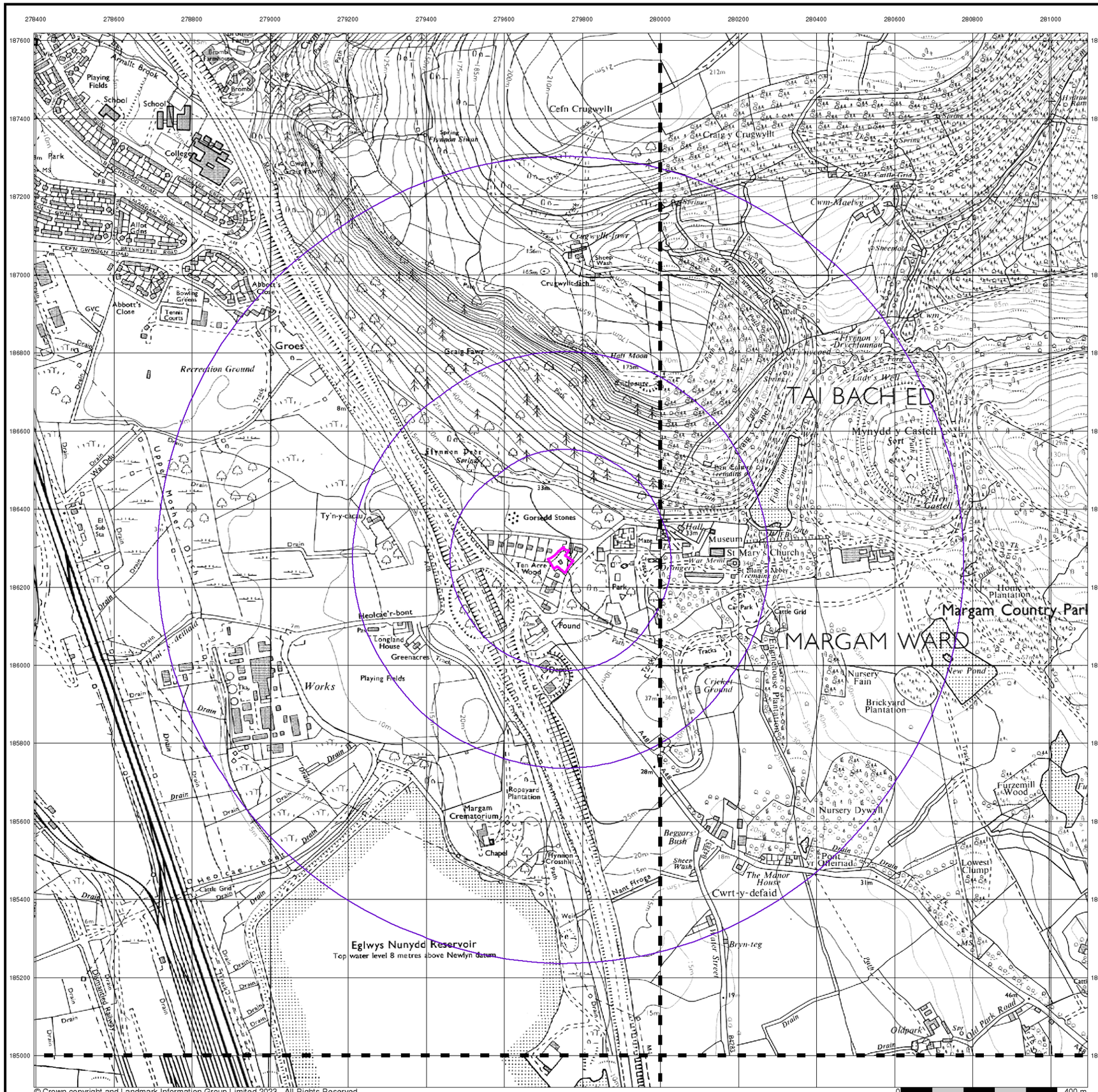
Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



Intégral Géotechnique

Ordnance Survey Plan

Published 1990 - 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.

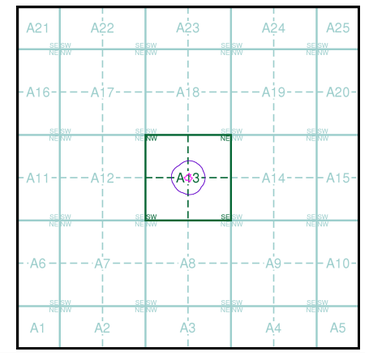
Map Name(s) and Date(s)

SS78NE 1993 1:10,000

SS88NW 1991 1:10,000

SS78SE 1990 1:10,000

Historical Map - Slice A



Order Details

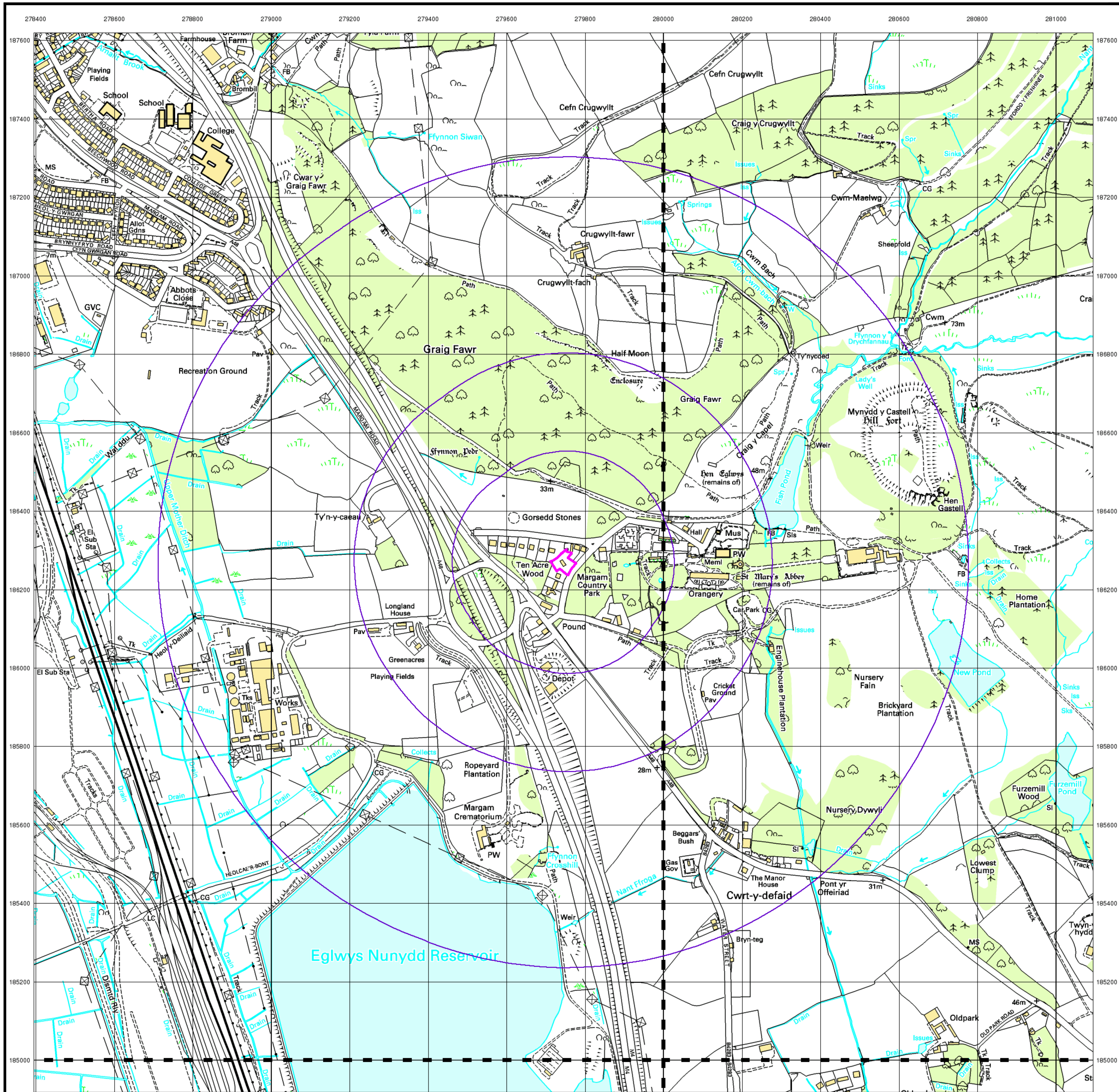
Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



© Crown copyright. All Rights Reserved. Licence Number 100022432.

Intégral Géotechnique

10k Raster Mapping

Published 1999

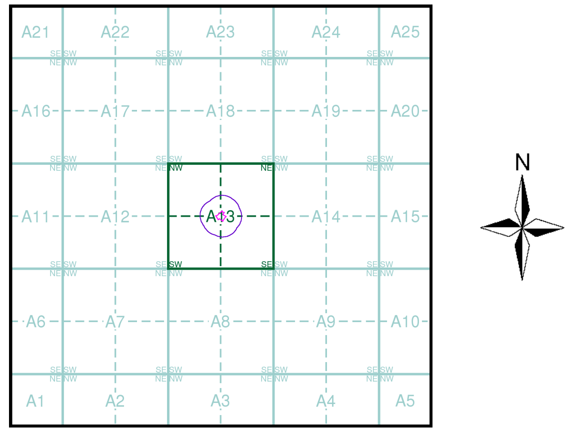
Source map scale - 1:10,000

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)

SS78NE 1999 1:10,000	SS88NW 1999 1:10,000
SS78SE 1999 1:10,000	SS88SW 1999 1:10,000

Historical Map - Slice A



Order Details

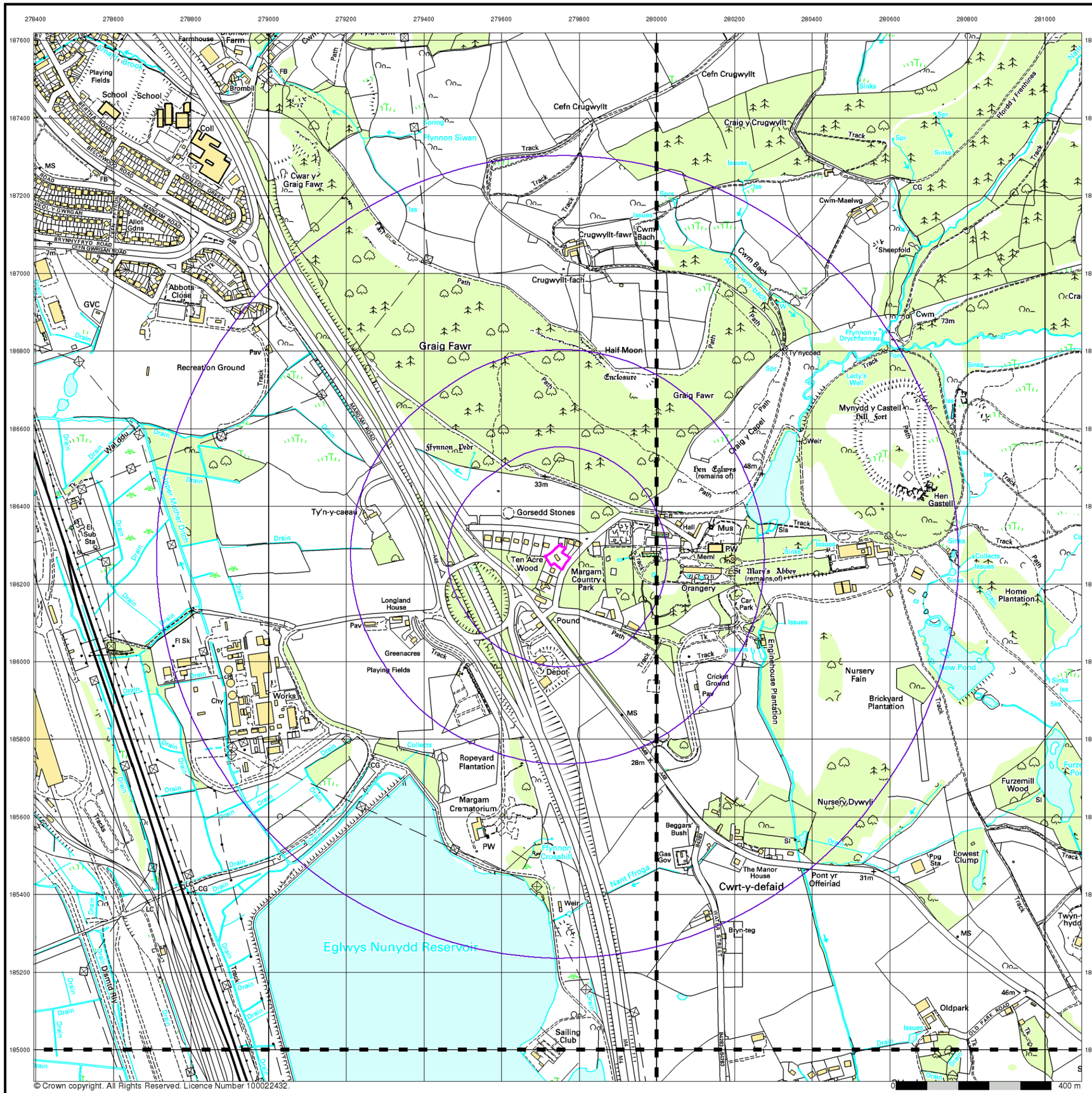
Order Number: 326265277_1_1
Customer Ref: 14283/LP
National Grid Reference: 279750, 186270
Slice: A
Site Area (Ha): 0.21
Search Buffer (m): 1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



© Crown copyright. All Rights Reserved. Licence Number 100022432.

Intégral Géotechnique

10k Raster Mapping

Published 2006

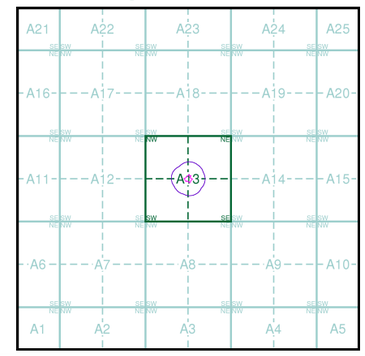
Source map scale - 1:10,000

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)

SS78NE 2006 1:10,000	SS88NW 2006 1:10,000
SS78SE 2006 1:10,000	SS88SW 2006 1:10,000

Historical Map - Slice A



Order Details

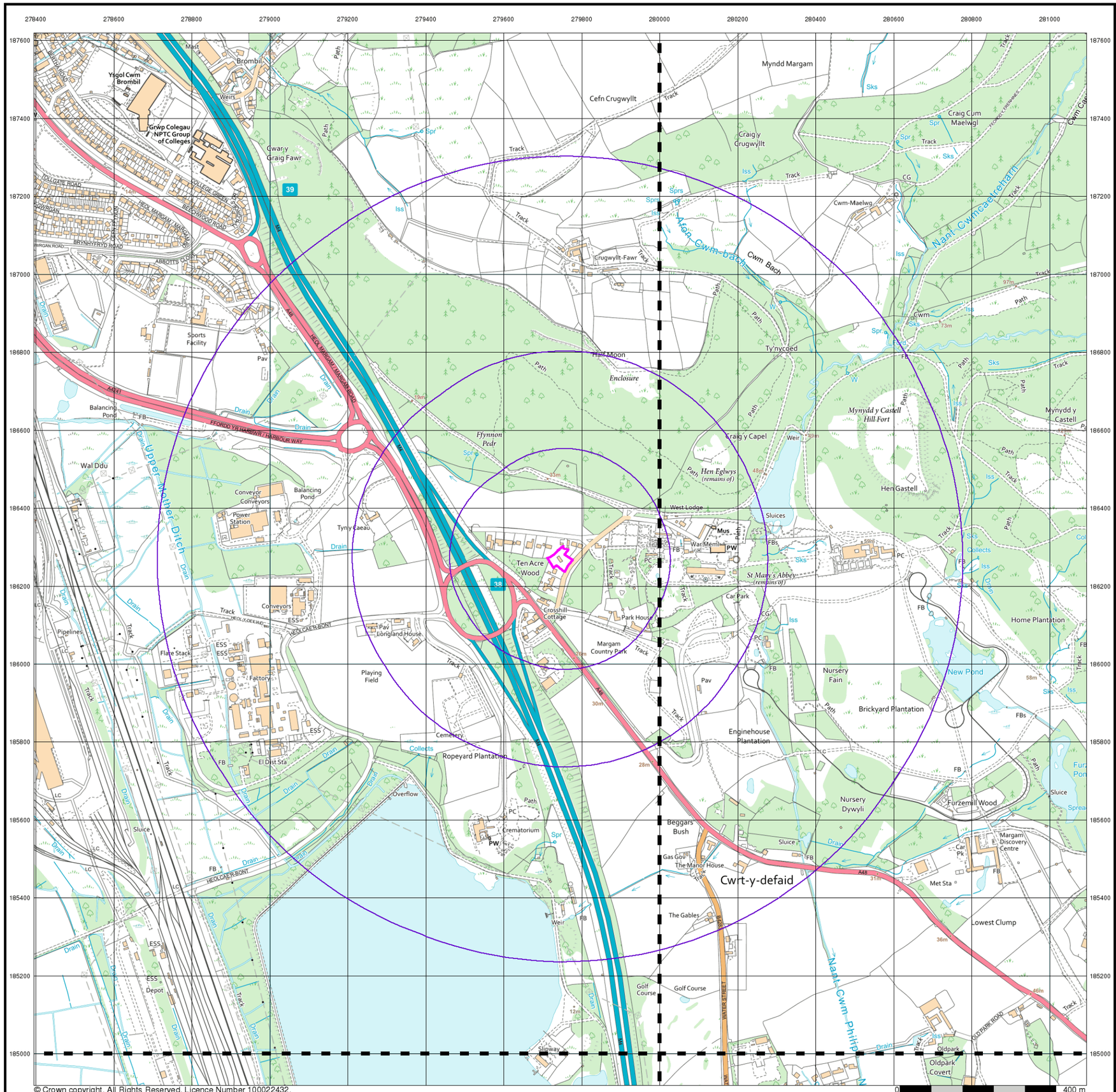
Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



Intégral Géotechnique

VectorMap Local

Published 2023

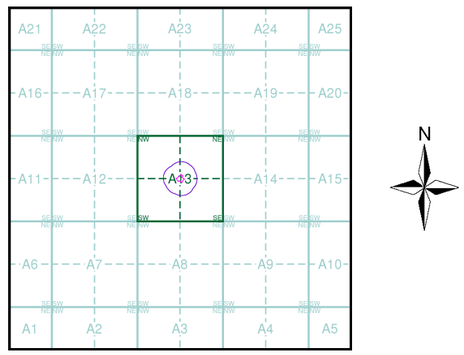
Source map scale - 1:10,000

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)

SS78NE 2023 Variable	SS88NW 2023 Variable
SS78SE 2023 Variable	SS88SW 2023 Variable

Historical Map - Slice A



Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

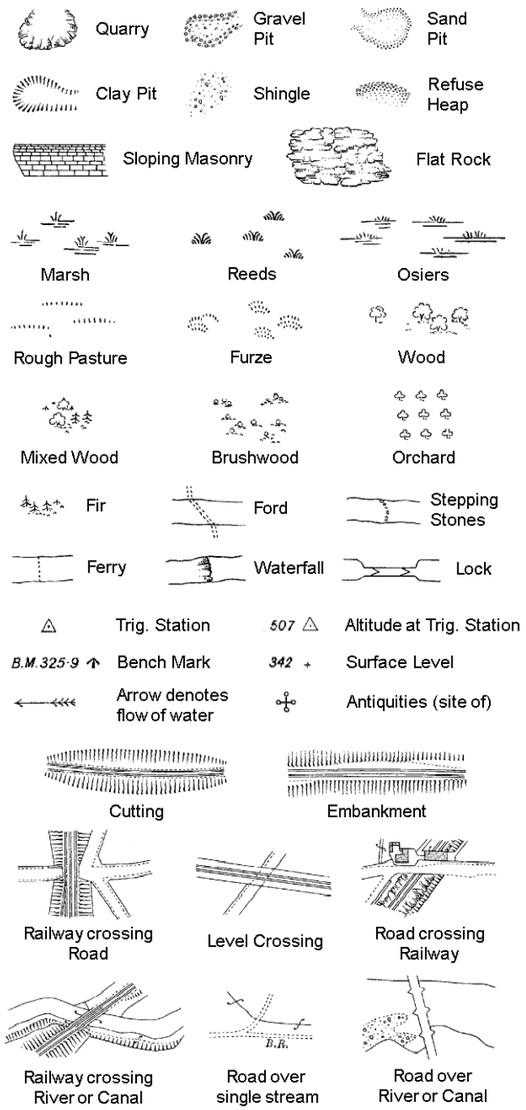
7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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

Historical Mapping Legends

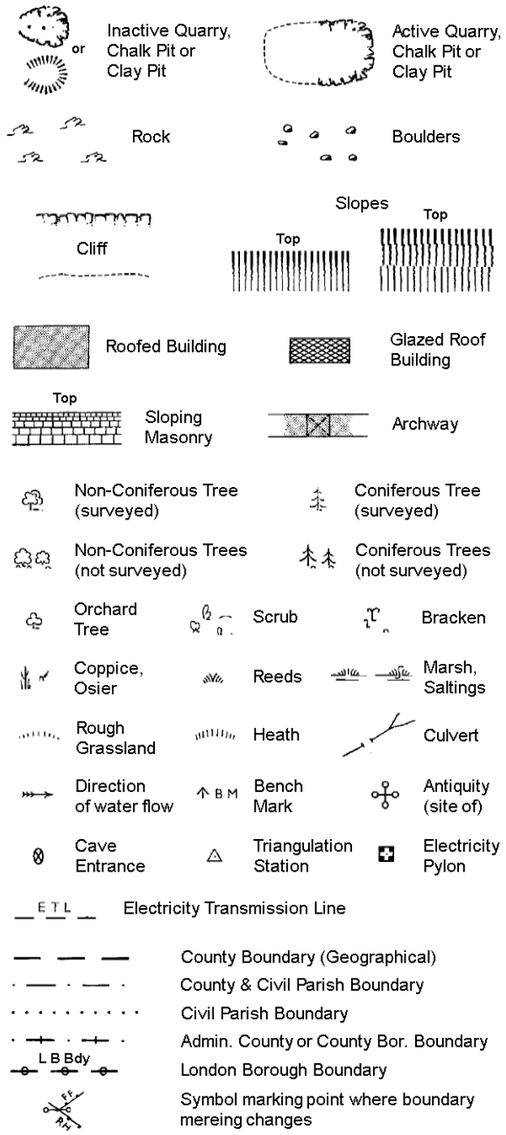
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	St.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

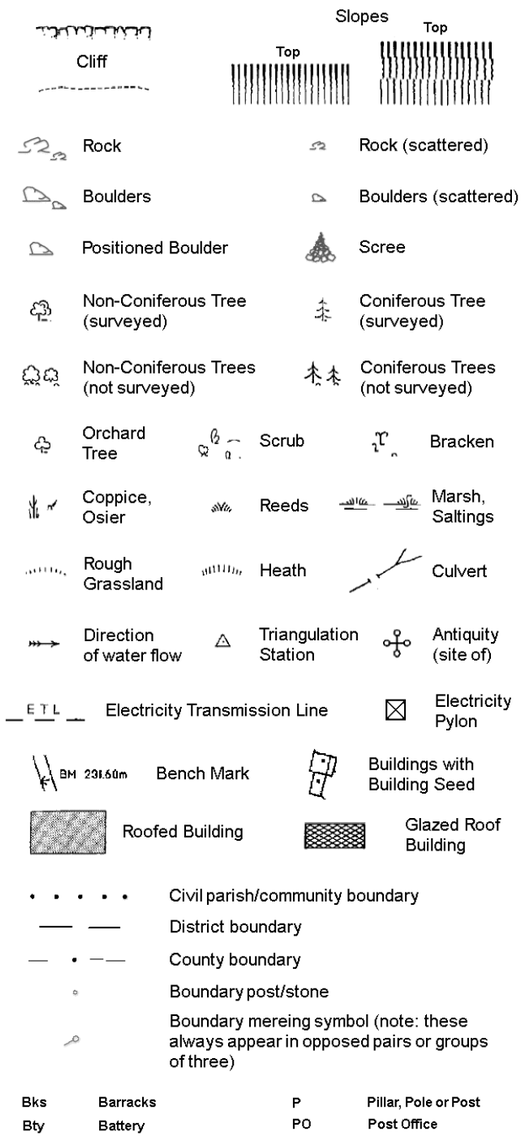
Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
L B Bdy 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
El 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



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)

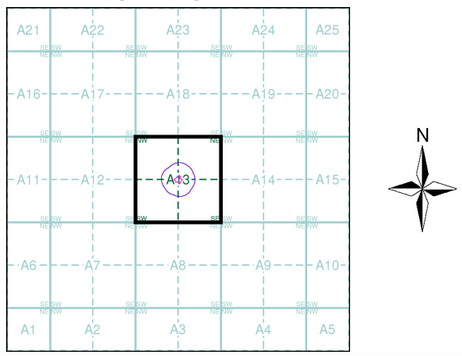
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El 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 Governer	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

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Glamorganshire	1:2,500	1877	2
Glamorganshire	1:2,500	1899	3
Glamorganshire	1:2,500	1918	4
Ordnance Survey Plan	1:2,500	1963 - 1964	5
Ordnance Survey Plan	1:2,500	1970	6
Additional SIMs	1:2,500	1979 - 1988	7
Ordnance Survey Plan	1:2,500	1991	8
Large-Scale National Grid Data	1:2,500	1993	9
Historical Aerial Photography	1:2,500	2001	10

Historical Map - Segment A13



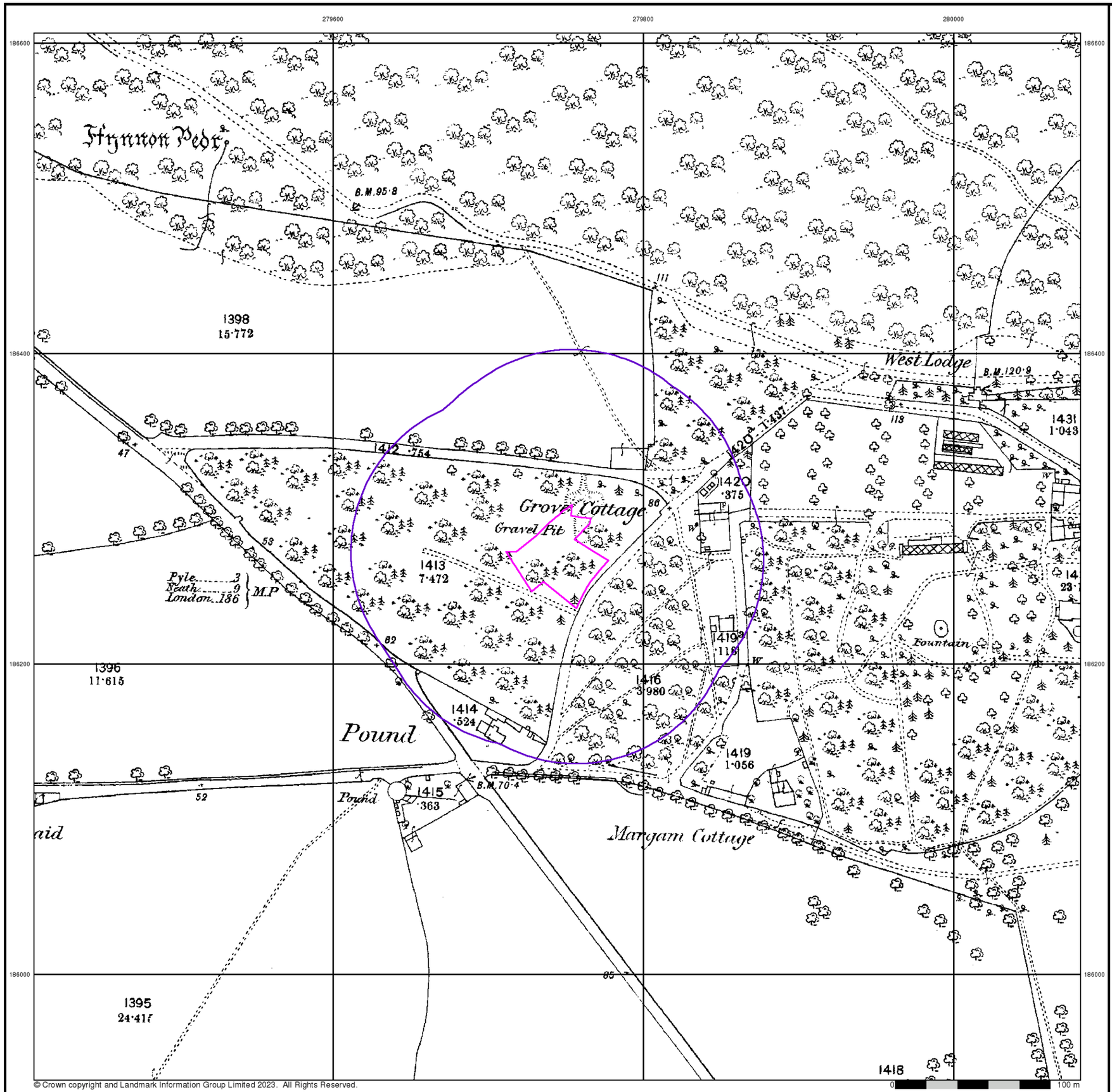
Order Details

Order Number: 326265277_1_1
Customer Ref: 14283/LP
National Grid Reference: 279750, 186270
Slice: A
Site Area (Ha): 0.21
Search Buffer (m): 100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



Intégral Géotechnique

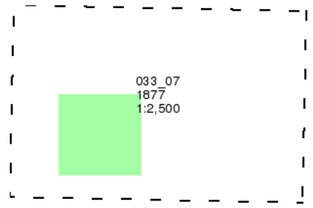
Glamorganshire

Published 1877

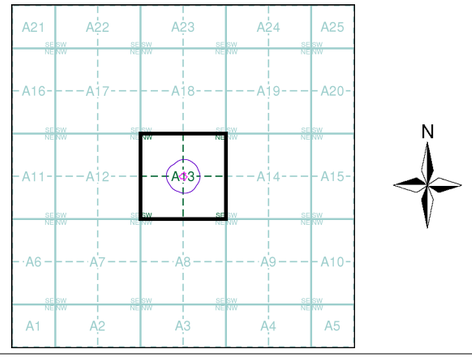
Source map scale - 1:2,500

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:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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

279600 279800 280000

186600 186400 186200 186000

Effynon Pedr

1614 1·290

B.M.95·8

1615 13·534

1609 1·814

West Lodge

B.M.12·0

1607

1614 ·690

1616 3·936

Old Gravel Pit

Grove Cottage

1610 ·375

1613 7·538

Ten Acre Wood

Neath...9
Pyle....3
M.P

1617 16·383

1608 23·430

Fn.

1611 4·098

Well

F.P.

1612 ·524

Pound

1631 1·056

B.M.70·5

P.O.

Pound

1630 ·497

Pheasantry

Margam Cottage

1632 ·531

1628 26·607

1642 20·351

© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

0 100 m

Intégral Géotechnique

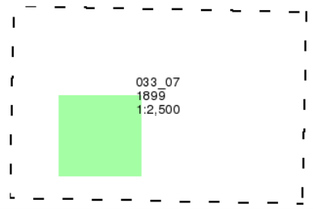
Glamorganshire

Published 1899

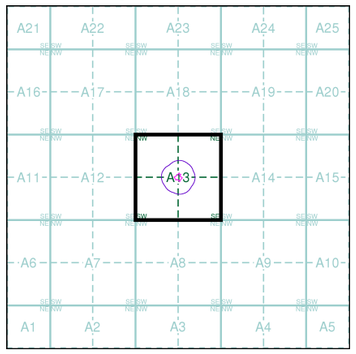
Source map scale - 1:2,500

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

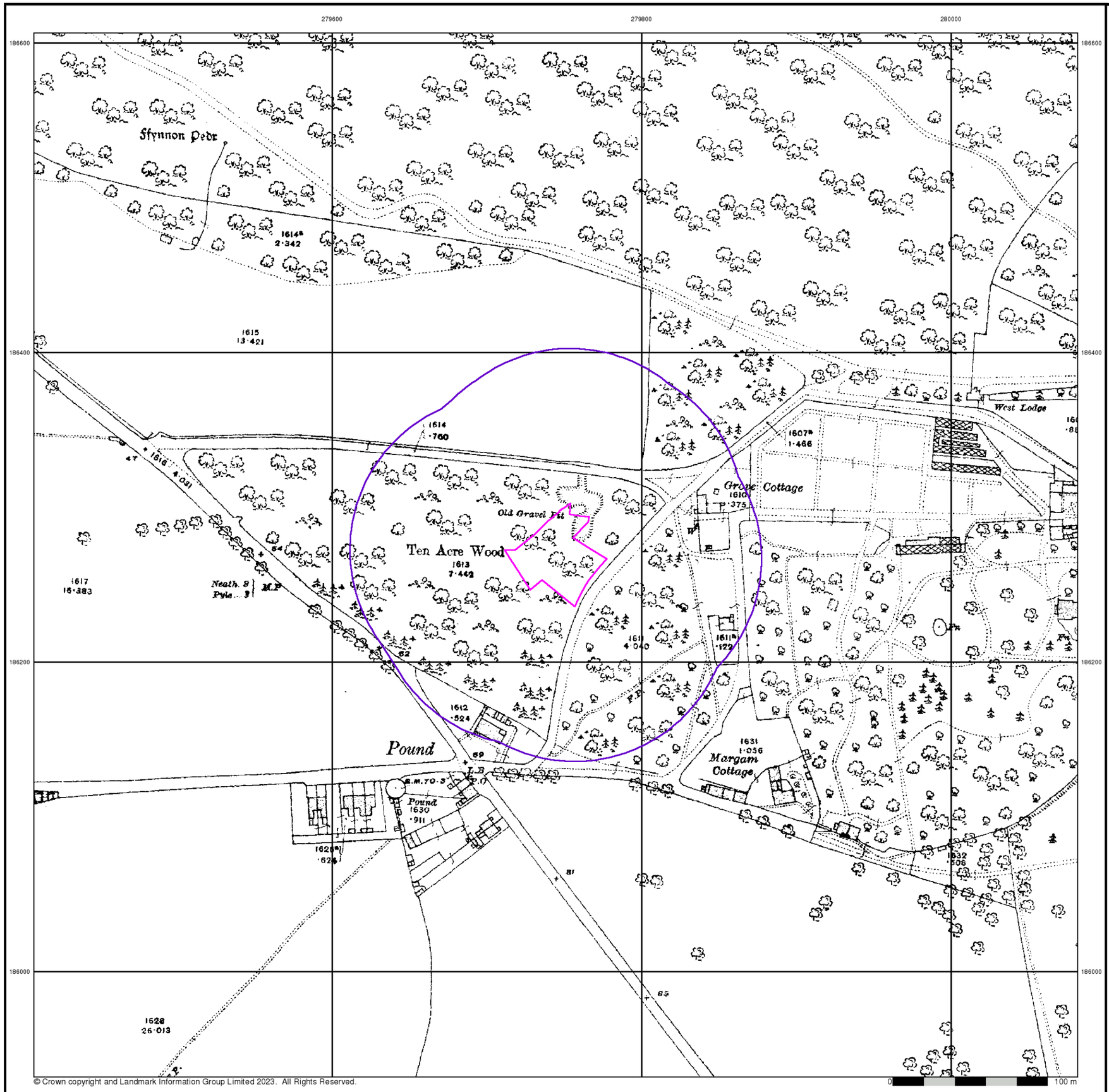
Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

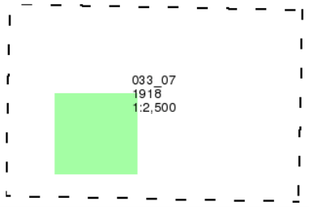
Glamorganshire

Published 1918

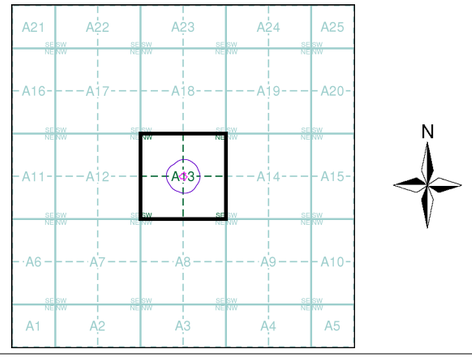
Source map scale - 1:2,500

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



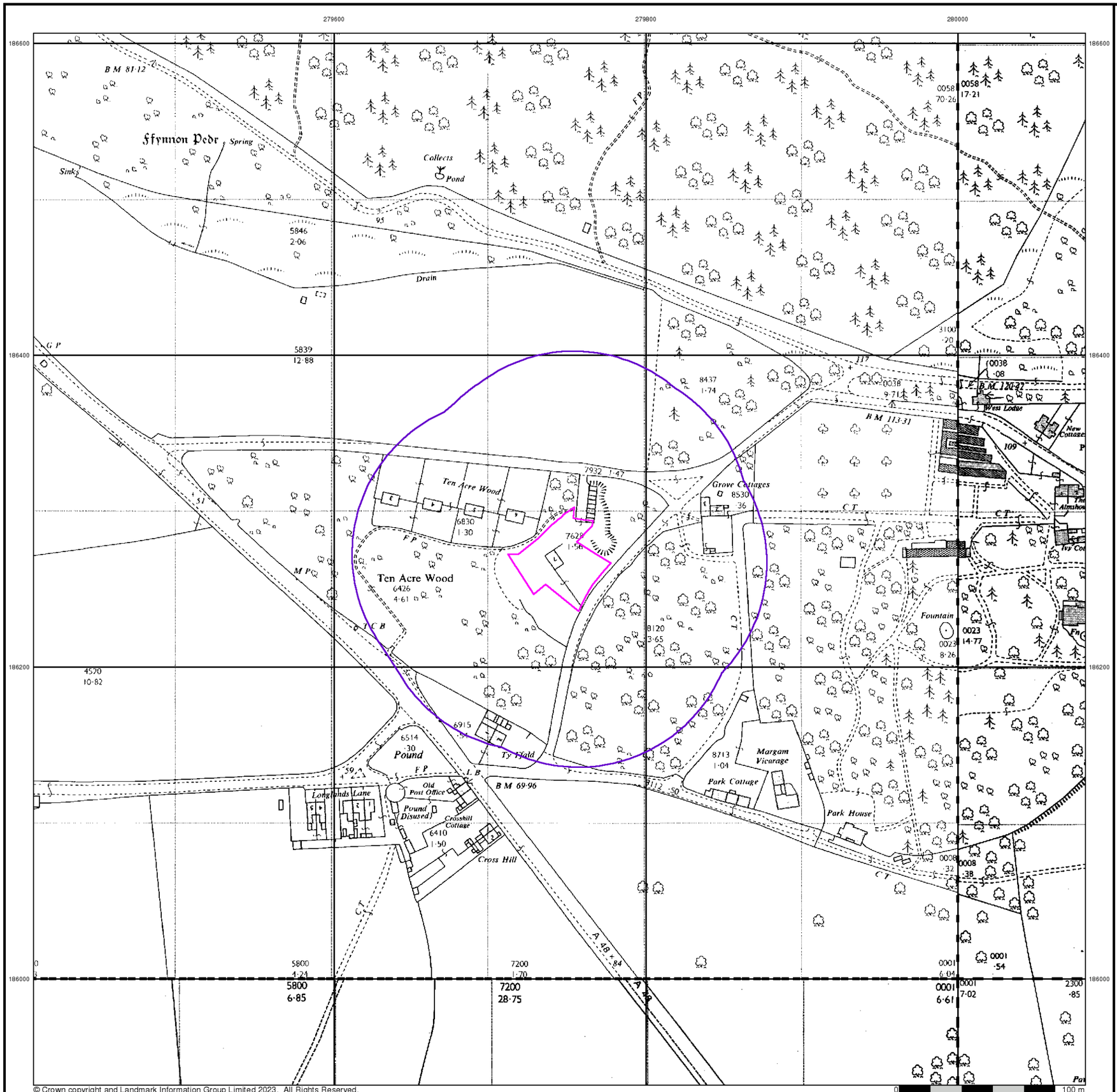
Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

Ordnance Survey Plan

Published 1963 - 1964

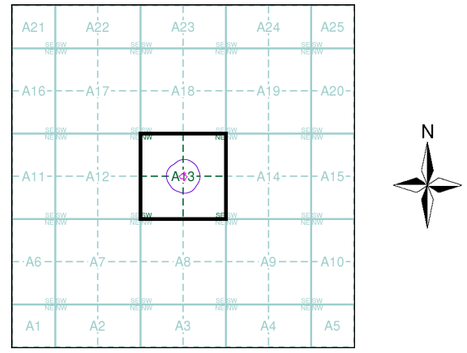
Source map scale - 1:2,500

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)

SS7986 1964 1:2,500	SS8086 1963 1:2,500
SS7985 1964 1:2,500	SS8085 1963 1:2,500

Historical Map - Segment A13



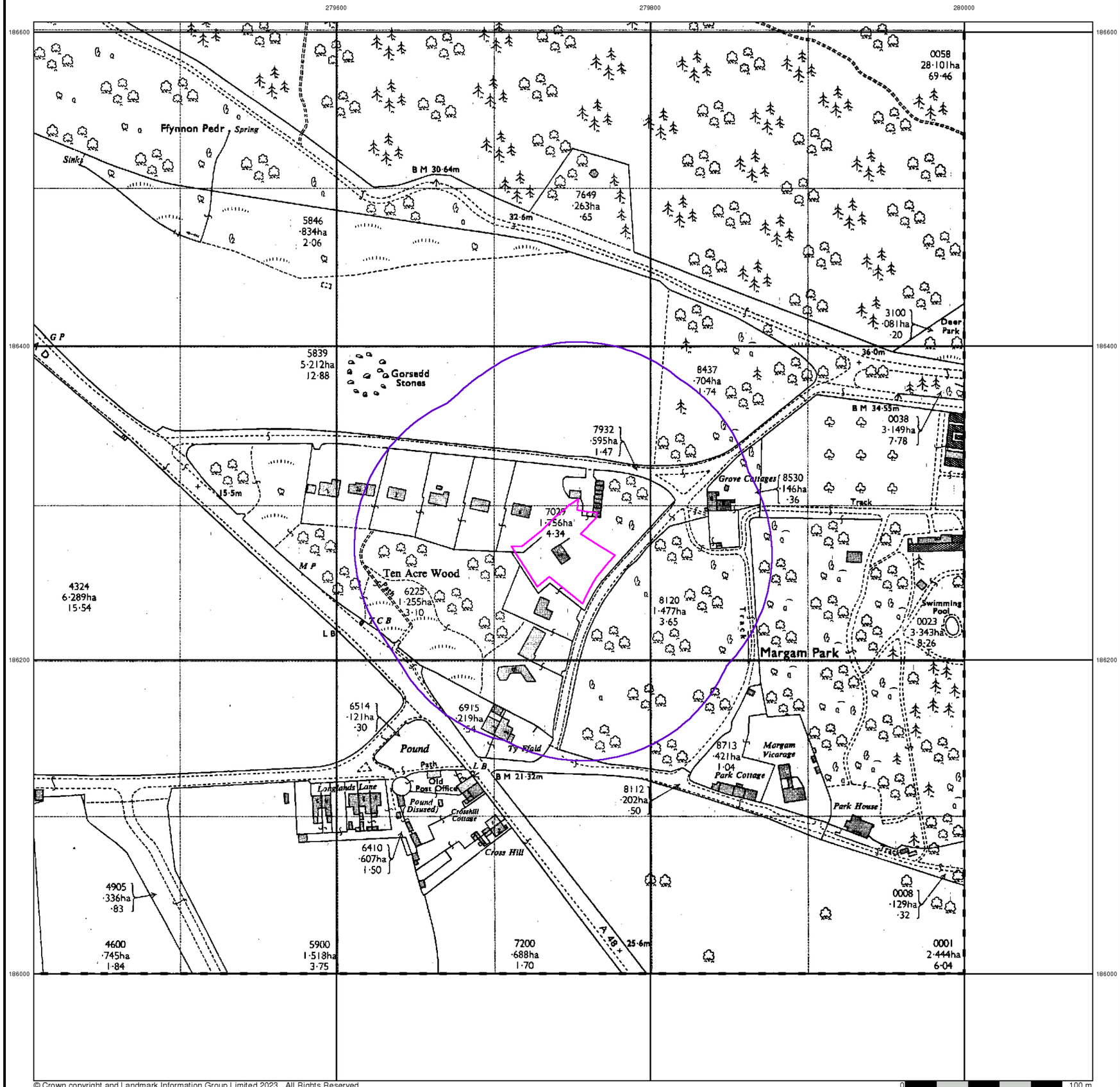
Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



Intégral Géotechnique

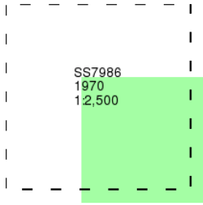
Ordnance Survey Plan

Published 1970

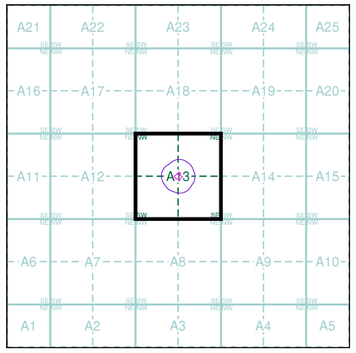
Source map scale - 1:2,500

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



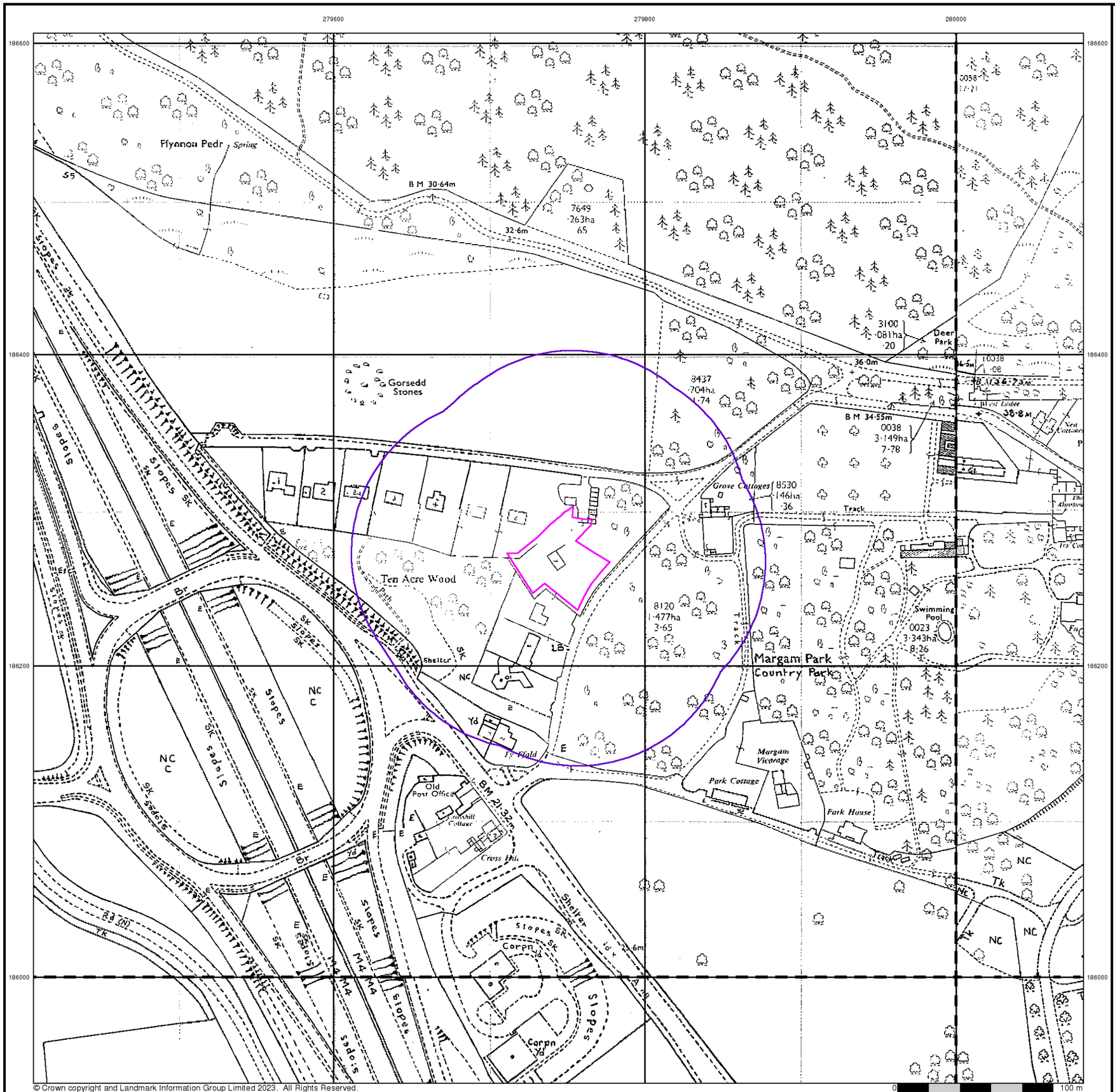
Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

Additional SIMs

Published 1979 - 1988

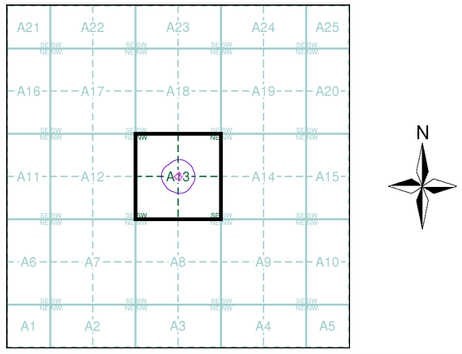
Source map scale - 1:2,500

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)

SS7986 1979 1:2,500	SS8086 1988 1:2,500
SS7985 1980 1:2,500	SS8085 1988 1:2,500

Historical Map - Segment A13



Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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

279600 279800 280000

186600 186400 186200 186000

4655 1.871ha
Flynnon Pedr Spring
5753 1.258ha
BM 30.84m
7649 0.263ha
564 / 0.839ha
32.6m
0041 0.087ha
6239 4.144ha
Gorsedd Stones
36.0m
8437 0.709ha
BM 34.56m
Grove Cottages
Maze
Track
PC
Pond
Drain
FB
Pool
Ten Acre Wood
Path (um)
Track
7921 10.670ha
LB
Margam Country Park
Path
Ty Ffald
BM 21.32m
Old Post Office
Crosshill Cottage
Cross Hill
Margam Cottage
Park Cottage
Park House
Pound
0008 0.045ha
Path
Track
4504 0.307ha
5300 0.449ha
4204 0.086ha
Track
M 4
Shelter
25.6m
A 48
Depot
0007 0.133ha
0001 2.112ha
Track

© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

0 100 m

Intégral Géotechnique

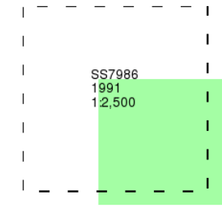
Ordnance Survey Plan

Published 1991

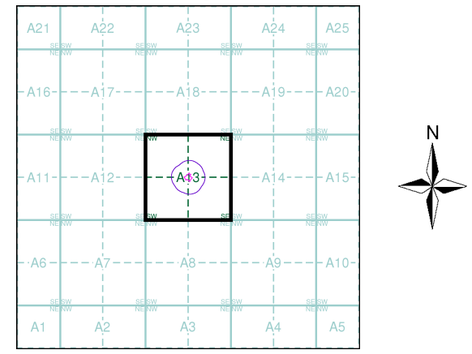
Source map scale - 1:2,500

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:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



© Crown copyright and Landmark Information Group Limited 2023. All Rights Reserved.

Intégral Géotechnique

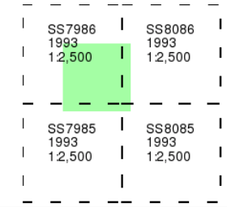
Large-Scale National Grid Data

Published 1993

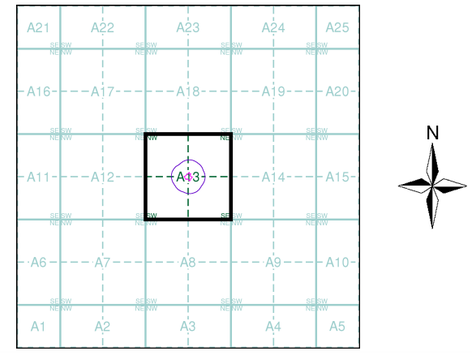
Source map scale - 1:2,500

'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:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



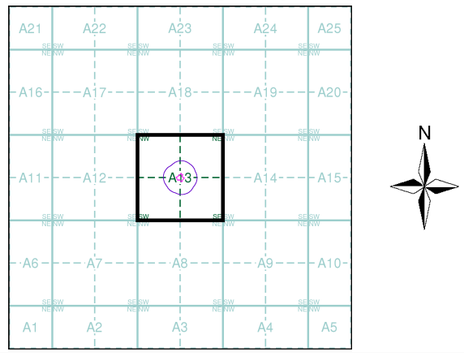
Intégral Géotechnique

Historical Aerial Photography

Published 2001

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

Historical Aerial Photography - Segment A13



Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	100

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark INFORMATION GROUP

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

Geology 1:50,000 Maps Legends

Artificial Ground and Landslip

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	LSGR	Landscaped Ground (Undivided)	Artificially Modified Ground	Not Supplied - Holocene
	MGR	Made Ground (Undivided)	Artificial Deposit	Not Supplied - Holocene
	SLIP	Landslide Deposit	Unknown/Unclassified Entry	Not Supplied - Quaternary

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	TFD	Tidal Flat Deposits	Clay, Silt and Sand	Not Supplied - Holocene
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	GFDUD	Glaciofluvial Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	GFICD	Glaciofluvial Ice Contact Deposits, Devensian	Sand and Gravel	Not Supplied - Devensian
	TILLD	Till, Devensian	Diamicton	Not Supplied - Devensian
	ALF	Alluvial Fan Deposits	Sand and Gravel	Not Supplied - Quaternary
	BSA	Blown Sand	Sand	Not Supplied - Quaternary

Bedrock and Faults

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	SWUCM	South Wales Upper Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	LLFB	Llynfi Member	Sandstone	Not Supplied - Westphalian
	LLFB	Llynfi Member	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	RA	Rhondda Member	Sandstone	Not Supplied - Westphalian
	SWUCM	South Wales Upper Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	RA	Rhondda Member	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
	SWMCM	South Wales Middle Coal Measures Formation	Mudstone, Siltstone and	Not Supplied - Westphalian
			Sandstone	
	SWMCM	South Wales Middle Coal Measures Formation	Sandstone	Not Supplied - Westphalian
	SWLCM	South Wales Lower Coal Measures Formation	Mudstone, Siltstone and Sandstone	Not Supplied - Westphalian
		Rock Segments		
		Faults		

Intégral Géotechnique

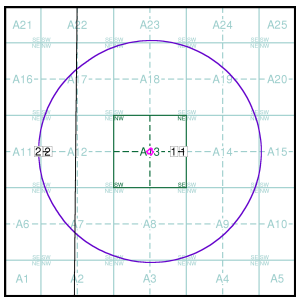
Geology 1:50,000 Maps

This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.
The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

Map ID:	**1**	**Map ID:**	**2**
Map Sheet No:	**248**	**Map Sheet No:**	**247**
Map Name:	**Pontypridd**	**Map Name:**	**Swansea**
Map Date:	**1960**	**Map Date:**	**2011**
Bedrock Geology:	**Available**	**Bedrock Geology:**	**Available**
Superficial Geology:	**Available**	**Superficial Geology:**	**Available**
Artificial Geology:	**Not Available**	**Artificial Geology:**	**Available**
Faults:	**Not Supplied**	**Faults:**	**Not Supplied**
Landslip:	**Available**	**Landslip:**	**Available**
Rock Segments:	**Not Supplied**	**Rock Segments:**	**Not Supplied**

Geology 1:50,000 Maps - Slice A



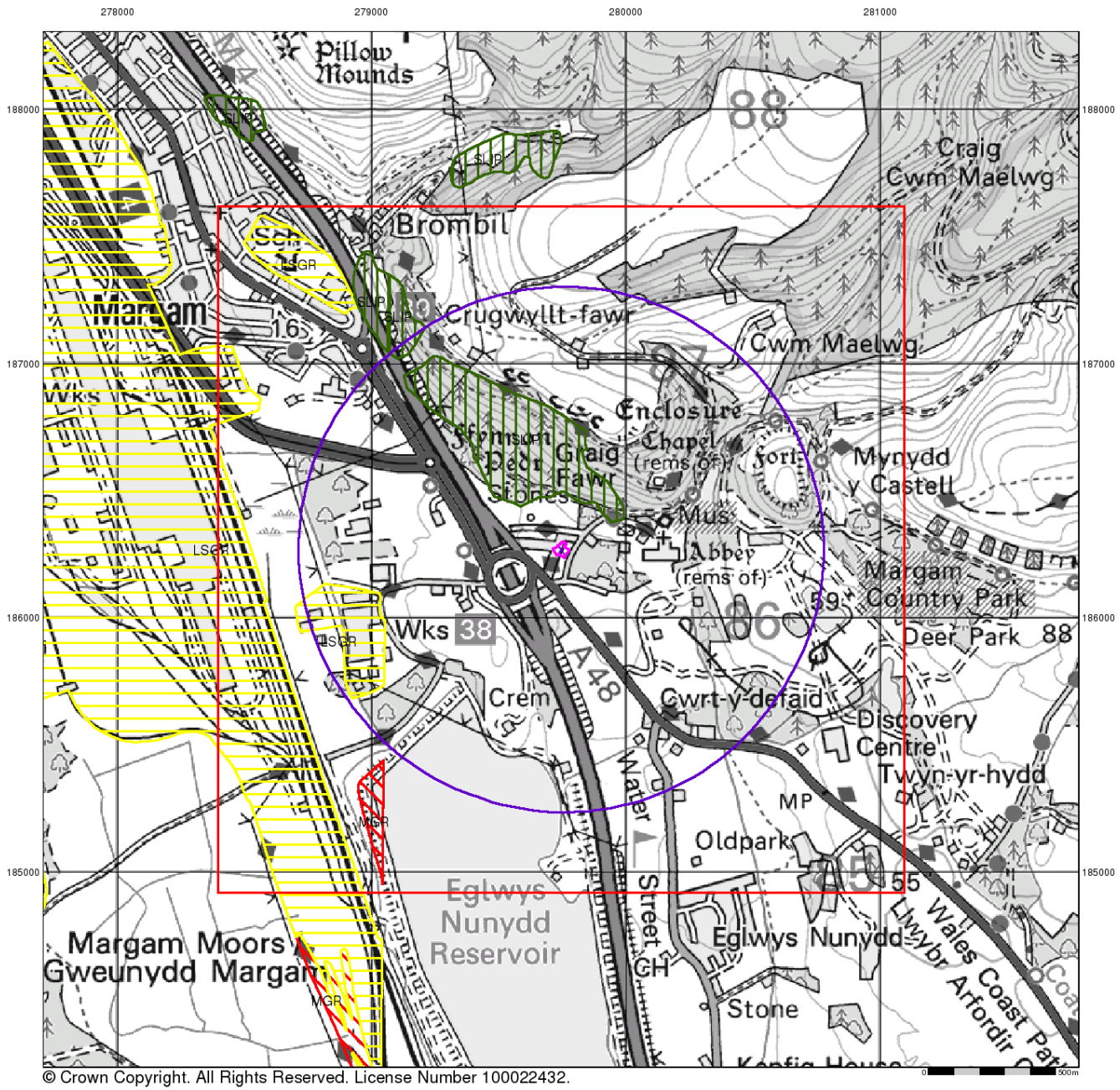
Order Details:

Order Number:	326265277_1_1
Customer Reference:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details:

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Landmark® INFORMATION GROUP
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



© Crown Copyright. All Rights Reserved. License Number 100022432.

Intégral
Géotechnique

Artificial Ground and Landslip

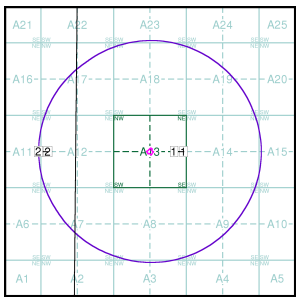
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions and unstable ground.

Artificial ground includes:

- Made ground - man-made deposits such as embankments and spoil heaps on the natural ground surface.
- Worked ground - areas where the ground has been cut away such as quarries and road cuttings.
- Infilled ground - areas where the ground has been cut away then wholly or partially backfilled.
- Landscaped ground - areas where the surface has been reshaped.
- Disturbed ground - areas of ill-defined shallow or near surface mineral workings where it is impracticable to map made and worked ground separately.

Mass movement (landslip) deposits on BGS geological maps are primarily superficial deposits that have moved down slope under gravity to form landslips. These affect bedrock, other superficial deposits and artificial ground. The dataset also includes foundered strata, where the ground has collapsed due to subsidence.

Artificial Ground and Landslip Map - Slice A



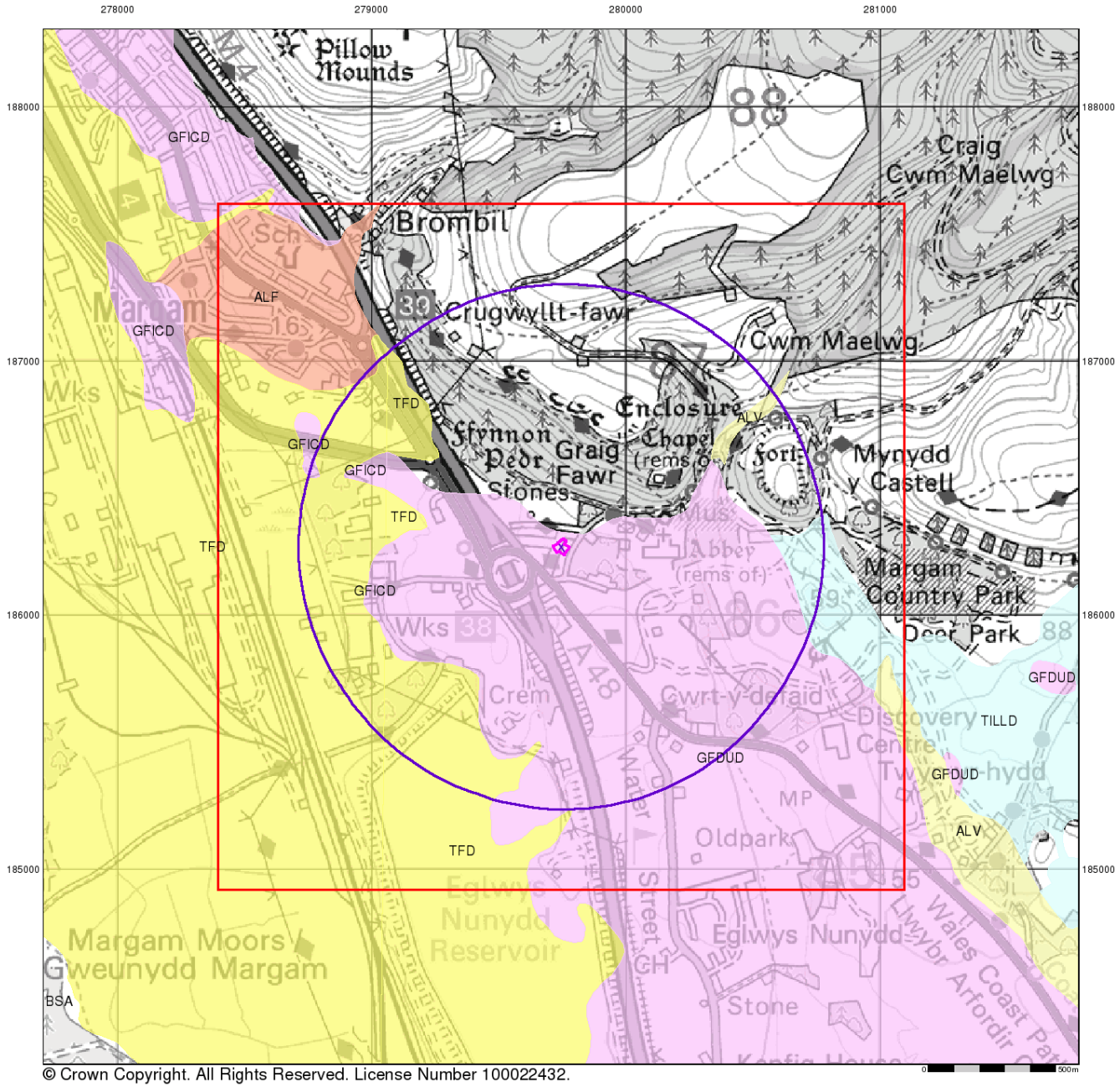
Order Details:

Order Number:	326265277_1_1
Customer Reference:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details:

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



© Crown Copyright. All Rights Reserved. License Number 100022432.

Intégral
Géotechnique

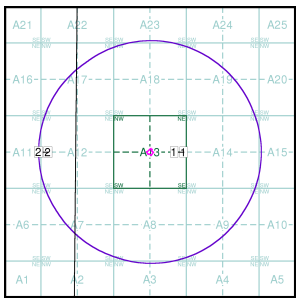
Superficial Geology

Superficial Deposits are the youngest geological deposits formed during the most recent period of geological time, the Quaternary, which extends back about 1.8 million years from the present.

They rest on older deposits or rocks referred to as Bedrock. This dataset contains Superficial deposits that are of natural origin and 'in place'. Other superficial strata may be held in the Mass Movement dataset where they have been moved, or in the Artificial Ground dataset where they are of man-made origin.

Most of these Superficial deposits are unconsolidated sediments such as gravel, sand, silt and clay, and onshore they form relatively thin, often discontinuous patches or larger spreads.

Superficial Geology Map - Slice A



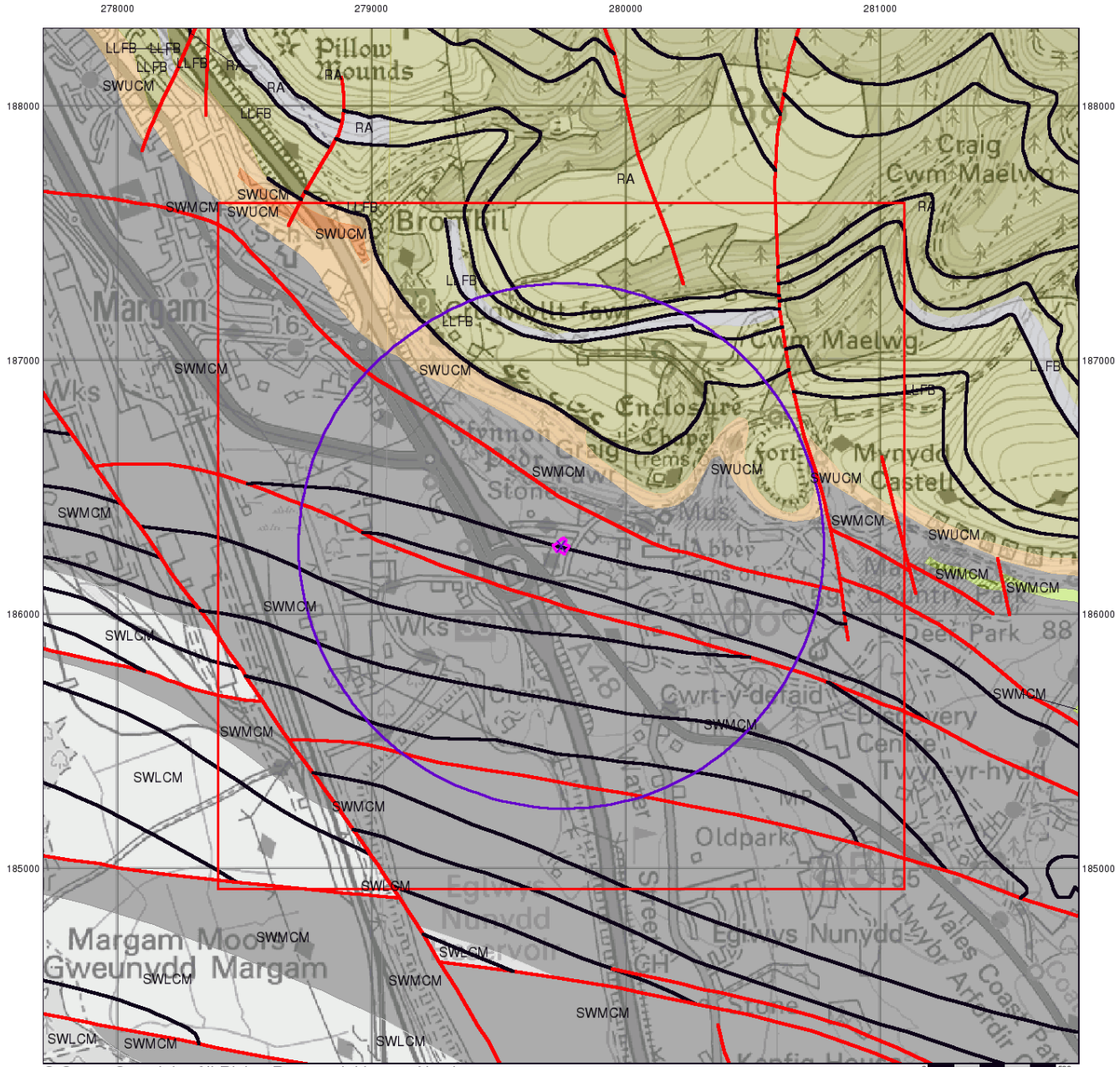
Order Details:

Order Number:	326265277_1_1
Customer Reference:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details:

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



© Crown Copyright. All Rights Reserved. License Number 100022432.

Intégral
Géotechnique

Bedrock and Faults

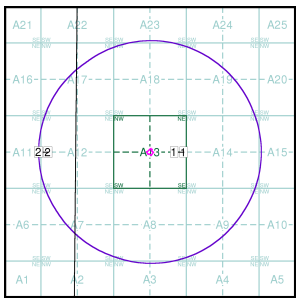
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

The bedrock has formed over vast lengths of geological time ranging from ancient and highly altered rocks of the Proterozoic, some 2500 million years ago, or older, up to the relatively young Pliocene, 1.8 million years ago.

The bedrock geology includes many lithologies, often classified into three types based on origin: igneous, metamorphic and sedimentary.

The BGS Faults and Rock Segments dataset includes geological faults (e.g. normal, thrust), and thin beds mapped as lines (e.g. coal seam, gypsum bed). Some of these are linked to other particular 1:50,000 Geology datasets, for example, coal seams are part of the bedrock sequence, most faults and mineral veins primarily affect the bedrock but cut across the strata and post date its deposition.

Bedrock and Faults Map - Slice A



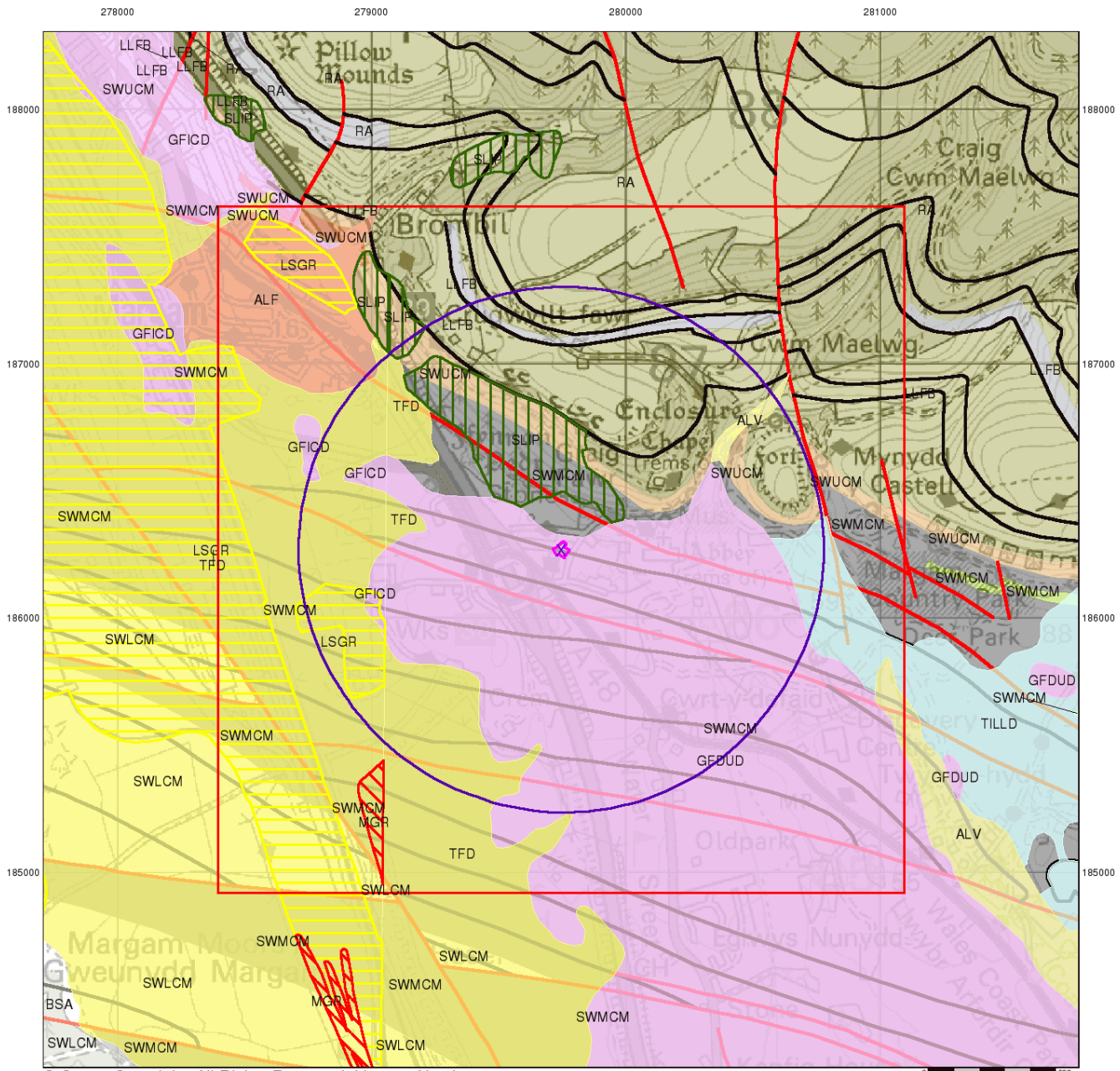
Order Details:

Order Number:	326265277_1_1
Customer Reference:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details:

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

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



© Crown Copyright. All Rights Reserved. License Number 100022432.

Intégral
Géotechnique

Combined Surface Geology

The Combined Surface Geology map combines all the previous maps into one combined geological overview of your site.

Please consult the legends to the previous maps to interpret the Combined "Surface Geology" map.

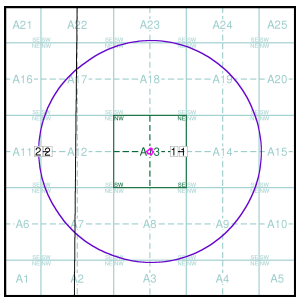
Additional Information

More information on 1:50,000 Geological mapping and explanations of rock classifications can be found on the BGS website. Using the LEX Codes in this report, further descriptions of rock types can be obtained by interrogating the 'BGS Lexicon of Named Rock Units'. This database can be accessed by following the 'Information and Data' link on the BGS website.

Contact

British Geological Survey
Kingsley Dunham Centre
Keyworth
Nottingham
NG12 5GG
Telephone: 0115 936 3143
Fax: 0115 936 3276
email: enquiries@bgs.ac.uk
website: www.bgs.ac.uk

Combined Geology Map - Slice A

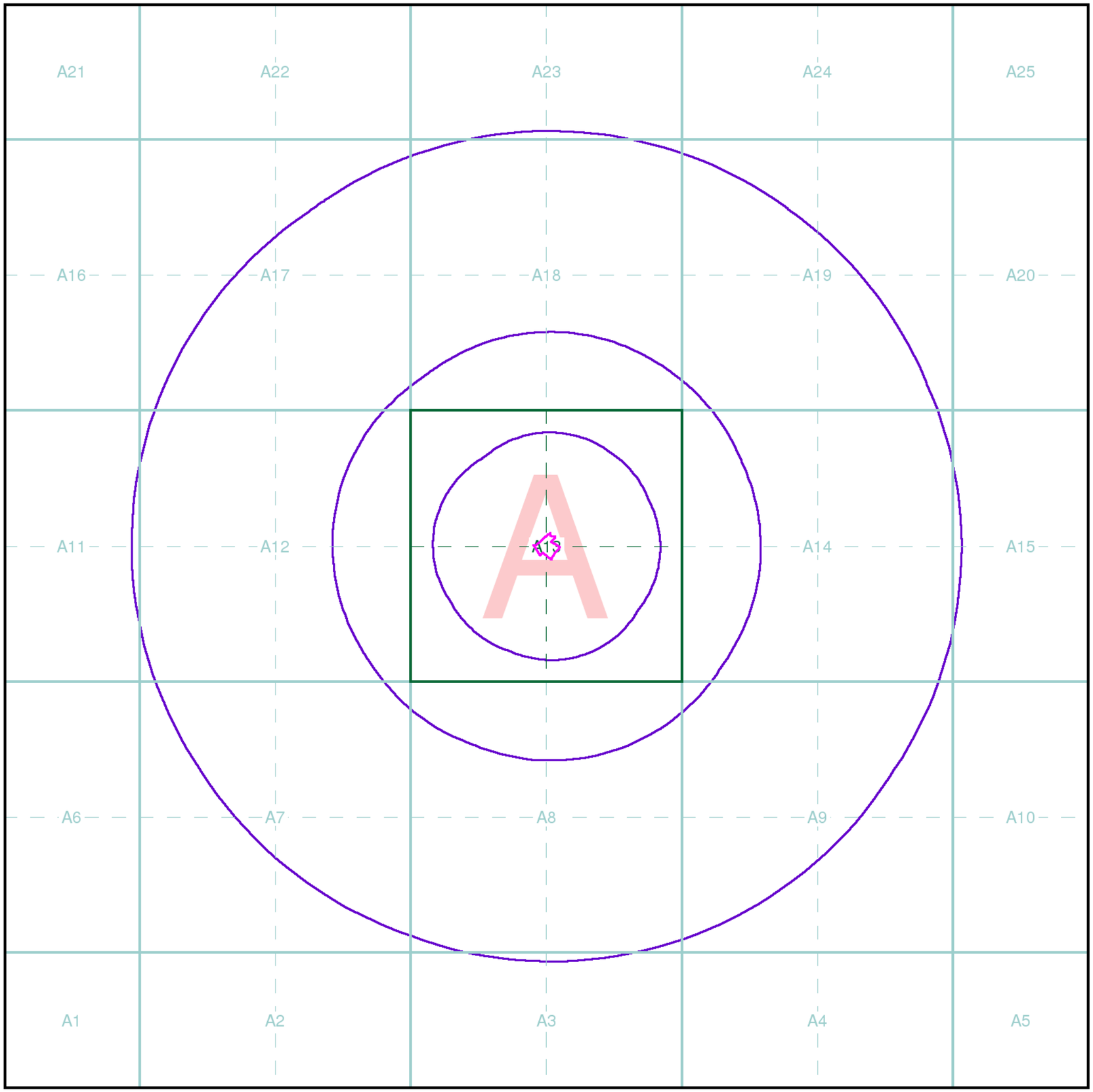


Order Details:

Order Number:	326265277_1_1
Customer Reference:	14283/LP
National Grid Reference:	279750, 186270
Slice:	A
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details:

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU



Intégral Géotechnique

Index Map

For ease of identification, your site and buffer have been split into Slices, Segments and Quadrants. These are illustrated on the Index Map opposite and explained further below.

Slice
Each slice represents a 1:10,000 plot area (2.7km x 2.7km) for your site and buffer. A large site and buffer may be made up of several slices (represented by a red outline), that are referenced by letters of the alphabet, starting from the bottom left corner of the slice "grid". This grid does not relate to National Grid lines but is designed to give best fit over the site and buffer.

Segment
A segment represents a 1:2,500 plot area. Segments that have plot files associated with them are shown in dark green, others in light blue. These are numbered from the bottom left hand corner within each slice.

Quadrant
A quadrant is a quarter of a segment. These are labelled as NW, NE, SW, SE and are referenced in the datasheet to allow features to be quickly located on plots. Therefore a feature that has a quadrant reference of A7NW will be in Slice A, Segment 7 and the NW Quadrant.

A selection of organisations who provide data within this report:

Map data

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Cyfoeth Naturiol Cymru
Natural Resources Wales

Envirocheck reports are compiled from 136 different sources of data.

Client Details

MR H Pritchard, Integral Geotechnique, Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX

Order Details

Order Number:	326265277_1_1
Customer Ref:	14283/LP
National Grid Reference:	279750, 186270
Site Area (Ha):	0.21
Search Buffer (m):	1000

Site Details

7, Ten Acre Wood, Margam, PORT TALBOT, SA13 2SU

Full Terms and Conditions can be found on the following link:
http://www.landmarkinfo.co.uk/Terms/Show/515

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

APPENDIX B

CONSULTANTS COAL MINING REPORT FROM THE COAL AUTHORITY

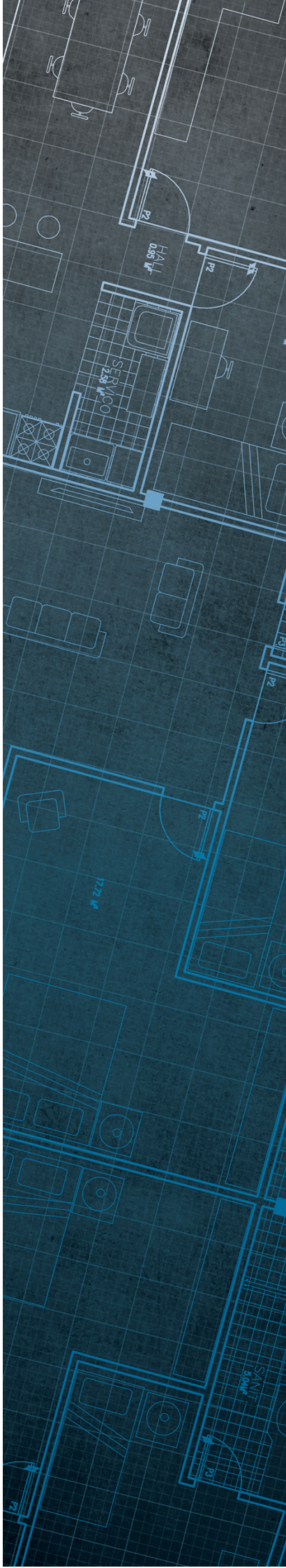
The Coal Authority

Consultants

Coal Mining Report

7 Ten Acre Wood
Margam
Neath Port Talbot
SA13 2SU

Date of enquiry:	**24 November 2023**
Date enquiry received:	**24 November 2023**
Issue date:	**24 November 2023**
Our reference:	**51003391531001**
Your reference:	**14283/LP**



Consultants

Coal Mining Report

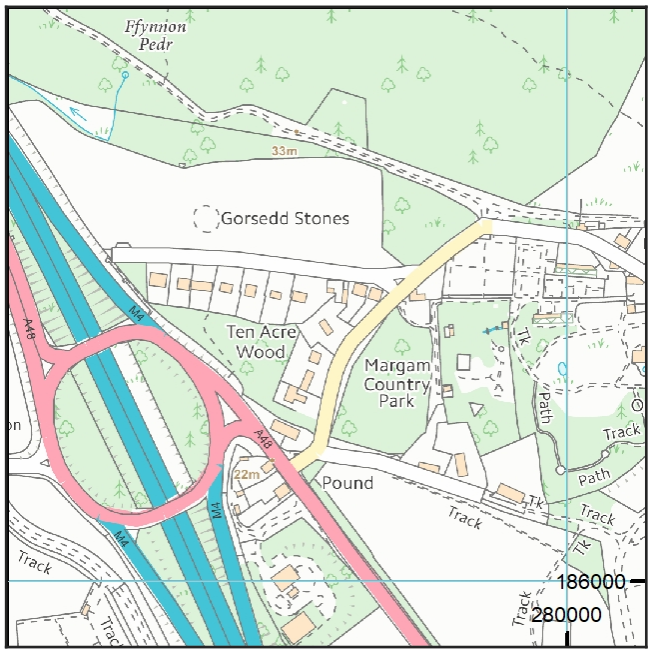
This report is based on and limited to the records held by the Coal Authority at the time the report was produced.

Client name

INTEGRAL GEOTECHNIQUE (WALES) LTD.

Enquiry address

7 Ten Acre Wood
Margam
Neath Port Talbot
SA13 2SU



Approximate position of property

Map data

Reproduced by permission of Ordnance Survey on behalf of HMSO. © Crown copyright and database right 2018. All rights reserved.

Ordnance Survey Licence number: 100020315

How to contact us

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

200 Lichfield Lane
Mansfield
Nottinghamshire
NG18 4RG

www.groundstability.com

@coalauthority
/company/the-coal-authority
/thecoalauthority
/thecoalauthority

Section 1 – Mining activity and geology

Past underground mining
No past mining recorded.

Probable unrecorded shallow workings
None.

Spine roadways at shallow depth
No spine roadway recorded at shallow depth.

Mine entries
None recorded within 100 metres of the enquiry boundary.

Abandoned mine plan catalogue numbers
None available.

Outcrops

Seam name	Mineral	Seam workable	Distance to outcrop (m)	Direction to outcrop	Bearing of outcrop
2FT NINE MID LEAF	Coal	Yes	Within	N/A	285
UPPER FOUR FOOT	Coal	Yes	31.6	South	285

Geological faults, fissures and breaklines
No faults, fissures or breaklines recorded.

Opencast mines
None recorded within 500 metres of the enquiry boundary.

Coal Authority managed tips
None recorded within 500 metres of the enquiry boundary.

Copyright © 2023 The Coal Authority

Section 2 – Investigative or remedial activity

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

Site investigations
None recorded within 50 metres of the enquiry boundary.

Remediated sites
None recorded within 50 metres of the enquiry boundary.

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

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

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

Mine gas
None recorded within 500 metres of the enquiry boundary.

Mine water treatment schemes
None recorded within 500 metres of the enquiry boundary.

Copyright © 2023 The Coal Authority

Section 3 – Licensing and future mining activity

Future underground mining
None recorded.

Coal mining licensing
None recorded within 200 metres of the enquiry boundary.

Court orders
None recorded.

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

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

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

Payments to owners of former copyhold land
The property is not in an area where a relevant notice has been published under the Coal Industry Act 1975/Coal Industry Act 1994.

Copyright © 2023 The Coal Authority

Section 4 – Further information

Based on the responses in this report, no further information has been highlighted.

Future development

If development proposals are being considered, technical advice relating to both the investigation of coal and former coal mines and their treatment should be obtained before beginning work on site. All proposals should apply specialist engineering practice required for former mining areas. No development should be undertaken that intersects, disturbs or interferes with any coal or coal mines without first obtaining the permission of the Coal Authority.

MINE GAS: Please note, if there are no recorded instances of mine gas within 500m of the enquiry boundary, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded. Developers should be aware that the investigation of coal seams, mine workings or mine entries may have the potential to generate and/or displace underground gases. Associated risks both to the development site and any neighbouring land or properties should be fully considered when undertaking any ground works. The need for effective measures to prevent gases migrating onto any land or into any properties, either during investigation or remediation work, or after development must also be assessed and properly addressed. In these instances, the Coal Authority recommends that a more detailed Gas Risk Assessment is undertaken by a competent assessor.

Copyright © 2023 The Coal Authority

Section 5 – Data definitions

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

Past underground coal mining

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

Probable unrecorded shallow workings

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

Spine roadways at shallow depth

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

Mine entries

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

Abandoned mine plan catalogue numbers

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

Outcrops

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

Geological faults, fissures and breaklines

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

Copyright © 2023 The Coal Authority

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

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

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

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

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

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

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

Mine gas
Reports of alleged mine gas emissions received by the Coal Authority, either within or within 500 metres of the enquiry boundary that subsequently required investigation and action by the Coal Authority to mitigate the effects of the mine gas emission. Please note, if there are no recorded instances of mine gas reported, this does not mean that mine gas is not present within the vicinity. The Coal Authority Mine Gas data is limited to only those sites where a Mine Gas incident has been recorded.

Copyright © 2023 The Coal Authority

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

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

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

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

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

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

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

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

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

Copyright © 2023 The Coal Authority

The Coal Authority

Summary of findings

Reproduced by permission of Ordnance Survey on behalf of HMSO.
© Crown copyright and database right 2018. All rights reserved.
Ordnance Survey Licence number: 100020315

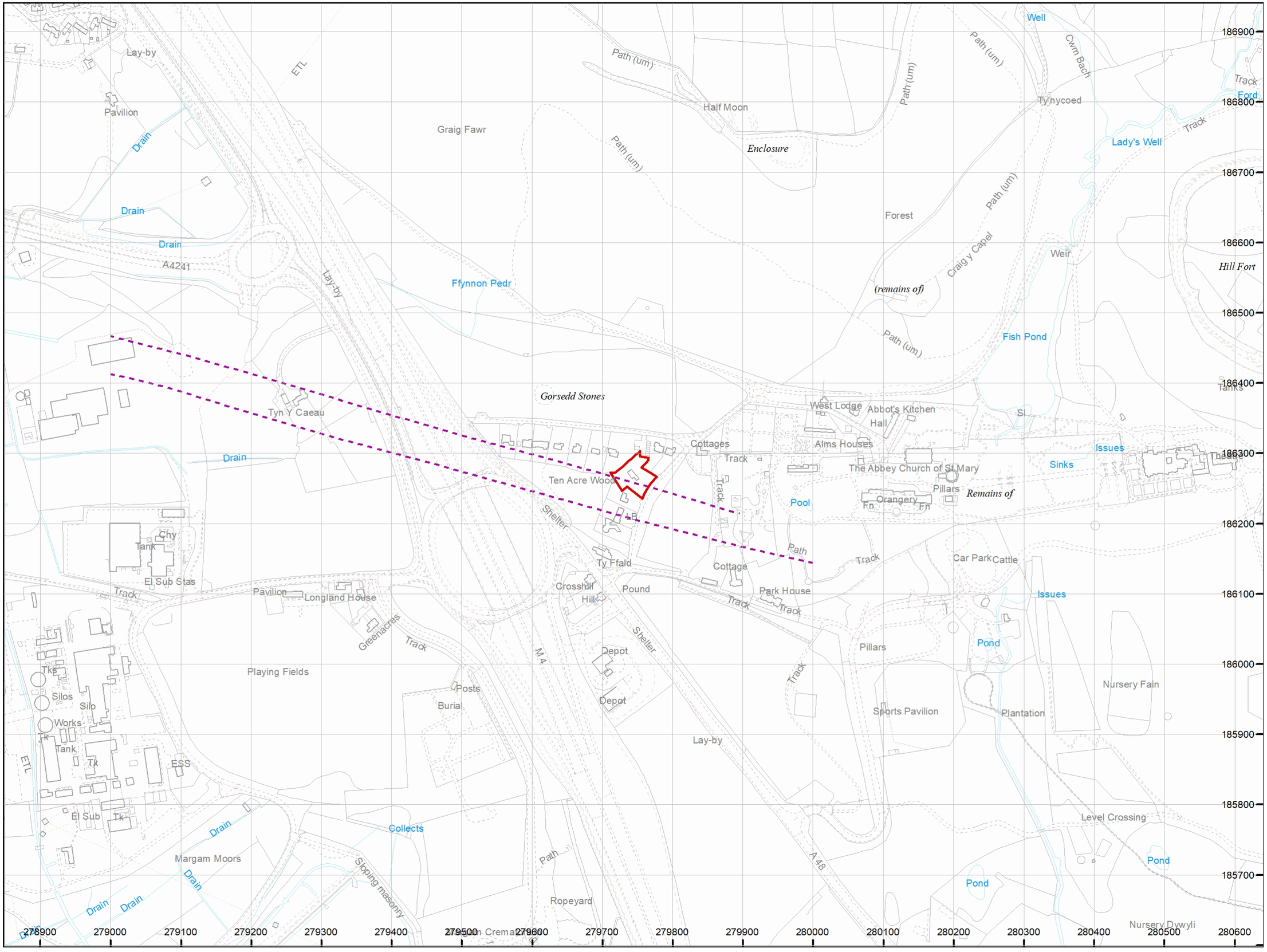
Map data

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

Key

Approximate position of the enquiry boundary shown

Outcrop (Conjectured)



How to contact us
0345 762 6848 (UK)
+44 (0)1623 637 000 (International)
www.groundstability.com

FIGURES

NORTH

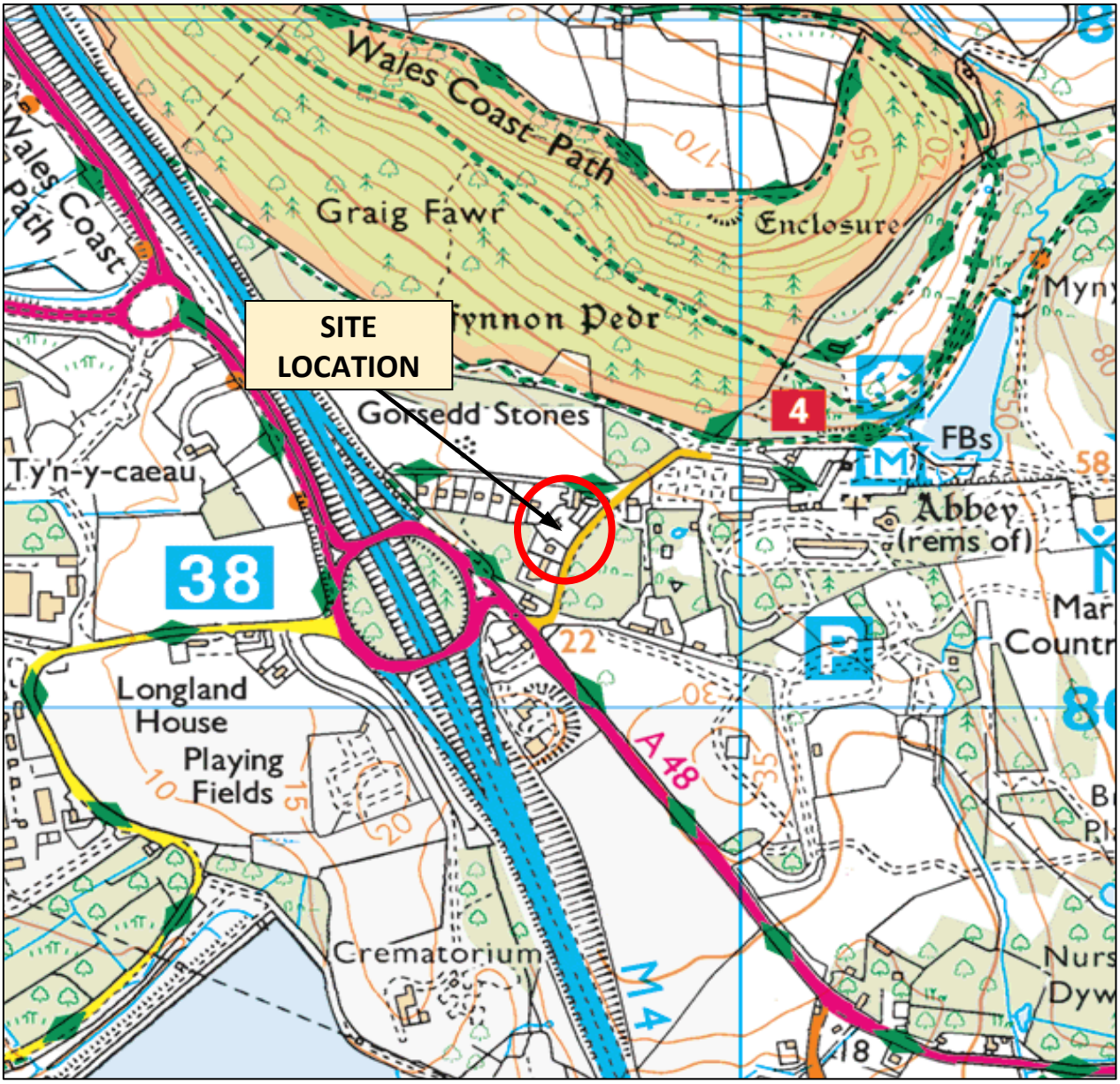


FIGURE 1: SITE LOCATION

7 Ten Acre Wood, Margam

Intégral Géotechnique

Intégral House
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 2080 7991



NORTH

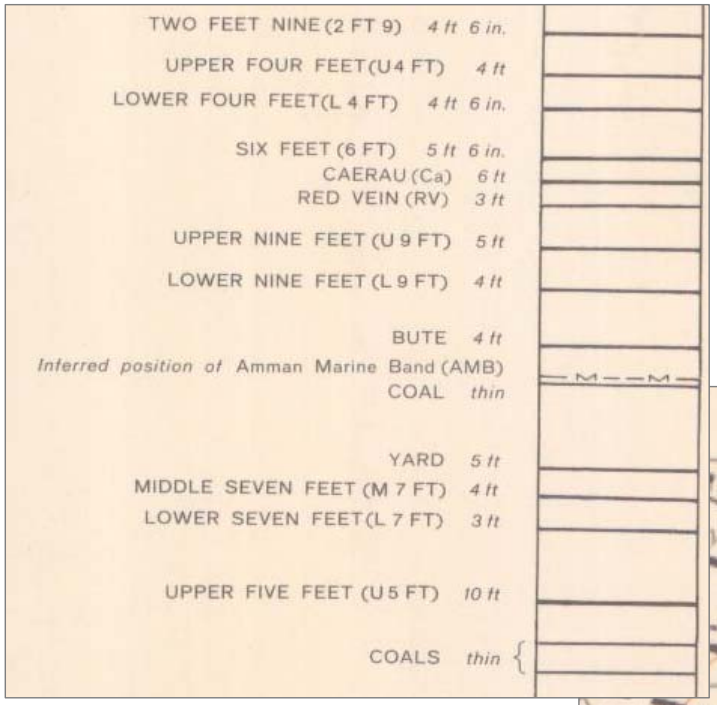


FIGURE 2: SITE PLAN

7 Ten Acre Wood, Margam

Intégral Géotechnique

Intégral House
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 2080 7991



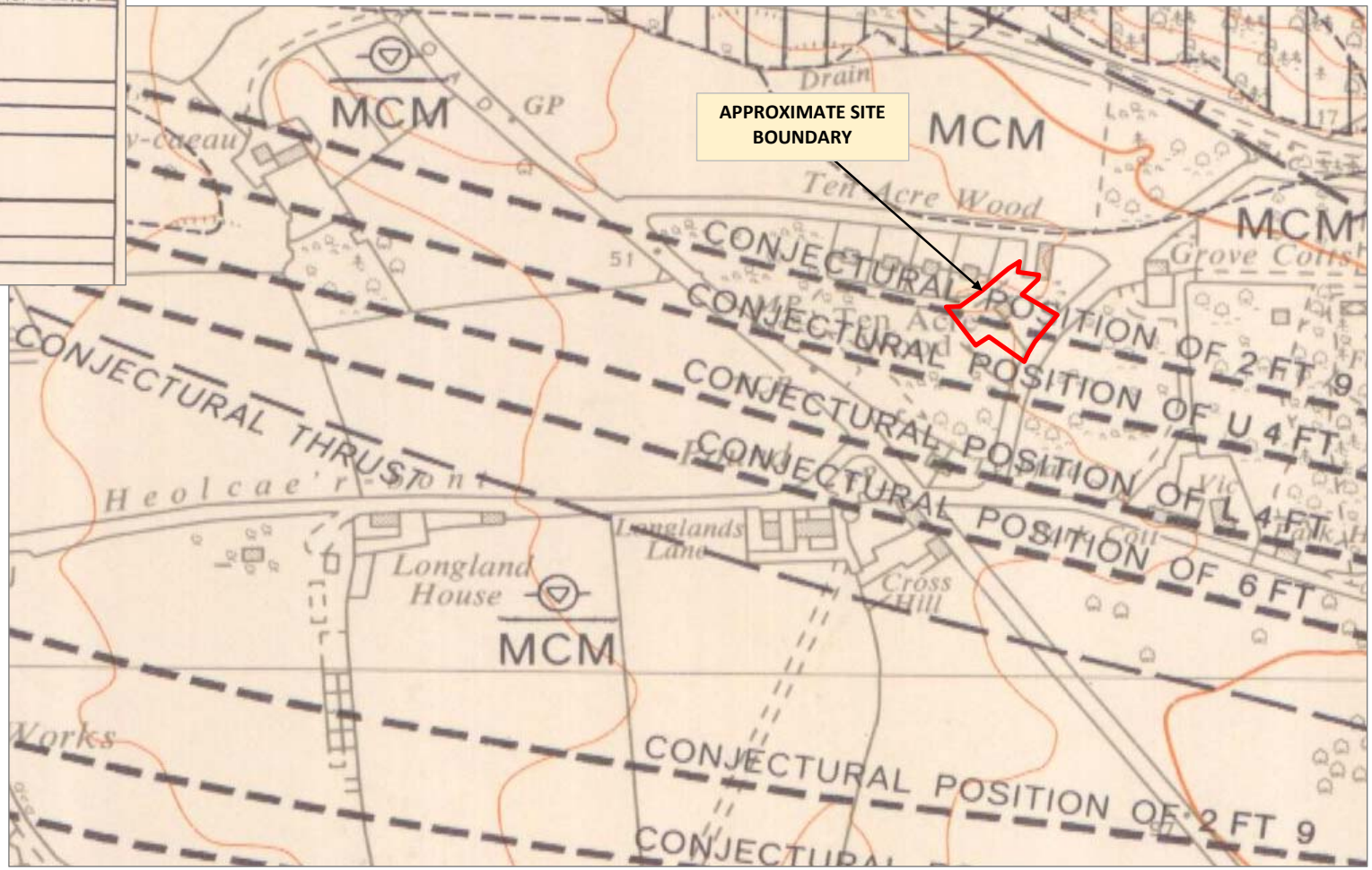


FIGURE 3: GEOLOGY MAP EXTRACT

7 Ten Acre Wood, Margam

Intégral Géotechnique

Intégral House
7 Beddau Way
Castlegate Business Park
Caerphilly
CF83 2AX
Tel: 029 2080 7991