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21<sup>st</sup> September 2020

Hale Construction Limited  
Unit 2  
Milland Road Industrial Estate  
Neath  
SA11 1NJ

For the attn. of Mr Steve Griffiths

Dear Steve,

## **HUMAN HEALTH RISK ASSESSMENT USING A SITE-SPECIFIC CATEGORY 4 SCREENING LEVEL FOR ARSENIC: LEIROS FARM, NEATH**

### **SECTION 1 Introduction**

Hale Construction Limited is proposing the residential development of land at Leiros Farm in the Rhydding area of Neath. A geotechnical and geo-environmental site investigation was undertaken at the site by Terra Firma (Wales) Limited in June 2017. A copy of the site investigation report is presented in **Annex A**.

Fourteen samples taken from the shallow natural soil were tested for a broad range of contaminants. Ten samples contained elevated concentrations of arsenic that exceeded the Category 4 Screening Level (C4SL) of 37mg/kg for a residential development with plant uptake. Across the fourteen samples, arsenic concentration ranged from 10mg/kg to 160mg/kg. No exceedances were recorded in any other samples and no visual or olfactory evidence of any other contamination was recorded in any of the exploratory holes.

Terra Firma (Wales) Limited has therefore been commissioned by Hale Construction Limited to determine a site-specific guideline for the site. It is anticipated that the site-specific guideline will provide a more reliable value with which to compare the site soils.

## SECTION 2 Summary and Development of Conceptual Model

All substances tested for were found to be present at concentrations below their respective human health threshold levels with the exception of seven samples with elevated arsenic in the surface-covering soils (GL to 0.25/0.35), and a further three in the soils directly beneath (0.25/0.35-0.8/0.85). The samples containing elevated concentrations of the arsenic testing from the earlier investigations are presented in **Table 2.1**.

| <b>Table 2.1 Summary of Soil Chemical Test Results: Arsenic</b> |                  |                    |                                                             |
|-----------------------------------------------------------------|------------------|--------------------|-------------------------------------------------------------|
| <b>Exploratory Hole Position</b>                                | <b>Depth (m)</b> | <b>Source</b>      | <b>Measured Concentrations of Tested Substances (mg/kg)</b> |
| TP01                                                            | 0.1              | GL to 0.25/0.35    | 160                                                         |
| TP02                                                            | 0.5              | 0.25/0.35-0.8/0.85 | 45                                                          |
| TP05                                                            | 0.1              | GL to 0.25/0.35    | 54                                                          |
| TP06                                                            | 0.4              | 0.25/0.35-0.8/0.85 | 59                                                          |
| TP07                                                            | 0.1              | GL to 0.25/0.35    | 75                                                          |
| TP10                                                            | 0.1              | GL to 0.25/0.35    | 72                                                          |
| TP11                                                            | 0.4              | 0.25/0.35-0.8/0.85 | 51                                                          |
| TP13                                                            | 0.1              | GL to 0.25/0.35    | 52                                                          |
| TP14                                                            | 0.1              | GL to 0.25/0.35    | 66                                                          |
| TP15                                                            | 0.1              | GL to 0.25/0.35    | 89                                                          |

Based upon the history of the site, where the site has lain undeveloped since the earliest date researched (1877) apart from a small group of agricultural buildings at the far south of the site, it is likely that the source of contamination within the near surface soil is from fallout from the historic smelting of metals such as tin, iron and copper in the surrounding area. This is a common occurrence in Neath. There is no evidence to suggest that there are any 'hotspots' of contamination across the site from either the desk study or the exploratory investigation.

BGS Urban Soil Chemistry Measured Concentration Values in proximity of the site are recorded at between 25mg/kg and 120mg/kg. Therefore, the arsenic values recorded on site are consistent with those found in the local area and are unlikely to be due to any past on-site processes.

Based on the comparison between the arsenic concentrations and the generic C4SL guidelines it was recommended that remedial measures be used across the site. An alternative solution was also offered, involving a site-specific risk assessment to determine whether the elevated concentrations of arsenic are a human health risk.



## SECTION 3 Site Work

Ten soil samples were taken from across the site on 19<sup>th</sup> August 2020. Samples were retrieved using JCB 3CX mechanical excavator.

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

The trial pit logs are presented in **Annex B**, and their locations are shown on **Drawing 01**.

### 3.1 Ground Conditions

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

| Table 4.1 Summary of Ground Conditions |   |         |               |                                                                                                                                                      |
|----------------------------------------|---|---------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| Depth (m)                              |   |         | Thickness (m) | Stratum                                                                                                                                              |
| GL                                     | - | 0.2/0.3 | 0.2/0.3       | Grass over soft dark brown organic-rich slightly sandy slightly gravelly <b>CLAY</b> /dark brown organic-rich clayey slightly gravelly <b>SAND</b> . |
| 0.2/0.3                                | - | >0.6    | Absent/1.50   | Soft to firm brown and grey sandy slightly gravelly <b>CLAY</b> .                                                                                    |

## **SECTION 4 Laboratory Chemical Testing**

### **4.1 Quality Assurance**

Ten small, disturbed soil samples were collected.

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

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

### **4.2 Laboratory Soil Analysis**

The samples were taken and despatched to the laboratories of Eurofins Chemtest Limited for laboratory chemical testing.

#### **Metals and Metalloids**

Arsenic

Arsenic Gastric mg/kg Bio-accessible

Arsenic Gastro Intestinal mg/kg Bio-accessible

The results are discussed further in **Section 5** and the laboratory test result certificates are found in **Annex C**.

## SECTION 5 Additional Soil Test Results

A further 10 No. samples were taken from the across the site to a maximum depth of 0.4m and tested for arsenic. Seven of the samples contained concentration of arsenic above the C4SL guideline of 37mg/kg. The results of the additional arsenic soil testing is presented in **Table 5.1**.

| <b>Table 5.1 Summary of Soil Chemical Test Results: Arsenic</b> |              |                             |                                                             |                                       |
|-----------------------------------------------------------------|--------------|-----------------------------|-------------------------------------------------------------|---------------------------------------|
| <b>Exploratory Hole Position</b>                                | <b>Depth</b> | <b>Generic C4SL (mg/kg)</b> | <b>Measured Concentrations of Tested Substances (mg/kg)</b> | <b>Exceedance above generic C4SL?</b> |
| TP01                                                            | 0.1          | 37                          | 78                                                          | Yes                                   |
| TP02                                                            | 0.3          | 37                          | 20                                                          | No                                    |
| TP03                                                            | 0.1          | 37                          | 77                                                          | Yes                                   |
| TP04                                                            | 0.4          | 37                          | 27                                                          | No                                    |
| TP05                                                            | 0.1          | 37                          | 85                                                          | Yes                                   |
| TP06                                                            | 0.1          | 37                          | 100                                                         | Yes                                   |
| TP07                                                            | 0.1          | 37                          | 72                                                          | Yes                                   |
| TP08                                                            | 0.4          | 37                          | 24                                                          | No                                    |
| TP09                                                            | 0.1          | 37                          | 100                                                         | Yes                                   |
| TP10                                                            | 0.1          | 37                          | 97                                                          | Yes                                   |

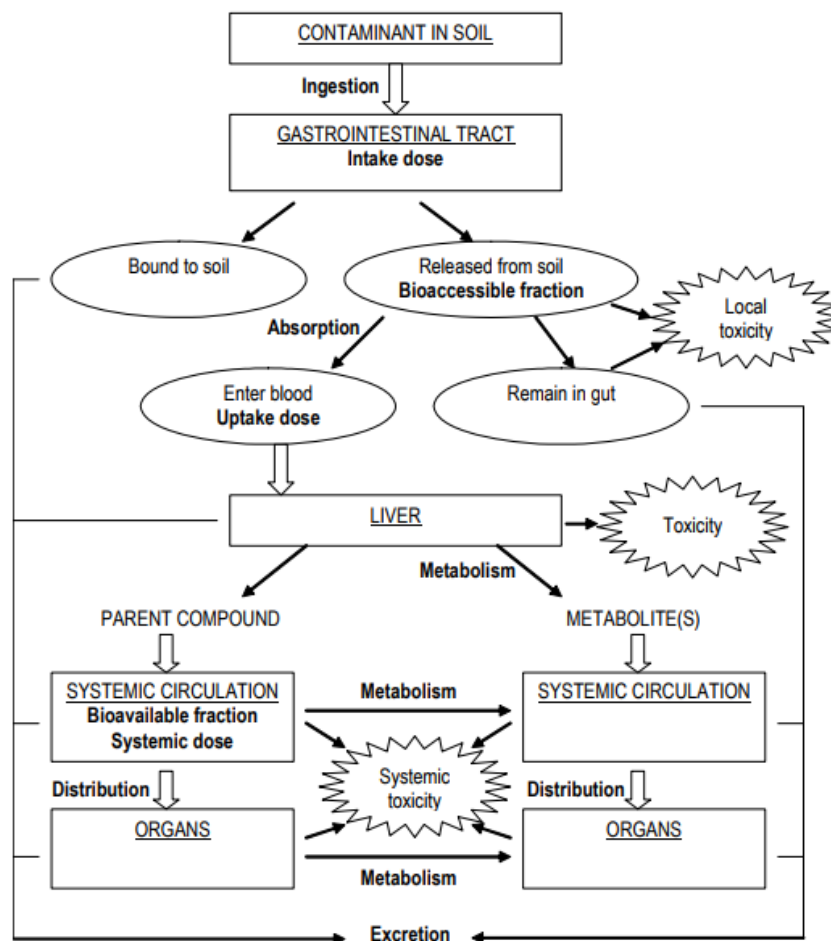
The results from the testing are generally consistent with those tested by in 2017 (see **Table 2.1**).

## SECTION 6 Site-Specific Risk Assessment

The site soils have initially been compared to the generic Category 4 Screening Levels. These generic screening levels do not take into consideration many site-specific details such as the building size and type, pH levels and soil organic matter of the soil. Another factor, which will affect the toxicity of the soil is the bioavailability of contaminants such as arsenic.

In the case of humans ingesting chemicals in contaminated soil, the chemical may be tightly bound to soil particles or contained within the mineral matrix. In order to become potentially bioavailable therefore, the chemical must first disassociate from the soil. The proportion of a chemical released from soil following ingestion and digestion, and entering into solution, is referred to as the bioaccessible fraction.

**Figure 6.1**, taken from Environment Agency's Science Report Final SC050021/SR2 (*Human health toxicological assessment of contaminants in soil*) is an illustration of a simplified kinetic pathway for oral exposure.



**Figure 6.1** Simplified kinetic pathway for oral exposure

## 6.1 CLEA Model

Category 4 Screening Level data, stored within the CLEA v1.07 Model has been used to calculate the site-specific guideline, together with the BARGE Method bioaccessibility test results, pH and soil organic matter results, and development details such as the type and size of the proposed dwelling.

It is considered that the 10 No. samples tested was sufficient to form a conservative site-specific guideline for the topsoil stockpile.

The number of samples taken is based upon the large area that the site covers but also the relatively thin covering and consistent composition of the soils in question. Further to this, based upon the historical overview and composition of the 'topsoil', the geochemistry of the soil is likely to be consistent.

It is also considered that the number of samples taken would provide a cost-effective way of determining whether the site-won soil could be used on site; in turn leading to less soil being transported to landfill, and less transporting of soil.

## 6.2 The BARGE Unified Bioaccessibility Method

Bioaccessibility testing is the main basis for estimating bioavailability in the UK.

The BARGE (Bioaccessibility Research Group of Europe) Unified Bioaccessibility Method is considered to be the most representative of the physiochemical conditions in the human gastrointestinal tract. Modifications were made to the RIVM methodology to ensure adequate conservatism, and that the in vitro test was robust and applicable to the local geological conditions in a range of different countries, were considered and tested prior to the preparation of a standard operating procedure (SOP) and detailed at the start of the full evaluation exercise.

Evaluation of the unified bioaccessibility method (UBM) has been undertaken by means of an international inter-laboratory comparison exercise. The full report of the Inter-laboratory trial of the UBM entitled 'Inter-laboratory trial of a unified bioaccessibility testing procedure' (Wragg et al, 2009) is available to download from the NORA NERC Open Research Archive.

As an in vitro test, the results should be used cautiously in assessing risks to health since the relationship between measured bioaccessibility and the relative human biological availability / toxicity of contaminants remains uncertain. The Environment Agency are not able to recommend any specific test. Provided such testing has been carried out in accordance with guidelines for good practice, the results will be useful for arsenic as part of a "lines of evidence approach" to evaluating site-specific risk including the sensitivity of any quantitative risk assessment.

A "lines of evidence approach" means that no single piece of evidence, such as the outcome of an in vitro test should be solely relied on to make a decision about health risks. However, alongside other investigations and considerations, such as a greater understanding of soil chemistry, in vitro tests can inform a site-specific risk evaluation.

### 6.3 Determination of Site-Specific C4SL

Seven samples with elevated concentrations of arsenic in the surface-covering soils (GL to 0.25/0.35), and a further three in the soils directly beneath (0.25/0.35-0.8/0.85) were recorded by the site investigation in June 2017.

A site-specific C4SL threshold has subsequently been calculated using the CLEA v1.07 Model in order to determine whether the in-situ soil is in fact suitable for use or not within the garden areas of the proposed development.

The results from 10 No. bioaccessible arsenic tests by BARGE Method were used to support the calculation of the site-specific threshold. The pH and soil organic matter of the soil, together with details of the proposed development were also used.

The CLEA v1.07 Model worksheets are presented in **Annex D**, and the chemical settings from the CLEA Model are presented in **Annex E**.

This CLEA model assumes the following:

| Table 6.1 CLEA Model Input Data |                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CRITERIA                        | SCENARIO                                                                                                                                                                   |
| Land Use                        | Residential with home grown produce (C4SL)                                                                                                                                 |
| Receptor                        | Female (Residential C4SL)                                                                                                                                                  |
| Building                        | Semi-detached house                                                                                                                                                        |
| Soil Type                       | Sandy clay loam                                                                                                                                                            |
| Start Age Class                 | 1 (Ages 0-1)                                                                                                                                                               |
| End Age Class                   | 6 (Ages 5-6)                                                                                                                                                               |
| pH                              | 5.6-6.8                                                                                                                                                                    |
| SOM (%)                         | 1.9-11.0                                                                                                                                                                   |
| Exposure Pathways               | Direct Soil and Dust Ingestion<br>Consumption of home grown produce<br>Soil attached to home grown produce<br>Dermal Indoor<br>Dermal Outdoor<br>Inhalation of Indoor Dust |
| Exposure Times                  | 23 Hours Indoors/Day<br>1 Hours Outdoors/Day                                                                                                                               |

#### 6.4 Site Specific Guideline

Based upon the data entered into the CLEA Model, site specific C4SLs of between 213mg/kg and 238mg/kg were determined. The site specific C4SL for arsenic in each sample is summarised in **Table 6.2**.

| Table 6.2 Summary of Site Specific C4SL: Arsenic |       |                            |                                                      |                                      |
|--------------------------------------------------|-------|----------------------------|------------------------------------------------------|--------------------------------------|
| Exploratory Hole Position                        | Depth | Site Specific C4SL (mg/kg) | Measured Concentrations of Tested Substances (mg/kg) | Exceedance above site specific C4SL? |
| TP01                                             | 0.1   | 225                        | 78                                                   | No                                   |
| TP02                                             | 0.3   | 229                        | 20                                                   | No                                   |
| TP03                                             | 0.1   | 233                        | 77                                                   | No                                   |
| TP04                                             | 0.4   | 235                        | 27                                                   | No                                   |
| TP05                                             | 0.1   | 229                        | 85                                                   | No                                   |
| TP06                                             | 0.1   | 238                        | 100                                                  | No                                   |
| TP07                                             | 0.1   | 222                        | 72                                                   | No                                   |
| TP08                                             | 0.4   | 223                        | 24                                                   | No                                   |
| TP09                                             | 0.1   | 227                        | 100                                                  | No                                   |
| TP10                                             | 0.1   | 213                        | 97                                                   | No                                   |



## SECTION 7 Conclusion

The CLEA v1.07 Model calculates site-specific C4SL thresholds of between 106.2mg/kg and 126.2mg/kg. Consequently, it is observed that the highest recorded arsenic value of 160mg/kg falls well below the most conservative of the 10 No. site-specific C4SL thresholds of 213mg/kg.

Based upon the historical review of the site, which indicates that the site has been used for farming throughout its history, it is considered that there are unlikely to be any hotspots of contamination on site, or more specifically within the soil in question. The elevated concentrations encountered in the soil will have resulted from fallout from historical smelting of metals in the local area.

Whilst there are some uncertainties from the use of bioaccessibility testing, it is considered that the results are consistent. It is also considered that the most conservative site specific C4SL of 213mg/kg is sufficiently high enough to diminish this uncertainty, and that the risk to the proposed receptor from the shallow natural soil is negligible. Further to this, due to the consistency of results, consistency of soil composition, and the highest recorded arsenic concentration of 160mg/kg being so much lower than the lowest site-specific C4SL of 213mg/kg, it is deemed unnecessary to test any more samples.

It is therefore concluded that the site-specific Category 4 Screening Level has demonstrated that the shallow natural soils are suitable for use and that no capping of the garden areas is necessary.

We trust that the above is to your satisfaction, however, if you have any queries or require any further information please do not hesitate to contact us.

Yours sincerely

**for: Terra Firma (Wales) Ltd**

A handwritten signature in dark ink, appearing to read 'Michael Watkins', with a stylized flourish at the end.

**Michael Watkins**

enc.

**Annex A**  
Terra Firma Site Investigation Report

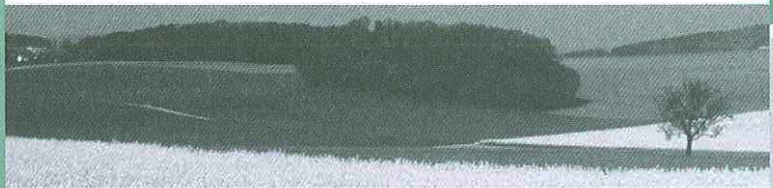
**Geotechnical & Geo-Environmental Site  
Investigation Report:**  
Leiros Park, Rhydding, Neath

**Prepared For:**  
Hale Construction Limited



**June 2017**

**Job No: 14156**

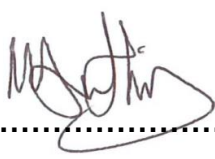


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Leiros Park, Rhydding, Neath

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

**JOB NUMBER :** **14156**

**DATE :** **June 2017**

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**Dr Gwyn C Lake**



## Executive Summary

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Site Location</b>                     | <i>The site situates on field land to the north of the Rhydding area of Neath at a National Grid Reference of 275340 199030. It occupies an approximate plan area of 11.09 hectares.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Proposed Development</b>              | <i>Hale Construction Limited is proposing a residential development with associated access roads, car parking areas, garden and landscaped areas.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Site History</b>                      | <p><i>The site has been unoccupied since the earliest map apart from some agricultural buildings at the far south of the site.</i></p> <p><i>Fallout from local historic metal smelting is commonly found in the near-surface soils in the Neath area. It is therefore possible that elevated levels of arsenic and lead could be detected in the near-surface soil.</i></p> <p><i>Based upon the records of the Coal Authority, two mine shafts are located on site. Historical maps provide strong evidence that the area surrounding the site has been heavily mined for coal. Leiros Gravel Pit was also located at the far northwest of the site.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Ground Conditions</b>                 | <i>The site is covered by a mixture of clayey very sandy gravel/gravelly sand over mudstone or sandstone. Bedrock varies between 0.30m and &gt;3.30m depth.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Radon</b>                             | <i>In lower probability radon areas of the site, no radon protection measures are required, and in intermediate probability radon areas of the site, basic protection measures are required.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Mining</b>                            | <p><i>The Coal Authority Report do not hold records of the workings in either Mountain or Garland coal seams. However, workings are recorded in seams at greater depth (62m to 137m) beneath the site.</i></p> <p><i>Ten mine entries are located within or within close proximity of the site boundary; two of which are located on site. A shaft is located roughly at the centre of the site, and another at the far west of the site.</i></p> <p><i>An unknown structure was recorded within close proximity of the agricultural buildings at the south of the site during a site walkover. The possibility of it being a shaft cannot be discounted</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Laboratory Chemical Testing</b>       | <i>All substances tested for were found to be present at concentrations below their respective human health threshold levels apart from ten samples of arsenic in the natural, near-surface soil.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Remediation / Mitigation Measures</b> | <p><i>Remedial measures will be required with regards to site soils which have been found to contain elevated levels of arsenic. The affected soils are the shallow surface soils that cover the entire site.</i></p> <p><i>In terms of the eventual site end users it is considered that there is a risk posed by the contaminated natural soil. Capping will therefore be required on the site. The capping is to consist of the proposed buildings, hard standing and in garden and landscaped areas 600mm of suitable clean imported subsoil/topsoil material. This material should ideally conform to the requirements of BS: 3882.</i></p> <p><i>An alternative approach would be to undertake more detailed analysis of the soil. This would include taking more samples of arsenic on a roughly 50m grid, undertaking bio-accessibility testing of the shallow soils, and processing the data into the CLEA (contaminated land exposure assessment) computer software to more accurately assess whether there is an actual risk to human health from the elevated concentrations of arsenic in the shallow soil.</i></p>                                                                                                                                                                                                                                                                                                                                     |
| <b>Foundation Solution</b>               | <p><i>The following foundation recommendations should be confirmed following the necessary intrusive coal mining risk assessment. At areas of the site affected by shallow mining or within influencing distance of mine entries, it will be necessary to use a reinforced concrete raft capable of spanning a remnant void of 3.0m with a cantilever effect on corners of 1.5m.</i></p> <p><i>Where the proposed plots are not affected by past shallow mining or mine entries, it is recommended that a strip and trench fill foundation be used. The foundations should be founded in either the sandstone bedrock at depths ranging between 0.25m and 1.90m or medium dense to very dense brown clayey sandy gravel/clayey gravelly sand.</i></p> <p><i>An allowable bearing pressure of 200kN/m<sup>2</sup> may be used for design purposes in the sandstone, and 100kN/m<sup>2</sup> may be used for design purposes in the gravel/sand.</i></p> <p><i>All foundations must sit at least 200mm within the founding horizon.</i></p> <p><i>In order to prevent damage from frost heave/and or thermal shrinkage foundations/edge beams should be taken down to a minimum depth of 450mm.</i></p> <p><i>For the given foundation solutions and bearing pressure, maximum total settlements of 30mm should result with differential movements of the superstructure not exceeding 1:750.</i></p> <p><i>The floor slabs can be designed as ground bearing.</i></p> |

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## SECTION 1 Introduction and Proposed Development

### 1.1 Introduction

Hale Construction Limited is proposing a residential development with associated access roads, car parking areas, garden and landscaped areas at a site in the Rhydding area of Neath.

CB<sup>3</sup> Consult Limited is the Consulting Civil and Structural Engineer for the proposed development.

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

The main objectives of the geoenvironmental assessment programme were to:

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

The main objectives of the geotechnical site investigation were to:

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

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

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

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

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

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

## SECTION 2 Review of Existing Data

### 2.1 Physical Setting and Current Site Use

The site sits on field land to the north of the Rhydding area of Neath at a National Grid Reference of 275340 199030. It occupies an approximate plan area of 11.09 hectares.

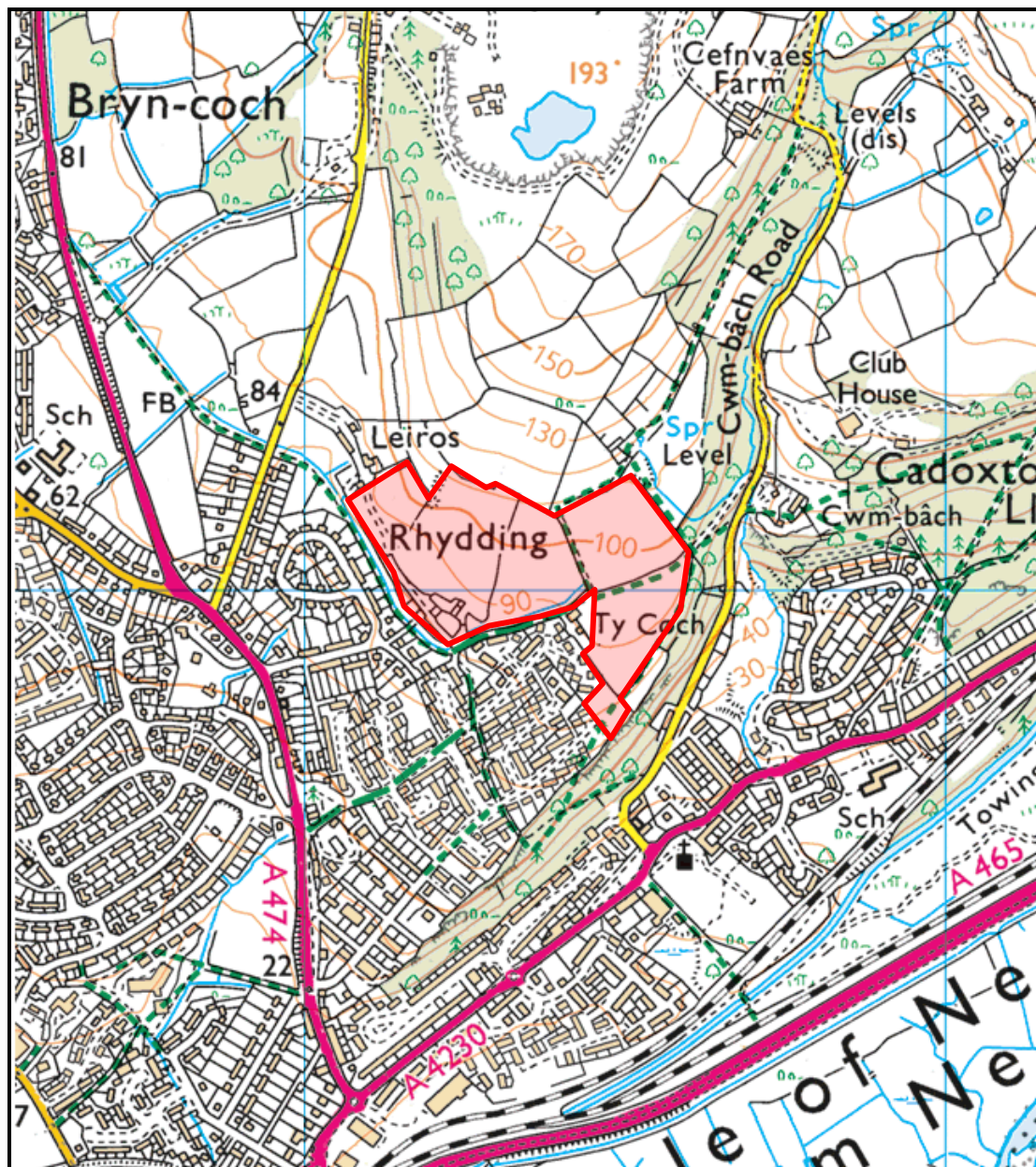


Figure 2.1: Site Location - OS Map

The site predominantly consists of fields, bounded by mature trees and hedgerows. A small parcel of land at the southwest of the site is occupied by old agricultural buildings and for storage and small scale agricultural use by local residents. A public right-of-way passes through the east of the site.

The far south of the site is covered by brambles and is separated from the remainder of the site by a damaged post and wire fence.

## 2.1 Physical Setting and Current Site Use

The site falls from approximately 115m AOD at the north, to approximately 90m AOD at the south, over a distance of approximately 200m.

The site is accessed from the southeast at the end of Daphne Road, or from the west at Gilfach Road via Leiros Farm.

The far southwest of the site is covered by brambles and is separated from the remainder of the site by a damaged post and wire fence.

The site is bound to the south and southwest by a large housing estate; to the north by fields; to the east by woodland; and to the northwest by Leiros Farm's buildings. The woodland to the east slopes very steeply from 84m AOD at the west, to 44m AOD to the east, over a horizontal distance of approximately 80m.

## 2.2 History

The history of the site has been traced using historical Ordnance Survey maps obtained from Landmark Information Group. These are presented in **Annex A**. A summary of the history of the site is given below. Distances, where quoted are approximate.

### 1877-81 (1:2,500 Scale)

The site in the earliest edition is seen to be unoccupied field land. A small cluster of buildings known as Rhydding is located at the far south of the site. Leiros Farm is located to the immediate northwest of the site, an old gravel pit is located straddling the northwest boundary of the site, and a spring is located at the site's southwest boundary.

The site is surrounded by signs of coal mining; a coal pit and nearby furnace are located approximately 150m southwest of the site, an old coal level approximately 60m north of the site, a coal pit 110m north of the site, an air shaft approximately 160m <sup>?</sup>, another coal pit located 140m to the east, and an old coal level 180m to the east. Rhydding Colliery is located approximately 220m south of the site.

Most of the surrounding area comprises farmland and woodland, sporadic houses, springs and a few small quarries; possibly mining the sandstone. Small settlements are located approximately 60m to the southwest and 140m to the west. A small track bisects the site from the northeast to the southwest of the site.

### 1899 (1:2,500 Scale)

Little change has been made to the site or surrounding area since the previous edition. Rhydding Colliery is no longer in use.

### 1918-1919 (1:2,500 Scale)

Little change has been made to the site or surrounding area since the previous edition. A small settlement known as Rhydding is located around the former Rhydding Colliery. A hydraulic ram (water pump) is located at a spring on the sites northwest boundary.

### 1935 (1:2,500 Scale)

There are no significant changes to the site or the immediate surrounding area since the previous edition apart from the growth of the residential settlement to the southwest around Rhydding.

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## 2.1 History (Continued)

### 1964-68 (1:2,500 Scale)

There are no significant changes to the site. However the residential settlement of Rhydding has grown significantly since 1935 and now forms the southwest boundary of the site. A large residential estate has also been constructed and the Leiros Farm has also grown, and the buildings at the south of the site are known as Rhydding Cottages.

### 1978-89 (1:2,500 Scale)

The site appears to remain unchanged, however the residential development to the southwest and east of the site have continued to grow.

### 1999 (1:10,000 Scale)

The site and surrounding area appear to remain unchanged,

### 2017 (1:10,000 Scale)

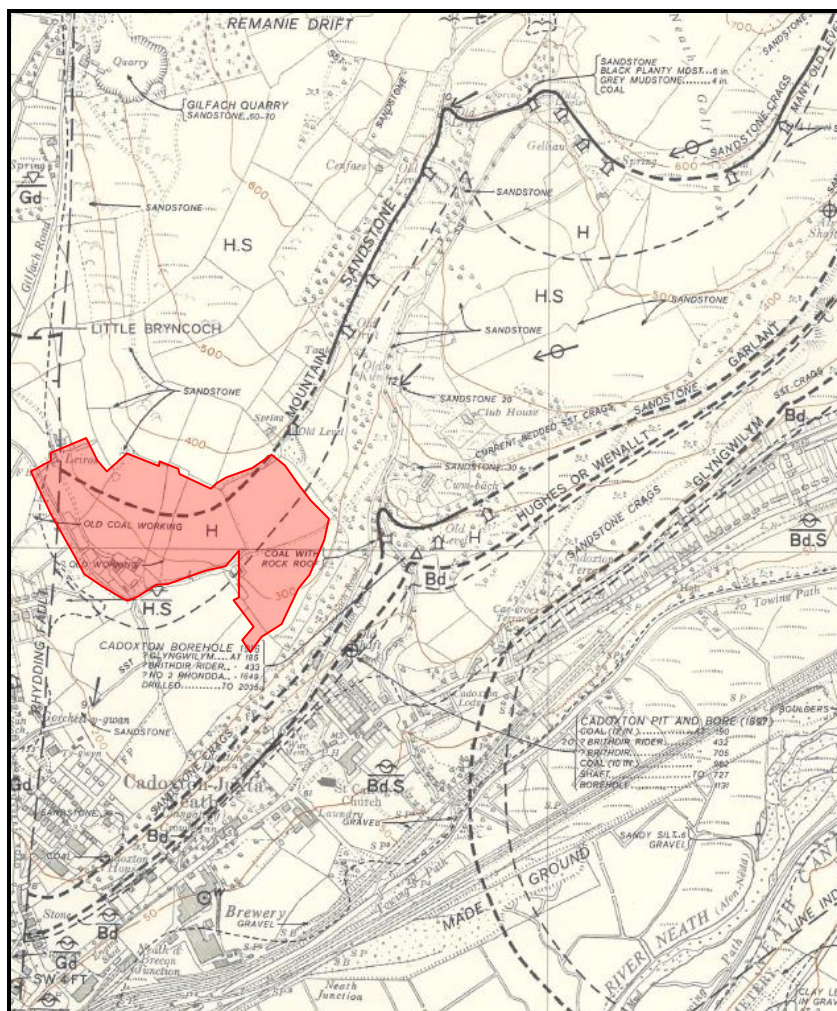
The site and surrounding area appear to remain unchanged,



## 2.3 Geological Setting

### 2.3.1 Geology

The 1:10,560 scale geological maps of the area (Sheets SS 79 NE) and the 1:50,000 scale geological map (Sheet 247) of the area was consulted.



**Figure 2.2: Extract from Geology Map (Sheet SS 79 NE)**

The site is underlain by the Hughes Member of the Upper Coal Measures Formation. These sedimentary rocks were formed in the Carboniferous Period. The north and southeast of the site are underlain by sandstone, and the central area of the site is underlain by bands of mudstones, siltstones and sandstones.

The bedrock in this area is recorded as dipping to the north and west at between 9° and 12°.

The conjectural outcrop of the Mountain coal seam is shown crossing the middle of the site. The seam will therefore underlie the northern area of the site at shallow depth. A number of adits working the seam are shown in the area; the closest of which is located approximately 50m northeast of the site.

The Generalised Vertical Section shows a thin coal seam that lies approximately 12.5m beneath the Mountain coal seam and therefore it too may underlie the northern area of the site at shallow depth.

## 2.3 Geology (Continued)

The conjectured outcrop of the Garland coal seam is located approximately 40m to the southeast of the site and approximately 54m below the Mountain coal seam. A number of adits and shafts show that the seam is commonly worked in the area. Based upon the recorded dip of the bedrock, the Garland coal seam may lie at shallow depth beneath the south-eastern portion of the site.

The Bodwr coal seam (2ft to 3ft 6 in.) lies approximately 18m beneath the Garland, and the Hughes (3ft to 4ft) another 18m beneath the Bodwr. Both seams are likely to have been worked however they should lie at sufficient depth to not affect ground stability at the surface.

Various shafts, adits and 'old coal workings' are shown in close proximity to the site.

The north to south orientated Rhydding Fault crosses the far west of the site; downthrowing to the west.

No superficial deposits are recorded on the site; however a small area of Glacial Till is located to the immediate southwest of the site.

### 2.3.2 Radon

The Envirocheck Datasheet (**Annex B**) states that the site contains both a lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level), and an intermediate probability radon area (3-5% of homes are estimated to be at or above the Action Level).

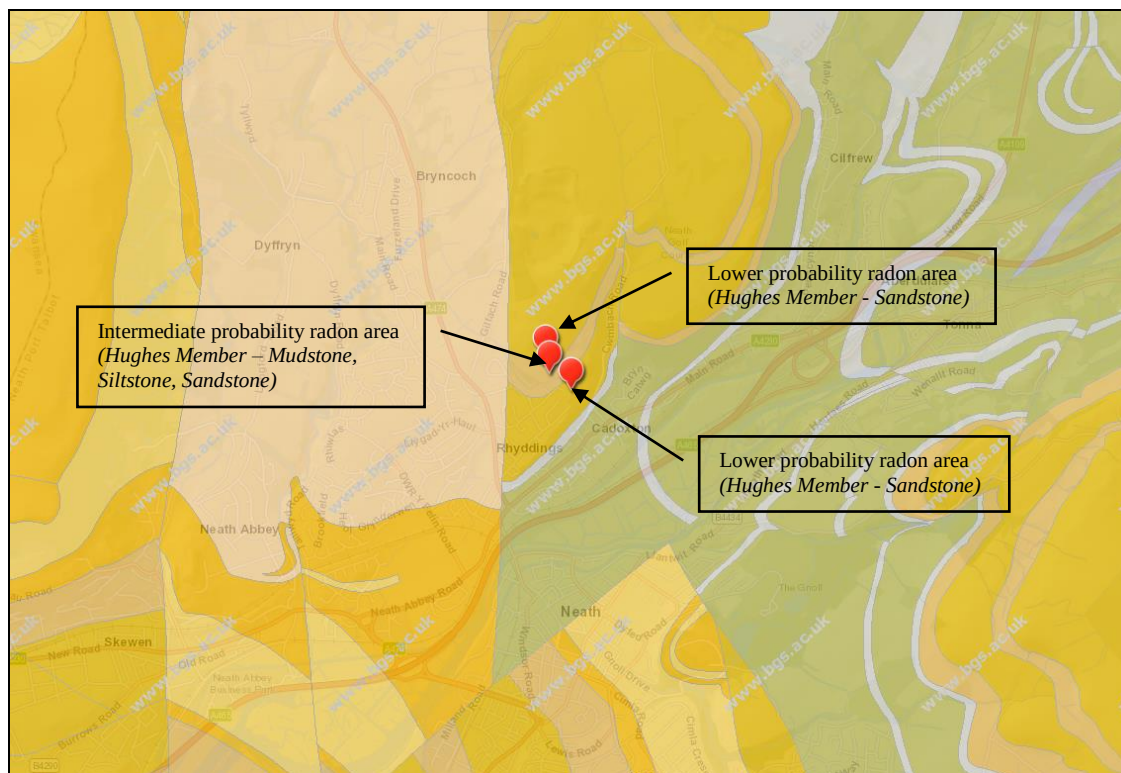
Radon is a colourless, odourless radioactive gas. It is formed by the radioactive decay of the small amounts of uranium that occur naturally in all rocks and soils. Radon affected areas are therefore affected by the geology beneath the site.

Based upon the co-ordinates designated for each of the affected areas, the intermediate probability radon area appears to stand within the Hughes Member – *Mudstone, Siltstone and Sandstone*, which runs through the central area of the site; and the lower probability radon area appears to stand within the Hughes Member – *Sandstone*, which lies at the north and south of the site.



## 2.3.2 Radon

Figure 2.3 shown below is taken from the BGS's Geology Viewer. The three pins illustrate the positions of the three affected areas.



**Figure 2.3: Extract from BGS Geology Viewer**

In lower probability radon areas, **no** radon protection measures are required, and in intermediate probability radon areas **basic** protection measures are required.

It would therefore be prudent to investigate the need for radon protection measures more closely. This could be done by dividing the site into smaller areas based upon the geology, a field-by field basis, or even on a plot-by-plot basis.

## 2.3.3 Mining

A Coal Authority Mining Report was obtained for the site and is presented in **Annex C**.

The report states that there are two seams of coal beneath the site with records of them having been worked; Hughes coal seam (62-82m depth) and Mynyddislwyn Lower Leaf (137m depth). The Coal Authority report also states that there is one coal outcrop on site. Whilst the Coal Authority record the seam as Darren Ddu; it is most likely referring to the Mountain coal seam, which outcrops through the middle of the site.

The report also states that spine roadways are located at shallow depth.

Ten mine entries are located within or within close proximity of the site boundary; two of which are located on site. A shaft is located roughly at the centre of the site, and another at the far west of the site.

The Coal Authority do not hold records describing how the mine entries were treated.

### 2.3.3 Mining (Continued)

During the site walkover, a local resident who rents a small parcel of the site for agricultural/recreational use stated that an unknown hole was located within close proximity to old agricultural buildings; as described in Section 2.1. A tractor wheel had been placed over the hole to stop children or animals from falling into it.

Beneath the wheel was a water-filled void with wooden and metal beams spanning across it. The water level was recorded at around 1.0m depth below ground level. The shape, depth or diameter of the structure could not be established.

Whilst the Coal Authority do not hold records of a shaft in this area of the site, the possibility of this structure being a shaft cannot be discounted.

The approximate location of the unknown structure is presented on **Figure 2.3** below.

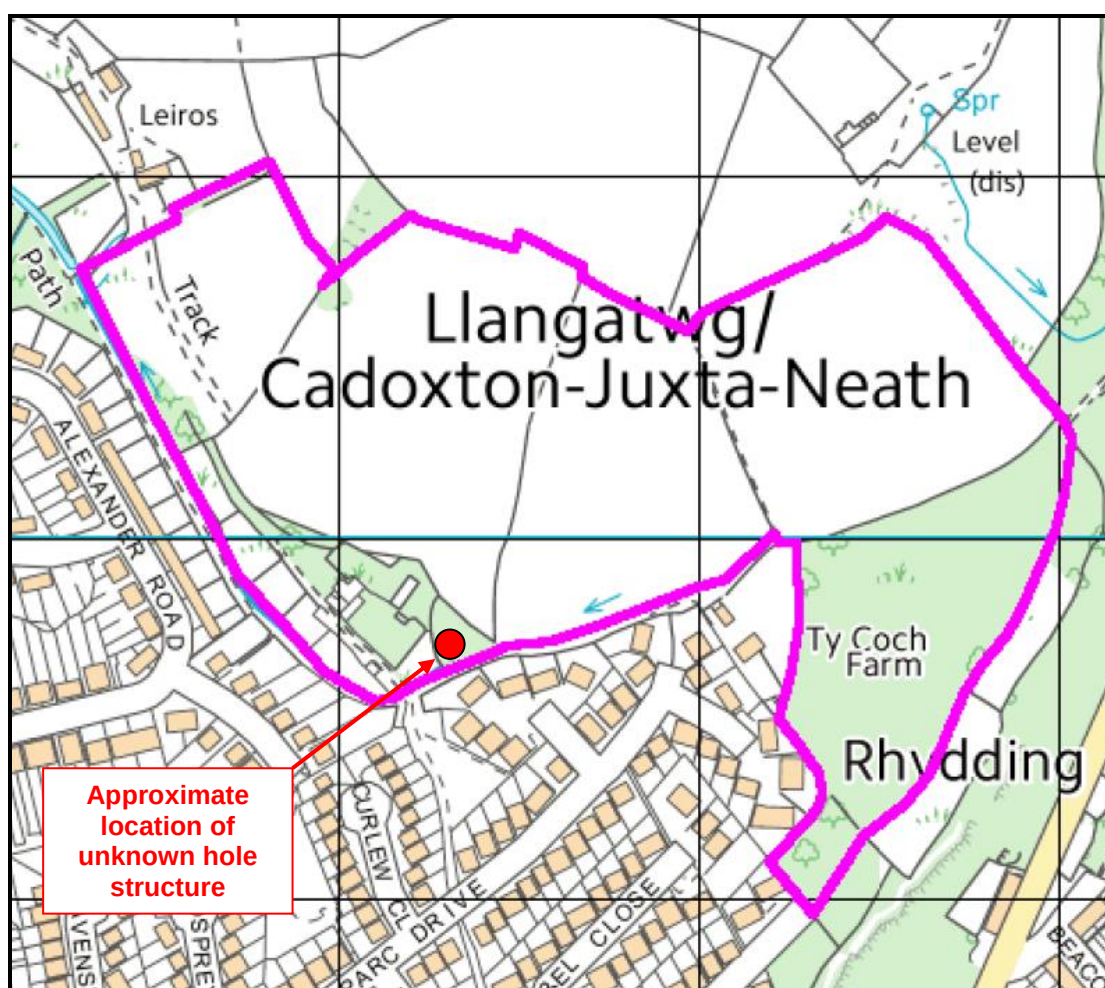


Figure 2.4: Approximate position of unknown hole structure

## **2.4 Environmental Setting**

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

### **2.4.1 Hydrogeology and Hydrology**

The nearest surface water feature recorded is located flowing along the southern boundary of the site. The unnamed stream starts at the middle of the southern boundary.

The topography of the general area falls to the east and south. Surface and shallow groundwater beneath the site is likely to flow in an easterly or southerly direction towards the River Neath, located at the bottom of the valley approximately 880m south of the site or Neath Canal 460m southeast of the site. Shallow groundwater or surface water may also be intercepted by the stream located at the southern boundary.

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

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

### **2.4.2 Groundwater**

The Envirocheck Report does not place the site within 1km of a groundwater source protection zone.

### **2.4.3 Flooding**

The site does not lie in an area prone to flooding or extreme flooding from rivers or sea without defences.

### **2.4.4 Waste**

There are no active or historic landfill sites identified by the Envirocheck Report within 250m of the site.

There are four (non-water) areas of infilled land within 100m of the site boundary; the closest of which is located 6m northeast of the site. All four are infilled pits or quarries.

One area of (water) infilled land is identified at the far west boundary of the site where an old stream appears to have been infilled or culverted. Two more infilled water bodies (small streams) are identified 15m south and 35m west of the site.

### **2.4.5 Pollution**

There are no pollution incidents located within 150m of the site.

## SECTION 3 Preliminary Human Health and Environmental Risk Assessment

### 3.1 General

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

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

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

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

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

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

### 3.2 Preliminary Site Conceptual Model

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

### 3.3 Potential Sources of Contamination and Gas

The potential contamination beneath the site, whether in the matrix of soil or groundwater is related to the sites past use. The site has been unoccupied since the earliest map apart from some agricultural buildings at the far south of the site.

Fallout from local historic metal smelting is commonly found in the near-surface soils in the Neath area. It is therefore possible that elevated levels of arsenic and lead could be detected in the near-surface soil.

Based upon the records of the Coal Authority, two mine shafts are located on site. Historical maps provide strong evidence that the area surrounding the site has been heavily mined for coal. Leiros Gravel Pit was also located at the far northwest of the site.

The site should therefore be tested for a standard suite of common contaminants such as metals, metalloids, polycyclic aromatic hydrocarbons, and phenol. If any Made Ground is encountered on site, it should also be screened for asbestos.

### 3.3 Potential Sources of Contamination and Gas (Continued)

Whilst several small areas of infilled ground are located near to the site, it is considered unlikely that these areas will present a significant source of ground gas as the infilled material is likely to be either coal mining waste or farm waste of significant age. Any decomposable material within this infill material is likely to be of very small quantity and of an age where it will have already broken down and will no longer be a source of methane or carbon dioxide.

### 3.4 Potential Receptors and Pollution Pathways

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

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

A residential end use is proposed. Once developed, future site users (residents and visitors) will potentially be at risk from contaminated soils through the same pathways as well as through consumption of site grown produce and potable drinking water. Landfill gas, ground gas and radon gas may also present a risk to site end users through inhalation or from the risk of explosion of gases in confined spaces.

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

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

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



### 3.5 Preliminary Human Health and Environmental Risk Assessment

| Table 3.1 Preliminary Human Health Risk Assessment |                                                                                                         |                                          |                                                                                                                                                                   |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential Source                                   | Potential Pathway                                                                                       | Potential Target                         | Preliminary Risk Assessment                                                                                                                                       |
| Human Health                                       |                                                                                                         |                                          |                                                                                                                                                                   |
| Site Soil                                          | Dermal contact with soil, ingestion of soil/soil dust, inhalation of soil dust                          | Construction workers                     | <b>Low Risk</b><br>COSHH assessment and good level of PPE/ hygiene by site workers/ staff; dust suppression measures if required                                  |
| Site Soil                                          | Dermal contact with soil, ingestion of soil/soil dust inhalation of soil dust                           | Passers - by/neighbouring site users     | <b>Low Risk</b><br>Made Ground is not anticipated on the site.                                                                                                    |
| Site Soil                                          | Dermal contact with soil, ingestion of soil/soil dust or site grown vegetables, inhalation of soil dust | Site End Users – Residents and visitors. | <b>Low Risk</b><br>Made Ground is not anticipated on the site.                                                                                                    |
| Radon Gas from underlying bedrock                  | Migration into indoor air                                                                               | Site End Users – Residents and visitors  | <b>Medium Risk</b><br>BGS Radon Report confirms basic radon protection measures are required across some areas of the site and no radon protection across others. |
| Landfill gas                                       | Migration through superficial deposits and bedrock and accumulation indoors                             | Site End Users – Residents and visitors  | <b>Negligible Risk</b><br>There are no historic landfills located within 250m of the site.                                                                        |
| Ground gas                                         | Direct from any made ground/buried organic matter on site and accumulation indoors                      | Site End Users – Residents and visitors  | <b>Very low Risk</b><br>Infilled land is located on and surrounding the site but is not considered to present a significant ground gas risk.                      |
| Vapours                                            | Migration into indoor air                                                                               | Site End Users – Residents and visitors  | <b>Very Low Risk</b><br>Made Ground and industrial processes are not anticipated on site.                                                                         |
| Site Soils                                         | Permeation of drinking water pipes                                                                      | Site End Users – Residents and visitors  | <b>Low Risk</b><br>Made Ground is not anticipated on the site.                                                                                                    |

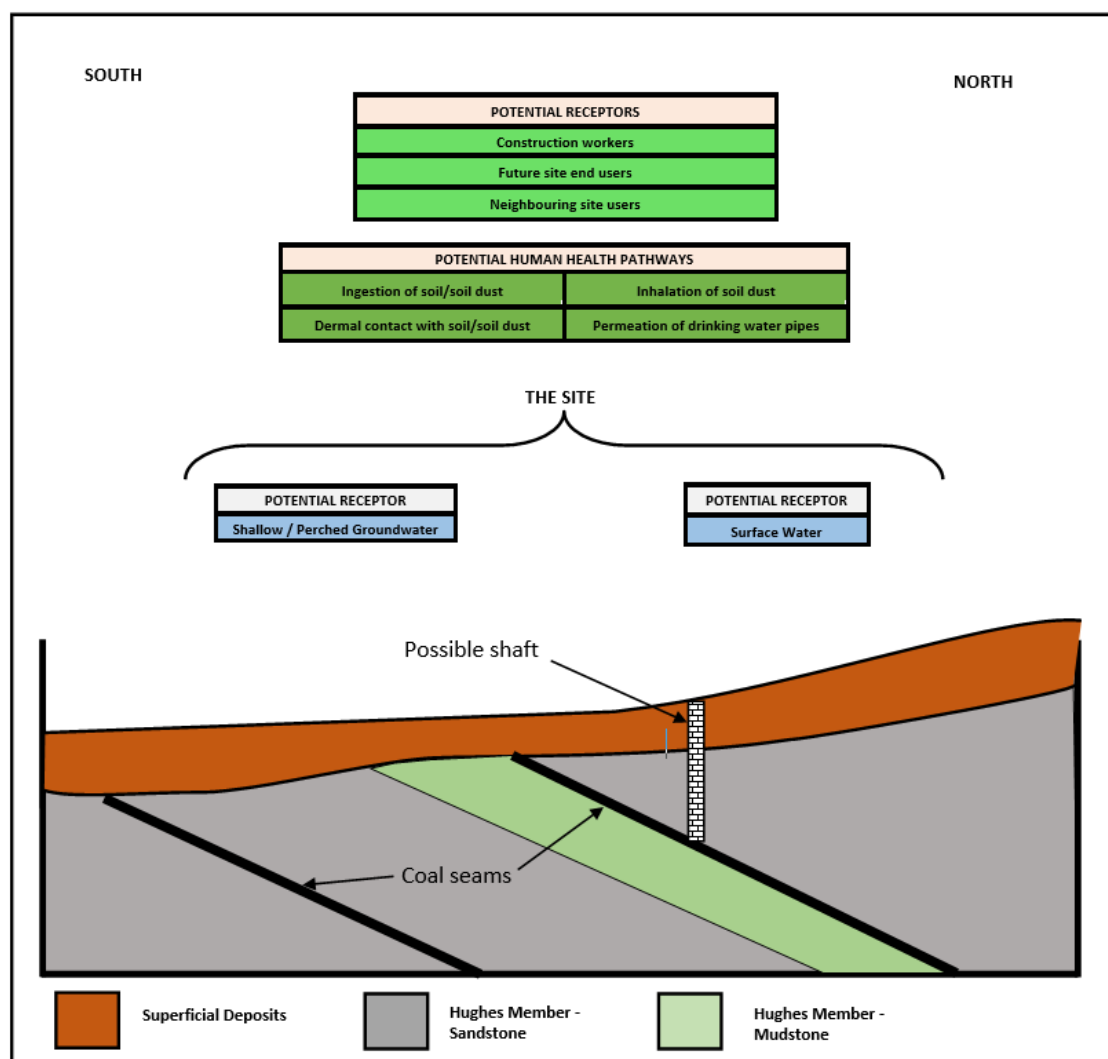


### 3.5 Preliminary Human Health and Environmental Risk Assessment (Continued)

| Table 3.2 Preliminary Environmental Risk Assessment |                                                                           |                                                         |                                                                       |
|-----------------------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------|
| Aquatic Environment                                 |                                                                           |                                                         |                                                                       |
| Site Soils                                          | Surface runoff and leaching of contamination into the perched groundwater | Perched groundwater beneath the site                    | <b>Low Risk</b><br>Made Ground is not anticipated on the site.        |
| Site Soils                                          | Groundwater transport                                                     | Unnamed stream located at southern boundary of site.    | <b>Low Risk</b><br>Made Ground is not anticipated on the site.        |
| Site Soils                                          | Groundwater transport                                                     | Underlying Bedrock: Secondary A Aquifer (Hughes Member) | <b>Low Risk</b><br>Made Ground is not anticipated on the site.        |
| Vegetation                                          |                                                                           |                                                         |                                                                       |
| Site Soils                                          | Uptake of phytotoxic contaminants                                         | Vegetation                                              | <b>Negligible Risk</b><br>Made Ground is not anticipated on the site. |
| Building Materials                                  |                                                                           |                                                         |                                                                       |
| Site Soils                                          | Damage of building materials                                              | New buildings                                           | <b>Low Risk</b><br>Correct class of concrete to be chosen             |

### 3.6 Preliminary Illustrative Site Conceptual Model

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



**Figure 3.1** Preliminary Illustrative Site Conceptual Model (not to scale)

## SECTION 4 Field Investigation

### 4.1 Site Works

A geotechnical and geo-environmental site investigation comprising sixteen machine excavated trial pits was undertaken on the 5<sup>th</sup> April 2017. Five soakaway tests were also undertaken during the trial pitting site works.

The trial pits were excavated with a JCB 3CX mechanical excavator.

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

The trial pit logs are presented in **Annex E**, and their locations are shown on **Drawing 01**.

### 4.2 Exploratory Strategy

Since the majority of the site has been undeveloped during the years researched, a non-targeted grid fashion was adopted. Any areas that have been developed by agricultural buildings have not been investigated and should be targeted during a second phase of investigation.

### 4.3 Ground Conditions

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

| Table 4.1 Summary of Ground Conditions – Above Sandstone |   |             |               |                                                                                                                                                                                                  |
|----------------------------------------------------------|---|-------------|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Depth (m)                                                |   |             | Thickness (m) | Stratum                                                                                                                                                                                          |
| GL                                                       | - | 0.20/0.30   | 0.20/0.35     | Grass over soft dark brown organic-rich slightly sandy slightly gravelly <b>CLAY</b> /dark brown organic-rich clayey slightly gravelly <b>SAND</b> .                                             |
| 0.80/1.70                                                | - | 1.90/2.80   | Absent/1.50   | [Medium dense to very dense] brown clayey very gravelly <b>SAND</b> /sandy <b>GRAVEL</b> with low cobble and boulder content / soft to firm brown and grey sandy slightly gravelly <b>CLAY</b> . |
| 0.25/0.30                                                | - | 0.55/2.30   | Absent/>1.60  | [Medium dense to very dense] grey clayey <b>SAND &amp; GRAVEL</b> / clayey or silty sandy <b>GRAVEL</b> of angular sandstone / <b>COBBLES &amp; BOULDERS</b> .                                   |
| 0.30/>2.30                                               | - | >0.40/>2.30 | -             | Grey mottled orangish brown <b>SANDSTONE</b>                                                                                                                                                     |

### 4.3 Ground Conditions (Continued)

| Table 4.2 Summary of Ground Conditions – Above Mudstone |   |             |               |                                                                                                             |
|---------------------------------------------------------|---|-------------|---------------|-------------------------------------------------------------------------------------------------------------|
| Depth (m)                                               |   |             | Thickness (m) | Stratum                                                                                                     |
| GL                                                      | - | 0.25/0.35   | 0.25/0.35     | Grass over soft dark brown organic-rich clayey slightly gravelly SAND                                       |
| 0.25/0.35                                               | - | 0.80/0.85   | 0.55          | [Medium dense] brownish orange clayey very sandy <b>GRAVEL</b> / gravelly <b>SAND</b> of angular sandstone. |
| 0.35/0.85                                               | - | >3.00/>3.30 | -             | [Medium dense to dense] brownish grey clayey gravelly <b>SAND</b> / sandy <b>GRAVEL</b> .                   |

## 4.4 Water Strikes

Groundwater was not encountered in the majority of the exploratory holes, however a groundwater inflow was encountered in TP15. The information has been summarised below.

| Table 4.3 Summary of Water Strike Information |                  |                            |
|-----------------------------------------------|------------------|----------------------------|
| Location                                      | Strike Depth (m) | Strike Description         |
| TP15                                          | 1.50m            | Medium groundwater inflow. |

## 4.5 Stability and Obstructions

Most of the trial pits were stable throughout the excavation, however TP02 was slightly unstable between 0.25m and 0.75m, and TP16 was slightly unstable whilst excavating the sandstone.

## 4.6 Laboratory Chemical Testing

### 4.6.1 Quality Assurance

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

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

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

## 4.6.2 Sampling Regime

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

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

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

| Table 4.4 Sample Locations and Depths |           |                                                        |
|---------------------------------------|-----------|--------------------------------------------------------|
| Sample                                | Depth (m) | MCERTS Sample Description                              |
| TP01                                  | 0.1       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP02                                  | 0.5       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP05                                  | 0.1       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP06                                  | 0.4       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP07                                  | 0.1       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP09                                  | 0.5       | Brown gravelly, sandy CLAY including odd rootlets      |
| TP10                                  | 0.1       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP11                                  | 0.4       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP12                                  | 0.4       | Brown gravelly, sandy CLAY including odd rootlets      |
| TP13                                  | 0.1       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP14                                  | 0.1       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP15                                  | 0.1       | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP15                                  | 0.3       | Brown gravelly, sandy CLAY including odd rootlets      |
| TP16                                  | 0.3       | Brown gravelly, sandy CLAY including odd rootlets      |

## 4.6.3 Laboratory Soil Analysis

During the site works 14 No. soil samples were taken and despatched to the laboratories of Derwentside Environmental Testing Services (DETS) for laboratory chemical testing;

### Metals and Metalloids

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

### In-Organics

Cyanide  
Sulphate

### Others

pH (acidity)

### Organic Chemicals

Phenols  
Polyaromatic Hydrocarbons (PAH)

The results are discussed in detail in **Section 5** and the laboratory test result certificates are found in **Annex F**.



## **4.7 Soil Property Testing**

### **4.7.1 Soakaway Testing**

During the site investigation five soakaway tests were undertaken in TP01, TP02, TP04, TP08 and TP09 to depths of 0.40m, 0.75m, 1.55m, 1.45m and 2.30m respectively.

The results of the soakaway tests are discussed in **Section 8.6** of this report. The results are presented in **Annex G**

### **4.7.2 Soil Plasticity Testing**

During the site investigation three samples were taken from TP04, TP06 and TP15 at depths of 0.70m, 1.00m and 2.00m respectively.

The plasticity test results are discussed in **Section 8.2** of this report and the results in their entirety are presented in **Annex H**.

### **4.7.3 Dynamic Cone Penetrometer Testing**

Six dynamic cone penetrometer tests were undertaken on 11<sup>th</sup> April 2017 at the following trial pit locations; TP02, TP03, TP06, TP08, TP09, TP11, TP13, TP14, TP15 and TP16.

The results were used for California Bearing Ratio correlations and are discussed further in Section 8.6 of the report. The results are presented in **Annex I**.

## SECTION 5 Evaluation of Soil Analytical Results

### 5.1 Soil Assessment Methodology

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

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

### 5.2 Soil Test Results

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

| <b>Table 5.1 Summary of Soil Chemical Test Results: Standard Suite</b> |                 |          |                                                      |         |                       |
|------------------------------------------------------------------------|-----------------|----------|------------------------------------------------------|---------|-----------------------|
| Substance                                                              | SGV/GAC (mg/kg) | Source   | Measured Concentrations of Tested Substances (mg/kg) |         | Number of Exceedances |
|                                                                        |                 |          | Minimum                                              | Maximum |                       |
| Arsenic                                                                | 32              | CLEA     | 10                                                   | 160     | 10                    |
| Cadmium                                                                | 10              | CLEA     | 0.1                                                  | 1.9     | 0                     |
| Chromium III                                                           | 910             | LQM/CIEH | 15                                                   | 20      | 0                     |
| Chromium VI                                                            | 6               | LQM/CIEH | <1.0                                                 | <1.0    | 0                     |
| Copper                                                                 | 2400            | LQM/CIEH | 24                                                   | 1500    | 0                     |
| Lead                                                                   | 200             | C4SL     | 14                                                   | 94      | 0                     |
| Mercury                                                                | 170             | CLEA     | 0.06                                                 | 0.16    | 0                     |
| Nickel                                                                 | 180             | LQM/CIEH | 17                                                   | 33      | 0                     |
| Selenium                                                               | 350             | CLEA     | 0.6                                                  | 1.2     | 0                     |
| Zinc                                                                   | 3700            | LQM/CIEH | 65                                                   | 710     | 0                     |
| Cyanide                                                                | 8               | CLEA     | 0.2                                                  | 0.8     | 0                     |
| Phenols                                                                | 420             | CLEA     | <0.3                                                 | 7.7     | 0                     |
| Sulphate                                                               | -               | -        | 300                                                  | 1300    | -                     |
| Organic Matter                                                         | -               | -        | 1.7                                                  | 8.6     | -                     |
| pH                                                                     | -               | -        | 5.5                                                  | 6.5     | -                     |
| Total PAH                                                              | 0.1             | LDL      | <0.10                                                | 0.71    | See Table 5.2         |

Notes:

- CLEA-Soil guideline values for a residential development with plant uptake
- LQM/CIEH - Generic Assessment Criteria for a residential development with plant uptake
- C4SL - category four screening level for a residential development with plant uptake
- LDL - Laboratory Detection Limit
- A total of 14 samples were tested
- - no available guideline

## 5.2 Soil Test Results (Continued)

All eight of the samples had levels of polyaromatic hydrocarbons (PAH) above laboratory detection limits and were therefore tested for speciated PAH.

| Table 5.2 Summary of Soil Chemical Test Results: Polyaromatic Hydrocarbons |             |          |                                                      |         |                       |
|----------------------------------------------------------------------------|-------------|----------|------------------------------------------------------|---------|-----------------------|
| Substance                                                                  | GAC (mg/kg) | Source   | Measured Concentrations of Tested Substances (mg/kg) |         | Number of Exceedances |
|                                                                            |             |          | Minimum                                              | Maximum |                       |
| Naphthalene                                                                | 2.3         | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Acenaphthylene                                                             | 170         | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Acenaphthene                                                               | 210         | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Fluorene                                                                   | 170         | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Phenanthrene                                                               | 95          | LQM/CIEH | <0.03                                                | 0.14    | 0                     |
| Anthracene                                                                 | 2400        | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Fluoranthene                                                               | 280         | LQM/CIEH | <0.03                                                | 0.19    | 0                     |
| Pyrene                                                                     | 620         | LQM/CIEH | <0.03                                                | 0.15    | 0                     |
| Benzo(a)anthracene                                                         | 7.2         | LQM/CIEH | <0.03                                                | 0.06    | 0                     |
| Chrysene                                                                   | 15          | LQM/CIEH | <0.03                                                | 0.09    | 0                     |
| Benzo(b)fluoranthene                                                       | 2.6         | LQM/CIEH | <0.03                                                | 0.06    | 0                     |
| Benzo(k)fluoranthene                                                       | 77          | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Benzo(a)pyrene                                                             | 2.2         | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Indeno(123cd)pyrene                                                        | 27          | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Dibenzo(ah)anthracene                                                      | 0.24        | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Benzo(ghi)perylene                                                         | 320         | LQM/CIEH | <0.03                                                | <0.03   | 0                     |
| Total PAH                                                                  | -           | -        | <0.10                                                | 0.71    | -                     |

### Notes:

- LQM/CIEH - Generic Assessment Criteria for a residential development with plant uptake.
- Guidelines for a residential land use with plant uptake.
- Thresholds based on 1% SOM
- 14 samples were tested for Speciated PAH

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## **SECTION 6 Quantitative Risk Assessment**

### **6.1 Contaminants of Concern**

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

All substances tested for were found to be present at concentrations below their respective human health threshold levels apart from ten samples of arsenic in the natural, near-surface soil.

Methods to deal with the soil contamination are detailed **Section 6.3** below.

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

Based upon the relatively low concentrations of the substances tested for, it is considered that there is no risk to the aquatic environment through leaching.

#### **6.1.3 Gas and Vapours**

There are no active or historic landfills within 250m of the site and significant amounts of infilled land is not expected to be located on or surrounding the site. The desk study determined that the risk of landfill and ground gas is negligible and very low risk respectively.

Basic radon protection measures are required across some areas of the site and no radon protection measures across others, as detailed in Section 2.3.2.

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

#### **6.2.1 Human Receptors**

Human receptors are potentially at risk from the arsenic contamination identified. The human receptors include construction workers, neighbouring site users and site end users.

#### **6.2.2 Aquatic Environment**

Based upon the relatively low concentrations of the substances tested for, it is considered that there is no risk to the aquatic environment through leaching.

## 6.3 Mitigation and Remedial Measures

### 6.3.1 Human Health

Remedial measures will be required with regards to site soils which have been found to contain elevated levels of arsenic. The affected soils are the shallow surface soils that cover the entire site.

In terms of the eventual site end users it is considered that there is a risk posed by the contaminated natural soil. Capping will therefore be required on the site. The capping is to consist of the proposed buildings, hard standing and in garden and landscaped areas 600mm of suitable clean imported subsoil/topsoil material. This material should ideally conform to the requirements of BS: 3882.

An alternative approach would be to undertake more detailed analysis of the soil. This would include taking more samples of arsenic on a roughly 50m grid, undertaking bio-accessibility testing of the shallow soils, and processing the data into the CLEA (contaminated land exposure assessment) computer software to more accurately assess whether there is an actual risk to human health from the elevated concentrations of arsenic in the shallow soil.

As good practise, construction workers should adhere to good site management, COSHH, good standards of hygiene and appropriate health & safety on site, with personal protection equipment (PPE) and dust suppression where appropriate.

Neighbouring site occupants and passers-by can be protected by site screening and dust suppression measures if necessary.

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

In order to protect construction workers good site management, COSHH, good standards of hygiene and appropriate health & safety on site should be adhered to, with personal protection equipment (PPE) and dust suppression where appropriate.

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

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

### 6.3.2 Aquatic Environment

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

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

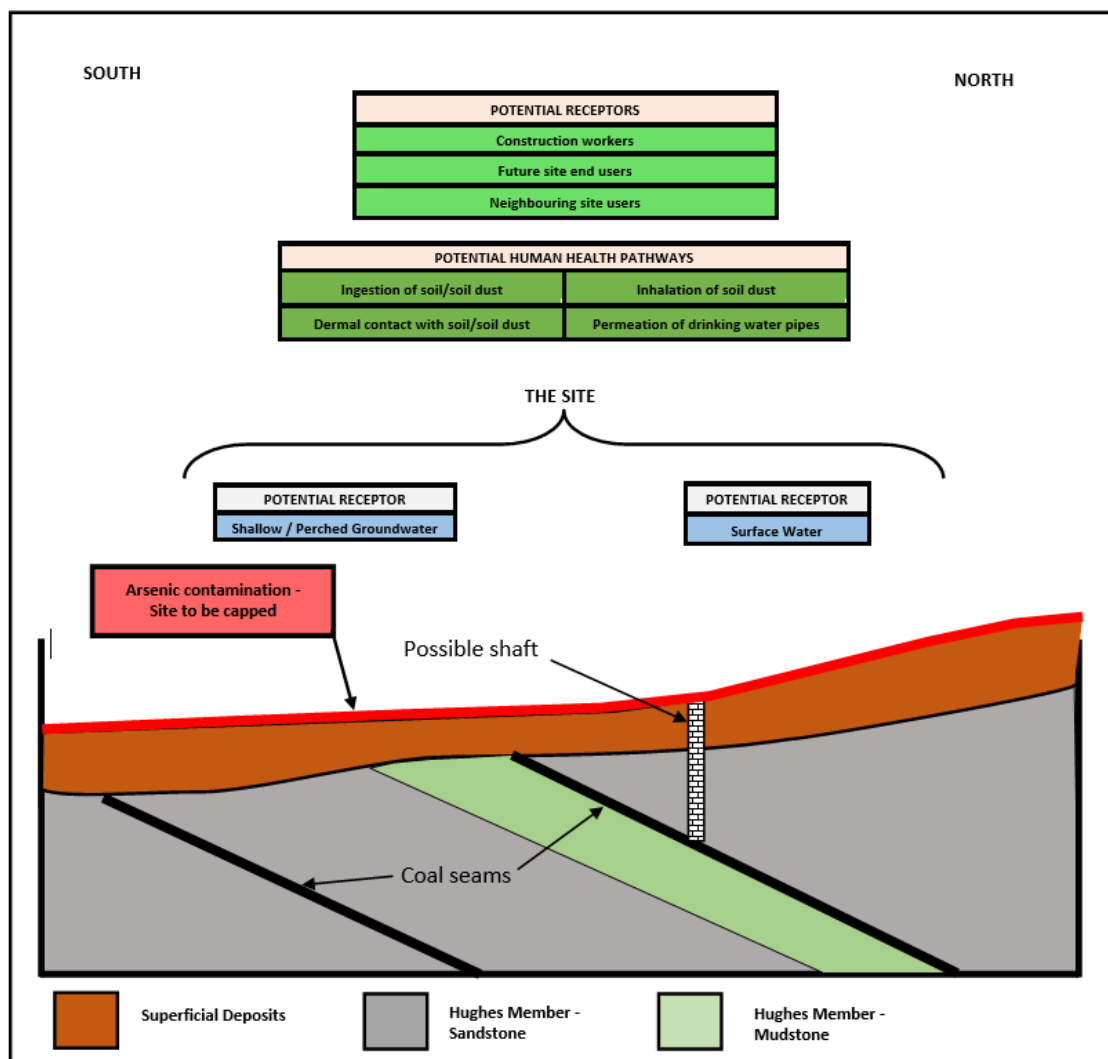
The risk is considered to be negligible as any adverse effects will be easily preventable by due diligence to good construction practise and housekeeping in preventing surface runoff and the spillage of materials.

The basic measures that should be taken are as follows:

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



## 6.4 Refined Illustrative Site Conceptual Model



**Figure 6.1:** Refined Illustrative Site Conceptual Model (not to scale)

## SECTION 7 Assessment of the Risk from Past Shallow Coal Mining and Mine Entries

### 7.1 Past Shallow Coal Mining

Based upon the geological and desk study information the stratigraphical sequence beneath the site and within 100m of the ground surface is taken to be:

- Measures
- **Mountain coal seam**
- Measures
- **Unnamed thin coal seam**
- Measures
- **Garlant coal seam**
- Measures
- **Bodwr coal seam**
- Measures
- **Hughes coal seam**

When assessing the risks from shallow mine workings, as a rule of thumb to prevent the future collapse of mine workings migrating to the surface and forming crown holes there should be a 10:1 rock head to void ratio.

It is unlikely that this criterion would be achieved over the Mountain and Unnamed coal seams across the north of the site. There may also be insufficient rockhead above the Garlant coal seam at the south-eastern area of the site.

Given the amount of mining features shown on both the historical maps and geological maps for the area, and the mining report for the site, it is considered highly likely that unrecorded shallow workings may have taken place beneath the site. Consequently, it is concluded that there is a significant risk to the surface stability of the site from past unrecorded coal workings and mine entries.

A site investigation comprising rotary probeholes should therefore be carried out to quantify the risk from past shallow workings.

### 7.2 Mine Entries

Investigation of the mine shafts and determination of their backfill/treatment should be completed. An excavator could be used to strip the ground to reveal any evidence of shafts on the site. In this way any mining feature should become visible. However, it would be prudent to complete a geophysical survey prior to any intrusive works to minimise intrusive activity in the interest of safety.

If shaft features are identified rotary probehole drilling on the shaft areas should be undertaken to confirm the presence of any fill or voids, and depths of the shafts. The depth to bedrock adjacent to the shafts would also need to be confirmed so that the shaft exclusion zone to building may be determined.

## 7.2 Mine Entries (Continued)

There is a risk of collapse of superficial deposits/Made Ground around the abandoned mine shafts and of any deposits within the shafts. Collapse is typically radial around a shaft. An exclusion zone to development will therefore need to be applied around the mine shaft. To ascertain the minimum exclusion zone around each shaft, the area potentially at risk from collapse must be confirmed. This can be determined by knowing the depth of the superficial deposits. As a guide, a 45° line taken from the superficial soil and rockhead interface up to the surface defines this radial zone of potential collapse, i.e. the depth down to bedrock equals the radial length around the shaft.

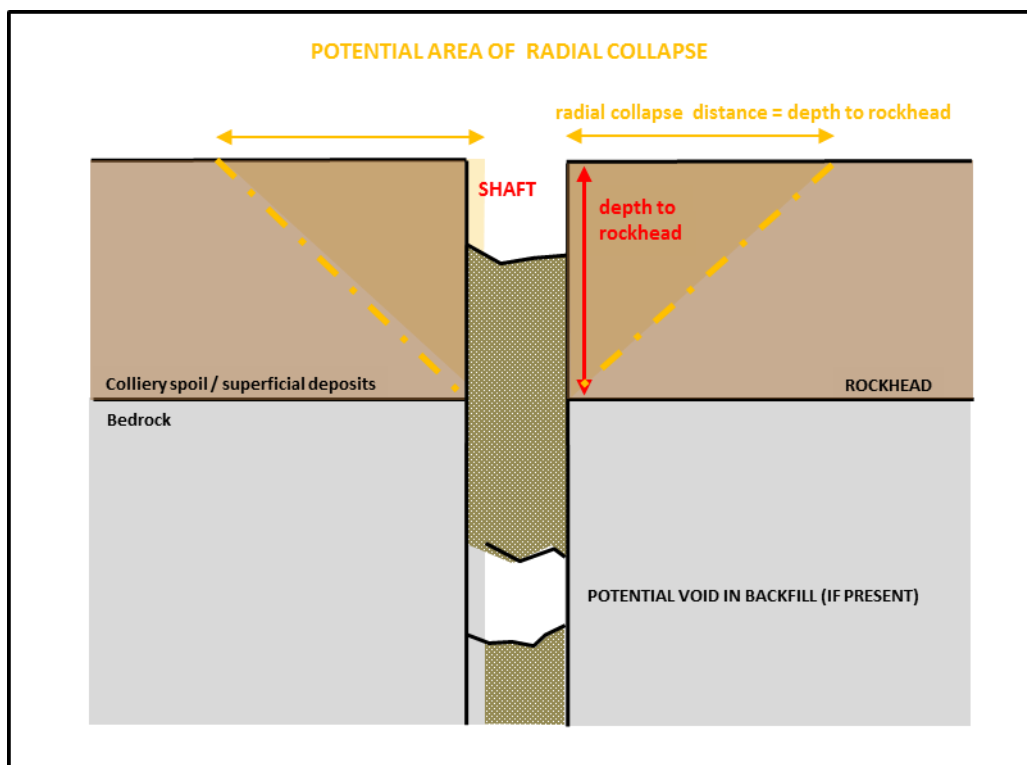


Figure 7.1: Mine Shaft Potential Area of Collapse

## **SECTION 8 Engineering Recommendations**

### **8.1 General**

The following recommendations are based on the condition that an intrusive coal mining risk assessment is carried out at the site, including an investigation of both the shallow mining at the site and any mine entries.

The following recommendations also need to be confirmed by more exploratory holes, which will allow a greater coverage of the site to be assessed.

### **8.2 Preparation of Site**

All scrub vegetation including all roots should be stripped and removed from beneath the proposed buildings and areas of hard standing. Any buried obstructions should also be excavated and removed.

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

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

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

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

### **8.3 Foundation and Floor Slab Solution**

The following foundation recommendations should be confirmed following the necessary intrusive coal mining risk assessment. At areas of the site affected by shallow mining or within influencing distance of mine entries, it will be necessary to use a reinforced concrete raft capable of spanning a remnant void of 3.0m with a cantilever effect on corners of 1.5m.

Where the proposed plots are not affected by past shallow mining or mine entries, it is recommended that a strip and trench fill foundation be used. The foundations should be founded in either the sandstone bedrock at depths ranging between 0.25m and 1.90m or medium dense to very dense brown clayey sandy gravel/clayey gravelly sand.

An allowable bearing pressure of 200kN/m<sup>2</sup> may be used for design purposes in the sandstone, and 100kN/m<sup>2</sup> may be used for design purposes in the gravel/sand.

All foundations must sit at least 200mm within the founding horizon.

### 8.3 Foundation and Floor Slab Solution (Continued)

In order to prevent damage from frost heave/and or thermal shrinkage foundations/edge beams should be taken down to a minimum depth of 900mm.

For the given foundation solutions and bearing pressure, maximum total settlements of 20mm should result with differential movements of the superstructure not exceeding 1:750.

Provided all grass/scrub vegetation including all roots are removed then the floor slabs can be designed as ground bearing.

It should be noted that if any soft ground or unusual ground conditions, which may suggest the possibility of a solution feature, is encountered during the groundworks, a suitably qualified engineer should be contacted as soon as possible.

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

There are a number of trees along the boundary of the site. The National House Building Council (NHBC) Chapter 4.2 gives guidelines as to the appropriate type of floor slab and void based on the type of tree, distance of the foundation from the tree and the plasticity index of the in-situ materials.

During the investigation five samples of the in-situ clay were taken and submitted for plasticity testing (**Annex H**). In line with the NHBC (Chapter 4.2), the modified plasticity index for each sample was calculated, and are presented in **Table 8.1** below.

| Table 8.1 Plasticity Test Results |           |                                          |                      |                         |                               |                         |
|-----------------------------------|-----------|------------------------------------------|----------------------|-------------------------|-------------------------------|-------------------------|
| Sample                            | Depth (m) | Laboratory Soil Description              | Plasticity Index (%) | Passing 425µm Sieve (%) | Modified Plasticity Index (%) | Volume Change Potential |
| TP04                              | 0.70      | Brown fine to medium gravelly silty CLAY | 32                   | 93                      | 30                            | Medium plasticity       |
| TP06                              | 1.00      | Brown silty CLAY                         | 31                   | 100                     | 31                            | Medium plasticity       |
| TP15                              | 2.00      | Brown orange silty CLAY                  | 25                   | 100                     | 25                            | Medium plasticity       |

For design purposes the clay soils on site should be assumed to have a medium volume change potential.

In order to prevent damage from the shrinking or swelling of the soil, foundations/edge beams should be taken down to a minimum depth of 900mm if founding in clay.

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

## 8.4 Excavations and Formations

Shallow excavations will be possible with normal soil excavating machinery however allowances should be made for larger excavators and a hydraulic breaker attachment if any buried bedrock is encountered.

Significant surface water, perched water and groundwater inflows were generally not encountered throughout the exploratory works apart from at TP15 at 1.50m depth. However, surface water is known to pool in the lowest standing areas of the site during wet periods, such as the southern boundary of the site to the north of Ty Coch Farm. Also, during periods of heavy rainfall a higher water table may be encountered. Any water inflows together with rainwater infiltration should be dealt with by conventional pumping techniques.

The trial pit walls were generally stable throughout, apart from some spalling of the weathered sandstone in TP02 and TP16. The sides of any excavations deeper than 1.0m, or shallower if unstable, should be supported by planking and strutting or other proprietary means.

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

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

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

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

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

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

## 8.5 Protection of Buried Concrete

Eight samples taken from depths ranging between 0.30m and 2.00m were tested for levels of Aqueous Extract Sulphate (as mg/l  $\text{SO}_4$ ) within the in-situ materials. Measured concentrations of between <10mg/l and 20mg/l were recorded, and the pH varied between 7.11 and 8.33.

All eight samples were also tested for Acid Soluble Sulphate and Sulphur, and were used to determine the oxidisable sulphate of the shallow soil. Measured concentrations of between 0.01% and 0.12% were recorded, and it was therefore concluded that pyrite is probably not present in the underlying soils.

Using the Aqueous Extract Sulphate results and comparing them to Table C1 of BRE Digest 1:2005, it calculated that all buried concrete should conform to **Class AC-1**.

A copy of the sulphate and pH test results is presented in **Annex H**.

## 8.6 Access Roads and Car Parking Areas

Ten number dynamic cone penetrometer tests were undertaken to provide CBR correlations. The tests were positioned across the site alongside ten of the trial pit positions in order to provide a site wide assessment of soil stiffness. The CBR correlations are presented in **Annex I** of the report and can be used for design purposes. Values of typically more than 2% were achieved from depths of 0.19m depth. The CBR values tend to increase with depth.

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

## 8.7 Storm Water Drainage

During the site investigation soakaway tests were undertaken in TP01, TP02, TP04, TP08 and TP09.

A summary of the soakaway test results is presented in **Table 7.3**. The results in their entirety are presented in **Annex G**

| Table 8.2 Soakaway Test Results |        |                      |
|---------------------------------|--------|----------------------|
| Trial pit                       | Test   | Rate of Infiltration |
| TP01                            | 1 of 1 | 1.33E-05             |
| TP02                            | 1 of 1 | 5.36E-06             |
| TP04                            | 1 of 1 | #                    |
| TP08                            | 1 of 2 | 1.58E-04             |
|                                 | 2 of 2 | 3.50E-05             |
| TP09                            | 1 of 1 | 2.25E-05             |

### Notes:

# - Due to a very slow rate of infiltration, a Soil Infiltration Rate could not be calculated.

Due to the variable ground conditions encountered at the site, the variable soil infiltration rates that were achieved, and the large area of the site, it is recommended that further soakaway testing is undertaken at the site at the specific locations and depths at which the proposed soakaways are to be positioned.

## 8.8 Slopes and Retaining Walls

Due to the sloping topography of the site retaining walls may be required.

The existing steepness of the site should not be increased. Any cuts should be undertaken in small sections and in such a way so as not to induce any instability of the ground.

The effective angles of shearing resistance of the encountered materials have been determined based upon past experience of the materials.



## 8.8 Slopes and Retaining Walls (Continued)

| Table 8.3 Effective Shear Stress Parameters              |                                  |             |                                              |                                                        |
|----------------------------------------------------------|----------------------------------|-------------|----------------------------------------------|--------------------------------------------------------|
| Stratum Description                                      | Bulk Weight<br>kN/m <sup>3</sup> | Unit<br>(γ) | Effective Cohesion<br>kN/m <sup>2</sup> (c') | Effective Angle of Shearing Resistance<br>(ϕ') degrees |
| Soft to firm cohesive soils                              | 18                               |             | 0                                            | 20 – 25                                                |
| Firm to stiff cohesive soils                             | 18                               |             | 0                                            | 25 – 30                                                |
| Loose granular soils                                     | 18                               |             | 0                                            | 22                                                     |
| Medium dense granular soils                              | 18                               |             | 0                                            | 25                                                     |
| Dense granular soils                                     | 19 - 20                          |             | 0                                            | 30 - 35                                                |
| Fresh/slightly weathered sandstone bedrock               | 19-24                            |             | 5                                            | 35 - 40                                                |
| Moderately / highly weathered mudstone/sandstone bedrock | 19-24                            |             | 0                                            | 20 - 30                                                |

The design and construction of the retaining walls should be in accordance with BS 6031: 1981 Code of Practice for Earthworks and other relevant guidance.

Allowances should also be made for the removal of soft spots and their replacement with imported suitable selected inert granular materials or suitable inert site won materials.

The cohesive deposits will have a tendency to flake and soften with weathering as they are less resistant. Measures should be put in place to prevent deterioration.

To prevent de-stabilisation due to surface water ingress and groundwater emergence upon the cutting/embankment face which will ultimately reduce the effective stress of the soil, cause erosion and instability, the following remedial measures are recommended:

1. Drainage channels should be installed at the top of the slope faces to intercept surface water running towards the excavation preventing it from running down and into the slope face.
2. Drainage channels should be installed at the bottom of the slope face to intercept any surface water flowing down the slope face and to collect any groundwater emerging from the slope face.
3. Consideration should be given to herringbone drainage should simple drainage channels be insufficient in intercepting surface water.

Particular attention should be given to whether the drainage channel should be lined to further prevent water ingress, diameter or capacity and gradient etc. A specialist should be consulted.

## 8.8 Slopes and Retaining Walls (Continued)

It is recommended that the construction of retaining walls be carried out in small sections.

During construction, surcharge of the retaining walls, retained soil and the crest and slope faces of the cuttings/embankments by construction machinery should be kept to a minimum, particularly during wet periods when slope de-stabilisation may be maximised.

During the site development/construction phases stability surveys should be undertaken at regular intervals, including pictorial records. Any evidence of slope instability should be reported to a qualified engineer and appropriate remedial measure implemented.

Unless incorporated into the design and build of any retaining walls, post development, the retaining walls, the retained soil or the top of the cutting/embankment slopes and slope faces themselves should not be surcharged with buildings, car parking or access roads etc.

If any future infrastructure developments become likely to impart a load upon the retaining walls/retained soils/slope crests or slope faces, appropriate slope face stability assessments should be undertaken to ensure their long term stability after such developments.

It is also recommended that periodic appraisal of the slope faces/retaining walls and drainage systems be undertaken by a qualified engineer to ensure their continued integrity.

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

# Historical Mapping Legends

## Ordnance Survey County Series 1:10,560

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

## Ordnance Survey Plan 1:10,000

|  |                                                                       |  |                                                         |
|--|-----------------------------------------------------------------------|--|---------------------------------------------------------|
|  | Chalk Pit, Clay Pit or Quarry                                         |  | Gravel Pit                                              |
|  | Sand Pit                                                              |  | Disused Pit or Quarry                                   |
|  | Refuse or Slag Heap                                                   |  | Lake, Loch or Pond                                      |
|  | Dunes                                                                 |  | Boulders                                                |
|  | Coniferous Trees                                                      |  | Non-Coniferous Trees                                    |
|  | Orchard                                                               |  | Scrub                                                   |
|  | Bracken                                                               |  | Heath                                                   |
|  | Marsh                                                                 |  | Reeds                                                   |
|  | Building                                                              |  | Glasshouse                                              |
|  | Sloping Masonry                                                       |  | Pylon                                                   |
|  | Cutting                                                               |  | Embankment                                              |
|  | Road Under                                                            |  | Road Over                                               |
|  | Level Crossing                                                        |  | Foot Bridge                                             |
|  | Standard Gauge Multiple Track                                         |  | Standard Gauge Single Track                             |
|  | Siding, Tramway or Mineral Line                                       |  | Narrow Gauge                                            |
|  | Geographical County                                                   |  | Administrative County, County Borough or County of City |
|  | Municipal Borough, Urban or Rural District, Burgh or District Council |  | Borough, Burgh or County Constituency                   |
|  | Civil Parish                                                          |  |                                                         |
|  | BP, BS Boundary Post or Stone                                         |  | Police Station                                          |
|  | Church                                                                |  | Post Office                                             |
|  | Club House                                                            |  | Public Convenience                                      |
|  | Fire Engine Station                                                   |  | Public House                                            |
|  | Foot Bridge                                                           |  | Signal Box                                              |
|  | Fountain                                                              |  | Spring                                                  |
|  | Guide Post                                                            |  | Telephone Call Box                                      |
|  | Mile Post                                                             |  | Telephone Call Post                                     |
|  | Mile Stone                                                            |  | Well                                                    |

## 1:10,000 Raster Mapping

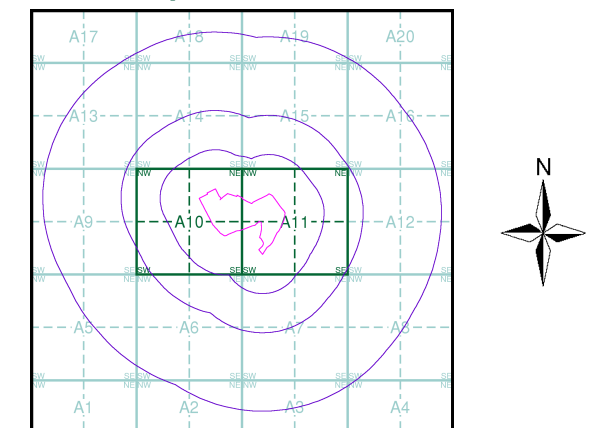
|  |                                                          |  |                                            |
|--|----------------------------------------------------------|--|--------------------------------------------|
|  | Gravel Pit                                               |  | Refuse tip 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                                |
|  | Mean high water (springs)                                |  | Mean low water (springs)                   |
|  | Telephone line (where shown)                             |  | Electricity transmission line (with poles) |
|  | 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                         |



## Historical Mapping & Photography included:

| Mapping Type                  | Scale    | Date        | Pg |
|-------------------------------|----------|-------------|----|
| Glamorganshire                | 1:10,560 | 1884        | 2  |
| Glamorganshire                | 1:10,560 | 1900        | 3  |
| Glamorganshire                | 1:10,560 | 1921        | 4  |
| Glamorganshire                | 1:10,560 | 1921        | 5  |
| Glamorganshire                | 1:10,560 | 1935 - 1936 | 6  |
| Glamorganshire                | 1:10,560 | 1938 - 1951 | 7  |
| Historical Aerial Photography | 1:10,560 | 1945 - 1949 | 8  |
| Glamorganshire                | 1:10,560 | 1951 - 1952 | 9  |
| Ordnance Survey Plan          | 1:10,000 | 1964 - 1965 | 10 |
| Ordnance Survey Plan          | 1:10,000 | 1968        | 11 |
| Ordnance Survey Plan          | 1:10,000 | 1970 - 1973 | 12 |
| Ordnance Survey Plan          | 1:10,000 | 1980 - 1989 | 13 |
| Ordnance Survey Plan          | 1:10,000 | 1992        | 14 |
| 10K Raster Mapping            | 1:10,000 | 1999        | 15 |
| 10K Raster Mapping            | 1:10,000 | 2006        | 16 |
| VectorMap Local               | 1:10,000 | 2017        | 17 |

## Historical Map - Slice A



## Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

## Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

**Landmark**  
INFORMATION GROUP

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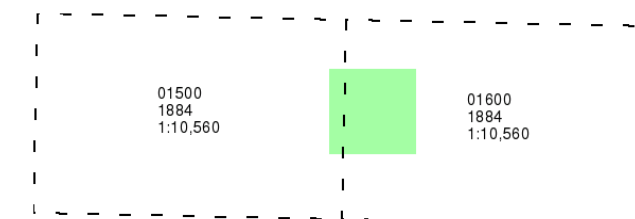
## Glamorganshire

Published 1884

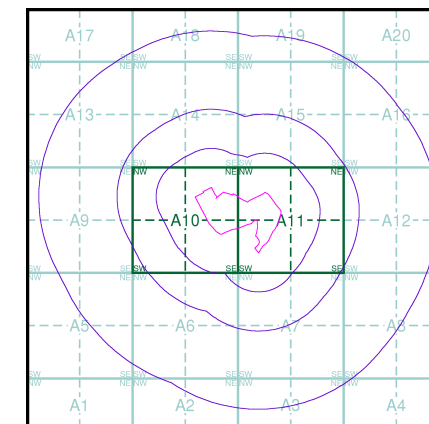
Source map scale - 1:10,560

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



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Site Area (Ha): 11.09  
Search Buffer (m): 1000

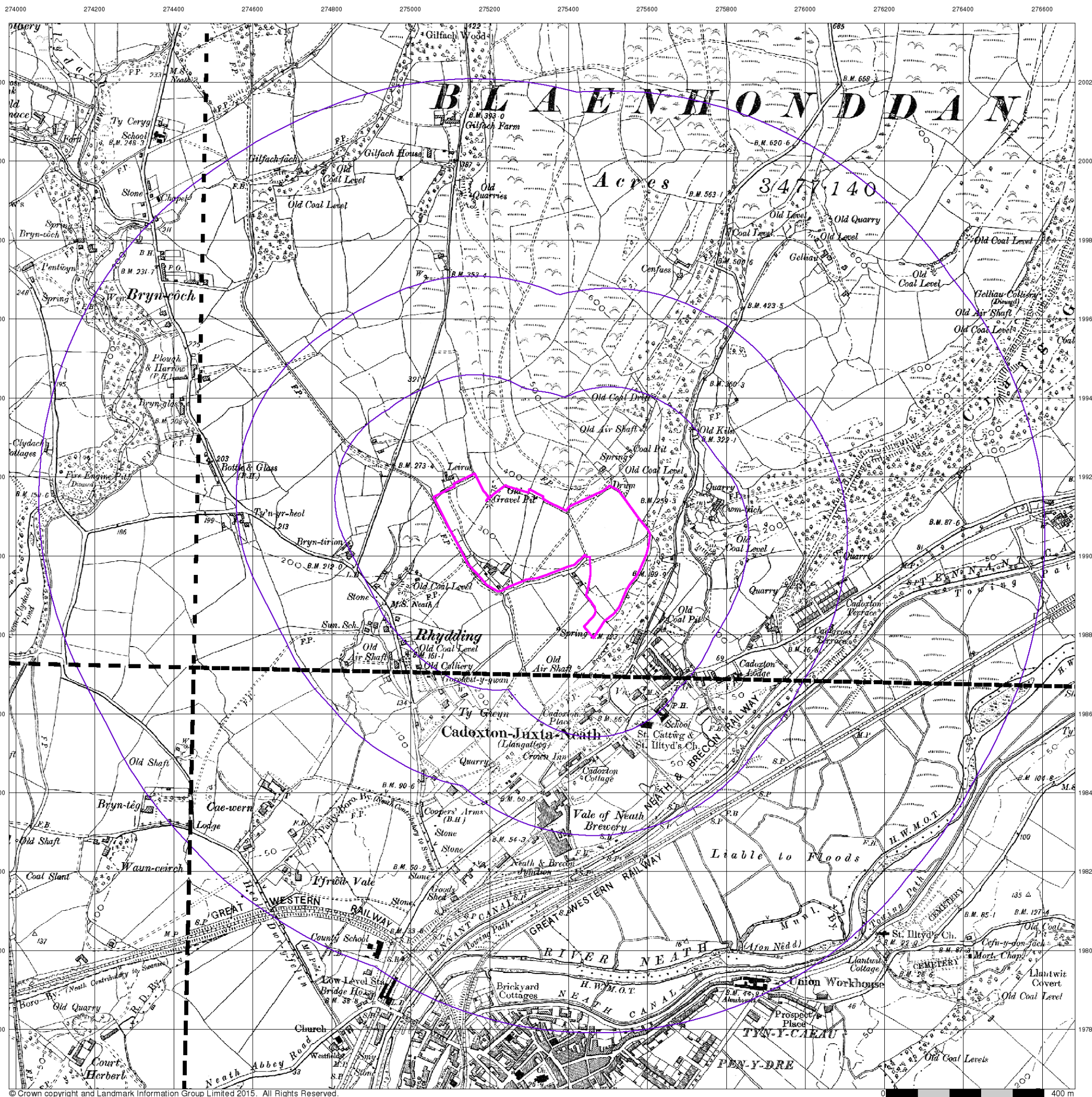
### Site Details

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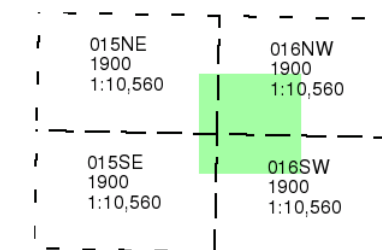
Glamorganshire

Published 1900

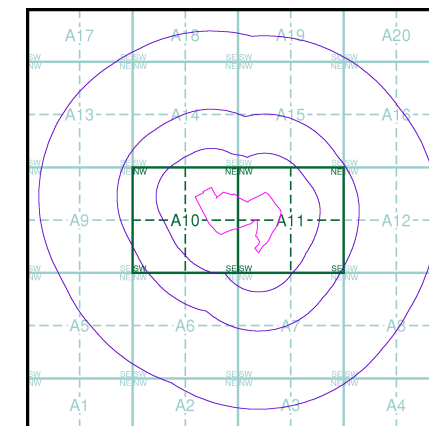
Source map scale - 1:10,560

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: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
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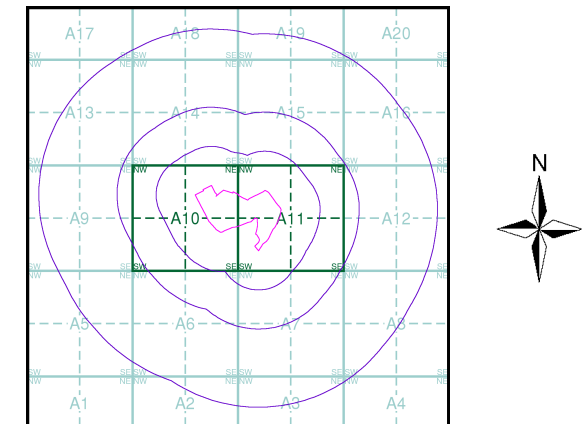


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some 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)

|                           |                           |
|---------------------------|---------------------------|
| 015NE<br>1921<br>1:10,560 | 016NW<br>1921<br>1:10,560 |
| 015SE<br>1921<br>1:10,560 | 016SW<br>1921<br>1:10,560 |

### Historical Map - Slice A

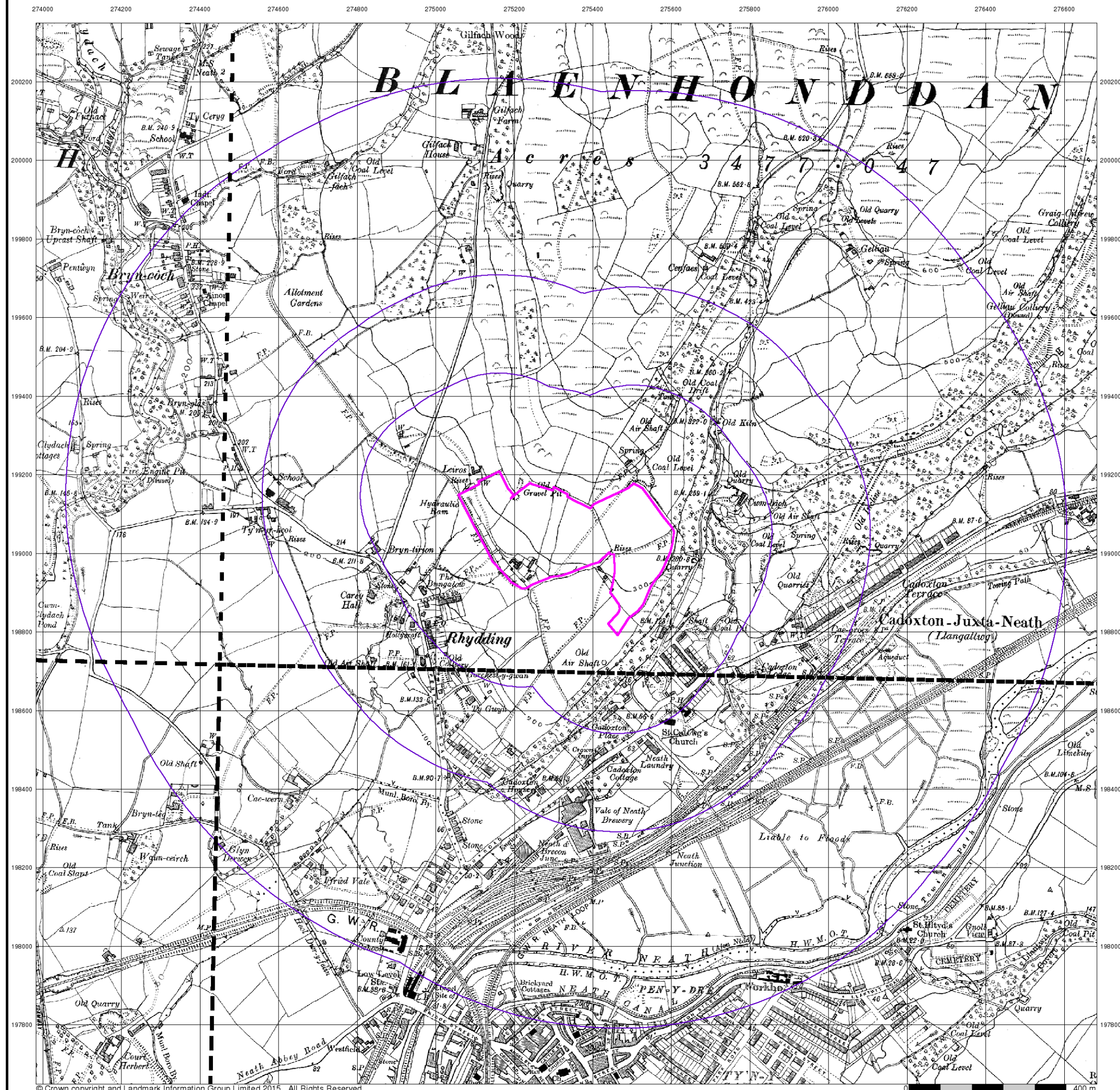


### Order Details

Order Number: 118892601\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

### Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

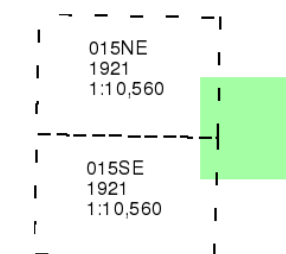




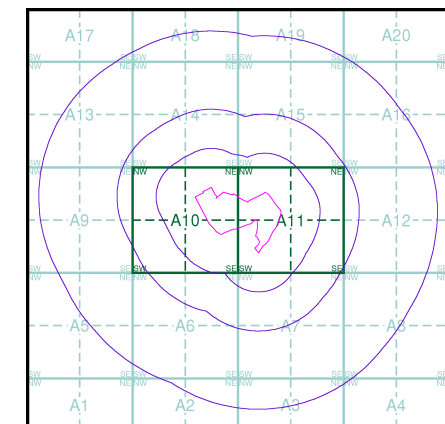


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some 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: 118892601\_1\_1  
Customer Ref: 14156  
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Site Area (Ha): 11.09  
Search Buffer (m): 1000

## Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

This map shows the area around Bryn-coch, with several key features labeled:

- Old Quarry**: Located near the bottom left.
- Court Herbert**: Situated below the Old Quarry.
- Bryn-coch**: The central village area.
- Bryn-tyl**: Located to the right of Bryn-coch.
- Wain-ceirch**: A feature near Bryn-tyl.
- Old Shaft**: Located near the center-right.
- Rixes**: Several locations are marked with this name.
- Coal Slant**: Located near the bottom left.
- Tank**: Located near the center-left.
- F.P. F.B.**: Located near the center-left.
- Mutual Loan Bk.**: Located near the bottom right.
- Sewage Tank**: Located near the top left.
- MS Veats 2**: Located near the top left.
- Ty Ceryg**: Located near the top left.
- Lodge Chapel**: Located near the top left.
- P.H.**: Located near the top left.
- B.M. 240-5**, **B.M. 245-5**, **B.M. 204-5**, **B.M. 146-5**, **B.M. 194-5**: Various benchmark points are marked.
- Spring**: Several locations are marked with this name.
- Clydach stages**: Located near the bottom left.
- Fire Engine Pk**: Located near the center-left.
- Dyffryn**: Located near the center-left.
- W.T.**: Several locations are marked with this name.
- W**: Several locations are marked with this letter.
- H**: A large letter marking the top left corner.

The map also features a grid system with coordinates ranging from 274000 to 276000 horizontally and 178000 to 202000 vertically. A scale bar at the bottom indicates distances up to 400 meters.





## Glamorganshire

Published 1935 - 1936

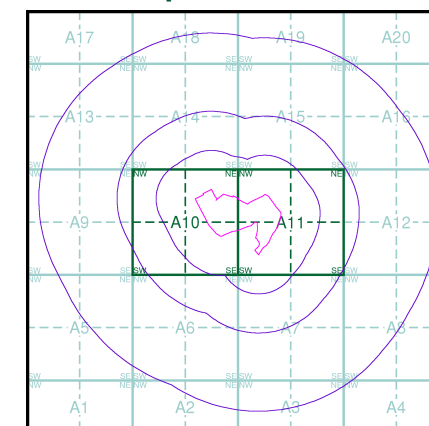
Source map scale - 1:10,560

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)

|          |      |
|----------|------|
| 016NW    | 1935 |
| 1:10,560 |      |
| 016SW    | 1936 |
| 1:10,560 |      |

### Historical Map - Slice A



### Order Details

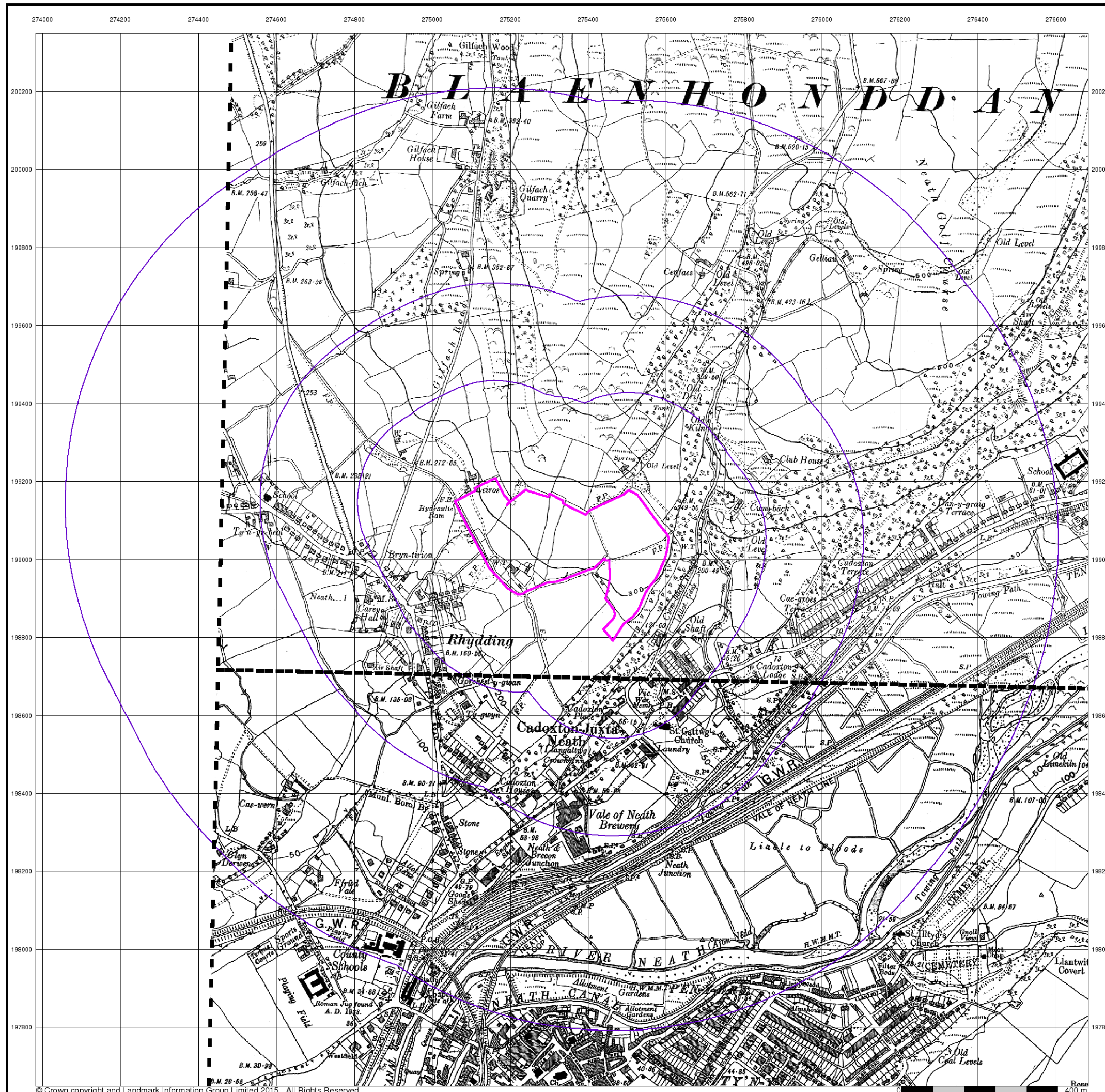
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

### Site Details

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## Glamorganshire

Published 1938 - 1951

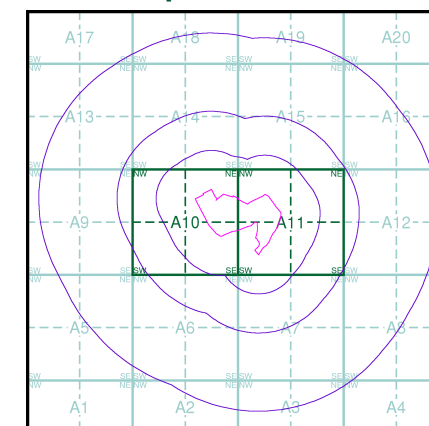
Source map scale - 1:10,560

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)

|                           |                           |
|---------------------------|---------------------------|
| 015NE<br>1938<br>1:10,560 | 016NW<br>1951<br>1:10,560 |
| 015SE<br>1940<br>1:10,560 | 016SW<br>1938<br>1:10,560 |

### Historical Map - Slice A



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

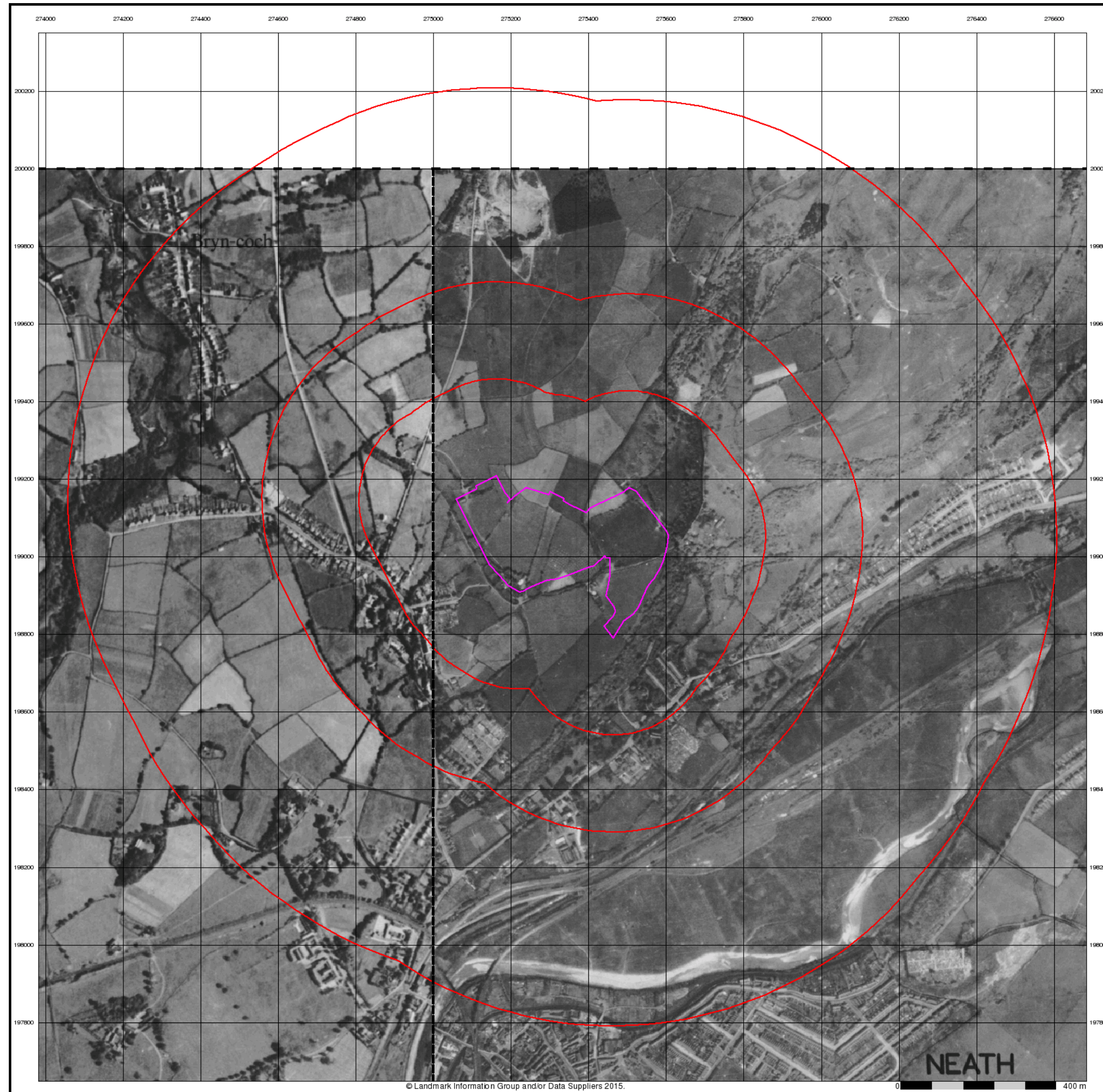
### Site Details

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0 400 m



terrafirma

## Historical Aerial Photography

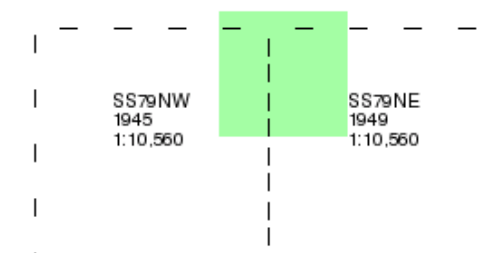
Published 1945 - 1949

Source map scale - 1:10,560

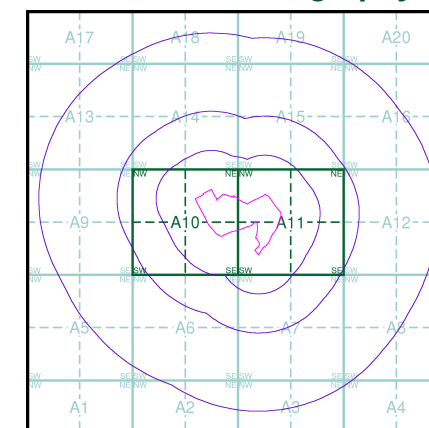
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the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

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



### Historical Aerial Photography - Slice A



LIBRARY  
HSILIRB

### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

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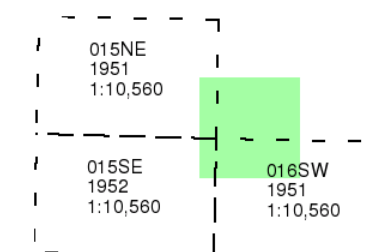
## Glamorganshire

Published 1951 - 1952

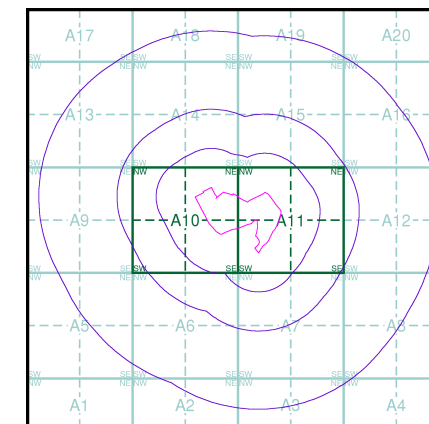
Source map scale - 1:10,560

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

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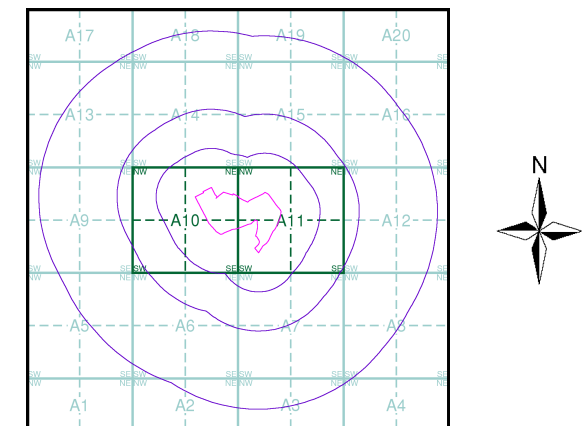


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some 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)

|                            |                            |
|----------------------------|----------------------------|
| SN70SW<br>1964<br>1:10,560 | SN70SE<br>1964<br>1:10,560 |
| SS79NW<br>1965<br>1:10,560 | SS79NE<br>1964<br>1:10,560 |

### Historical Map - Slice A



## Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
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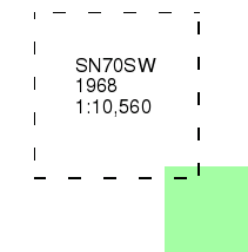
## Ordnance Survey Plan

Published 1968

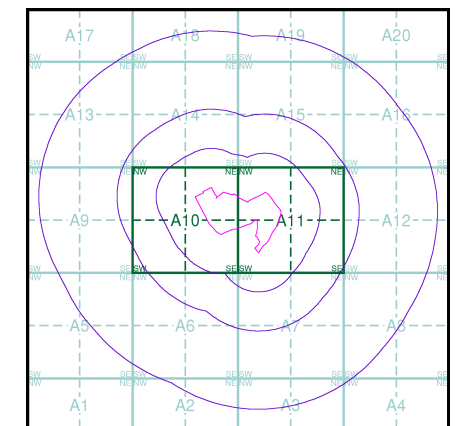
### Source map scale - 1:10,000

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

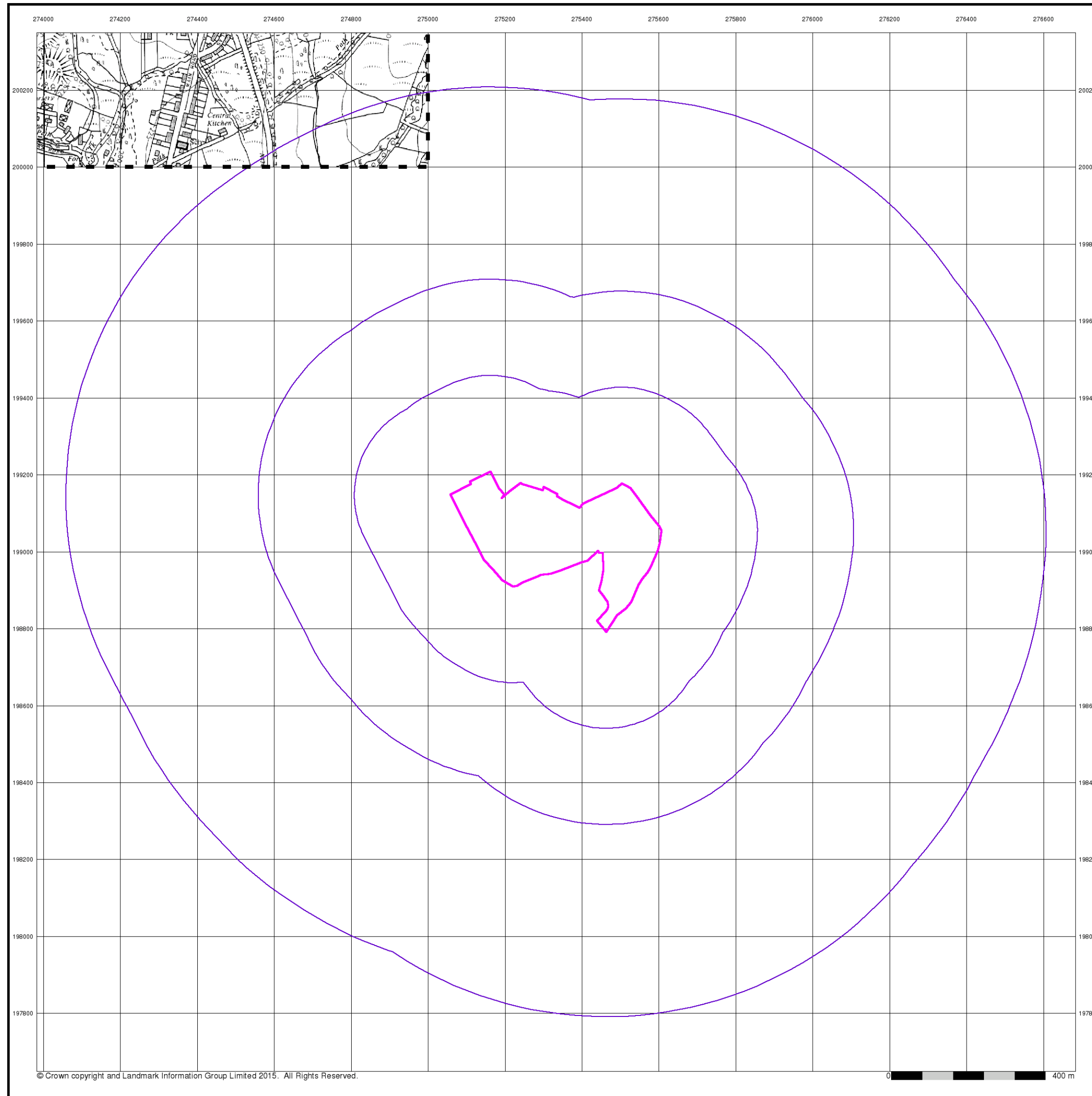
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

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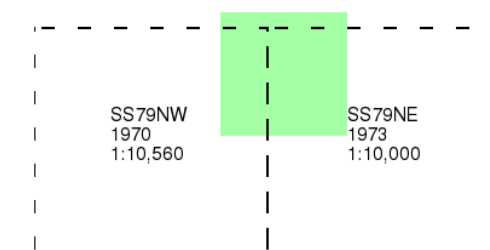
## Ordnance Survey Plan

Published 1970 - 1973

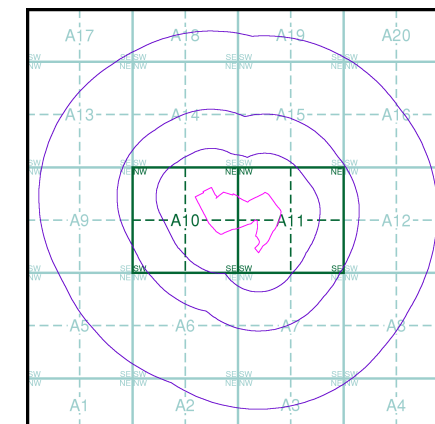
Source map scale - 1:10,000

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

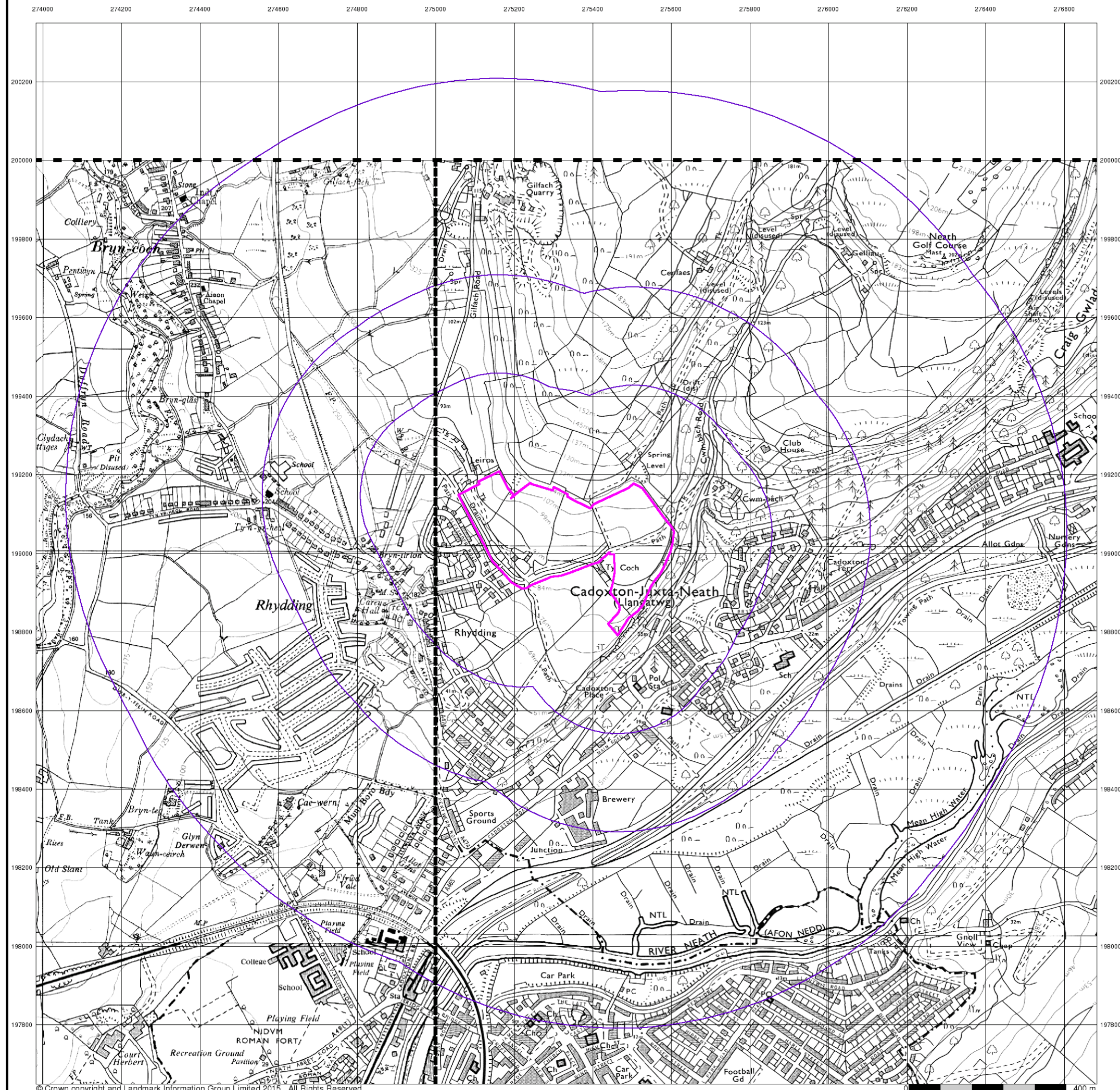


### Order Details

Order Number: 118892601\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

### Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX







## Ordnance Survey Plan

Published 1980 - 1989

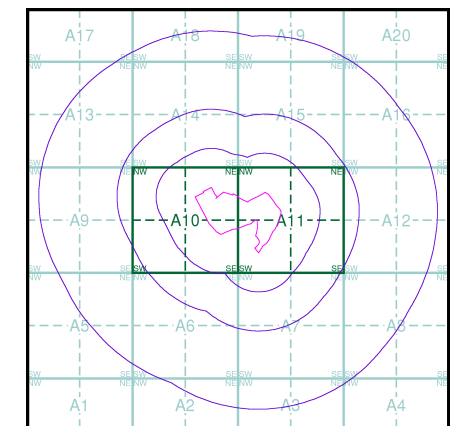
Source map scale - 1:10,000

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some years later than the surveyed date. Before 1938, all OS maps were based on the Cassini Projection, with independent surveys of a single county or group of counties, giving rise to significant inaccuracies in outlying areas. In the late 1940's, a Provisional Edition was produced, which updated the 1:10,560 mapping from a number of sources. The maps appear unfinished - with all military camps and other strategic sites removed. These maps were initially overprinted with the National Grid. In 1970, the first 1:10,000 maps were produced using the Transverse Mercator Projection. The revision process continued until recently, with new editions appearing every 10 years or so for urban areas.

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

|          |          |
|----------|----------|
| SN70SW   | SN70SE   |
| 1982     | 1989     |
| 1:10,000 | 1:10,000 |
| SS79NW   | SS79NE   |
| 1980     | 1983     |
| 1:10,000 | 1:10,000 |

### Historical Map - Slice A



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

### Site Details

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## Ordnance Survey Plan

Published 1992

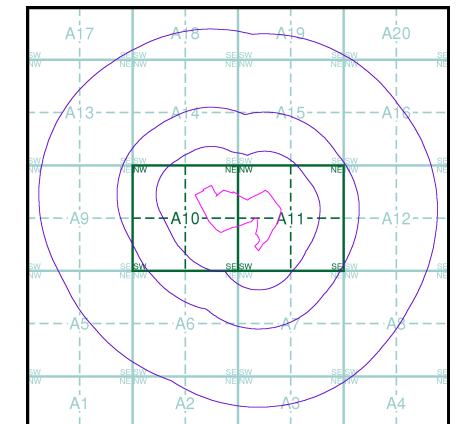
Source map scale - 1:10,000

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)

|        |      |          |
|--------|------|----------|
| SN70SW | 1992 | 1:10,000 |
| SS79NW | 1992 | 1:10,000 |
| SS79NE | 1992 | 1:10,000 |

### Historical Map - Slice A



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

### Site Details

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## 10k Raster Mapping

Published 1999

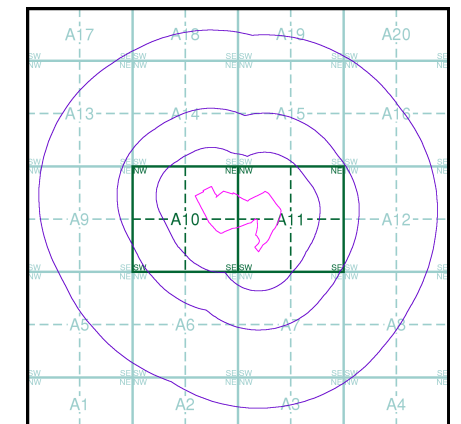
Source map scale - 1:10,000

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

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

|          |          |
|----------|----------|
| SN70SW   | SN70SE   |
| 1999     | 1999     |
| 1:10,000 | 1:10,000 |
| SS79NW   | SS79NE   |
| 1999     | 1999     |
| 1:10,000 | 1:10,000 |

### Historical Map - Slice A



### Order Details

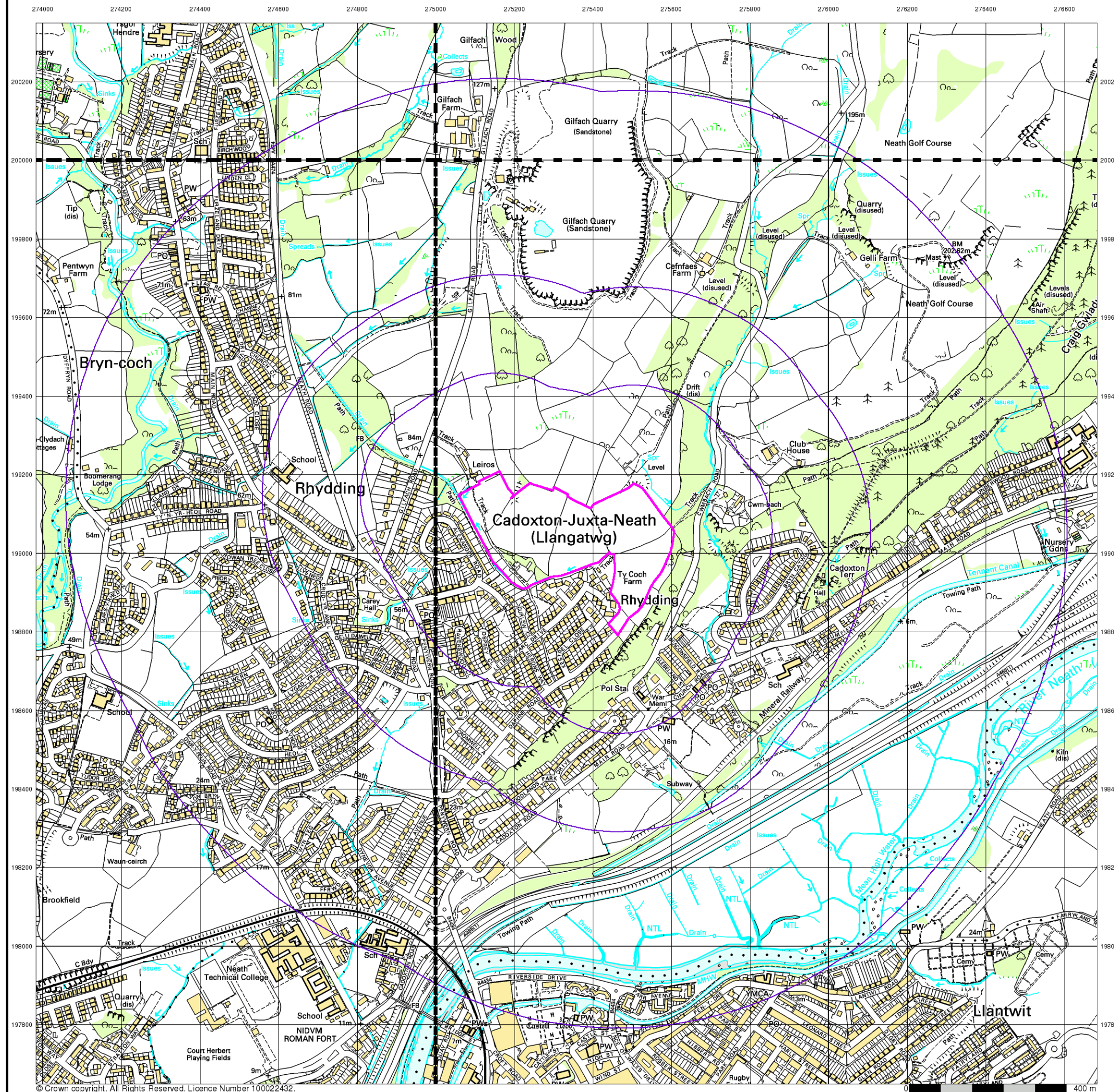
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

### Site Details

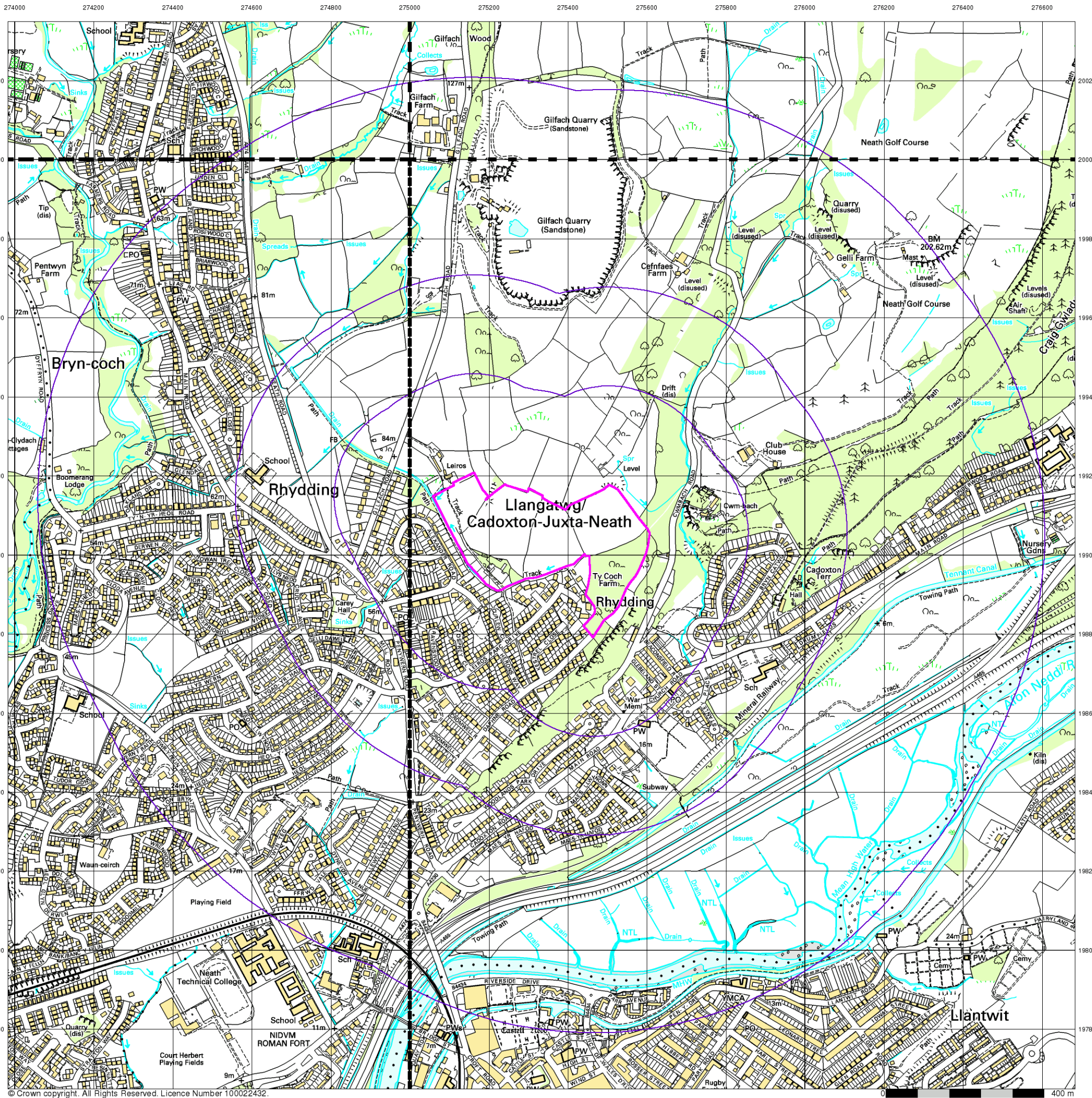
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## 10k Raster Mapping

Published 2006

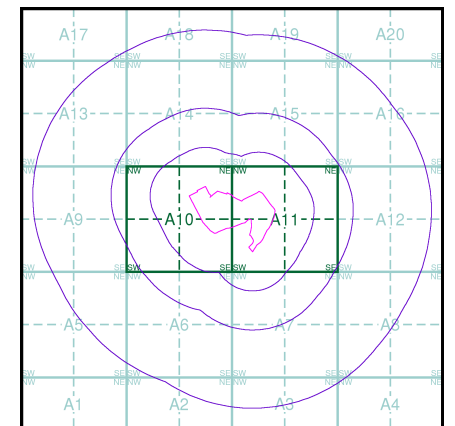
Source map scale - 1:10,000

The historical maps shown were produced from the Ordnance Survey's 1:10,000 colour raster mapping. These maps are derived from 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)

|          |          |
|----------|----------|
| SN70SW   | SN70SE   |
| 2006     | 2006     |
| 1:10,000 | 1:10,000 |
| SS79NW   | SS79NE   |
| 2006     | 2006     |
| 1:10,000 | 1:10,000 |

### Historical Map - Slice A



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

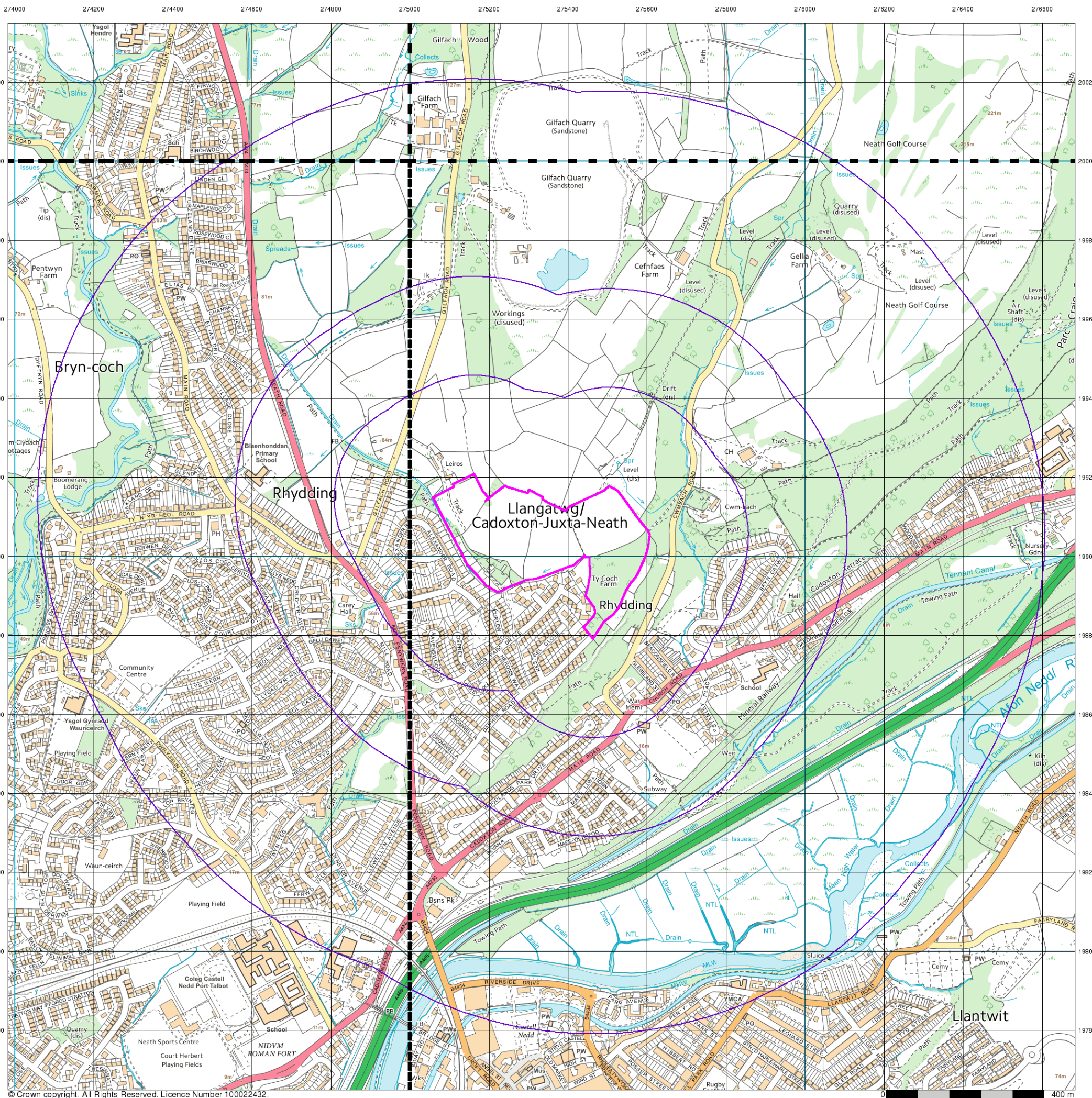
### Site Details

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## VectorMap Local

Published 2017

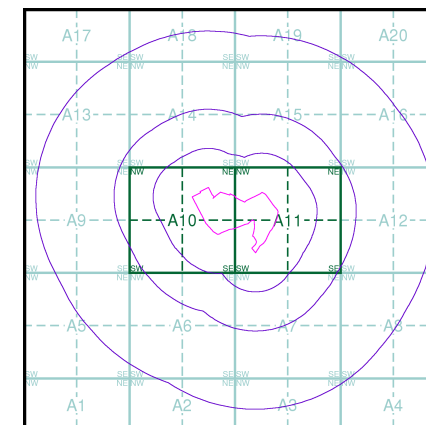
Source map scale - 1:10,000

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)

|                            |                            |
|----------------------------|----------------------------|
| SN70SW<br>2017<br>Variable | SN70SE<br>2017<br>Variable |
| SS79NW<br>2017<br>Variable | SS79NE<br>2017<br>Variable |

## Historical Map - Slice A



## Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

## Site Details

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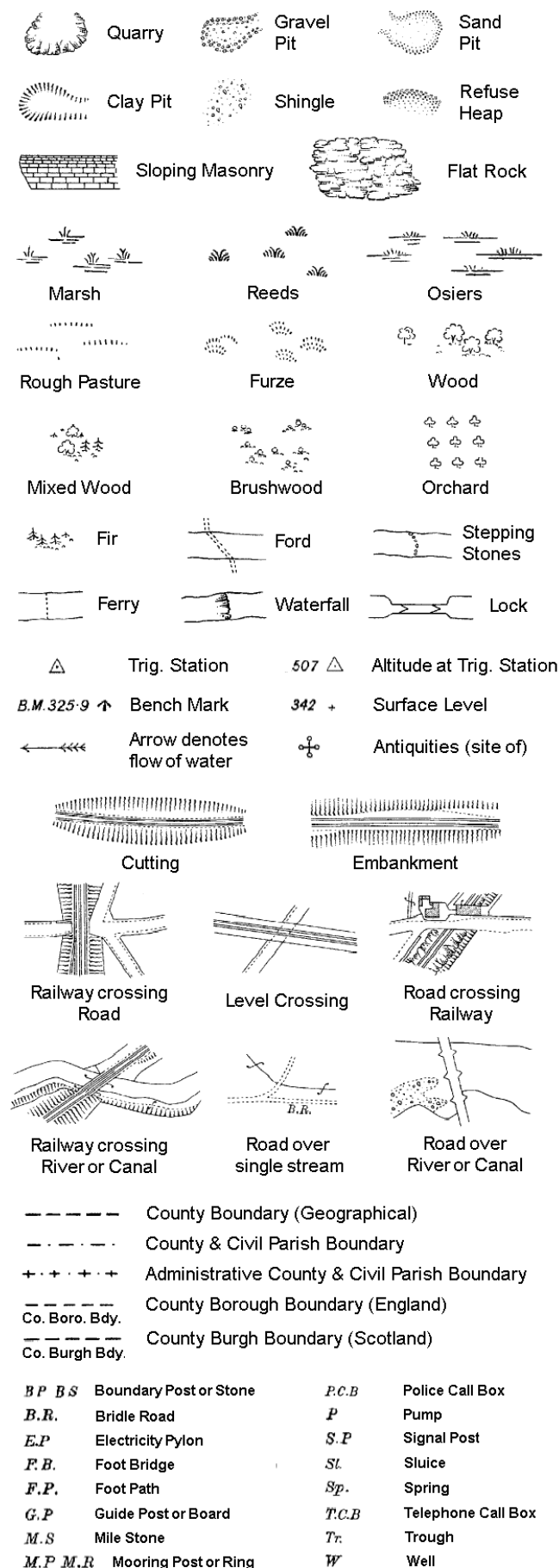


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# Historical Mapping Legends

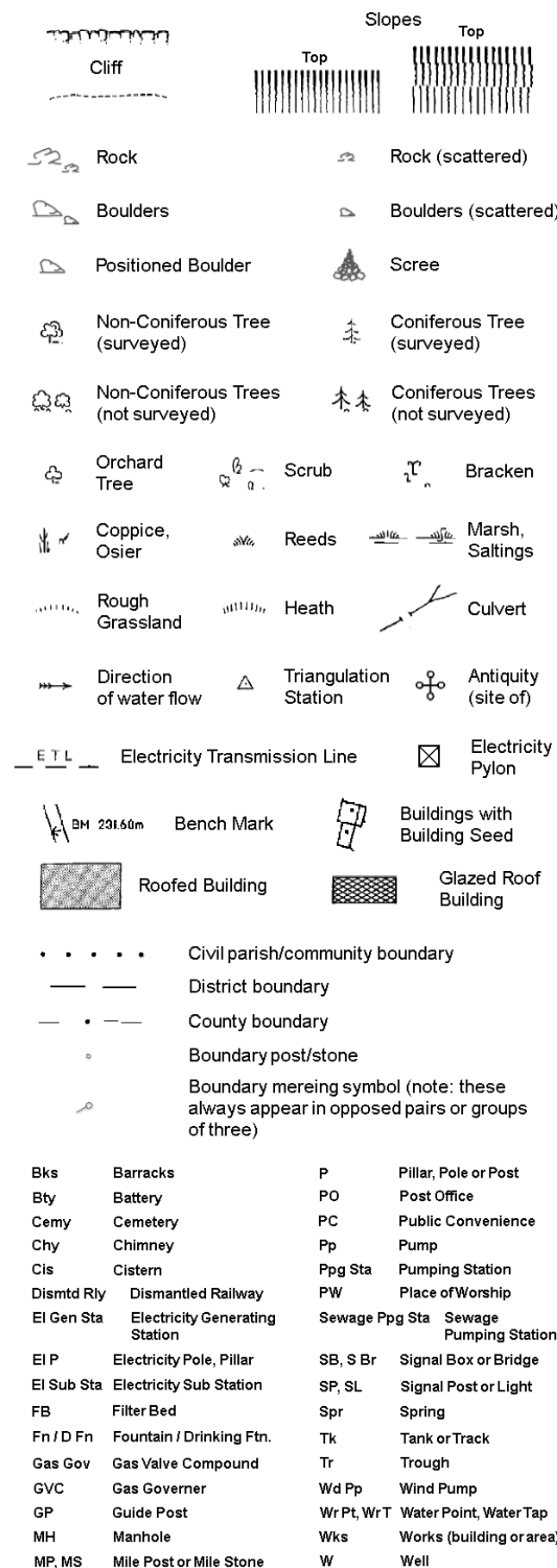
## Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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



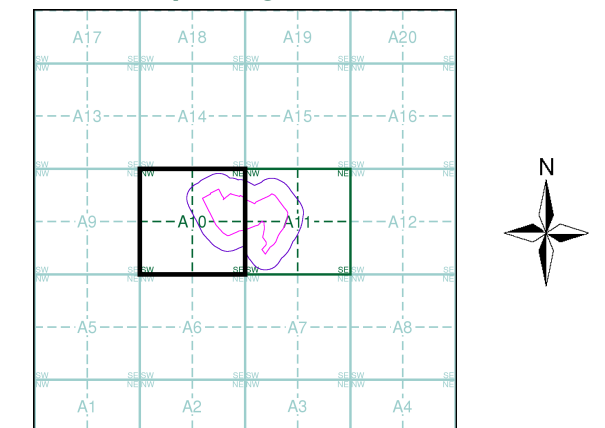
## Large-Scale National Grid Data 1:2,500 and 1:1,250



## Historical Mapping & Photography included:

| Mapping Type                   | Scale   | Date        | Pg |
|--------------------------------|---------|-------------|----|
| Glamorganshire                 | 1:2,500 | 1877 - 1881 | 2  |
| Glamorganshire                 | 1:2,500 | 1899        | 3  |
| Glamorganshire                 | 1:2,500 | 1918 - 1919 | 4  |
| Glamorganshire                 | 1:2,500 | 1935        | 5  |
| Ordnance Survey Plan           | 1:2,500 | 1965 - 1968 | 6  |
| Ordnance Survey Plan           | 1:1,250 | 1967 - 1972 | 7  |
| Additional SIMs                | 1:1,250 | 1967 - 1989 | 8  |
| Additional SIMs                | 1:2,500 | 1979        | 9  |
| Ordnance Survey Plan           | 1:1,250 | 1989        | 10 |
| Additional SIMs                | 1:1,250 | 1989        | 11 |
| Large-Scale National Grid Data | 1:2,500 | 1993        | 12 |
| Large-Scale National Grid Data | 1:1,250 | 1993        | 13 |
| Large-Scale National Grid Data | 1:1,250 | 1994        | 14 |
| Large-Scale National Grid Data | 1:1,250 | 1996        | 15 |
| Historical Aerial Photography  | 1:2,500 | 2000        | 16 |

## Historical Map - Segment A10



## Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

## Site Details

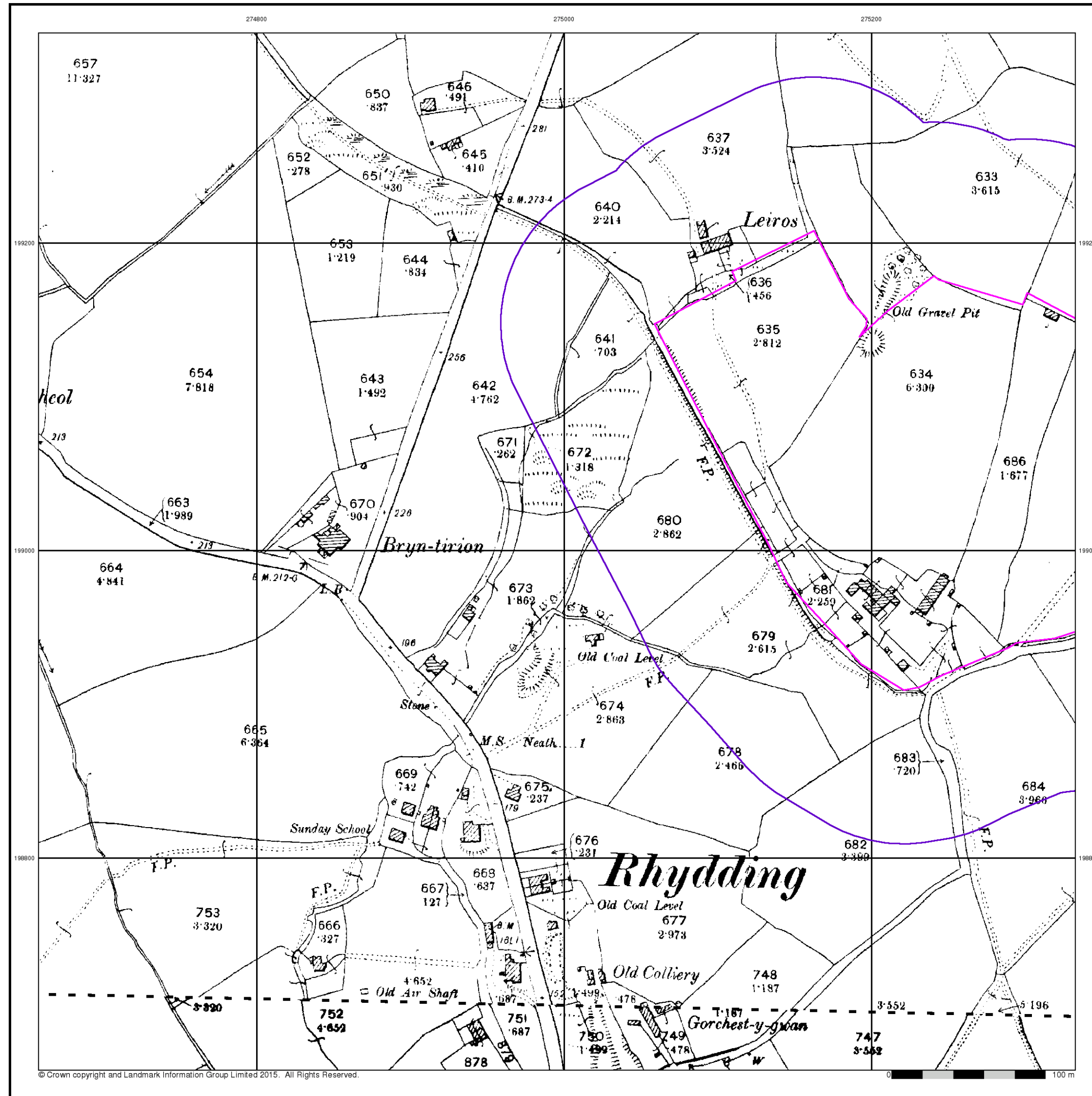
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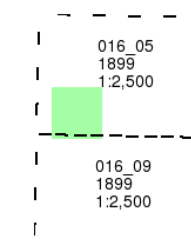
Glamorganshire

Published 1899

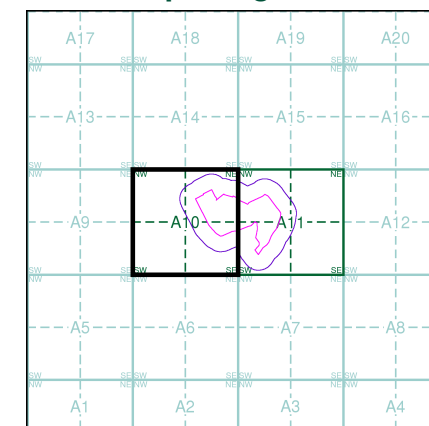
Source map scale - 1:2,500

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 A10



### Order Details

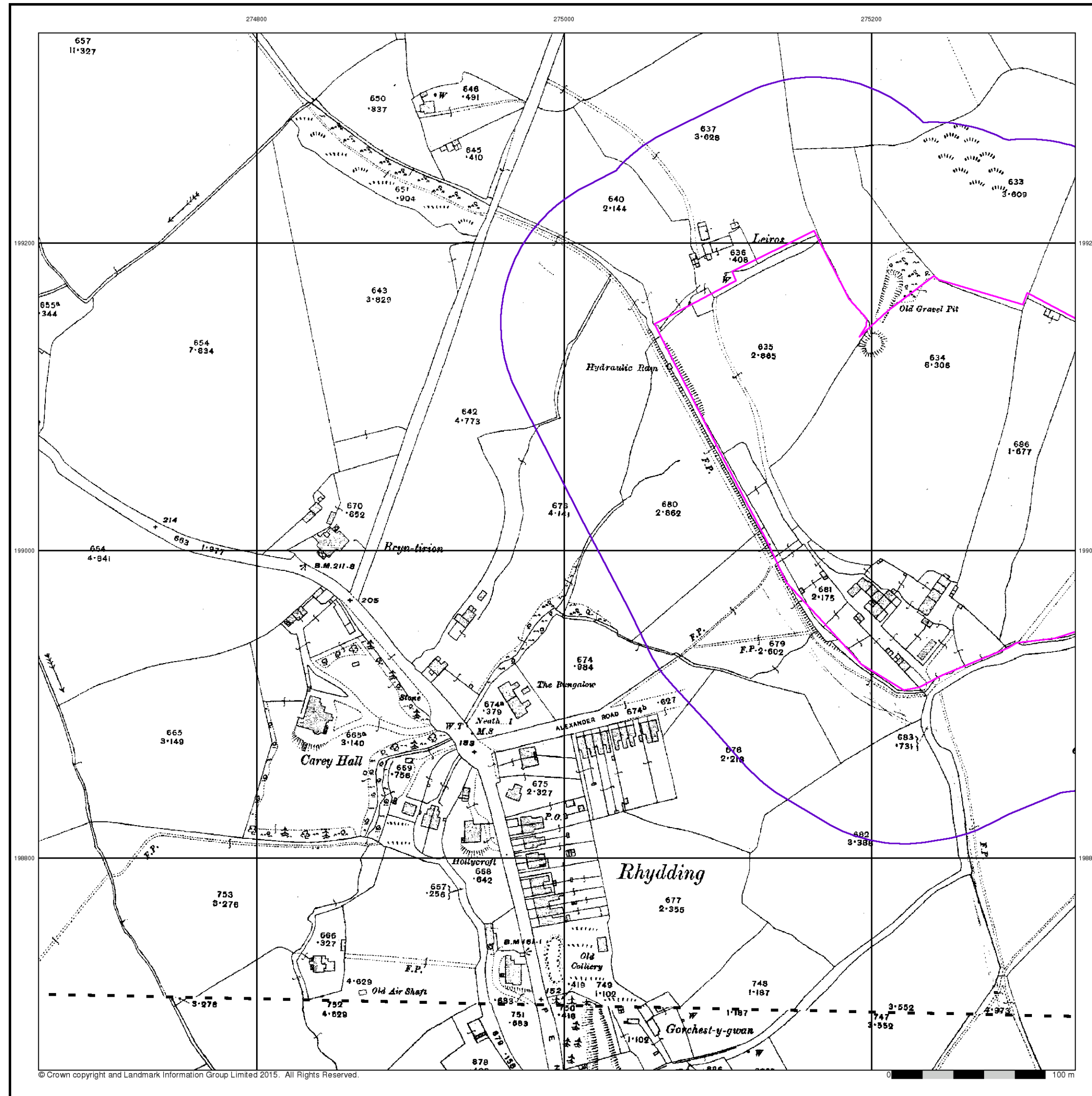
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

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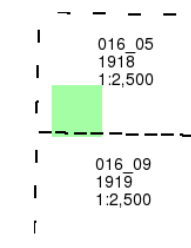
## Glamorganshire

Published 1918 - 1919

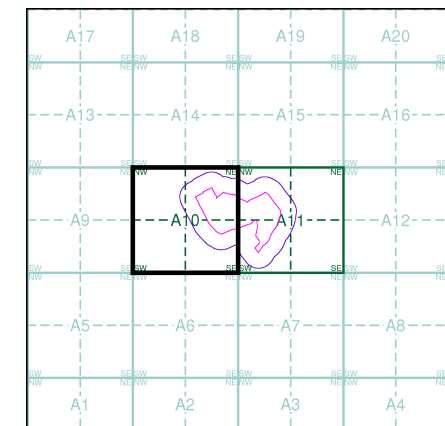
Source map scale - 1:2,500

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

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



### Historical Map - Segment A10



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

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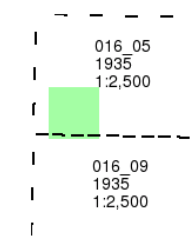
## Glamorganshire

Published 1935

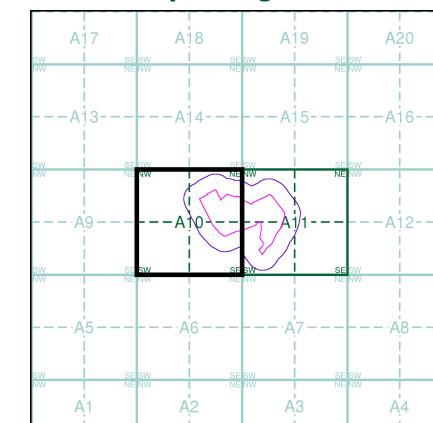
Source map scale - 1:2,500

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 A10



### Order Details

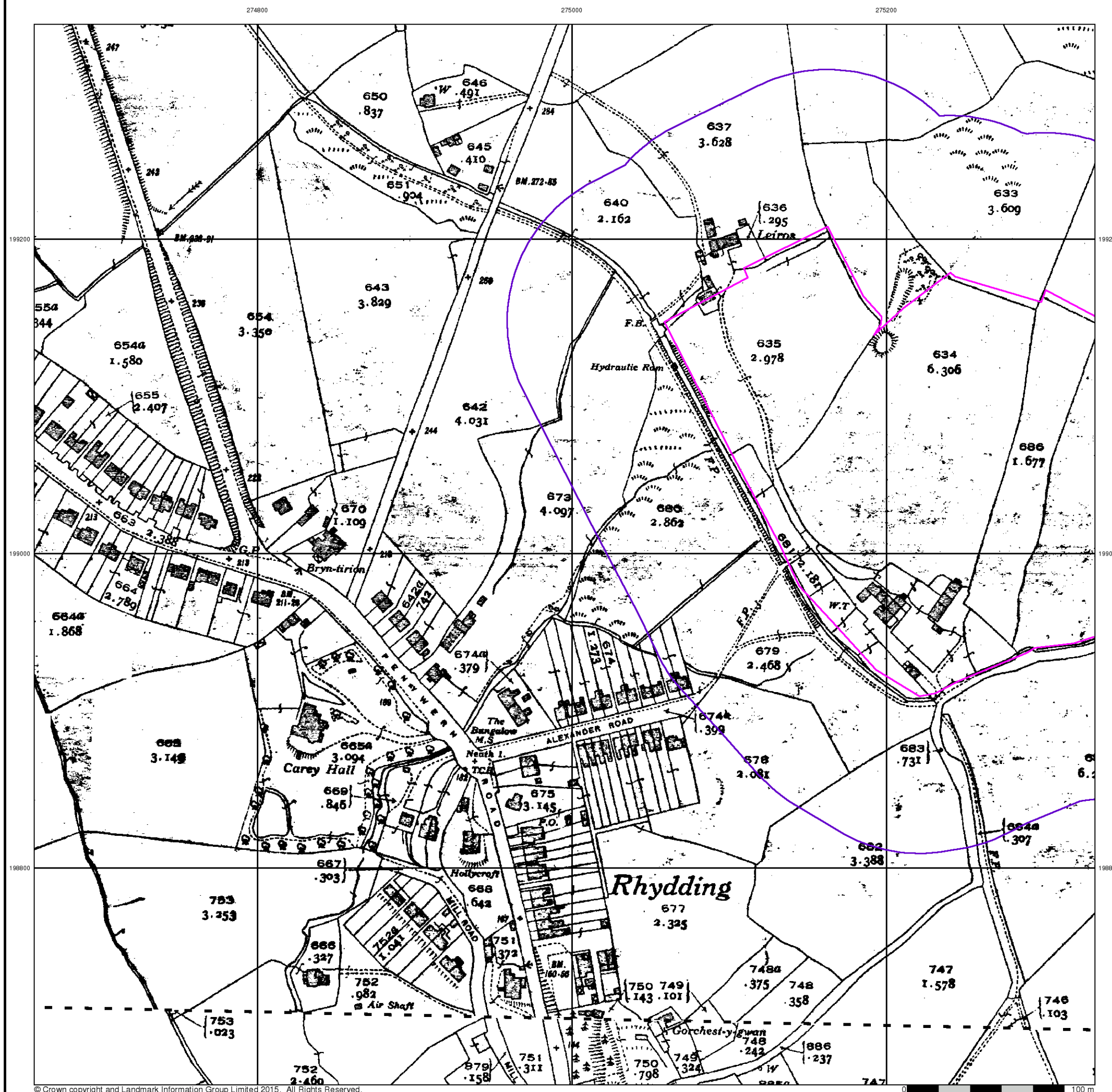
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

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## Ordnance Survey Plan

Published 1965 - 1968

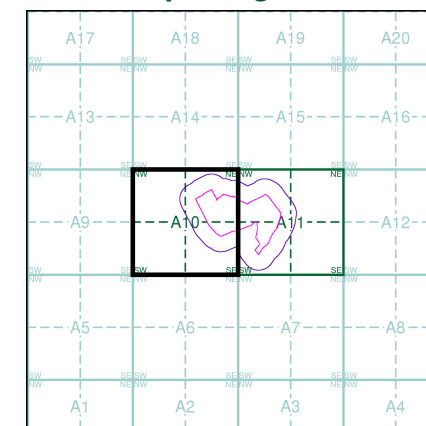
Source map scale - 1:2,500

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)

|                          |                          |
|--------------------------|--------------------------|
| SS7499<br>1965<br>12,500 | SS7599<br>1965<br>12,500 |
| SS7498<br>1968<br>12,500 | SS7598<br>1968<br>12,500 |

### Historical Map - Segment A10



### Order Details

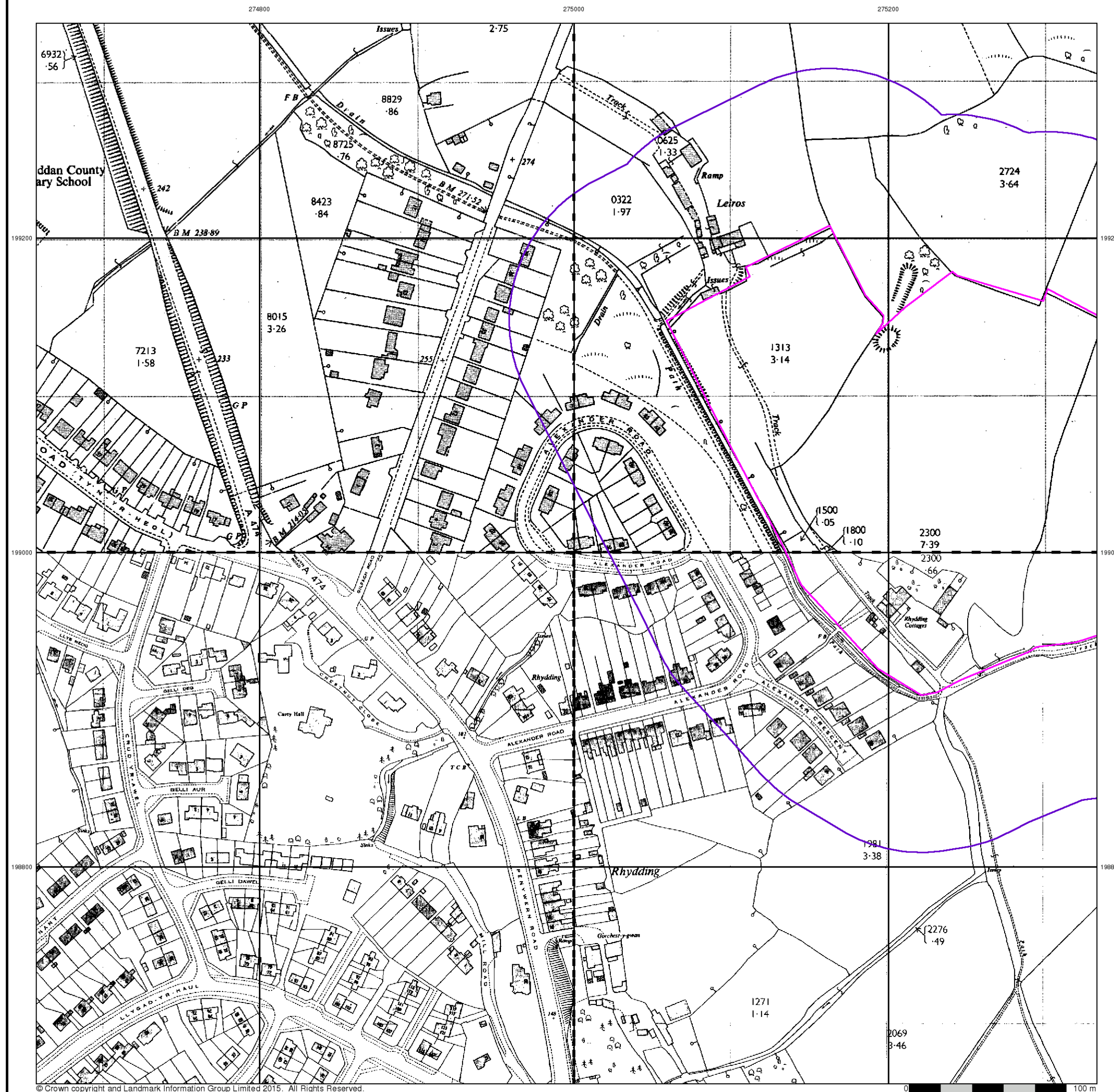
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

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## Ordnance Survey Plan

Published 1967 - 1972

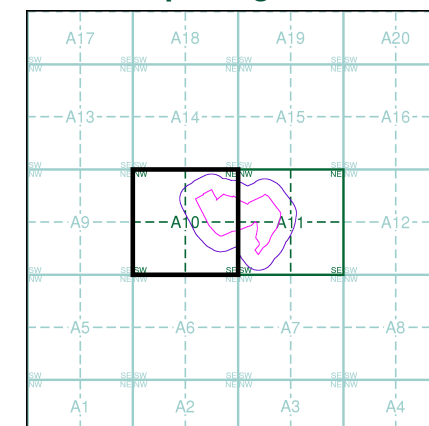
Source map scale - 1:1,250

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

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

|          |      |         |
|----------|------|---------|
| SS7499SE | 1972 | 1:1,250 |
| SS7498NE | 1967 | 1:1,250 |
| SS7598NW | 1967 | 1:1,250 |

### Historical Map - Segment A10



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

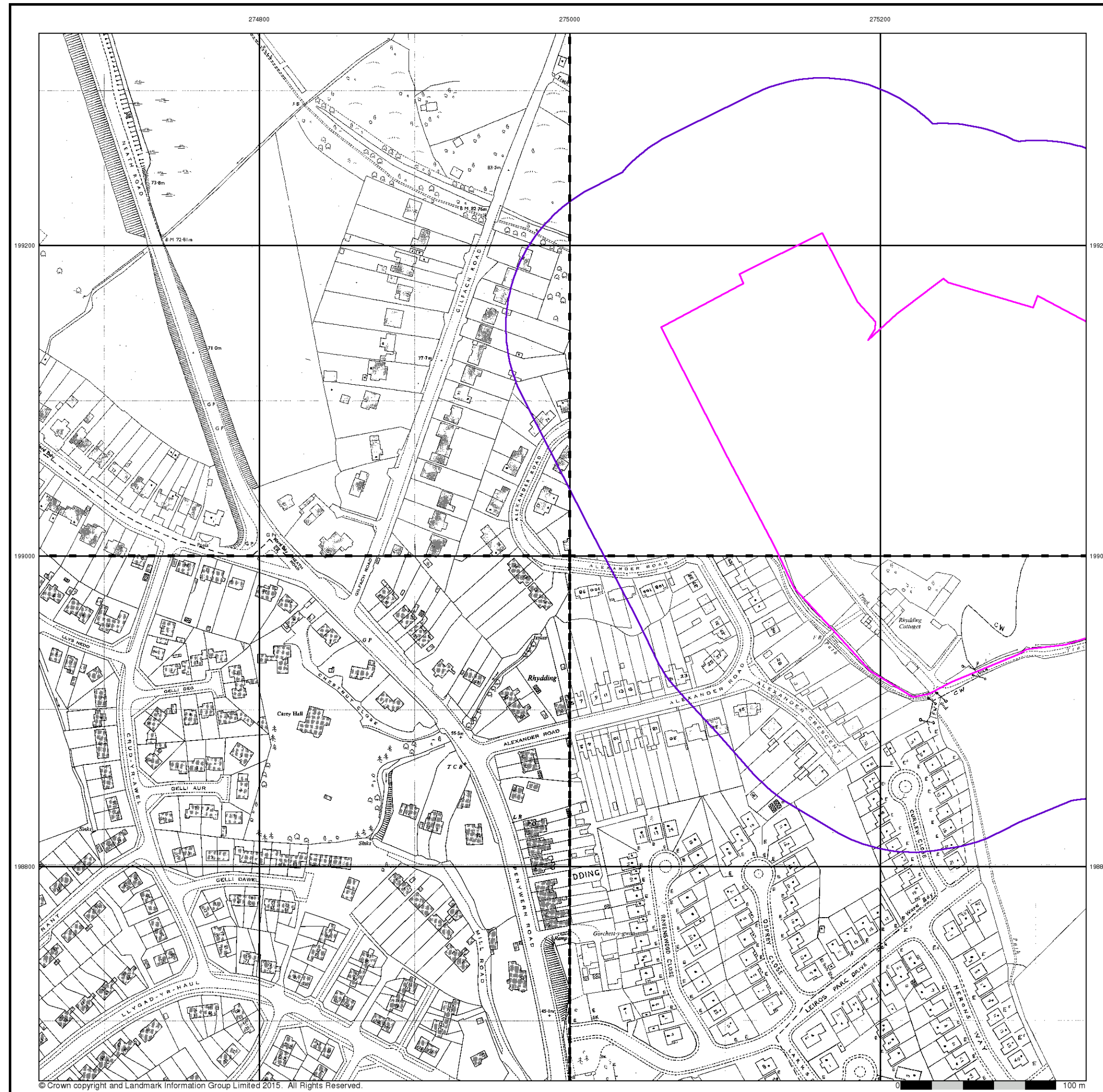
### Site Details

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**Additional SIMs**

**Published 1967 - 1989**

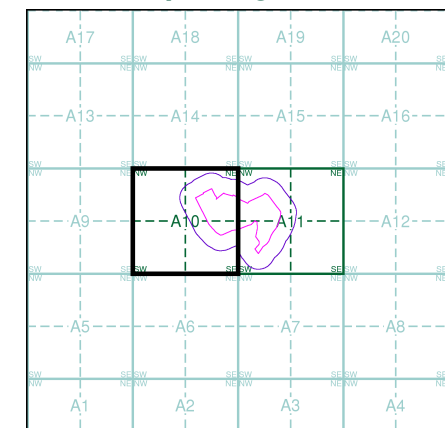
**Source map scale - 1:1,250**

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

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

|          |      |         |
|----------|------|---------|
| SS7499SE | 1989 | 1:1,250 |
| SS7498NE | 1967 | 1:1,250 |
| SS7598NW | 1978 | 1:1,250 |

**Historical Map - Segment A10**



**Order Details**

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

**Site Details**

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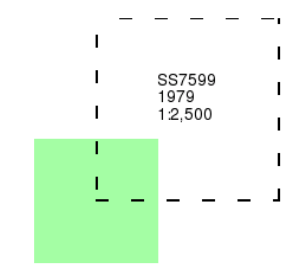
### Additional SIMs

Published 1979

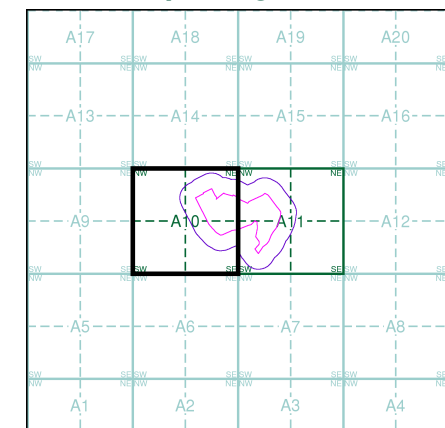
Source map scale - 1:2,500

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

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



### Historical Map - Segment A10



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

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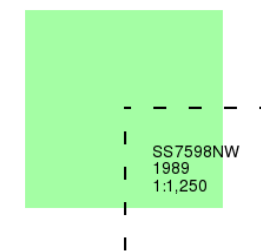
## Ordnance Survey Plan

Published 1989

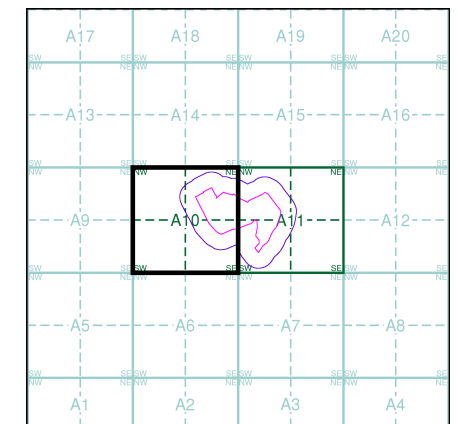
Source map scale - 1:1,250

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

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



### Historical Map - Segment A10



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

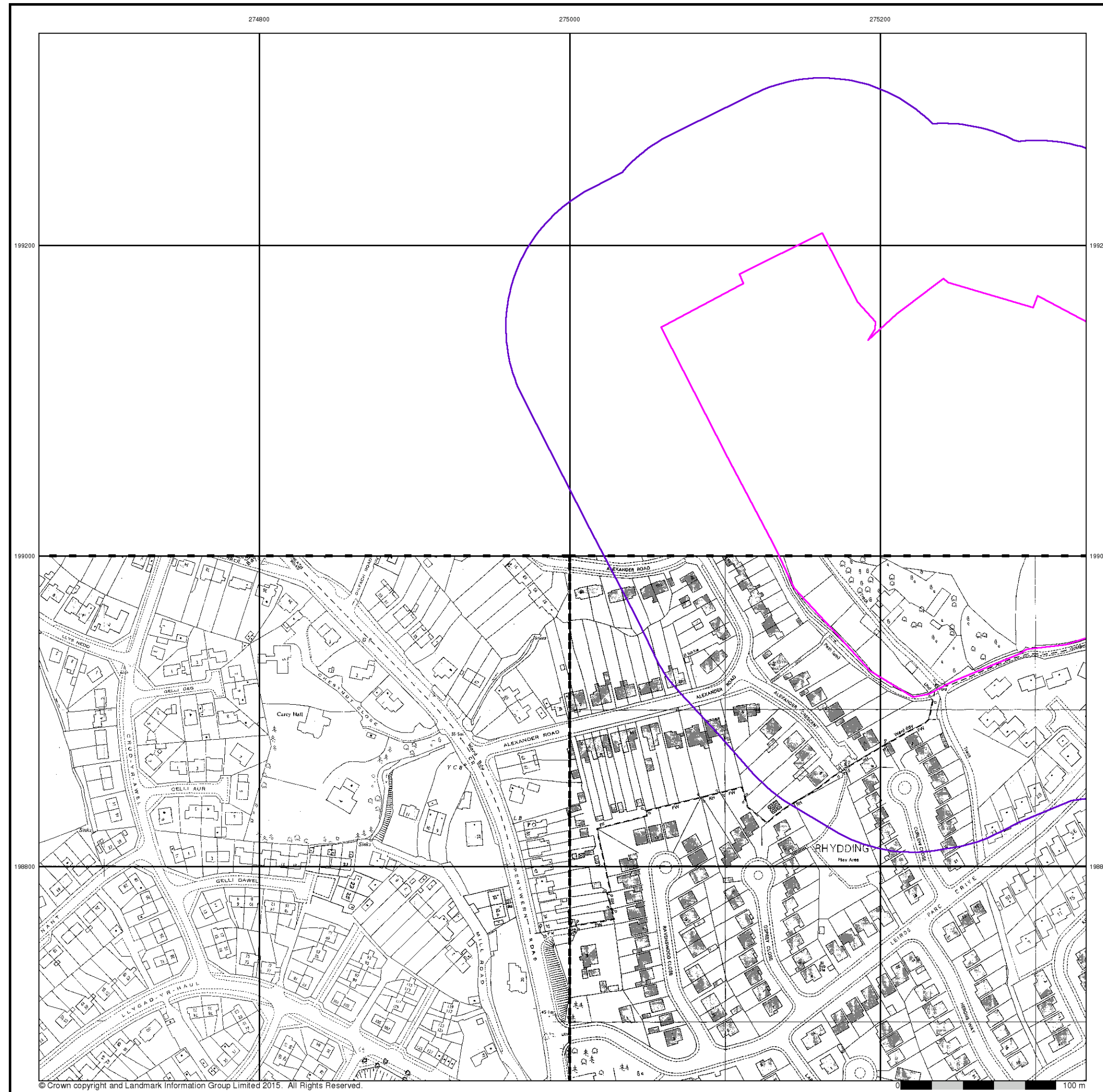
### Site Details

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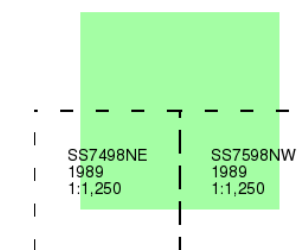
## Additional SIMs

Published 1989

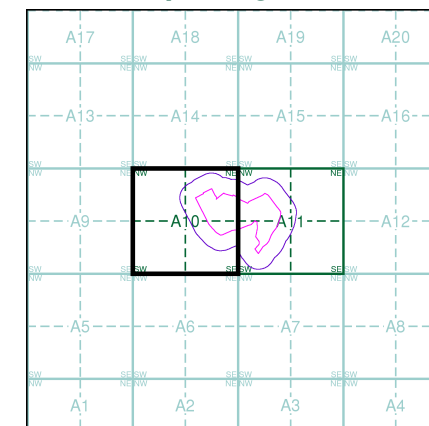
Source map scale - 1:1,250

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

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



## Historical Map - Segment A10



## Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

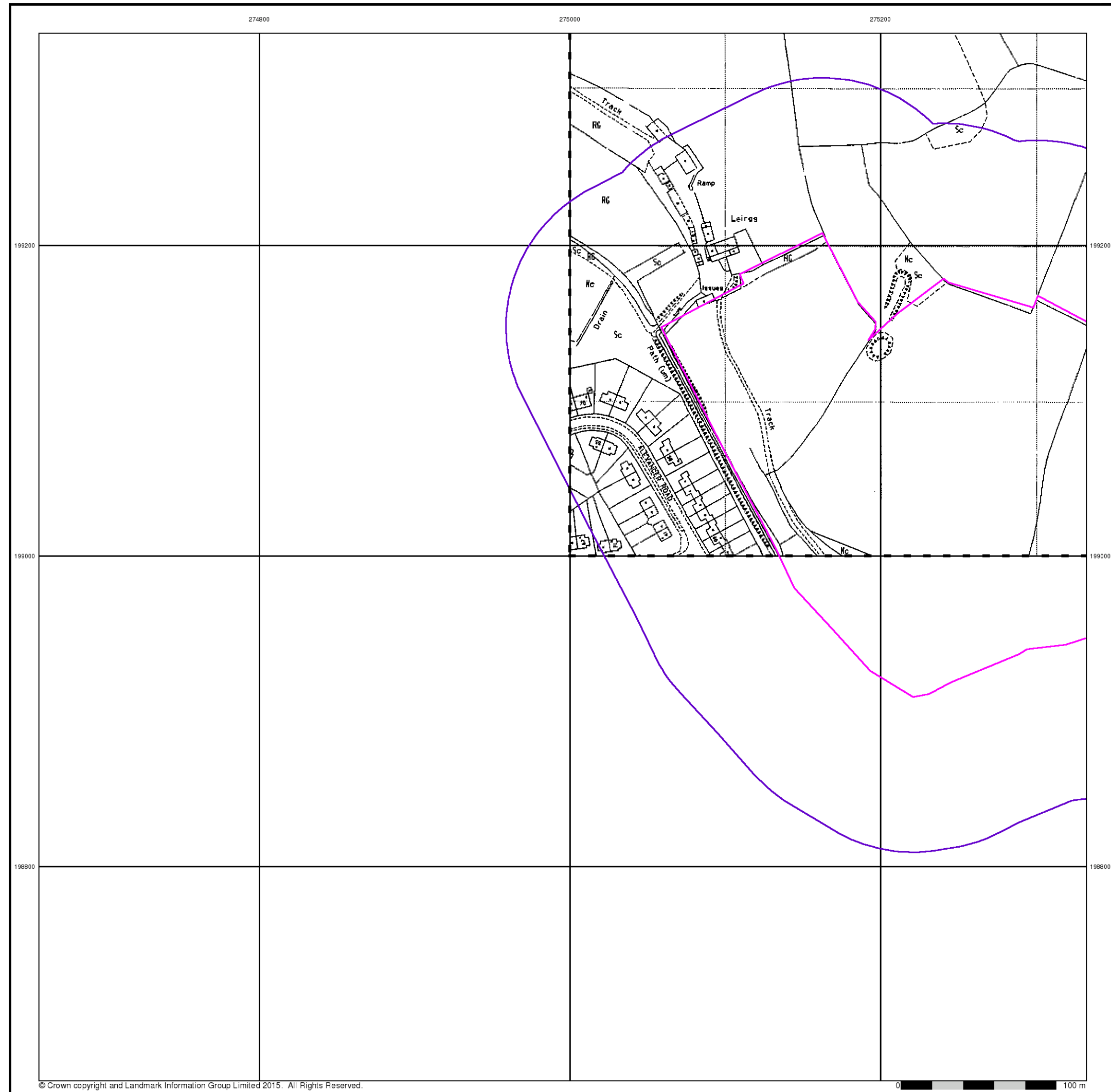
## Site Details

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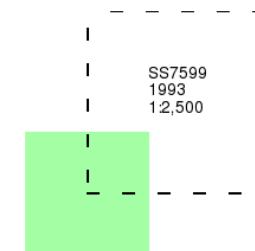
## Large-Scale National Grid Data

Published 1993

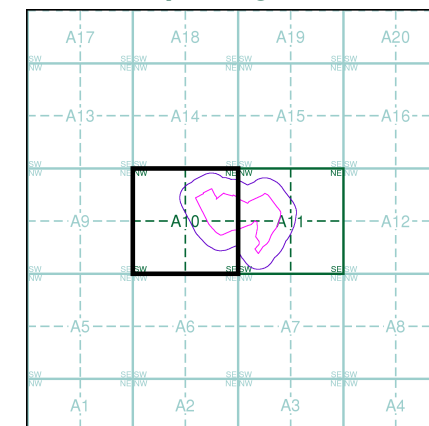
Source map scale - 1:2,500

'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 A10



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

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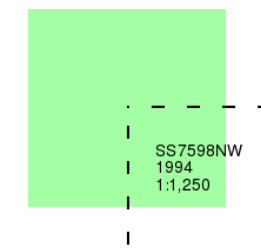
## Large-Scale National Grid Data

Published 1994

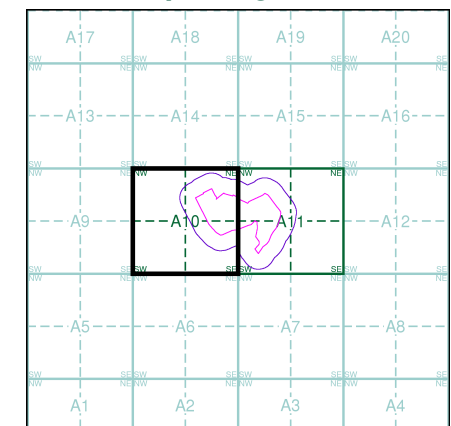
Source map scale - 1:1,250

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

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



### Historical Map - Segment A10



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

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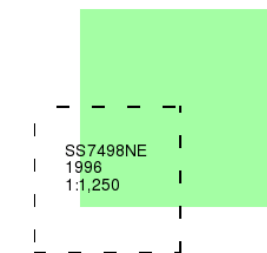
## Large-Scale National Grid Data

Published 1996

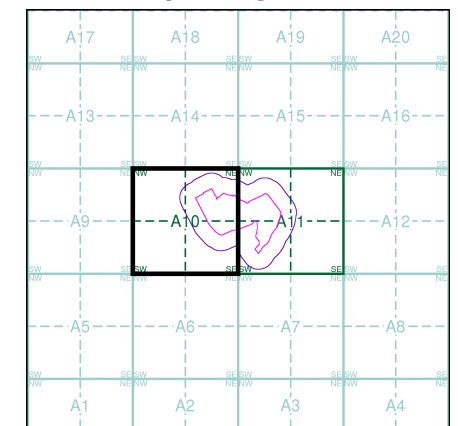
Source map scale - 1:1,250

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

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



### Historical Map - Segment A10



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

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0 100 m

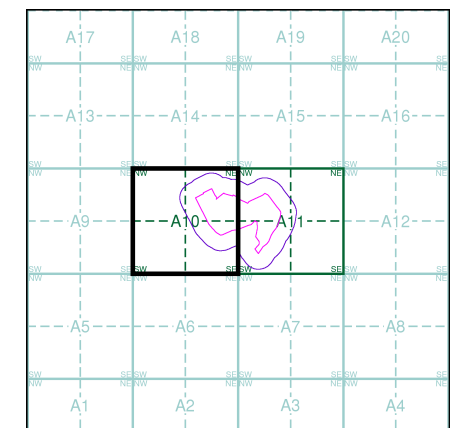


## Historical Aerial Photography

Published 2000

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

### Historical Aerial Photography - Segment A10



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

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# Historical Mapping Legends

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



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



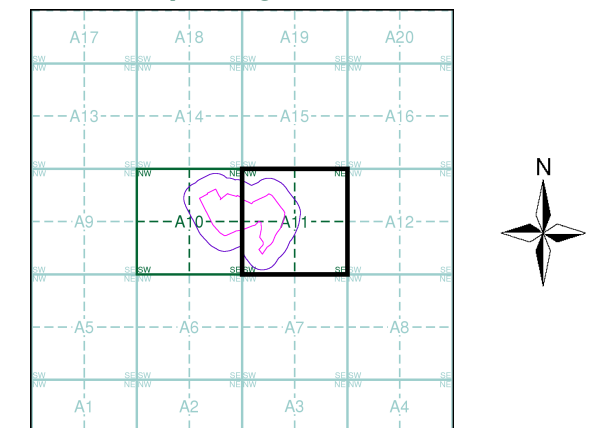
## Large-Scale National Grid Data 1:2,500 and 1:1,250



## Historical Mapping & Photography included:

| Mapping Type                   | Scale   | Date        | Pg |
|--------------------------------|---------|-------------|----|
| Glamorganshire                 | 1:2,500 | 1877 - 1881 | 2  |
| Glamorganshire                 | 1:2,500 | 1899        | 3  |
| Glamorganshire                 | 1:2,500 | 1918 - 1919 | 4  |
| Glamorganshire                 | 1:2,500 | 1935        | 5  |
| Ordnance Survey Plan           | 1:2,500 | 1964 - 1968 | 6  |
| Ordnance Survey Plan           | 1:1,250 | 1967        | 7  |
| Ordnance Survey Plan           | 1:1,250 | 1971 - 1989 | 8  |
| Additional SIMs                | 1:1,250 | 1978 - 1989 | 9  |
| Additional SIMs                | 1:2,500 | 1978 - 1979 | 10 |
| Ordnance Survey Plan           | 1:2,500 | 1984        | 11 |
| Additional SIMs                | 1:2,500 | 1984 - 1987 | 12 |
| Additional SIMs                | 1:1,250 | 1989        | 13 |
| Large-Scale National Grid Data | 1:2,500 | 1993        | 14 |
| Large-Scale National Grid Data | 1:1,250 | 1993        | 15 |
| Large-Scale National Grid Data | 1:2,500 | 1993        | 16 |
| Large-Scale National Grid Data | 1:1,250 | 1994        | 17 |
| Large-Scale National Grid Data | 1:2,500 | 1994        | 18 |
| Historical Aerial Photography  | 1:2,500 | 2000        | 19 |

## Historical Map - Segment A11



## Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

## Site Details

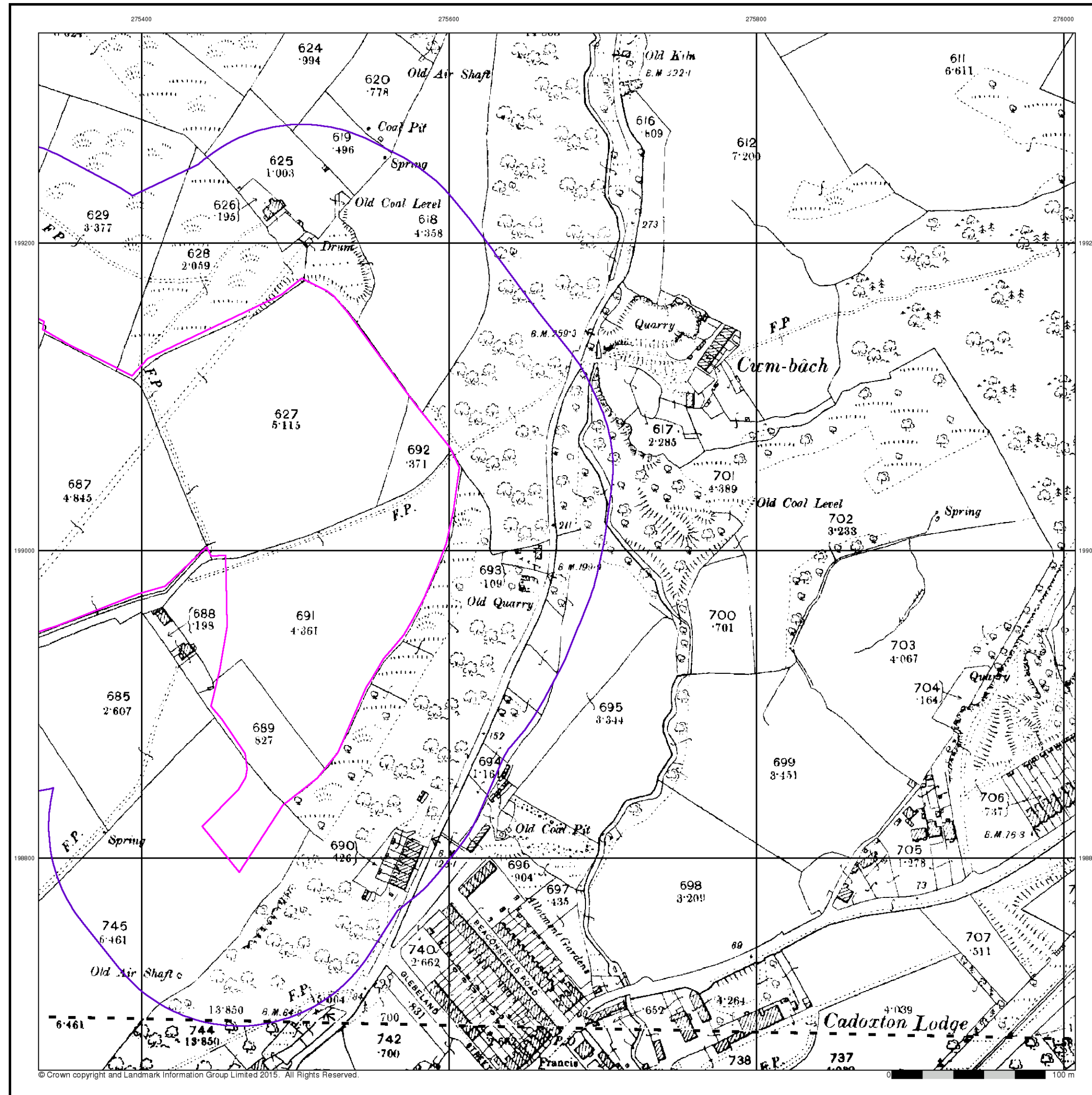
Leiros Park, Bryncoch, Neath, SA10 7EX



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







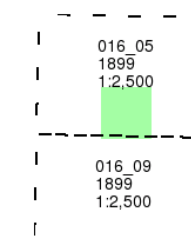
Glamorganshire

Published 1899

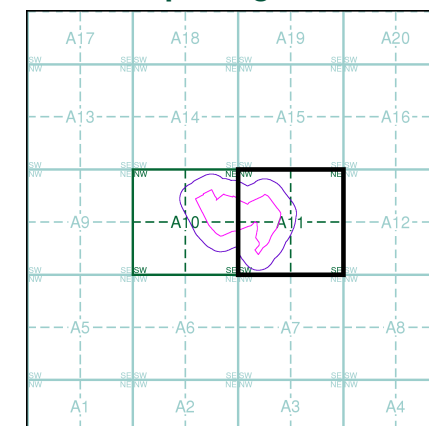
Source map scale - 1:2,500

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 A11



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

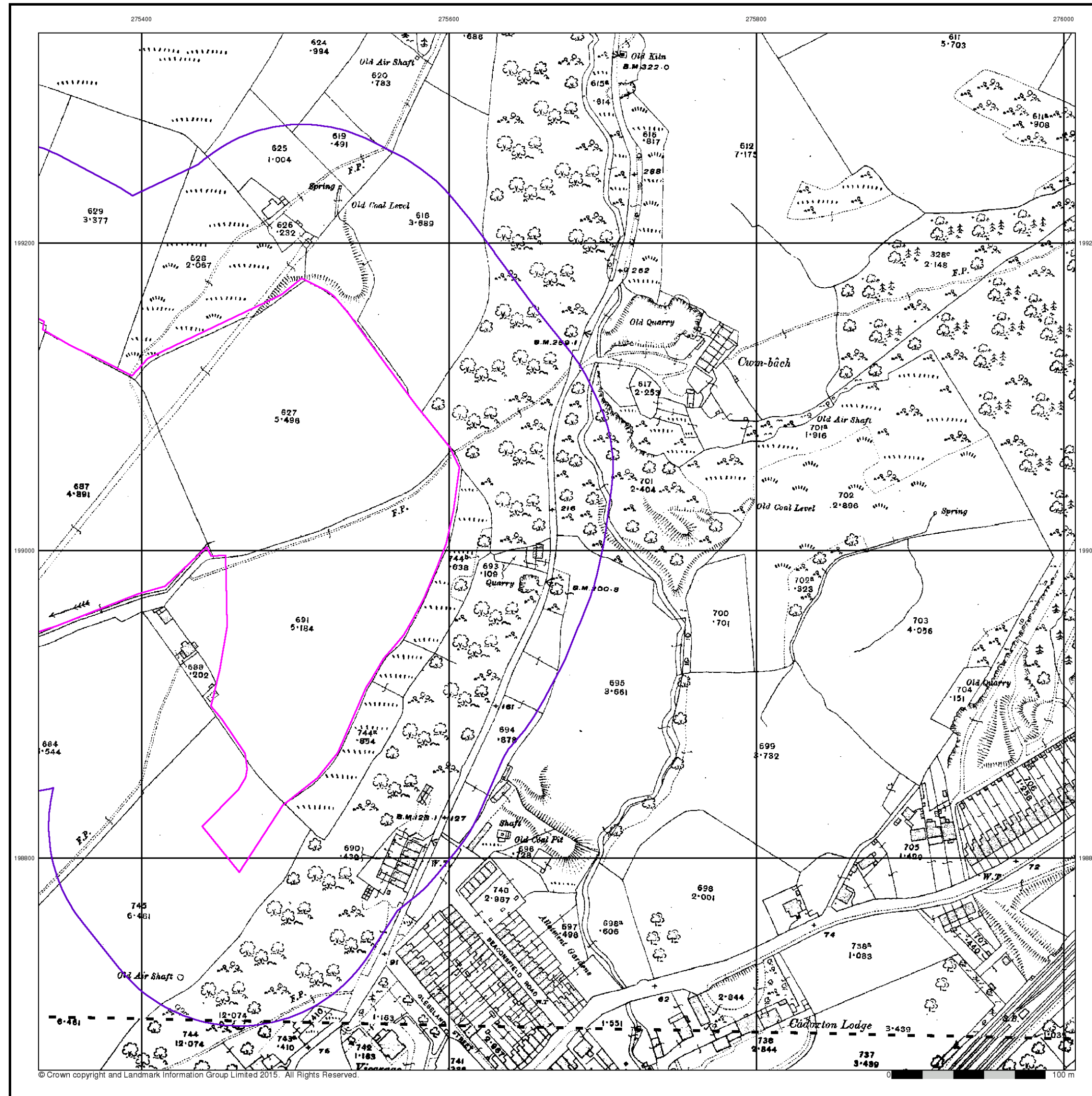
### Site Details

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INFORMATION GROUP

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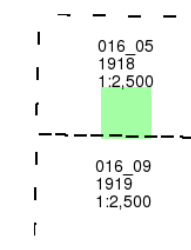
## Glamorganshire

Published 1918 - 1919

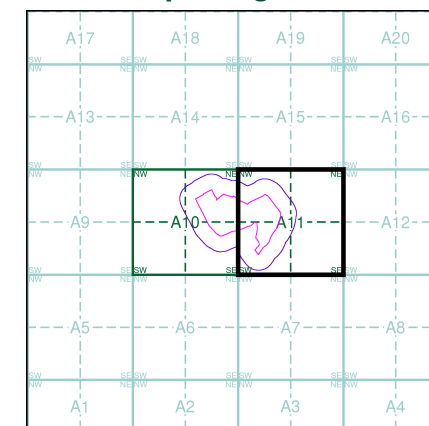
Source map scale - 1:2,500

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

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



### Historical Map - Segment A11



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

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## Ordnance Survey Plan

Published 1964 - 1968

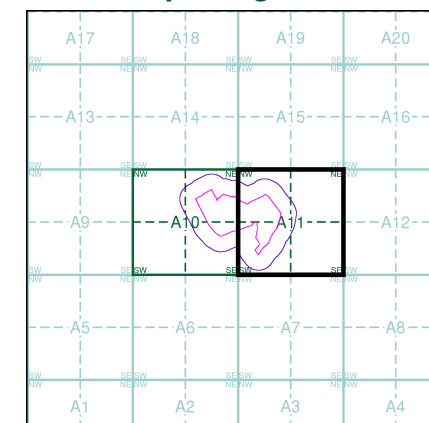
Source map scale - 1:2,500

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)

|                          |                          |
|--------------------------|--------------------------|
| SS7599<br>1965<br>12,500 | SS7699<br>1964<br>12,500 |
| SS7598<br>1968<br>12,500 | SS7698<br>1964<br>12,500 |

### Historical Map - Segment A11



### Order Details

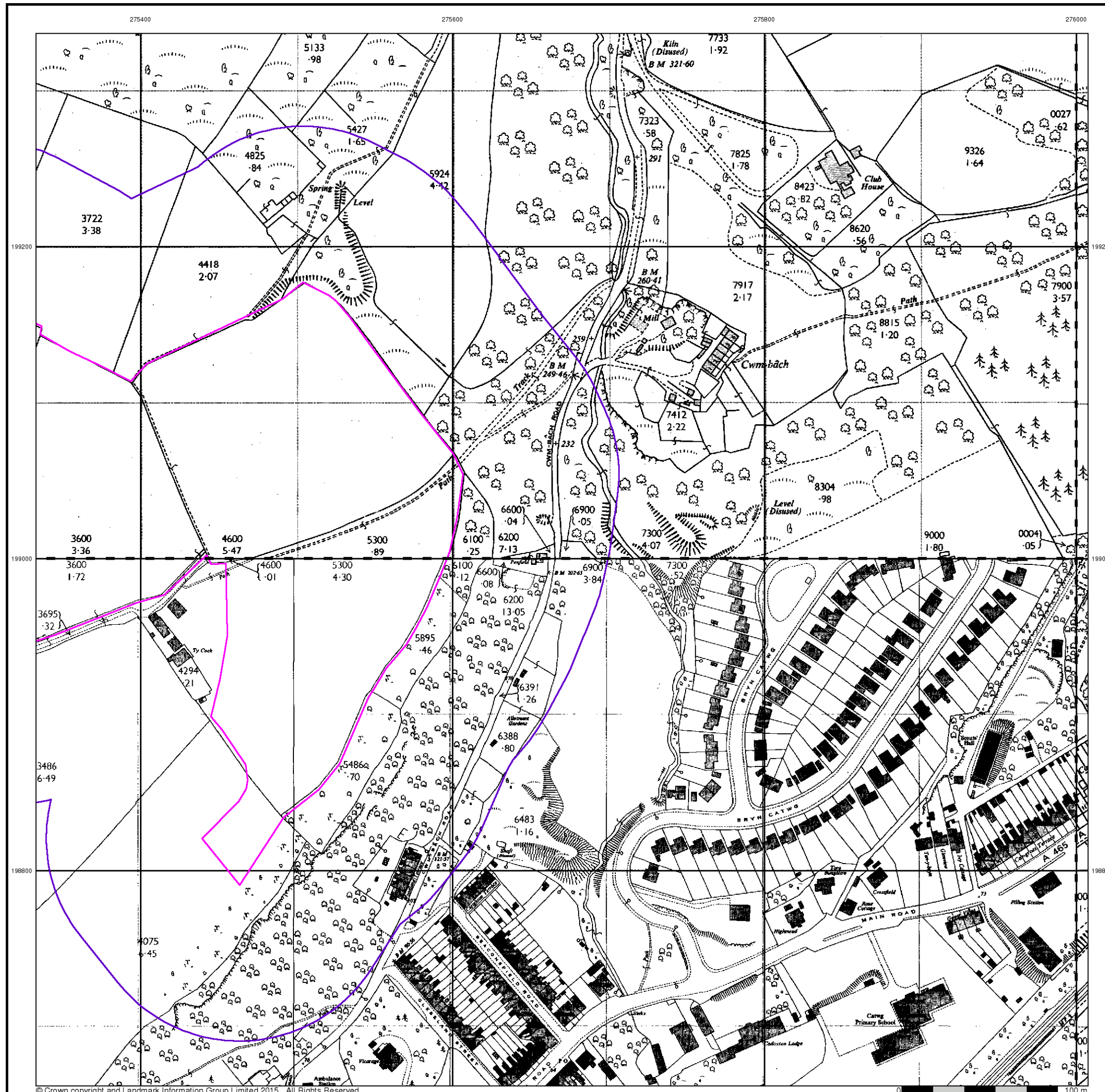
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

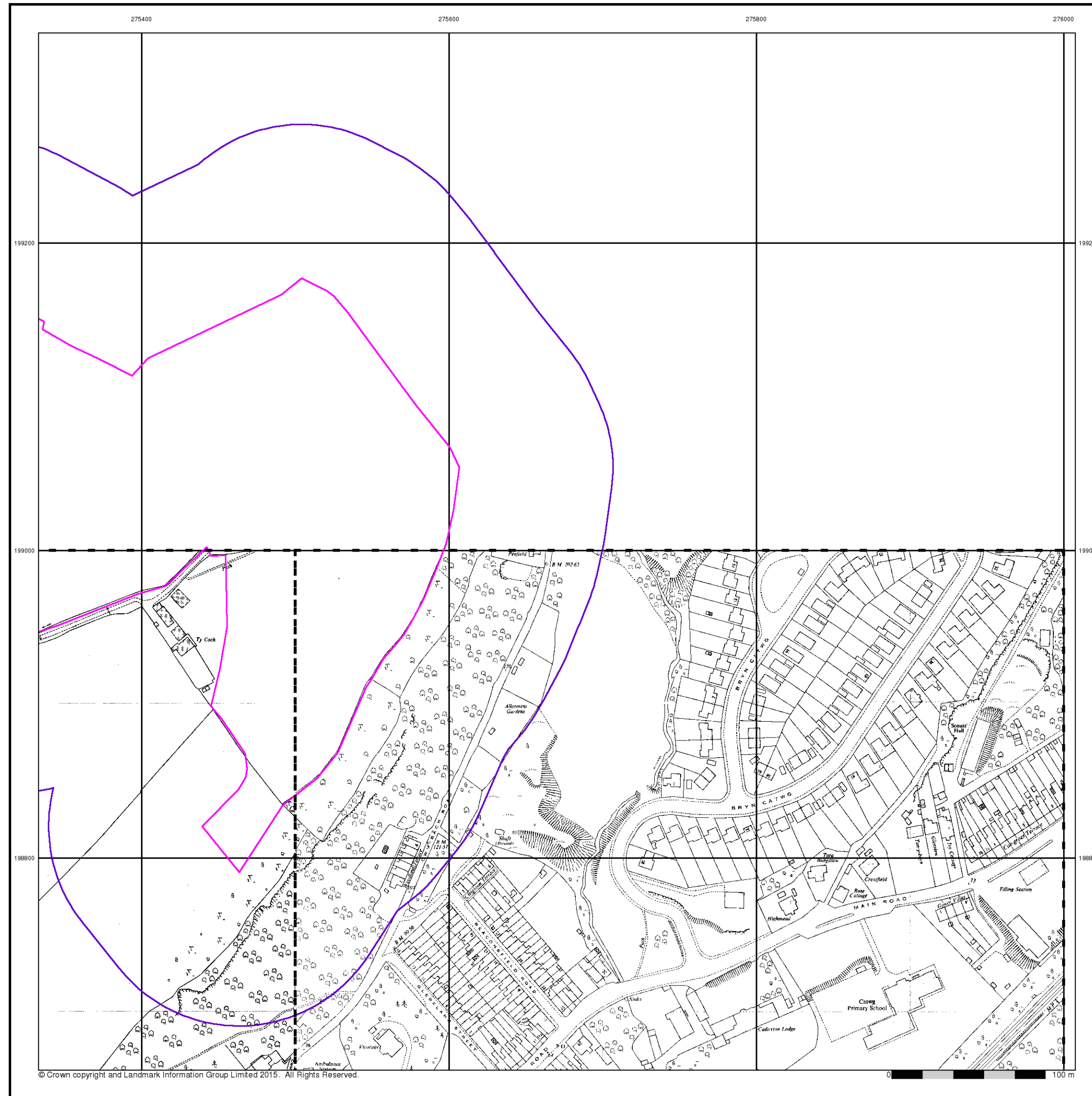
### Site Details

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**Landmark**  
INFORMATION GROUP

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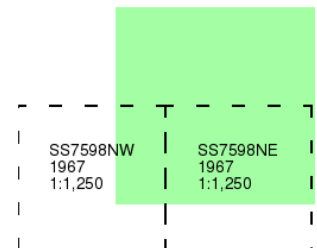




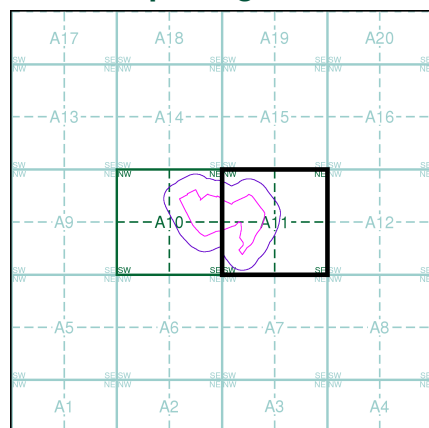
**Ordnance Survey Plan**  
**Published 1967**  
**Source map scale - 1:1,250**

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

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



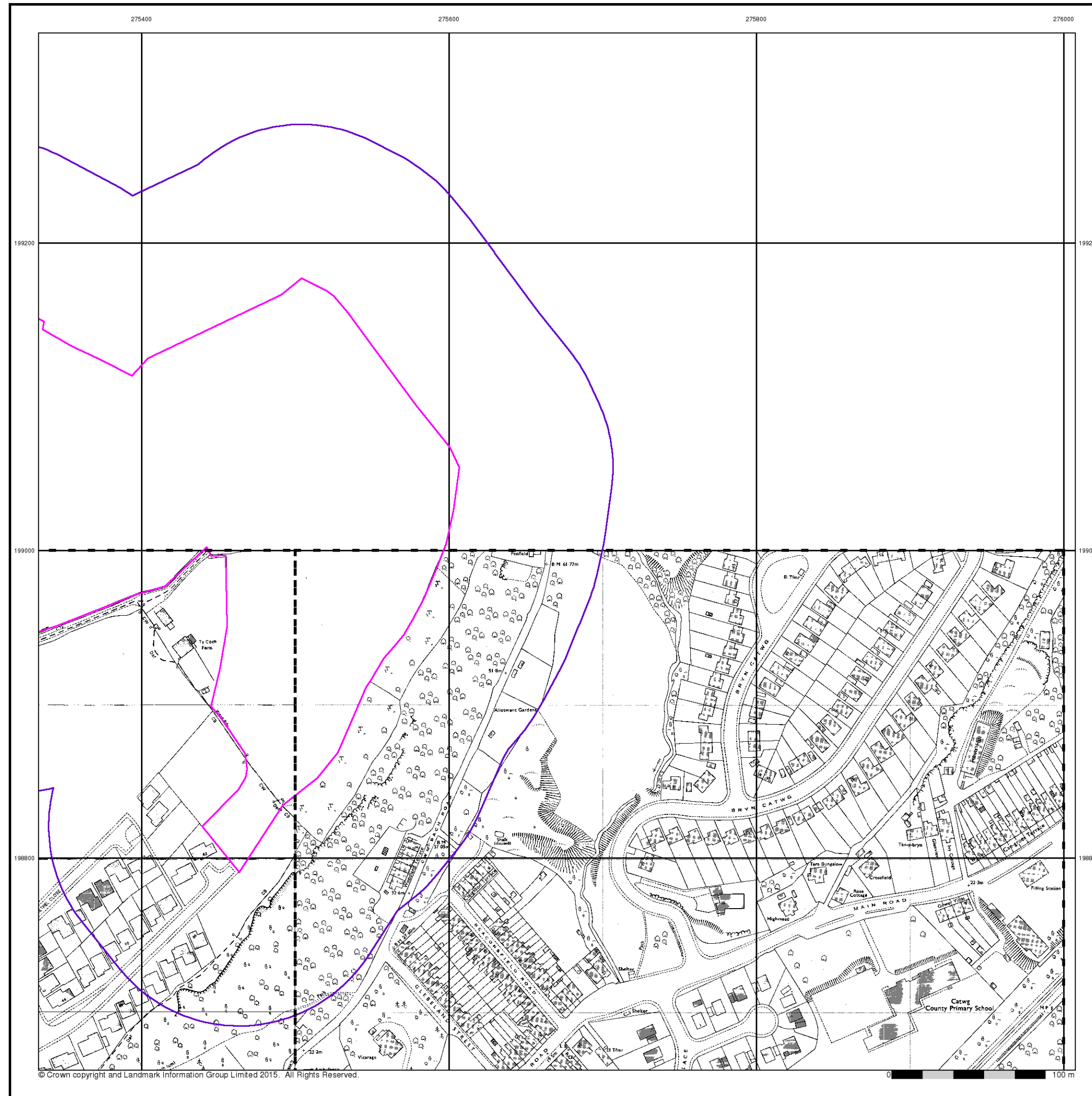
**Historical Map - Segment A11**



**Order Details**  
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

**Site Details**  
Leiros Park, Bryncoch, Neath, SA10 7EX

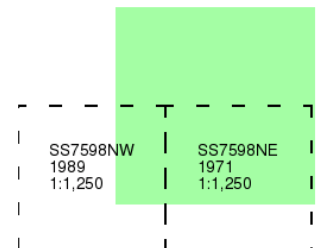




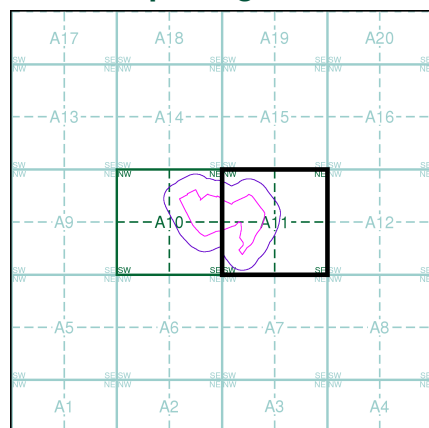
**Ordnance Survey Plan**  
**Published 1971 - 1989**  
**Source map scale - 1:1,250**

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

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

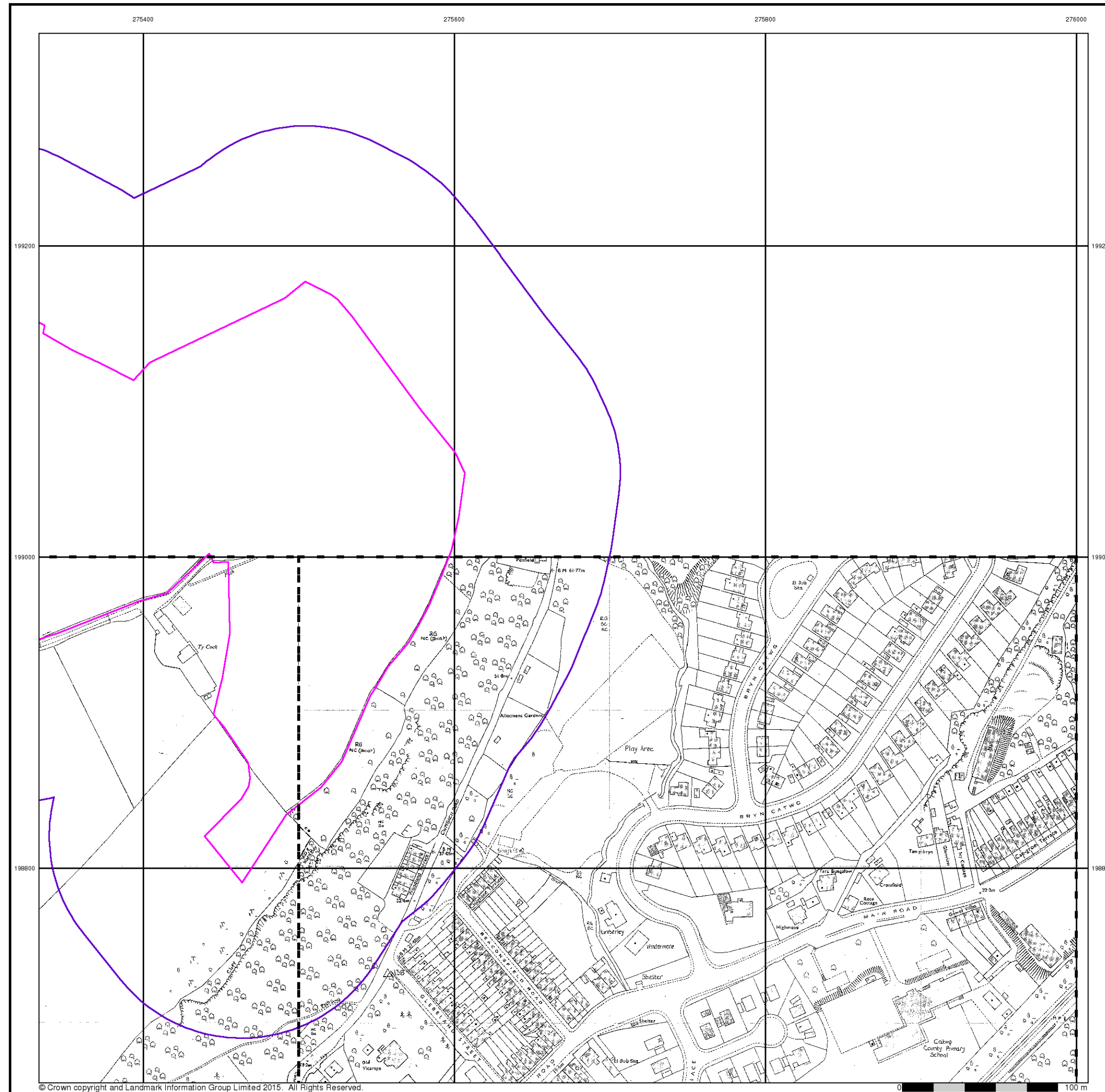


**Historical Map - Segment A11**



**Order Details**  
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

**Site Details**  
Leiros Park, Bryncoch, Neath, SA10 7EX



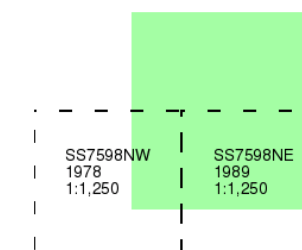
## Additional SIMs

Published 1978 - 1989

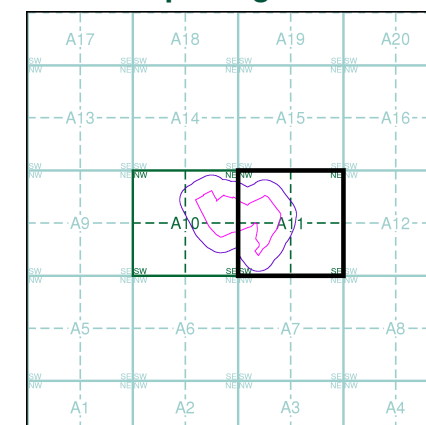
Source map scale - 1:1,250

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

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



## Historical Map - Segment A11



## Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

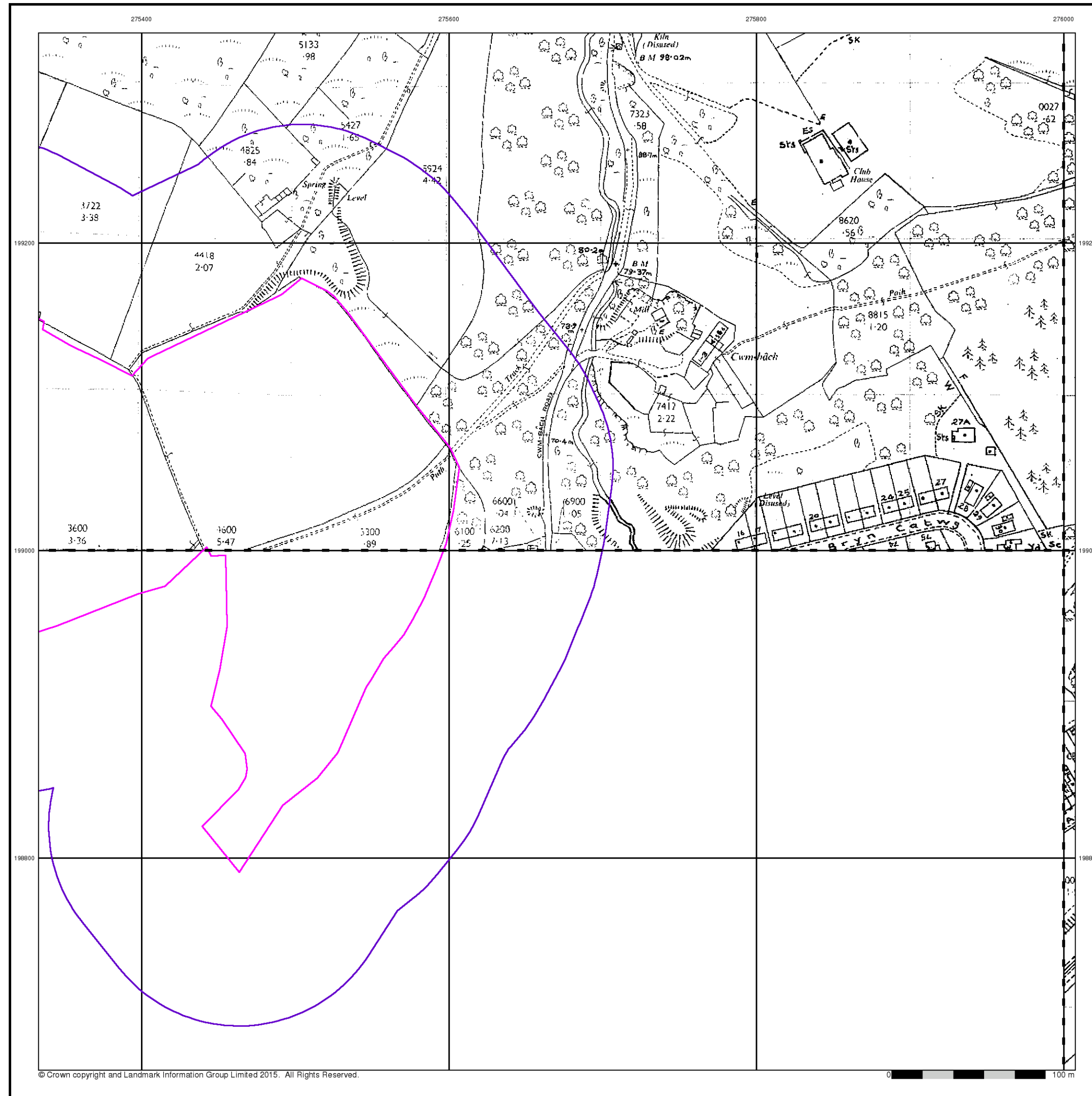
## Site Details

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Web: www.envirocheck.co.uk





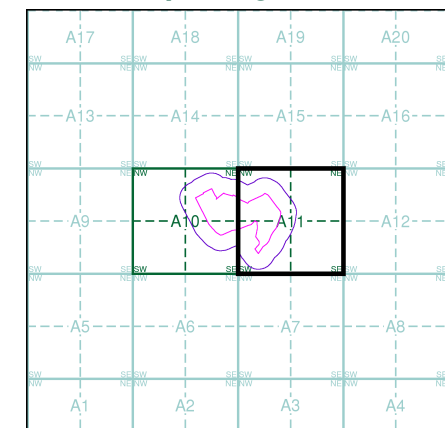
**Additional SIMs**  
**Published 1978 - 1979**  
**Source map scale - 1:2,500**

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)**

|                          |                          |
|--------------------------|--------------------------|
| SS7599<br>1979<br>12,500 | SS7699<br>1978<br>12,500 |
|                          |                          |
| SS7698<br>1978<br>12,500 |                          |

**Historical Map - Segment A11**



**Order Details**  
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

**Site Details**  
Leiros Park, Bryncoch, Neath, SA10 7EX



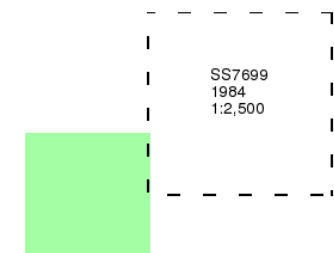
## Ordnance Survey Plan

Published 1984

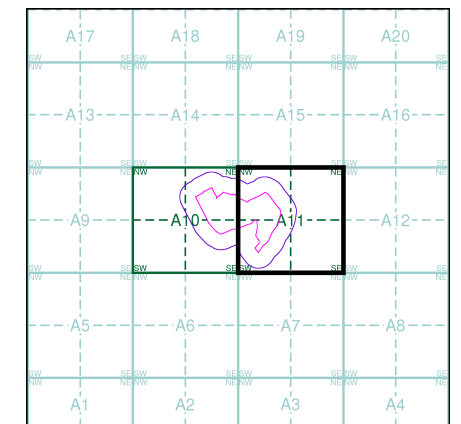
Source map scale - 1:2,500

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 A11



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

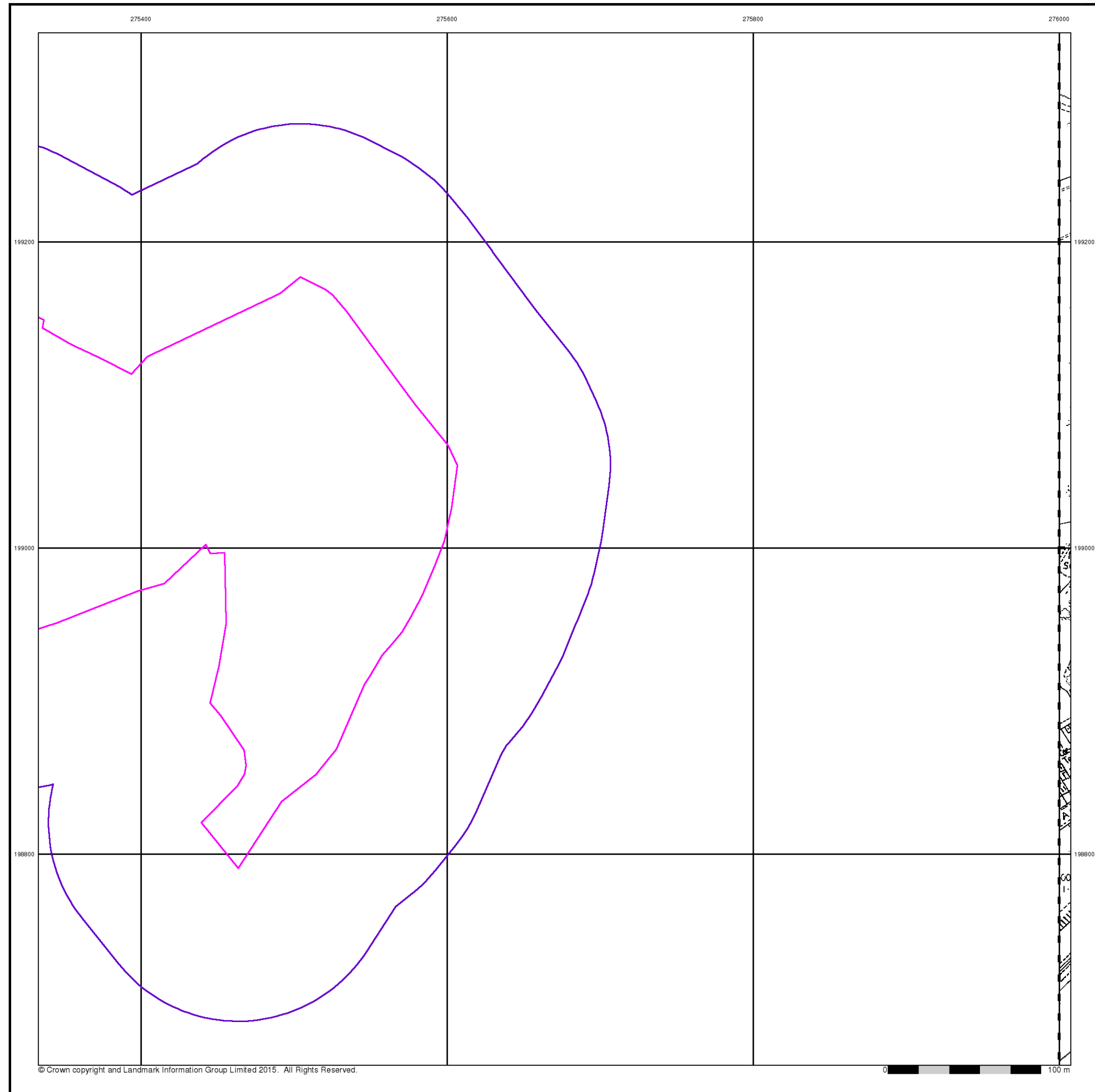
### Site Details

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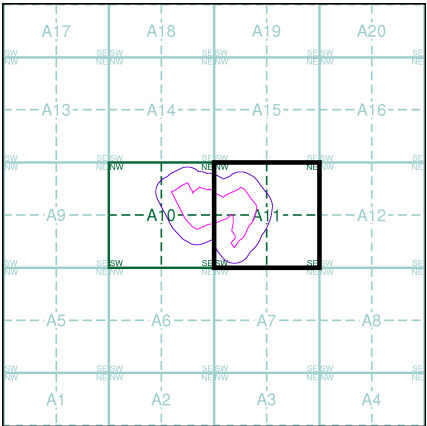
**Additional SIMs**  
**Published 1984 - 1987**  
**Source map scale - 1:2,500**

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)**

|  |                          |
|--|--------------------------|
|  | SS7699<br>1984<br>12,500 |
|  | SS7698<br>1987<br>12,500 |

**Historical Map - Segment A11**

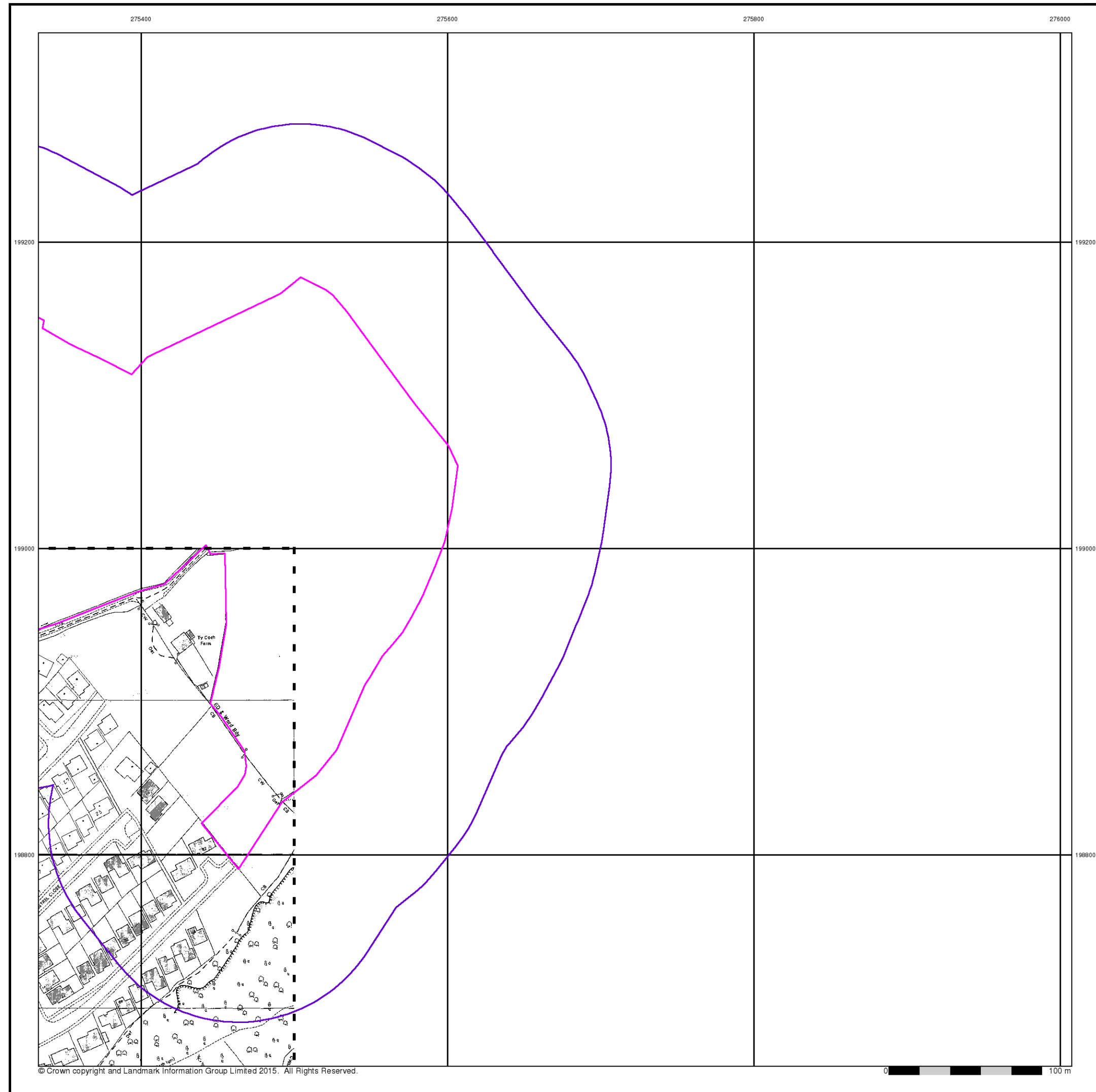


**Order Details**  
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

**Site Details**  
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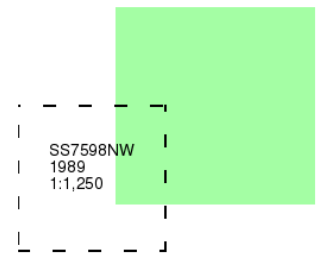
### Additional SIMs

**Published 1989**

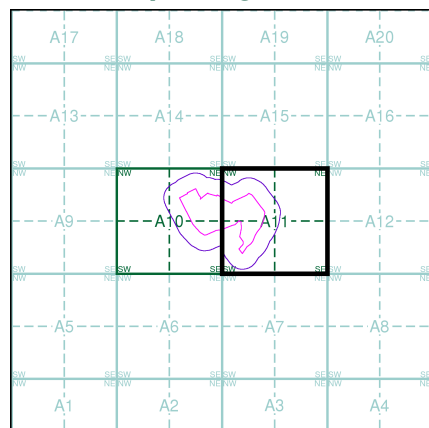
**Source map scale - 1:1,250**

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

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



### Historical Map - Segment A11



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

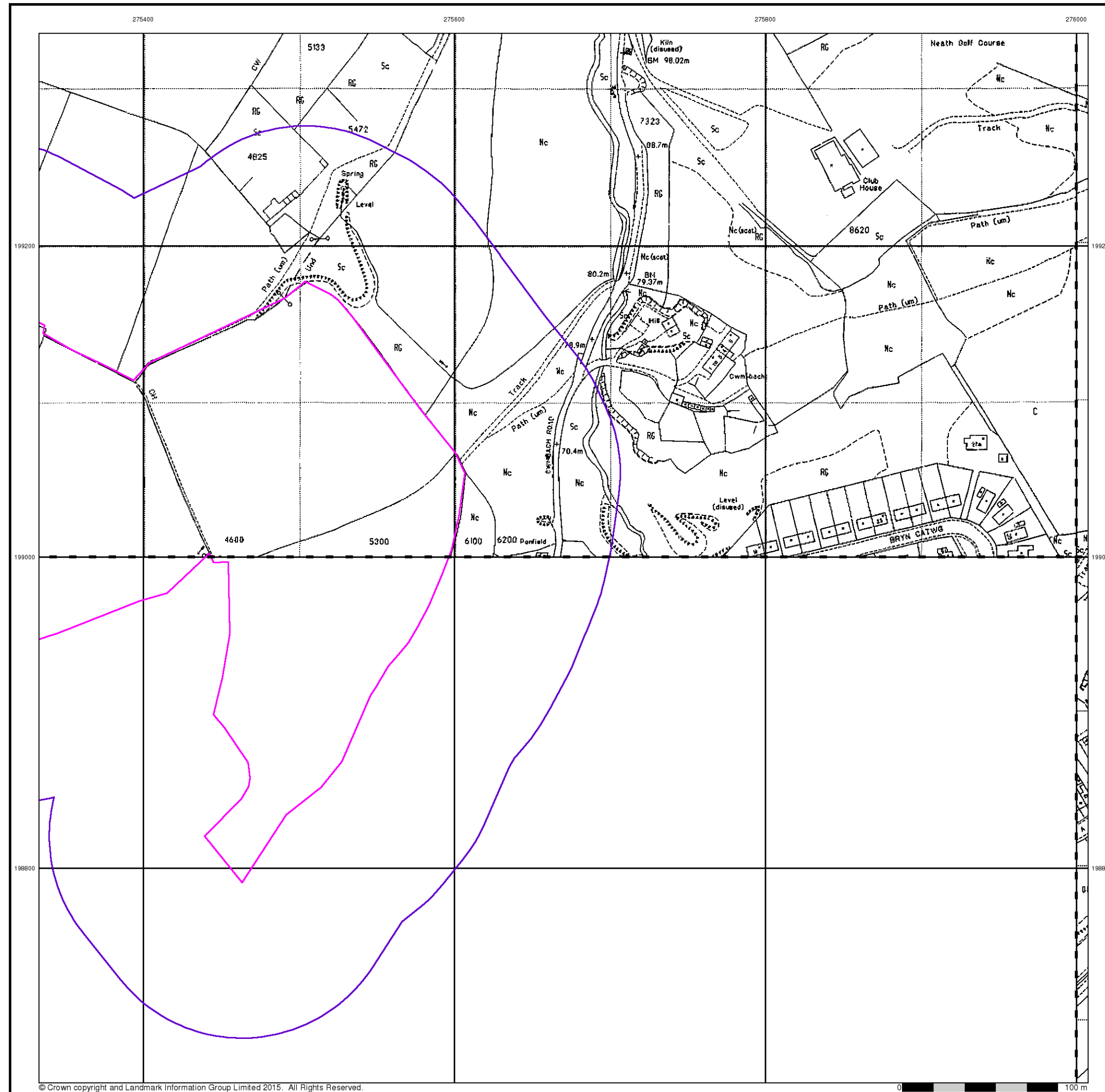
### Site Details

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## Large-Scale National Grid Data

Published 1993

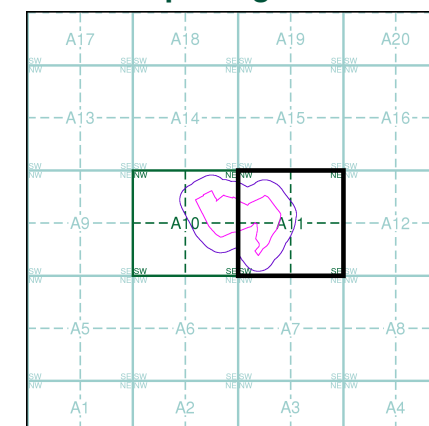
Source map scale - 1:2,500

'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)

|                          |                          |
|--------------------------|--------------------------|
| SS7599<br>1993<br>12,500 | SS7699<br>1993<br>12,500 |
|                          | SS7698<br>1993<br>12,500 |

### Historical Map - Segment A11



### Order Details

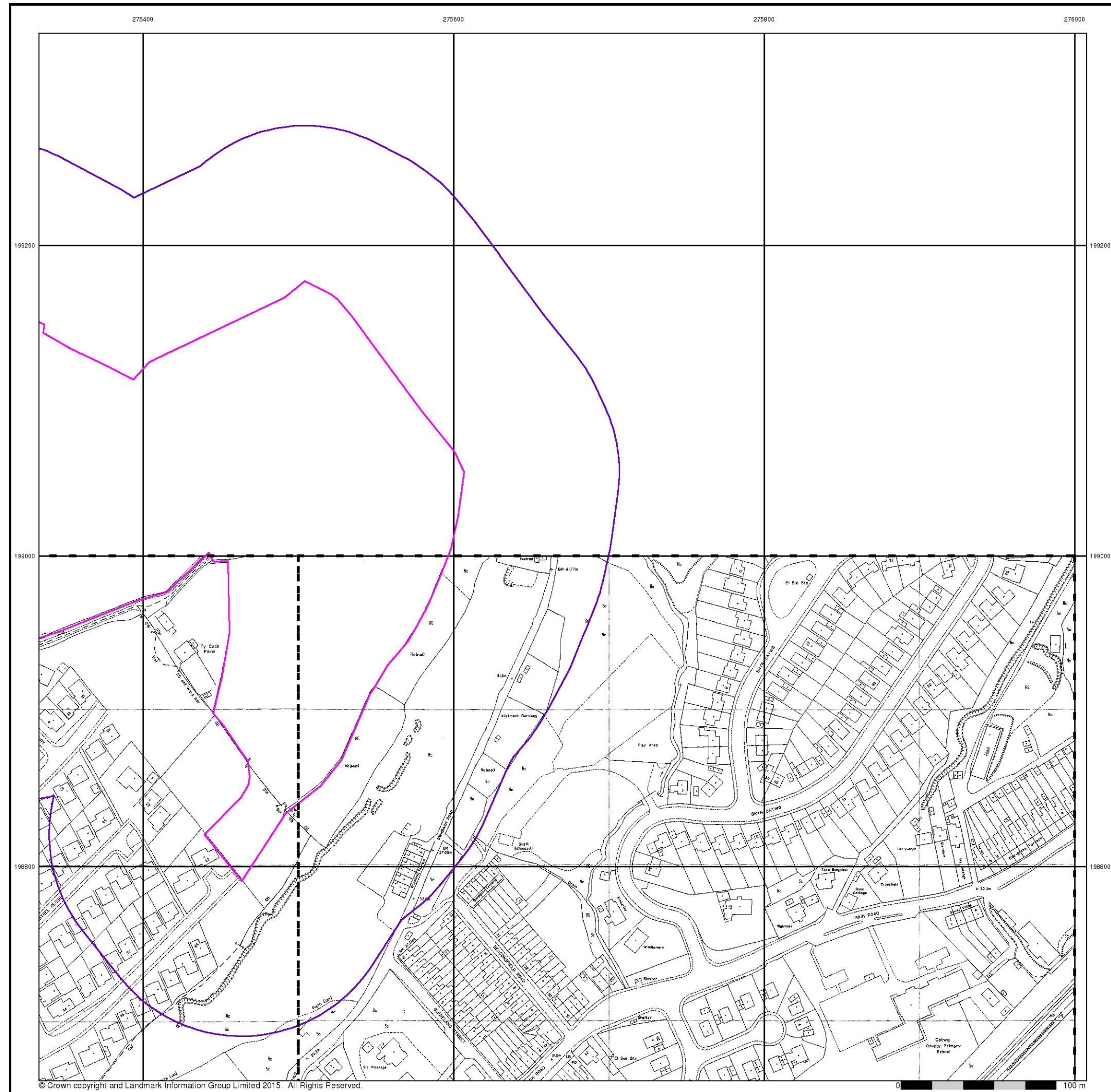
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

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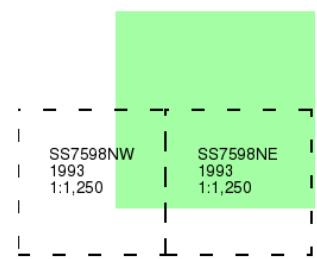
# Large-Scale National Grid Data

## Published 1993

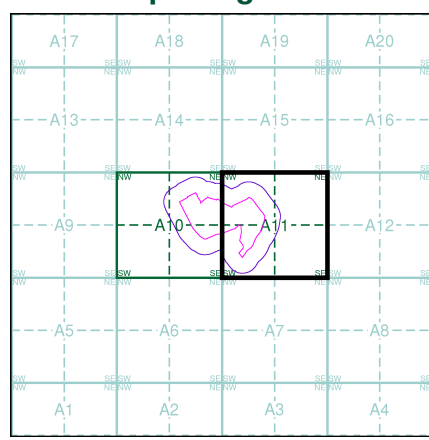
### Source map scale - 1:1,250

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

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



### Historical Map - Segment A11



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
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## Large-Scale National Grid Data

Published 1993

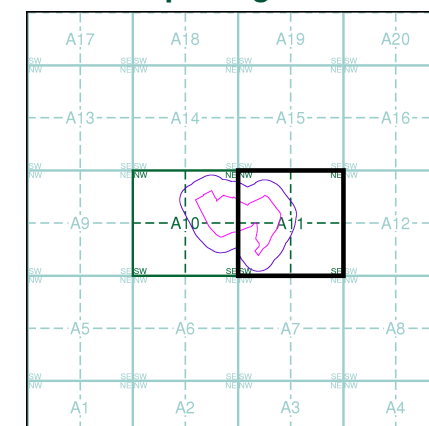
Source map scale - 1:2,500

'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)

|                          |                                                                                      |                          |
|--------------------------|--------------------------------------------------------------------------------------|--------------------------|
| SS7699<br>1993<br>12,500 |  | SS7698<br>1993<br>12,500 |
|                          |                                                                                      |                          |

### Historical Map - Segment A11



### Order Details

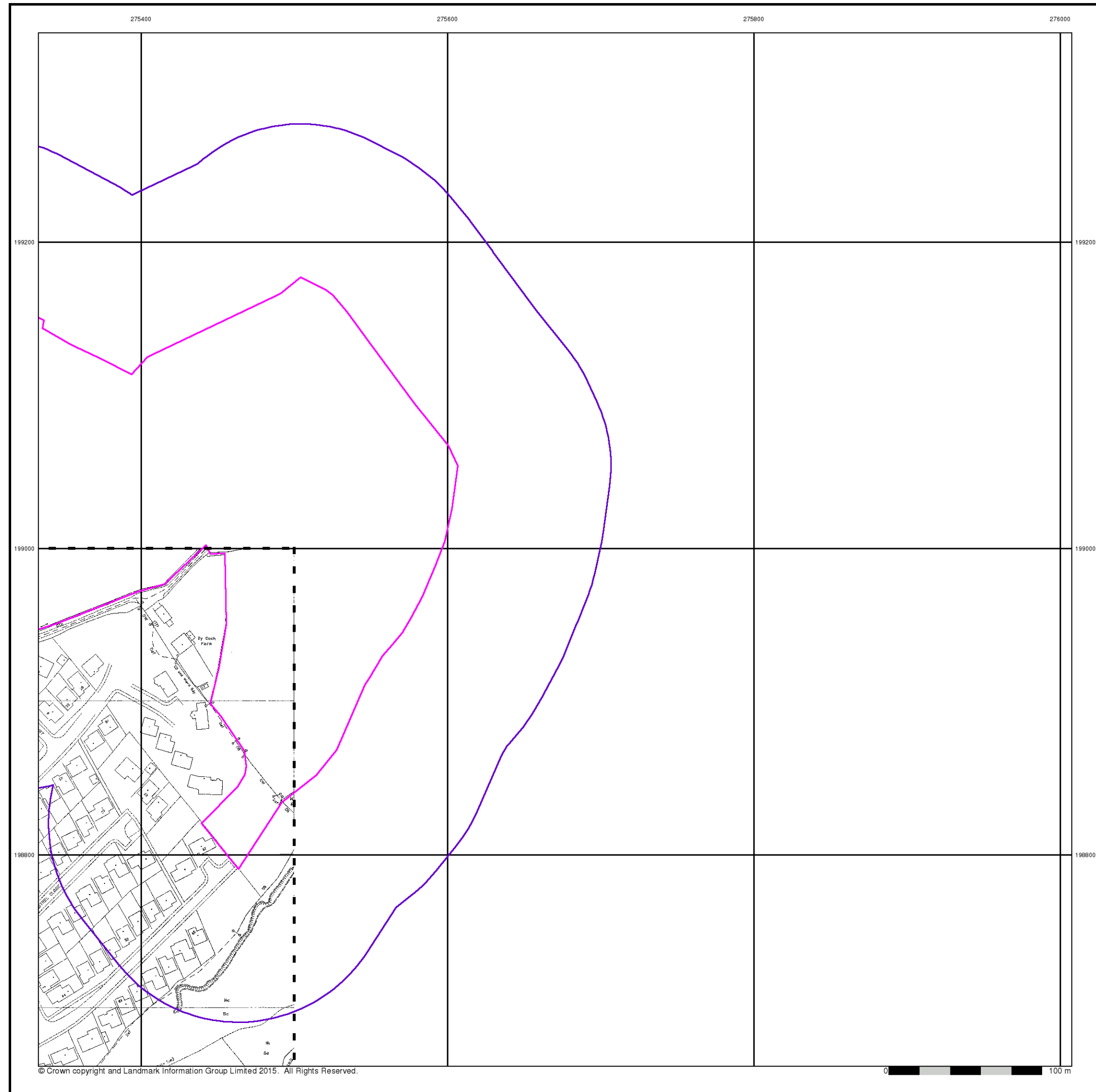
Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

**Landmark**  
INFORMATION GROUP

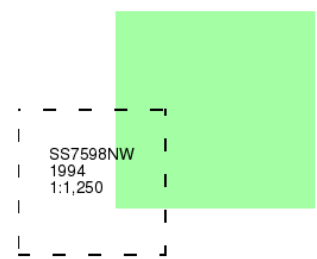
Tel: 0844 844 9952  
Fax: 0844 844 9951  
Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)



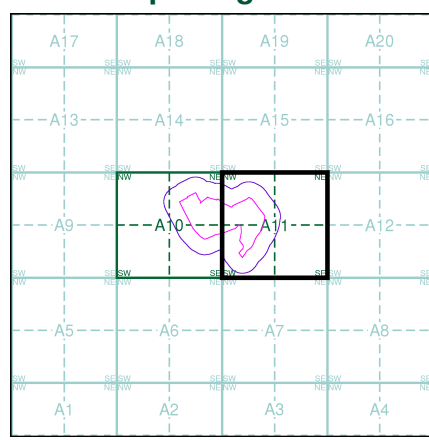
**Large-Scale National Grid Data**  
**Published 1994**  
**Source map scale - 1:1,250**

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

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



**Historical Map - Segment A11**



**Order Details**

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

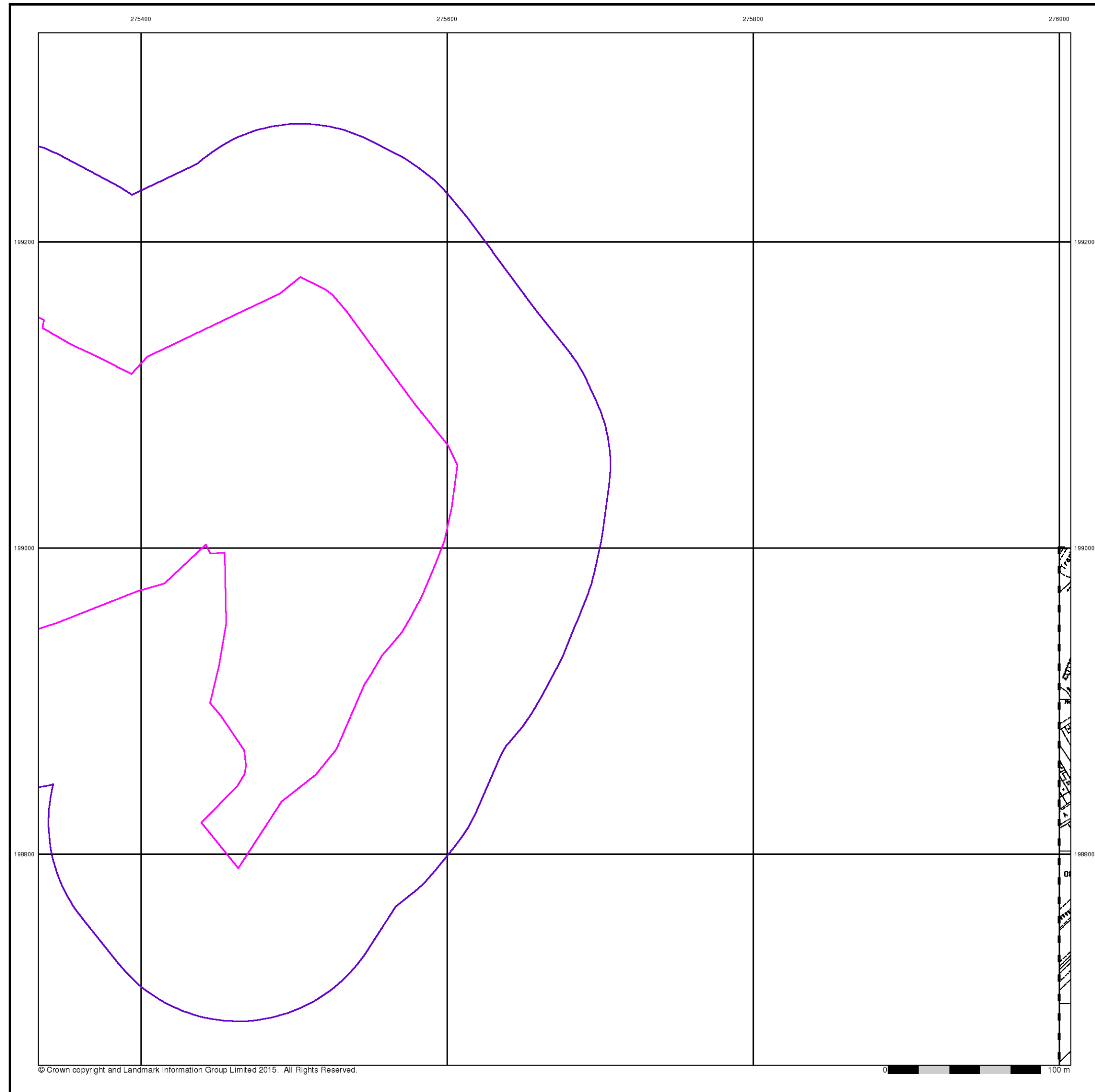
**Site Details**

Leiros Park, Bryncoch, Neath, SA10 7EX



Tel: 0844 844 9952  
Fax: 0844 844 9951  
Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)





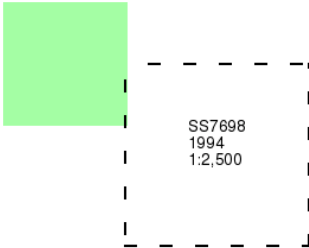
Large-Scale National Grid Data

Published 1994

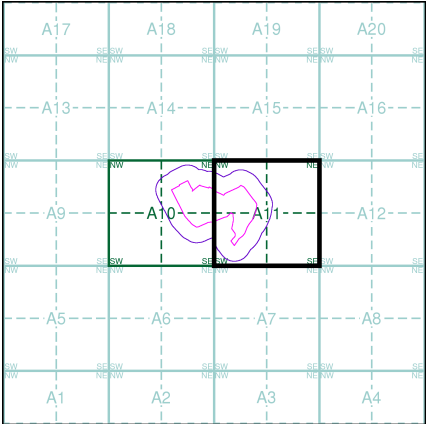
Source map scale - 1:2,500

'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 A11



Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

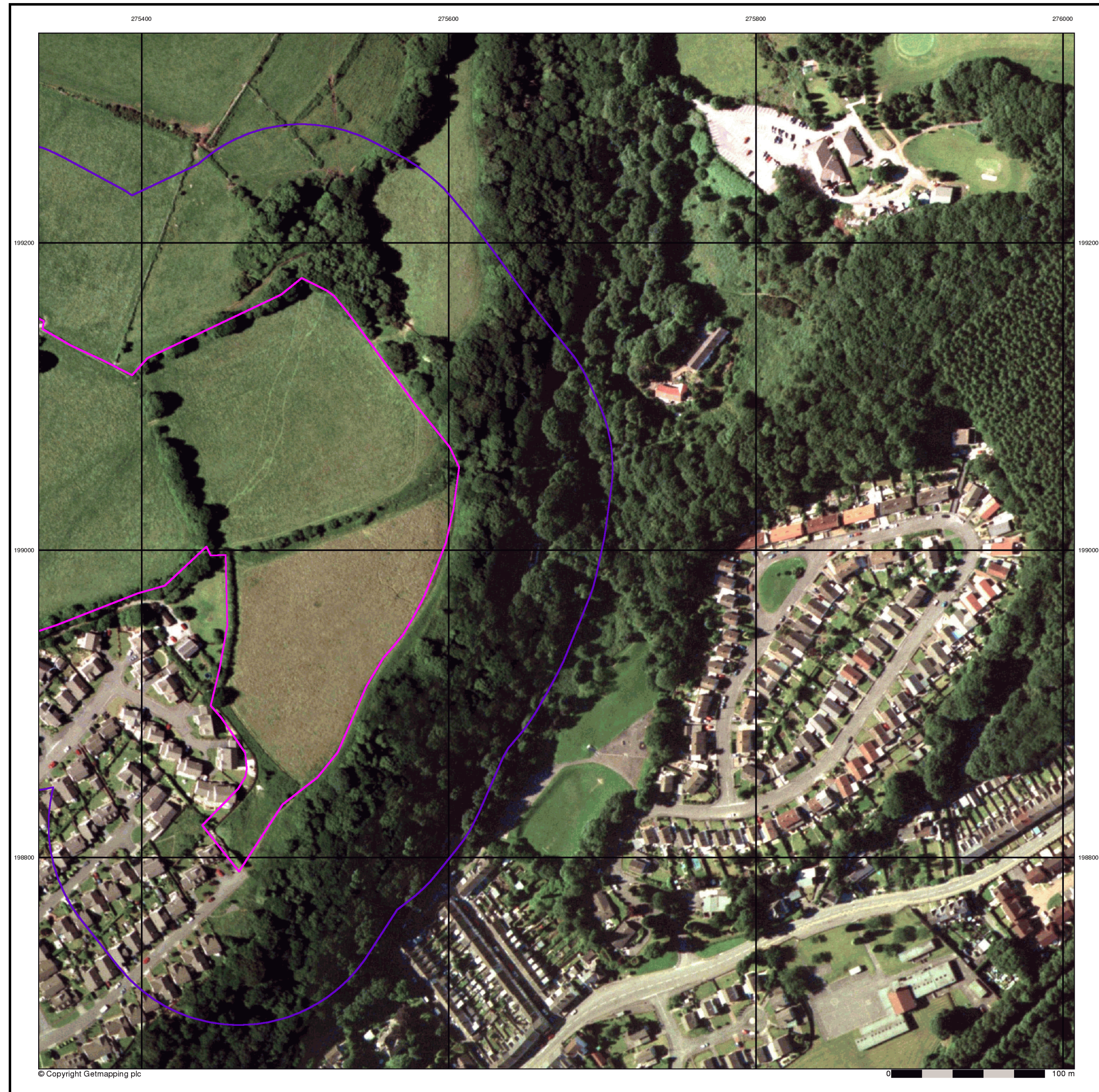
Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX



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





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0 100 m

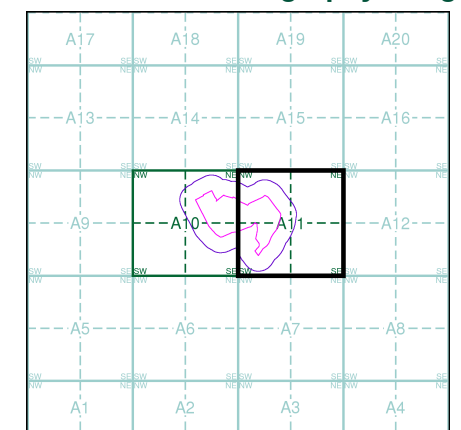


## Historical Aerial Photography

Published 2000

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

### Historical Aerial Photography - Segment A11



### Order Details

Order Number: 118892601\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search Buffer (m): 100

### Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

**Landmark**  
INFORMATION GROUP

Tel: 0844 844 9952  
Fax: 0844 844 9951  
Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)



**ANNEX B****Envirocheck Datasheet and Maps**

# Envirocheck<sup>®</sup> Report:

## Datasheet

### Order Details:

**Order Number:**

120078810\_1\_1

**Customer Reference:**

14156

**National Grid Reference:**

275340, 199030

**Slice:**

A

**Site Area (Ha):**

11.09

**Search Buffer (m):**

1000

### Site Details:

Leiros Park

Bryncoch

Neath

SA10 7EX

### Client Details:

Ms N Thomas

Terra Firma (Wales) Ltd

5 Deryn Court

Wharfdale Road

Pentwyn

Cardiff

CF23 7HB



| Report Section        | Page Number |
|-----------------------|-------------|
| Summary               | -           |
| Agency & Hydrological | 1           |
| Waste                 | 27          |
| Hazardous Substances  | -           |
| Geological            | 31          |
| Industrial Land Use   | 48          |
| Sensitive Land Use    | 53          |
| Data Currency         | 54          |
| Data Suppliers        | 60          |
| Useful Contacts       | 61          |

## Introduction

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

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

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## Radon Potential dataset Copyright Notice

Information supplied from a joint dataset compiled by The British Geological Survey and Public Health England.

## Report Version v50.0

| Data Type                                                     | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m<br>(*up to 2000m) |
|---------------------------------------------------------------|-------------|---------|-----------|-------------|--------------------------------|
| <b>Agency &amp; Hydrological</b>                              |             |         |           |             |                                |
| BGS Groundwater Flooding Susceptibility                       | pg 1        | Yes     | Yes       | Yes         | n/a                            |
| Contaminated Land Register Entries and Notices                |             |         |           |             |                                |
| Discharge Consents                                            | pg 5        |         | 1         | 10          | 21                             |
| Prosecutions Relating to Controlled Waters                    |             |         | n/a       | n/a         | n/a                            |
| Enforcement and Prohibition Notices                           |             |         |           |             |                                |
| Integrated Pollution Controls                                 |             |         |           |             |                                |
| Integrated Pollution Prevention And Control                   |             |         |           |             |                                |
| Local Authority Integrated Pollution Prevention And Control   |             |         |           |             |                                |
| Local Authority Pollution Prevention and Controls             | pg 13       |         |           |             | 2                              |
| Local Authority Pollution Prevention and Control Enforcements |             |         |           |             |                                |
| Nearest Surface Water Feature                                 | pg 13       | Yes     |           |             |                                |
| Pollution Incidents to Controlled Waters                      | pg 14       |         | 2         | 4           | 30                             |
| Prosecutions Relating to Authorised Processes                 |             |         |           |             |                                |
| Registered Radioactive Substances                             |             |         |           |             |                                |
| River Quality                                                 | pg 20       |         |           |             | 3                              |
| River Quality Biology Sampling Points                         |             |         |           |             |                                |
| River Quality Chemistry Sampling Points                       |             |         |           |             |                                |
| Substantiated Pollution Incident Register                     | pg 20       |         |           |             | 2                              |
| Water Abstractions                                            | pg 20       |         |           | 4           | 2 (*16)                        |
| Water Industry Act Referrals                                  |             |         |           |             |                                |
| Groundwater Vulnerability                                     | pg 26       | Yes     | n/a       | n/a         | n/a                            |
| Drift Deposits                                                |             |         | n/a       | n/a         | n/a                            |
| Bedrock Aquifer Designations                                  | pg 26       | Yes     | n/a       | n/a         | n/a                            |
| Superficial Aquifer Designations                              |             |         | n/a       | n/a         | n/a                            |
| Source Protection Zones                                       |             |         |           |             |                                |
| Extreme Flooding from Rivers or Sea without Defences          |             |         |           | n/a         | n/a                            |
| Flooding from Rivers or Sea without Defences                  |             |         |           | n/a         | n/a                            |
| Areas Benefiting from Flood Defences                          |             |         |           | n/a         | n/a                            |
| Flood Water Storage Areas                                     |             |         |           | n/a         | n/a                            |
| Flood Defences                                                |             |         |           | n/a         | n/a                            |



| Data Type                                                           | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|---------------------------------------------------------------------|-------------|---------|-----------|-------------|-----------------------------|
| <b>Waste</b>                                                        |             |         |           |             |                             |
| BGS Recorded Landfill Sites                                         |             |         |           |             |                             |
| Historical Landfill Sites                                           | pg 27       |         |           | 1           |                             |
| Integrated Pollution Control Registered Waste Sites                 |             |         |           |             |                             |
| Licensed Waste Management Facilities (Landfill Boundaries)          |             |         |           |             |                             |
| Licensed Waste Management Facilities (Locations)                    |             |         |           |             |                             |
| Local Authority Landfill Coverage                                   | pg 27       | 1       | n/a       | n/a         | n/a                         |
| Local Authority Recorded Landfill Sites                             | pg 27       |         |           |             | 1                           |
| Potentially Infilled Land (Non-Water)                               | pg 27       |         | 8         | 1           | 6                           |
| Potentially Infilled Land (Water)                                   | pg 28       | 1       | 2         | 11          | 14                          |
| Registered Landfill Sites                                           | pg 30       |         |           |             | 1                           |
| Registered Waste Transfer Sites                                     |             |         |           |             |                             |
| Registered Waste Treatment or Disposal Sites                        |             |         |           |             |                             |
| <b>Hazardous Substances</b>                                         |             |         |           |             |                             |
| Control of Major Accident Hazards Sites (COMAH)                     |             |         |           |             |                             |
| Explosive Sites                                                     |             |         |           |             |                             |
| Notification of Installations Handling Hazardous Substances (NIHHS) |             |         |           |             |                             |
| Planning Hazardous Substance Consents                               |             |         |           |             |                             |
| Planning Hazardous Substance Enforcements                           |             |         |           |             |                             |

| Data Type                                                         | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|-------------------------------------------------------------------|-------------|---------|-----------|-------------|-----------------------------|
| <b>Geological</b>                                                 |             |         |           |             |                             |
| BGS 1:625,000 Solid Geology                                       | pg 31       | Yes     | n/a       | n/a         | n/a                         |
| BGS Estimated Soil Chemistry                                      | pg 31       | Yes     | Yes       | Yes         | Yes                         |
| BGS Recorded Mineral Sites                                        | pg 39       | 1       | 8         | 4           | 17                          |
| BGS Urban Soil Chemistry                                          | pg 44       |         | Yes       | Yes         | Yes                         |
| BGS Urban Soil Chemistry Averages                                 | pg 46       | Yes     |           |             |                             |
| CBSCB Compensation District                                       |             |         | n/a       | n/a         | n/a                         |
| Coal Mining Affected Areas                                        | pg 46       | Yes     | n/a       | n/a         | n/a                         |
| Mining Instability                                                | pg 46       | Yes     | n/a       | n/a         | n/a                         |
| Man-Made Mining Cavities                                          |             |         |           |             |                             |
| Natural Cavities                                                  |             |         |           |             |                             |
| Non Coal Mining Areas of Great Britain                            |             |         |           | n/a         | n/a                         |
| Potential for Collapsible Ground Stability Hazards                | pg 46       | Yes     | Yes       | n/a         | n/a                         |
| Potential for Compressible Ground Stability Hazards               |             |         |           | n/a         | n/a                         |
| Potential for Ground Dissolution Stability Hazards                |             |         |           | n/a         | n/a                         |
| Potential for Landslide Ground Stability Hazards                  | pg 46       | Yes     | Yes       | n/a         | n/a                         |
| Potential for Running Sand Ground Stability Hazards               | pg 47       | Yes     | Yes       | n/a         | n/a                         |
| Potential for Shrinking or Swelling Clay Ground Stability Hazards | pg 47       | Yes     | Yes       | n/a         | n/a                         |
| Radon Potential - Radon Affected Areas                            | pg 47       | Yes     | n/a       | n/a         | n/a                         |
| Radon Potential - Radon Protection Measures                       | pg 47       | Yes     | n/a       | n/a         | n/a                         |
| <b>Industrial Land Use</b>                                        |             |         |           |             |                             |
| Contemporary Trade Directory Entries                              | pg 48       |         | 2         | 2           | 11                          |
| Fuel Station Entries                                              | pg 49       |         |           |             | 1                           |
| Points of Interest - Commercial Services                          | pg 49       |         |           |             | 4                           |
| Points of Interest - Education and Health                         |             |         |           |             |                             |
| Points of Interest - Manufacturing and Production                 | pg 49       |         | 2         | 3           | 11                          |
| Points of Interest - Public Infrastructure                        | pg 51       |         |           | 1           | 4                           |
| Points of Interest - Recreational and Environmental               | pg 51       |         | 4         | 2           | 4                           |
| Gas Pipelines                                                     |             |         |           |             |                             |
| Underground Electrical Cables                                     |             |         |           |             |                             |



| Data Type                            | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|--------------------------------------|-------------|---------|-----------|-------------|-----------------------------|
| <b>Sensitive Land Use</b>            |             |         |           |             |                             |
| Ancient Woodland                     | pg 53       | 1       | 2         |             | 3                           |
| Areas of Adopted Green Belt          |             |         |           |             |                             |
| Areas of Unadopted Green Belt        |             |         |           |             |                             |
| Areas of Outstanding Natural Beauty  |             |         |           |             |                             |
| Environmentally Sensitive Areas      |             |         |           |             |                             |
| Forest Parks                         |             |         |           |             |                             |
| Local Nature Reserves                |             |         |           |             |                             |
| Marine Nature Reserves               |             |         |           |             |                             |
| National Nature Reserves             |             |         |           |             |                             |
| National Parks                       |             |         |           |             |                             |
| Nitrate Sensitive Areas              |             |         |           |             |                             |
| Nitrate Vulnerable Zones             |             |         |           |             |                             |
| Ramsar Sites                         |             |         |           |             |                             |
| Sites of Special Scientific Interest |             |         |           |             |                             |
| Special Areas of Conservation        |             |         |           |             |                             |
| Special Protection Areas             |             |         |           |             |                             |
| World Heritage Sites                 |             |         |           |             |                             |

| Map ID | Details                                                                                                                                     | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------|---------|---------------|
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                     | A11NW (N)                              | 0                            | 2       | 275343 199050 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                     | A11SW (SE)                             | 0                            | 2       | 275400 198950 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11NW (N)                              | 0                            | 2       | 275343 199150 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10NE (W)                              | 0                            | 2       | 275150 199100 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NE (NW)                             | 0                            | 2       | 275250 199100 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NE (NW)                             | 0                            | 2       | 275250 199150 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NE (N)                              | 0                            | 2       | 275300 199150 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                     | A11NW (NE)                             | 3                            | 2       | 275400 199150 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NE (W)                              | 9                            | 2       | 275050 199100 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11NW (NE)                             | 10                           | 2       | 275550 199150 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11NW (N)                              | 13                           | 2       | 275350 199150 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NE (W)                              | 30                           | 2       | 275100 199000 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11NW (NE)                             | 51                           | 2       | 275600 199150 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NE (NW)                             | 51                           | 2       | 275050 199200 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NE (W)                              | 59                           | 2       | 275000 199050 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SE (SW)                             | 63                           | 2       | 275200 198850 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NE (NW)                             | 79                           | 2       | 275000 199200 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A11NW (NE)                             | 80                           | 2       | 275600 199200 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NE (NW)                             | 91                           | 2       | 275050 199250 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10NE (W)                              | 97                           | 2       | 275000 199032 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A11NW (NE)                             | 113                          | 2       | 275600 199250 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                     | A11SW (SE)                             | 115                          | 2       | 275650 198850 |



| Map ID | Details                                                                                                                                     | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------|---------|------------------|
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NW (W)                              | 142                          | 2       | 274950<br>199032 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11NW (NE)                             | 150                          | 2       | 275650<br>199250 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SE (S)                              | 160                          | 2       | 275250<br>198750 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SE (SW)                             | 175                          | 2       | 275150<br>198750 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A7NW (S)                               | 181                          | 2       | 275343<br>198650 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11NE (NE)                             | 190                          | 2       | 275700<br>199250 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SE (SW)                             | 191                          | 2       | 275050<br>198800 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11NE (E)                              | 200                          | 2       | 275750<br>199200 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10SE (S)                              | 210                          | 2       | 275250<br>198700 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SE (SW)                             | 211                          | 2       | 275200<br>198700 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A6NE (S)                               | 216                          | 2       | 275300<br>198650 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11NE (E)                              | 216                          | 2       | 275800<br>199150 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A11NE (NE)                             | 221                          | 2       | 275700<br>199300 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A14SE (NW)                             | 221                          | 2       | 275000<br>199400 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A14SE (NW)                             | 222                          | 2       | 275050<br>199400 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NW (S)                               | 223                          | 2       | 275343<br>198600 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10SE (SW)                             | 227                          | 2       | 275050<br>198750 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SE (SW)                             | 242                          | 2       | 275100<br>198700 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A11NE (E)                              | 262                          | 2       | 275850<br>199150 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SW (SW)                             | 265                          | 2       | 274950<br>198800 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A6NE (SW)                              | 269                          | 2       | 275150<br>198650 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A14SW (NW)                             | 291                          | 2       | 274850<br>199350 |

| Map ID | Details                                                                                                                                     | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A7NW (S)                               | 292                          | 2       | 275400<br>198500 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A7NW (S)                               | 294                          | 2       | 275500<br>198500 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                     | A7NW (S)                               | 298                          | 2       | 275350<br>198500 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10SE (SW)                             | 298                          | 2       | 275000<br>198700 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                     | A10SW (SW)                             | 299                          | 2       | 274950<br>198750 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NE (SE)                              | 304                          | 2       | 275700<br>198600 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NW (SE)                              | 305                          | 2       | 275650<br>198550 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A7NE (SE)                              | 311                          | 2       | 275750<br>198650 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A10NW (W)                              | 314                          | 2       | 274750<br>199200 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NW (SE)                              | 322                          | 2       | 275600<br>198500 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SW (SW)                             | 333                          | 2       | 274950<br>198700 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A15SE (NE)                             | 334                          | 2       | 275700<br>199450 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NE (SE)                              | 338                          | 2       | 275700<br>198550 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                     | A11SE (E)                              | 338                          | 2       | 275900<br>198850 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A7NW (S)                               | 341                          | 2       | 275450<br>198450 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                     | A11SE (SE)                             | 341                          | 2       | 275850<br>198750 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NW (S)                               | 342                          | 2       | 275343<br>198450 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NW (S)                               | 343                          | 2       | 275500<br>198450 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NW (S)                               | 347                          | 2       | 275350<br>198450 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NE (SE)                              | 350                          | 2       | 275800<br>198650 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A14SE (NW)                             | 360                          | 2       | 275050<br>199550 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A14SW (NW)                             | 362                          | 2       | 274800<br>199400 |



| Map ID | Details                                                                                                                                     | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11SE (E)                              | 368                          | 2       | 275950<br>198900 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11SE (SE)                             | 383                          | 2       | 275900<br>198750 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SW (SW)                             | 389                          | 2       | 274800<br>198800 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A7NE (SE)                              | 390                          | 2       | 275850<br>198650 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A11NE (E)                              | 394                          | 2       | 276000<br>199050 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11NE (E)                              | 394                          | 2       | 276000<br>199032 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11SE (E)                              | 404                          | 2       | 275950<br>198800 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A11SE (SE)                             | 409                          | 2       | 275900<br>198700 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                     | A7NE (SE)                              | 420                          | 2       | 275850<br>198600 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A11SE (SE)                             | 427                          | 2       | 275950<br>198750 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A6NE (SW)                              | 427                          | 2       | 275100<br>198500 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A11SE (E)                              | 431                          | 2       | 276000<br>198850 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NE (SE)                              | 432                          | 2       | 275900<br>198650 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A12NW (E)                              | 444                          | 2       | 276050<br>199032 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A12NW (E)                              | 444                          | 2       | 276050<br>199050 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A7NE (SE)                              | 445                          | 2       | 275800<br>198500 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A15SE (NE)                             | 445                          | 2       | 275750<br>199550 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A6NE (S)                               | 446                          | 2       | 275250<br>198400 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A11SE (E)                              | 450                          | 2       | 276000<br>198800 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                        | A11SE (SE)                             | 452                          | 2       | 275950<br>198700 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A12SW (E)                              | 454                          | 2       | 276050<br>198950 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A10SW (W)                              | 455                          | 2       | 274700<br>198850 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A7NW (S)                               | 462                          | 2       | 275600 198350 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A12SW (E)                              | 464                          | 2       | 276050 198900 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A15SE (NE)                             | 473                          | 2       | 275800 199550 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A6NE (SW)                              | 475                          | 2       | 275100 198450 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A7NE (SE)                              | 476                          | 2       | 275950 198650 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A9SE (W)                               | 477                          | 2       | 274650 198900 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A7NW (SE)                              | 479                          | 2       | 275650 198350 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A7NE (SE)                              | 480                          | 2       | 275800 198450 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A7NE (SE)                              | 490                          | 2       | 275900 198550 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A7SW (S)                               | 492                          | 2       | 275400 198300 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A11SE (SE)                             | 495                          | 2       | 276000 198700 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Limited Potential for Groundwater Flooding to Occur                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A7SW (S)                               | 495                          | 2       | 275343 198300 |
|        | <b>BGS Groundwater Flooding Susceptibility</b><br>Flooding Type: Potential for Groundwater Flooding to Occur at Surface                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | A12NW (E)                              | 497                          | 2       | 276100 199000 |
| 1      | <b>Discharge Consents</b><br>Operator: Davies L M<br>Property Type: Undefined Or Other<br>Location: Neath Tycoch Farmhouse The Rhydding, Tycoch Farmhouse The Rhyddings<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bp0020001<br>Permit Version: 1<br>Effective Date: 17th June 1986<br>Issued Date: 17th June 1986<br>Revocation Date: 1st August 1994<br>Discharge Type: Unspecified<br>Discharge Environment: Not Supplied<br>Receiving Water: To Land<br><b>Status: Consent expired</b><br>Positional Accuracy: Located by supplier to within 100m                                                          | A11SW (SE)                             | 45                           | 3       | 275400 198900 |
| 2      | <b>Discharge Consents</b><br>Operator: The Secretary<br>Property Type: Public Houses & Bars<br>Location: Neath Golf Club, Cadoxton, , Neath, Neath Port Talbot, Sa10 8ah<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bb4023301<br>Permit Version: 5<br>Effective Date: 26th November 2012<br>Issued Date: 26th November 2012<br>Revocation Date: Not Supplied<br>Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company<br>Discharge Environment: Onto Land<br>Receiving Water: Land<br><b>Status: Varied under EPR 2010</b><br>Positional Accuracy: Located by supplier to within 10m | A11NE (NE)                             | 273                          | 3       | 275814 199236 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 2      | <b>Discharge Consents</b><br>Operator: The Secretary<br>Property Type: Public Houses & Bars<br>Location: Neath Golf Club, Cadoxton, ., Neath, Neath Port Talbot, Sa10 8ah<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bb4023301<br>Permit Version: 4<br>Effective Date: 15th November 2011<br>Issued Date: 15th November 2011<br>Revocation Date: 25th November 2012<br>Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company<br>Discharge: Onto Land<br>Environment:<br>Receiving Water: Land<br><b>Status: Varied under EPR 2010</b><br>Positional Accuracy: Located by supplier to within 10m                                                                                                | A11NE (NE)                             | 273                          | 3       | 275814 199236 |
| 2      | <b>Discharge Consents</b><br>Operator: The Secretary<br>Property Type: Public Houses & Bars<br>Location: Neath Golf Club, Cadoxton, ., Neath, Neath Port Talbot, Sa10 8ah<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bb4023301<br>Permit Version: 3<br>Effective Date: 13th February 2002<br>Issued Date: 12th February 2002<br>Revocation Date: 14th November 2011<br>Discharge Type: Sewage And Trade Combined - Unspecified<br>Discharge: Onto Land<br>Environment:<br>Receiving Water: Land<br><b>Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m                                          | A11NE (NE)                             | 273                          | 3       | 275814 199236 |
| 3      | <b>Discharge Consents</b><br>Operator: Neath Golf Club<br>Property Type: Recreational & Cultural<br>Location: Club House Neath Golf Club Cadoxton, Neath Golf Club, Cadoxton Neath<br>Authority: Natural Resources Wales<br>Catchment Area: Not Given<br>Reference: BB4023301<br>Permit Version: 2<br>Effective Date: 9th August 1995<br>Issued Date: 8th August 1995<br>Revocation Date: 12th February 2002<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: Land<br><b>Status: New Consent, by Application (Water Resources Act 1991, Section 88)</b><br>Positional Accuracy: Located by supplier to within 100m                                                                                                  | A11NE (NE)                             | 301                          | 3       | 275800 199300 |
| 4      | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Church Road Cso Church Road Neath, Church Road, Cadoxton<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bp0353501<br>Permit Version: 1<br>Effective Date: 31st March 2006<br>Issued Date: 31st March 2006<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Trib Of Tennant Canal<br><b>Status: New Consent (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m | A7NE (SE)                              | 420                          | 3       | 275796 198535 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 5      | <b>Discharge Consents</b><br>Operator: Cemex Uk Materials Ltd<br>Property Type: Extraction Of Stone, Gravel Etc.<br>Location: Gilfach Quarry Gilfach Road Neath<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: BB4012201<br>Permit Version: 2<br>Effective Date: 8th March 1994<br>Issued Date: 8th March 1994<br>Revocation Date: Not Supplied<br>Discharge Type: Trade Effluent<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Unnamed Trib Of River Clydach<br><b>Status: New Consent, by Application (Water Resources Act 1991, Section 88)</b><br>Positional Accuracy: Located by supplier to within 100m                                                                                         | A14SW (NW)                             | 438                          | 3       | 274800 199500 |
| 5      | <b>Discharge Consents</b><br>Operator: Rmc Roadstone Ltd (South Wales)<br>Property Type: Extraction Of Stone, Gravel Etc.<br>Location: Gilfach Quarry Gilfach Road Neath<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bb4012201<br>Permit Version: 1<br>Effective Date: 27th November 1974<br>Issued Date: 27th November 1974<br>Revocation Date: 7th March 1994<br>Discharge Type: Trade Effluent<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: Unnamed Trib Of River Clydach<br><b>Status: Authorisation revokedRevoked</b><br>Positional Accuracy: Located by supplier to within 100m                                                                                                                       | A14SW (NW)                             | 438                          | 3       | 274800 199500 |
| 6      | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: 25 Gelli Dawel Bryn Coch Neath P T, Bryncoch, Neath, Neath Port Talbot<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bw2901301<br>Permit Version: 2<br>Effective Date: 31st March 2007<br>Issued Date: 7th March 2005<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Surface Drain<br><b>Status: New Consent (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 100m | A10SW (SW)                             | 444                          | 3       | 274800 198700 |
| 6      | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: 25 Gelli Dawel Bryn Coch Neath P T, Bryncoch, Neath, Neath Port Talbot<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bw2901301<br>Permit Version: 1<br>Effective Date: 20th October 1989<br>Issued Date: 20th October 1989<br>Revocation Date: 30th March 2007<br>Discharge Type: Unspecified<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Surface Drain<br><b>Status: Consent expired</b><br>Positional Accuracy: Located by supplier to within 100m                                                                                                          | A10SW (SW)                             | 444                          | 3       | 274800 198700 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 7      | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewage Disposal Works - Water Company<br>Location: Heol Illtyd Cso Bryncoch Npt, Bryncoch, Neath, Neath Port Talbot, Sa10 7sg<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bp0362001<br>Permit Version: 1<br>Effective Date: 31st March 2007<br>Issued Date: 21st March 2007<br>Revocation Date: Not Supplied<br>Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Trib River Neath<br><b>Status:</b> <b>New Consent (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m | A6NW (SW)                              | 489                          | 3       | 274875 198555 |
| 8      | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Cso 8 Bryncoch Swo 7b Bryncoch, Adjacent 46 Main Road, Neath Port Talbot Cbc<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bw2901501<br>Permit Version: 2<br>Effective Date: 1st April 2004<br>Issued Date: 31st March 2004<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Tributary Of The River Clydach<br><b>Status:</b> <b>Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m                 | A9NE (W)                               | 637                          | 3       | 274441 199300 |
| 9      | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Cadoxton Road Cso Cadoxton Road, Neath, Neath Port Talbot<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bp0353601<br>Permit Version: 1<br>Effective Date: 31st March 2006<br>Issued Date: 31st March 2006<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: River Neath<br><b>Status:</b> <b>New Consent (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m                                                | A2NE (S)                               | 855                          | 3       | 275189 197982 |
| 9      | <b>Discharge Consents</b><br>Operator: Lidl Uk Gmbh<br>Property Type: Sewerage Network - Pumping Station - Water Company<br>Location: Vale Of Neath Retail Park Ps, Cadoxton Road, Neath, Sa10 7ay<br>Authority: Natural Resources Wales<br>Catchment Area: Not Given<br>Reference: BP027170101<br>Permit Version: 1<br>Effective Date: 21st August 1998<br>Issued Date: 21st August 1998<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Neath Estuary Via Culvert<br><b>Status:</b> <b>New Consent (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m                             | A6SE (S)                               | 858                          | 3       | 275157 197990 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 10     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Pumping Station - Water Company<br>Location: Farfield Ps Prince Of Wales Drive, Prince Of Wales Drive Neath<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: BP0255701<br>Permit Version: 1<br>Effective Date: 31st December 1997<br>Issued Date: 19th September 1996<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Saline Estuary<br>Environment:<br>Receiving Water: River Neath Estuarial Waters<br><b>Status: New Consent, by Application (Water Resources Act 1991, Section 88)</b><br>Positional Accuracy: Located by supplier to within 100m | A3NW (S)                               | 882                          | 3       | 275440 197910 |
| 10     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Fairfield Outfall Ty'N-Y-Caeau Neat, Ty'N-Y-Caeau Neath<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bp0064307<br>Permit Version: 3<br>Effective Date: 29th March 1996<br>Issued Date: 28th March 1996<br>Revocation Date: 31st December 1997<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: Estuarial Waters Of River Neat<br><b>Status: Consent expired</b><br>Positional Accuracy: Located by supplier to within 10m                                                                                               | A3NW (S)                               | 891                          | 3       | 275470 197900 |
| 10     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Fairfield Outfall Ty'N-Y-Caeau Neat, Ty'N-Y-Caeau Neath<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bp0064307<br>Permit Version: 2<br>Effective Date: 28th November 1992<br>Issued Date: 28th August 1992<br>Revocation Date: 28th March 1996<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: Estuarial Waters Of River Neat<br><b>Status: Authorisation revokedRevoked</b><br>Positional Accuracy: Located by supplier to within 100m                                                                                | A3NW (S)                               | 891                          | 3       | 275470 197900 |
| 10     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Fairfield Outfall Ty'N-Y-Caeau Neat, Ty'N-Y-Caeau Neath<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bp0064307<br>Permit Version: 1<br>Effective Date: 24th November 1987<br>Issued Date: 24th November 1987<br>Revocation Date: 27th November 1992<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: Estuarial Waters Of River Neat<br><b>Status: Authorisation revokedRevoked</b><br>Positional Accuracy: Located by supplier to within 10m                                                                            | A3NW (S)                               | 891                          | 3       | 275470 197900 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 10     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Gnoll Park Road Cso Gnoll Park Rd, Gnoll Park Road, Neath, Neath Port Talbot<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bp0353801<br>Permit Version: 1<br>Effective Date: 31st March 2006<br>Issued Date: 31st March 2006<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: River Neath<br><b>Status:</b> <b>New Consent (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m | A3NW (S)                               | 895                          | 3       | 275516 197898 |
| 10     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Pumping Station - Water Company<br>Location: Cso No 38 O/S Public Health Office, Dyfed Road, Neath<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bp0303901<br>Permit Version: 1<br>Effective Date: 5th March 2003<br>Issued Date: 5th March 2003<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: The Afon Nedd<br><b>Status:</b> <b>New Consent (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m               | A3NW (S)                               | 896                          | 3       | 275516 197897 |
| 11     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Boundary Sewer Overflow Swo 6c<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bw2901701<br>Permit Version: 1<br>Effective Date: 8th November 1972<br>Issued Date: 8th November 1972<br>Revocation Date: 21st December 1992<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: River Neath<br><b>Status:</b> <b>Consent expired</b><br>Positional Accuracy: Located by supplier to within 100m                                                                                                                                                                 | A8NE (E)                               | 896                          | 3       | 276400 198600 |
| 12     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Bryncoch Swo 7b Main Rd Adj.4<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: BW2901501<br>Permit Version: 1<br>Effective Date: 17th June 1973<br>Issued Date: 17th June 1973<br>Revocation Date: 31st March 2004<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: Tributary Of The River Clydach<br><b>Status:</b> <b>New Consent, by Application (Water Resources Act 1991, Section 88)</b><br>Positional Accuracy: Located by supplier to within 100m                                                                                                     | A13NE (NW)                             | 928                          | 3       | 274430 199830 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 13     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Undefined Or Other<br>Location: Llangatwg School (Storm) Cadoxton, Neath<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bm0010801<br>Permit Version: 2<br>Effective Date: 11th November 1986<br>Issued Date: 11th November 1986<br>Revocation Date: 14th March 1994<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: Unnamed Trib. Neath<br><b>Status:</b> <b>Consent expired</b><br>Positional Accuracy: Located by supplier to within 10m                                                                                                                                                               | A12NE (E)                              | 945                          | 3       | 276550 199110 |
| 13     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Cso 49 Llangatwg School Aberdulias, Neath, Neath Port Talbot Cbc<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bw2902801<br>Permit Version: 4<br>Effective Date: 27th November 2008<br>Issued Date: 27th November 2008<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: River Dulais<br><b>Status:</b> <b>Modified (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m                   | A12NE (E)                              | 948                          | 3       | 276552 199114 |
| 13     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Cso 49 Llangatwg School Aberdulias, Neath, Neath Port Talbot Cbc<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bw2902801<br>Permit Version: 2<br>Effective Date: 31st March 2004<br>Issued Date: 31st March 2004<br>Revocation Date: 30th March 2005<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: River Dulais<br><b>Status:</b> <b>Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m       | A12NE (E)                              | 948                          | 3       | 276552 199114 |
| 13     | <b>Discharge Consents</b><br>Operator: Mr S R Jones<br>Property Type: Domestic Property (Single)<br>Location: 1 Ynysllynlladd Cottages Cadoxton, Neath, Wales, Sa10 8da<br>Authority: Natural Resources Wales<br>Catchment Area: Not Supplied<br>Reference: Bp0325801<br>Permit Version: 1<br>Effective Date: 6th August 2004<br>Issued Date: 6th August 2004<br>Revocation Date: Not Supplied<br>Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Trib Of River Neath<br><b>Status:</b> <b>New Consent (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m | A12NE (E)                              | 972                          | 3       | 276576 199121 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 14     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Bryncoch Swo 7c J'Tion<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: BW2901401<br>Permit Version: 1<br>Effective Date: 7th January 1957<br>Issued Date: 7th January 1957<br>Revocation Date: 5th March 2003<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: Tributary Of River Clydach<br><b>Status: New Consent, by Application (Water Resources Act 1991, Section 88)</b><br>Positional Accuracy: Located by supplier to within 100m                                                                                                           | A13NE (NW)                             | 956                          | 3       | 274360 199800 |
| 14     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Cso No 10 30m U/S Roadbridge, Lamb & Flag Public House, Bryncoch<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bw2901401<br>Permit Version: 2<br>Effective Date: 6th March 2003<br>Issued Date: 5th March 2003<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Tributary Of The Afon Clydach<br><b>Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m | A13NE (NW)                             | 970                          | 3       | 274360 199820 |
| 14     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Cso No 10 30m U/S Roadbridge, Lamb & Flag Public House, Bryncoch<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bw2901401<br>Permit Version: 2<br>Effective Date: 6th March 2003<br>Issued Date: 5th March 2003<br>Revocation Date: Not Supplied<br>Discharge Type: Public Sewage: Storm Sewage Overflow<br>Discharge: Freshwater Stream/River<br>Environment:<br>Receiving Water: Tributary Of The Afon Clydach<br><b>Status: Varied by Application - (Water Resources Act 1991, Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 10m | A13NE (NW)                             | 970                          | 3       | 274360 199820 |
| 15     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Swo.Point V. U/S Cemet. Lla<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: BB4000510<br>Permit Version: 1<br>Effective Date: 8th November 1972<br>Issued Date: 8th November 1972<br>Revocation Date: 31st March 2003<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: River Neath<br><b>Status: Revoked (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 100m                                                                                 | A8NE (SE)                              | 972                          | 3       | 276450 198530 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 16     | <b>Discharge Consents</b><br>Operator: Evans G<br>Property Type: Domestic Property (Single)<br>Location: Neath 4 Cwm Clydach Cottages Dyffry, 4 Cwm Clydach Cottages Dyffryn R, Dyffryn Rd Bryncoch<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: Bp0021901<br>Permit Version: 1<br>Effective Date: 21st July 1986<br>Issued Date: 21st July 1986<br>Revocation Date: 10th October 1994<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: To Land<br><b>Status: Consent expired</b><br>Positional Accuracy: Located by supplier to within 10m                                                  | A9NW (W)                               | 988                          | 3       | 274080 199280 |
| 17     | <b>Discharge Consents</b><br>Operator: Dwr Cymru Cyfyngedig<br>Property Type: Sewerage Network - Sewers - Water Company<br>Location: Swo Point A N.West<br>Authority: Natural Resources Wales<br>Catchment Area: River Neath<br>Reference: BB4000503<br>Permit Version: 1<br>Effective Date: 8th November 1972<br>Issued Date: 8th November 1972<br>Revocation Date: 31st March 2003<br>Discharge Type: Unspecified<br>Discharge: Not Supplied<br>Environment:<br>Receiving Water: River Neath<br><b>Status: Revoked (Water Resources Act 1991, Section 88 &amp; Schedule 10 as amended by Environment Act 1995)</b><br>Positional Accuracy: Located by supplier to within 100m | A8SW (SE)                              | 994                          | 3       | 276090 198020 |
| 18     | <b>Prosecutions Relating to Controlled Waters</b><br>Location: River Clydach, R/O Main Road, Bryncoch, Sa10<br>Prosecution Text: Casuing raw sewage to enter a watercourse<br>Prosecution Act: Wra91 S85(1)<br>Hearing Date: 14th March 2007<br>Verdict: Guilty<br>Fine: 3500<br>Cost: 400<br>Positional Accuracy: Manually positioned to the road within the address or location                                                                                                                                                                                                                                                                                               | A13NE (NW)                             | 968                          | 5       | 274344 199800 |
| 19     | <b>Local Authority Pollution Prevention and Controls</b><br>Name: Cemex Uk Materials Ltd<br>Location: Gilfach Quarry, The Rhyddings, NEATH, West Glamorgan, SA10 8AD<br>Authority: Neath Port Talbot County Borough Council, Environmental Health Department<br>Permit Reference: E3/1/38<br>Dated: 6th April 1993<br>Process Type: Local Authority Air Pollution Control<br>Description: PG3/8 Quarry processes including roadstone plants and the size reduction of bricks, tiles and concrete<br><b>Status: Authorised</b><br>Positional Accuracy: Manually positioned to the address or location                                                                            | A14NE (N)                              | 680                          | 4       | 275173 199888 |
| 20     | <b>Local Authority Pollution Prevention and Controls</b><br>Name: Wm Morrison Supermarkets Plc<br>Location: Angel Street, NEATH, West Glamorgan, SA11 1RS<br>Authority: Neath Port Talbot County Borough Council, Environmental Health Department<br>Permit Reference: E3/1/67<br>Dated: 1st October 1998<br>Process Type: Local Authority Air Pollution Control<br>Description: PG1/14 Petrol filling station<br><b>Status: Authorised</b><br>Positional Accuracy: Manually positioned to the address or location                                                                                                                                                              | A2NE (S)                               | 905                          | 4       | 275294 197902 |
|        | <b>Nearest Surface Water Feature</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | A10SE (SW)                             | 0                            | -       | 275236 198914 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 21     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Tyn Yr Heolp S, BRYNCAE<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Light Oil<br>Note: Mechanical/Electrical Plant Failure<br>Incident Date: 18th February 1996<br>Incident Reference: 27423<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Overflow<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                 | A10NW (W)                              | 166                          | 5       | 274900 199195 |
| 21     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Water Company Sewage: Other<br>Location: Tyn Yr Heol, Pumping Station, BRYNCOCH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Light Oil<br>Note: Mechanical Failure<br>Incident Date: 18th February 1996<br>Incident Reference: 27423<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Overflow<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A10NW (W)                              | 168                          | 5       | 274900 199200 |
| 22     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Quarrying (Hard Rock)<br>Location: Gilfach Quarry<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: Weather<br>Incident Date: 3rd January 1991<br>Incident Reference: 2560<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Effluent Discharge<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m                          | A10NW (NW)                             | 301                          | 5       | 274800 199300 |
| 23     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Quarry Bryncoch<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Unknown<br>Note: Not Supplied<br>Incident Date: 23rd June 1991<br>Incident Reference: 900<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                                                         | A14SW (NW)                             | 439                          | 5       | 274700 199400 |
| 24     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Land<br>Location: Cadoxton Tip, And Betts<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Farm Effluent/Slurry<br>Note: Deliberate Act<br>Incident Date: 6th March 1991<br>Incident Reference: 2669<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Direct Discharge<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m                       | A7NE (SE)                              | 445                          | 5       | 275800 198500 |
| 24     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Land<br>Location: Cadoxton Near, Betts, Nurseries Old<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Farm Effluent/Slurry<br>Note: Deliberate Act<br>Incident Date: 11th March 1991<br>Incident Reference: 2672<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Direct Discharge<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m          | A7NE (SE)                              | 449                          | 5       | 275800 198495 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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| 25     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Sewage Pumping, St Teilo Street, Ty'n Heol Road, BRYNCOCH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Light Oil<br>Note: Mechanical/Electrical Plant Failure<br>Incident Date: 1st November 1996<br>Incident Reference: 30442<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Overflow<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m     | A9NE (W)                               | 677                          | 5       | 274400<br>199300 |
| 26     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Location Description Not Available<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: River Clydach; Overflow<br>Incident Date: 2nd January 1998<br>Incident Reference: 34481<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Mechanical/Electrical Plant Failure<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m           | A9NE (W)                               | 716                          | 5       | 274350<br>199245 |
| 26     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Bryncoch Pumping Station<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: River Clydach; Overflow<br>Incident Date: 2nd January 1998<br>Incident Reference: 34481<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Mechanical/Electrical Plant Failure<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                     | A9NE (W)                               | 717                          | 5       | 274350<br>199250 |
| 27     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Manhole At Sewage Pumping Station, BRYNCOCH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: River Clydach; Overflow<br>Incident Date: 25th January 1998<br>Incident Reference: 34694<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Mechanical/Electrical Plant Failure<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A9NW (W)                               | 756                          | 5       | 274305<br>199195 |
| 27     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Tyr Yr Awel Road, Bryncoch, NEATH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: River Clydach; Overflow<br>Incident Date: 25th January 1998<br>Incident Reference: 34694<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Mechanical/Electrical Plant Failure<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m           | A9NW (W)                               | 761                          | 5       | 274300<br>199195 |
| 27     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Water Company Sewage: Other<br>Location: Tyn Yr Heol, Pumping Station<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Heavy Fuel Oil<br>Note: Mechanical Failure<br>Incident Date: 27th October 1994<br>Incident Reference: 21652<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Overflow<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m                      | A9NW (W)                               | 761                          | 5       | 274300<br>199200 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 28     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Building Sites<br>Location: Adjacent Dwr Y Felin Road, NEATH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: Poor Operational Practise<br>Incident Date: 11th November 1994<br>Incident Reference: 21783<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Runoff<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m               | A9SE (W)                               | 791                          | 5       | 274400 198700 |
| 29     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Miscellaneous Premises: Surface Runoff<br>Location: Church Neath, B And Q Stores, LLANTWIT<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: Not Supplied<br>Incident Date: 20th June 1996<br>Incident Reference: 28930<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A7SW (S)                               | 792                          | 5       | 275500 198000 |
| 29     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: From Llantwit Church, NEATH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: Not Supplied<br>Incident Date: 20th June 1996<br>Incident Reference: 28930<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                                         | A7SW (S)                               | 797                          | 5       | 275500 197995 |
| 30     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Dwr Y Felin Road<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Unknown<br>Note: Not Supplied<br>Incident Date: 25th August 1994<br>Incident Reference: 20815<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                                                       | A5NE (SW)                              | 793                          | 5       | 274600 198400 |
| 30     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Dwr Y Felin Road<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Oils - Other Oil<br>Note: Not Supplied<br>Incident Date: 12th September 1994<br>Incident Reference: 21148<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m                                     | A5NE (SW)                              | 797                          | 5       | 274600 198395 |
| 31     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Adjacent To, Parr Avenue, NEATH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Cesspit Contents<br>Note: Not Supplied<br>Incident Date: 16th January 1996<br>Incident Reference: 27136<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                              | A7SW (S)                               | 803                          | 5       | 275600 198000 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 31     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Other<br>Location: Opposite, Safeways Neath<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Oils - Diesel (Including Agricultural)<br>Note: Not Supplied<br>Incident Date: 31st March 1992<br>Incident Reference: 4011<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m                   | A7SW (S)                               | 808                          | 5       | 275600 197995 |
| 31     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Adjacent To Parr Avenue, NEATH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Cesspit Contents<br>Note: Not Supplied<br>Incident Date: 16th January 1996<br>Incident Reference: 27136<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                                  | A7SW (S)                               | 809                          | 5       | 275605 197995 |
| 32     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Bridge<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: Not Supplied<br>Incident Date: 19th June 1996<br>Incident Reference: 28932<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                                                                 | A6SE (S)                               | 831                          | 5       | 275001 198101 |
| 32     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Under Old Bridge, Along Footbridge<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: Not Supplied<br>Incident Date: 19th June 1996<br>Incident Reference: 28932<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                                     | A6SE (S)                               | 835                          | 5       | 275001 198096 |
| 33     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Water Company Sewage: Other<br>Location: Tyn Yr Heol, Pumping Station, BRYNCOCH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Algae<br>Note: Mechanical Failure<br>Incident Date: 3rd February 1995<br>Incident Reference: 23345<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Overflow<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m            | A9NW (W)                               | 856                          | 5       | 274205 199205 |
| 33     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Water Company Sewage: Other<br>Location: Tyn Yr Heol, Pumping Station<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Farm Effluent/Slurry<br>Note: Mechanical Failure<br>Incident Date: 9th November 1994<br>Incident Reference: 21729<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Overflow<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m | A9NW (W)                               | 856                          | 5       | 274205 199195 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 33     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Water Company Sewage: Other<br>Location: Tyn Yr Heol, Pumping Station<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Unknown<br>Note: Mechanical Failure<br>Incident Date: 3rd November 1994<br>Incident Reference: 21751<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Overflow<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m         | A9NW (W)                               | 856                          | 5       | 274205 199200 |
| 33     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Tyn Yr Heol, Pumping Station<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Algae<br>Note: Not Supplied<br>Incident Date: 2nd September 1994<br>Incident Reference: 20928<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                                   | A9NW (W)                               | 860                          | 5       | 274200 199195 |
| 33     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Water Company Sewage: Other<br>Location: Tyn Yr Heol, Pumping Station<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Mud/Clay/Soil<br>Note: Blocked Sewer<br>Incident Date: 1st September 1994<br>Incident Reference: 20926<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Overflow<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m | A9NW (W)                               | 861                          | 5       | 274200 199200 |
| 34     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Other<br>Location: 14 Park Avenue, Maes Yr Afon<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Mud/Clay/Soil<br>Note: Deliberate Act<br>Incident Date: 2nd February 1995<br>Incident Reference: 23042<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Direct Discharge<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                     | A3NW (S)                               | 902                          | 5       | 275600 197900 |
| 34     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Roundabout By, Safeways Near, Riverside<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: Not Supplied<br>Incident Date: 2nd August 1994<br>Incident Reference: 21297<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m              | A3NW (S)                               | 907                          | 5       | 275600 197895 |
| 35     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Safeways Garage, Riverside<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Unknown<br>Note: Not Supplied<br>Incident Date: 6th September 1994<br>Incident Reference: 21047<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                                   | A2NE (S)                               | 906                          | 5       | 275300 197900 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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| 36     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Location Description Not Available<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Farm Effluent/Slurry<br>Note: Not Supplied<br>Incident Date: 10th July 1991<br>Incident Reference: 998<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m                            | A13SW (W)                              | 929                          | 5       | 274200<br>199500 |
| 37     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Canal Overflows, To Neath At, Tonna Lock<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Light Oil<br>Note: Not Supplied<br>Incident Date: 2nd July 1995<br>Incident Reference: 25058<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Unknown<br>Incident Severity: Category 2 - Significant Incident<br>Positional Accuracy: Located by supplier to within 100m                                | A8SW (SE)                              | 940                          | 5       | 276100<br>198100 |
| 38     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Water Company Sewage: Sewerage<br>Location: 30 M Up Stream Of Road Bridge, Near Lamb And Flag<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: Not Supplied<br>Incident Date: 21st January 1992<br>Incident Reference: 3747<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Overflow<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m | A13NE (NW)                             | 942                          | 5       | 274380<br>199800 |
| 39     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Not Given<br>Location: Tyn Yr Heol Pumping Station, Bryncoch, NEATH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Crude Sewage<br>Note: Mechanical/Electrical Failure<br>Incident Date: 6th May 1997<br>Incident Reference: 32177<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Leakage<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m               | A9NW (W)                               | 960                          | 5       | 274100<br>199100 |
| 40     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Domestic/Residential<br>Location: Adjacent Lamb And, Flag Public House, BRYNCOCH<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Mining Water<br>Note: Deliberate Act<br>Incident Date: 9th August 1995<br>Incident Reference: 25414<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Direct Discharge<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m     | A13NW (NW)                             | 969                          | 5       | 274300<br>199750 |
| 41     | <b>Pollution Incidents to Controlled Waters</b><br>Property Type: Building Sites<br>Location: WATERFALL<br>Authority: Environment Agency, Welsh Region<br>Pollutant: Light Oil<br>Note: Not Supplied<br>Incident Date: 9th October 1994<br>Incident Reference: 21654<br>Catchment Area: Not Given<br>Receiving Water: Not Given<br>Cause of Incident: Runoff<br>Incident Severity: Category 3 - Minor Incident<br>Positional Accuracy: Located by supplier to within 100m                                                              | A9SW (W)                               | 991                          | 5       | 274100<br>198900 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>River Quality</b><br>Name: Port Tennant Canal<br>GQA Grade: River Quality B<br>Reach: Neath Abbey - Conf.Neath<br>Estimated Distance 4<br>(km):<br>Flow Rate: Flow greater than 80 cumecs<br>Flow Type: Canal<br>Year: 2000                                                                                                                                                                                                                                                                                                                                                                                                                                        | A7NE (SE)                              | 549                          | 5       | 275912 198473 |
|        | <b>River Quality</b><br>Name: Clydach<br>GQA Grade: River Quality A<br>Reach: Tidal Limit - Dyffryn Arms Bryncoch<br>Estimated Distance 4.3<br>(km):<br>Flow Rate: Flow less than 0.62 cumecs<br>Flow Type: River<br>Year: 2000                                                                                                                                                                                                                                                                                                                                                                                                                                       | A9NW (W)                               | 791                          | 5       | 274270 199226 |
|        | <b>River Quality</b><br>Name: Neath Canal<br>GQA Grade: River Quality D<br>Reach: Conf.Neath - Aberdulais Aqueduct<br>Estimated Distance 8<br>(km):<br>Flow Rate: Flow greater than 80 cumecs<br>Flow Type: Canal<br>Year: 2000                                                                                                                                                                                                                                                                                                                                                                                                                                       | A2NE (S)                               | 907                          | 5       | 275313 197888 |
| 42     | <b>Substantiated Pollution Incident Register</b><br>Authority: Natural Resources Wales<br>Incident Date: 7th November 2012<br>Incident Reference: 1054075<br>Water Impact: Category 2 - Significant Incident<br>Air Impact: Category 4 - No Impact<br>Land Impact: Category 4 - No Impact<br>Positional Accuracy: Located by supplier to within 10m<br>Pollutant: Inert Materials And Wastes: Soils And Clay                                                                                                                                                                                                                                                          | A14SW (NW)                             | 534                          | 3       | 274836 199640 |
| 43     | <b>Substantiated Pollution Incident Register</b><br>Authority: Natural Resources Wales<br>Incident Date: 27th July 2006<br>Incident Reference: 421608<br>Water Impact: Category 2 - Significant Incident<br>Air Impact: Category 4 - No Impact<br>Land Impact: Category 4 - No Impact<br>Positional Accuracy: Located by supplier to within 10m<br>Pollutant: Crude Sewage                                                                                                                                                                                                                                                                                            | A13SW (NW)                             | 931                          | 3       | 274239 199587 |
| 44     | <b>Water Abstractions</b><br>Operator: Neath Golf Club<br>Licence Number: 21/58/74/0027<br>Permit Version: 2<br>Location: U/G Strata, Pennant Measures Sandstone At Neath Golf Club<br>Authority: Natural Resources Wales<br>Abstraction: Golf Courses: Spray Irrigation - Direct<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Not Supplied<br>Authorised Start: 01 April<br>Authorised End: 31 October<br>Permit Start Date: 4th September 2008<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | A11NE (E)                              | 355                          | 3       | 275910 199240 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 44     | <b>Water Abstractions</b><br>Operator: Neath Golf Club<br>Licence Number: 21/58/74/0027<br>Permit Version: 1<br>Location: U/G Strata, Pennant Measures Sandstone At Neath Golf Club<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Golf Courses: Spray Irrigation - Direct<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Groundwater<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Not Supplied<br>Authorised Start: 01 April<br>Authorised End: 31 October<br>Permit Start Date: 1st April 2008<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m      | A11NE (E)                              | 355                          | 5       | 275910 199240 |
| 45     | <b>Water Abstractions</b><br>Operator: Cemex Uk Materials Ltd<br>Licence Number: 21/58/74/0017<br>Permit Version: 101<br>Location: Stream West Of Gilfach Quarry, Neath<br>Authority: Natural Resources Wales<br>Abstraction: Mineral Products: Mineral Washing<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Not Supplied<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 13th June 2008<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m                                  | A14SW (NW)                             | 464                          | 3       | 274950 199620 |
| 45     | <b>Water Abstractions</b><br>Operator: Rmc Materials Limited<br>Licence Number: 21/58/74/0017<br>Permit Version: 100<br>Location: Stream West Of Gilfach Quarry, Neath<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Mineral Products: Mineral Washing<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Stream West Of Gilfach Quarry; Neath<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 1st April 2001<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m | A14SW (NW)                             | 464                          | 5       | 274950 199620 |
| 46     | <b>Water Abstractions</b><br>Operator: Neath Golf Club<br>Licence Number: 21/58/74/0018<br>Permit Version: 100<br>Location: Spring 1<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Golf Courses: Spray Irrigation - Direct<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Spring 1<br>Authorised Start: 01 April<br>Authorised End: 31 October<br>Permit Start Date: 1st April 2000<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m                                                            | A12NW (E)                              | 589                          | 5       | 276150 199280 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 47     | <b>Water Abstractions</b><br>Operator: Neath Golf Club<br>Licence Number: 21/58/74/0018<br>Permit Version: 100<br>Location: Spring 2<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Golf Courses: Spray Irrigation - Direct<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Spring 2<br>Authorised Start: 01 April<br>Authorised End: 31 October<br>Permit Start Date: 1st April 2000<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m                                                                     | A16SW (NE)                             | 820                          | 5       | 276320 199460 |
|        | <b>Water Abstractions</b><br>Operator: Neath Canal Navigation<br>Licence Number: 21/58/72/0007<br>Permit Version: 101<br>Location: Inland Water River Neath In The Community Of Tonna<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Private Water Undertaking: General Use (Medium Loss)<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Not Supplied<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 1st April 2005<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | (E)                                    | 1314                         | 5       | 276900 198820 |
|        | <b>Water Abstractions</b><br>Operator: Neath Canal Navigation<br>Licence Number: 21/58/72/0007<br>Permit Version: 100<br>Location: Inland Water River Neath In The Community Of Tonna<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Private Water Supply: General Use (High Loss)<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: River Neath<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 1st April 1994<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m        | (E)                                    | 1314                         | 5       | 276900 198820 |
|        | <b>Water Abstractions</b><br>Operator: Neath Canal Navigation<br>Licence Number: 21/58/72/0035<br>Permit Version: 2<br>Location: River Neath At Tonna Lock<br>Authority: Natural Resources Wales<br>Abstraction: Private Water Undertaking: Transfer between sources<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Not Supplied<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 6th February 2009<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m                                   | (E)                                    | 1382                         | 3       | 276970 198830 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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|        | <b>Water Abstractions</b><br>Operator: Neath Canal Navigation<br>Licence Number: 21/58/72/0007<br>Permit Version: Not Supplied<br>Location: Location Description Not Available<br>Authority: Environment Agency, Welsh Region<br>Abstraction: General Industrial<br>Abstraction Type: Not Supplied<br>Source: River<br>Daily Rate (m3): 0<br>Yearly Rate (m3): 0<br>Details: Stream At Lock House; Tonna To Neath Can<br>Authorised Start: Not Supplied<br>Authorised End: Not Supplied<br>Permit Start Date: Not Supplied<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m                                                                                      | (E)                                    | 1391                         | 5       | 276970<br>198770 |
|        | <b>Water Abstractions</b><br>Operator: Neath Golf Club<br>Licence Number: 21/58/74/0026<br>Permit Version: 100<br>Location: Land Drains In The Catchment Of The River Neath<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Golf Courses: Spray Irrigation - Storage<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Reservoir Supplied By Land Drains At Neath Golf Course<br>Authorised Start: 01 June<br>Authorised End: 30 September<br>Permit Start Date: 25th July 1996<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m | A20NW<br>(NE)                          | 1499                         | 5       | 276210<br>200500 |
|        | <b>Water Abstractions</b><br>Operator: National Trust<br>Licence Number: 21/58/73/0014<br>Permit Version: 100<br>Location: Afon Dulais At Aberdulais Falls<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Production Of Energy: Hydroelectric Power Generation<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Afon Dulais At Aberdulais Falls<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 1st April 2004<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m                           | (E)                                    | 1622                         | 5       | 277150<br>199550 |
|        | <b>Water Abstractions</b><br>Operator: The National Trust<br>Licence Number: Wa/058/0073/001<br>Permit Version: 2<br>Location: Afon Dulais<br>Authority: Natural Resources Wales<br>Abstraction: Production Of Energy: Hydroelectric Power Generation<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Aberdulais, Neath, Glamorgan<br>Authorised Start: 01 April<br>Authorised End: 31 March<br>Permit Start Date: 28th March 2014<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m                                                            | (E)                                    | 1628                         | 3       | 277152<br>199564 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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|        | <b>Water Abstractions</b><br>Operator: Port Tennant Co Ltd<br>Licence Number: 21/58/74/0001<br>Permit Version: 103<br>Location: River Neath To Tennant Canal At Aberdulais<br>Authority: Natural Resources Wales<br>Abstraction: Private Water Undertaking: Raw Water Supply<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Not Supplied<br>Authorised Start: 04 January<br>Authorised End: 03 July<br>Permit Start Date: 24th September 2014<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m                | (E)                                    | 1654                         | 3       | 277239<br>199316 |
|        | <b>Water Abstractions</b><br>Operator: Port Tennant Co Ltd<br>Licence Number: 21/58/74/0001<br>Permit Version: 103<br>Location: River Neath To Tennant Canal At Aberdulais<br>Authority: Natural Resources Wales<br>Abstraction: Private Water Undertaking: Raw Water Supply<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Not Supplied<br>Authorised Start: 01 April<br>Authorised End: 31 March<br>Permit Start Date: 24th September 2014<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m                 | (E)                                    | 1654                         | 3       | 277239<br>199316 |
|        | <b>Water Abstractions</b><br>Operator: Port Tennant Co Ltd<br>Licence Number: 21/58/74/0001<br>Permit Version: 103<br>Location: River Neath To Tennant Canal At Aberdulais<br>Authority: Natural Resources Wales<br>Abstraction: Private Water Undertaking: Raw Water Supply<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Tennant Canal<br>Authorised Start: 01 April<br>Authorised End: 31 March<br>Permit Start Date: 24th September 2014<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m                | (E)                                    | 1654                         | 3       | 277239<br>199316 |
|        | <b>Water Abstractions</b><br>Operator: The National Trust<br>Licence Number: Wa/058/0073/001<br>Permit Version: 1<br>Location: Afon Dulais At Aberdulais Falls<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Production Of Energy: Hydroelectric Power Generation<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Aberdulais, Neath, Glamorgan<br>Authorised Start: 01 April<br>Authorised End: 31 March<br>Permit Start Date: 1st June 2011<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | (E)                                    | 1656                         | 5       | 277159<br>199630 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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|        | <b>Water Abstractions</b><br>Operator: Alfred Mcalpine Construction Ltd<br>Licence Number: 21/58/72/0032<br>Permit Version: Not Supplied<br>Location: Location Description Not Available<br>Authority: Environment Agency, Welsh Region<br>Abstraction: General Industrial<br>Abstraction Type: Not Supplied<br>Source: River<br>Daily Rate (m3): 0<br>Yearly Rate (m3): 0<br>Details: Inland Water Afon Nedd Neath West Glam<br>Authorised Start: Not Supplied<br>Authorised End: Not Supplied<br>Permit Start Date: Not Supplied<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m                                             | (E)                                    | 1670                         | 5       | 277240<br>199400 |
|        | <b>Water Abstractions</b><br>Operator: Port Tennant Co Ltd<br>Licence Number: 21/58/74/0001<br>Permit Version: 102<br>Location: River Neath To Tennant Canal At Aberdulais<br>Authority: Natural Resources Wales<br>Abstraction: Private Water Undertaking: Raw Water Supply<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Port Tennant Canal<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 1st April 2006<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m          | (E)                                    | 1698                         | 3       | 277280<br>199340 |
|        | <b>Water Abstractions</b><br>Operator: Port Tennant Co Ltd<br>Licence Number: 21/58/74/0001<br>Permit Version: 102<br>Location: River Neath To Tennant Canal At Aberdulais<br>Authority: Natural Resources Wales<br>Abstraction: Private Water Undertaking: Raw Water Supply<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Tennant Canal<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 1st April 2006<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m               | (E)                                    | 1698                         | 3       | 277280<br>199340 |
|        | <b>Water Abstractions</b><br>Operator: Port Tennant Co. Ltd<br>Licence Number: 21/58/74/0001<br>Permit Version: 101<br>Location: River Neath To Tennant Canal At Aberdulais<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Private Water Undertaking: Raw Water Supply<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: Tennant Canal<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 17th December 2003<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 10m | (E)                                    | 1698                         | 5       | 277280<br>199340 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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|        | <b>Water Abstractions</b><br>Operator: Port Tennant Co. Ltd<br>Licence Number: 21/58/74/0001<br>Permit Version: 100<br>Location: River Neath To Tennant Canal At Aberdulais<br>Authority: Environment Agency, Welsh Region<br>Abstraction: Private Water Undertaking: Raw Water Supply<br>Abstraction Type: Water may be abstracted from a single point<br>Source: Surface<br>Daily Rate (m3): Not Supplied<br>Yearly Rate (m3): Not Supplied<br>Details: River Neath To Tennant Canal At Aberdulais<br>Authorised Start: 01 January<br>Authorised End: 31 December<br>Permit Start Date: 3rd January 1978<br>Permit End Date: Not Supplied<br>Positional Accuracy: Located by supplier to within 100m | (E)                                    | 1698                         | 5       | 277280<br>199340 |
|        | <b>Groundwater Vulnerability</b><br>Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise<br>Map Sheet: Sheet 35 West Glamorgan<br>Scale: 1:100,000                                                                                                                                                                                                                                                                                                                                                  | A10SE (SW)                             | 0                            | 5       | 275203<br>198929 |
|        | <b>Groundwater Vulnerability</b><br>Soil Classification: Soils of High Leaching Potential (H3)- Coarse textured or moderately shallow soils which readily transmit non-absorbed pollutants and liquid discharges but which have some ability to attenuate absorbed pollutants because of their large clay or organic matter contents<br>Map Sheet: Sheet 35 West Glamorgan<br>Scale: 1:100,000                                                                                                                                                                                                                                                                                                         | A11NW (SE)                             | 0                            | 5       | 275343<br>199032 |
|        | <b>Drift Deposits</b><br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                        |                              |         |                  |
|        | <b>Bedrock Aquifer Designations</b><br>Aquifer Designation: Secondary Aquifer - A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A11NW (SE)                             | 0                            | 2       | 275343<br>199032 |
|        | <b>Superficial Aquifer Designations</b><br>No Data Available                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                        |                              |         |                  |
|        | <b>Extreme Flooding from Rivers or Sea without Defences</b><br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                        |                              |         |                  |
|        | <b>Flooding from Rivers or Sea without Defences</b><br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                        |                              |         |                  |
|        | <b>Areas Benefiting from Flood Defences</b><br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                        |                              |         |                  |
|        | <b>Flood Water Storage Areas</b><br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                        |                              |         |                  |
|        | <b>Flood Defences</b><br>None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                        |                              |         |                  |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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| 48     | <b>Historical Landfill Sites</b><br>Licence Holder: Neath Borough Council<br>Location: Neath, West Glamorgan<br>Name: Cadoxton<br>Operator Location: Not Supplied<br>Boundary Accuracy: As Supplied<br>Provider Reference: EAHLD14875<br>First Input Date: 31st December 1971<br>Last Input Date: 1st April 1985<br>Specified Waste: Deposited Waste included Inert, Industrial, Commercial, Household and<br>Type: Special Waste<br>EA Waste Ref: 0<br>Regis Ref: Not Supplied<br>WRC Ref: 6930/0002<br>BGS Ref: Not Supplied<br>Other Ref: Not Supplied | A7NE (SE)                              | 468                          | 3       | 275885<br>198568 |
|        | <b>Local Authority Landfill Coverage</b><br>Name: Neath Port Talbot County Borough Council<br>- Has supplied landfill data                                                                                                                                                                                                                                                                                                                                                                                                                                |                                        | 0                            | 4       | 275343<br>199032 |
| 49     | <b>Local Authority Recorded Landfill Sites</b><br>Location: Cadoxton Landfill Site<br>Reference: Not Supplied<br>Authority: Neath Port Talbot County Borough Council, Environmental Health Department<br><b>Last Reported Status:</b> Not Supplied<br>Types of Waste: Not Supplied<br>Date of Closure: Not Supplied<br>Positional Accuracy: Manually corrected supplier location<br>Boundary Quality: Not Applicable                                                                                                                                      | A7NE (SE)                              | 600                          | 4       | 276000<br>198500 |
| 50     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: NE<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                  | A11NW (NE)                             | 6                            | -       | 275490<br>199172 |
| 51     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: S<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                   | A11SW (S)                              | 90                           | -       | 275416<br>198715 |
| 52     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: W<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                   | A10SE (W)                              | 96                           | -       | 275068<br>198922 |
| 53     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: NE<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                  | A11NW (NE)                             | 100                          | -       | 275541<br>199270 |
| 54     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: SE<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                  | A11SW (SE)                             | 110                          | -       | 275635<br>198838 |
| 55     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: NE<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                  | A11NW (NE)                             | 157                          | -       | 275573<br>199317 |
| 56     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: SW<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                  | A10SE (SW)                             | 243                          | -       | 275007<br>198771 |
| 57     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: E<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                   | A11NE (E)                              | 248                          | -       | 275852<br>199092 |
| 58     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: SW<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                  | A10SW (SW)                             | 393                          | -       | 274860<br>198708 |
| 59     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: W<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992                                                                                                                                                                                                                                                                                                                                                                                                                   | A9NE (W)                               | 698                          | -       | 274372<br>199271 |

| Map ID | Details                                                                                                                                  | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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| 60     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: NE<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992 | A16NW (NE)                             | 812                          | -       | 276020<br>199810 |
| 61     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: NE<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992 | A15NE (NE)                             | 821                          | -       | 275992<br>199841 |
| 62     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: NW<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992 | A14NW (NW)                             | 833                          | -       | 274688<br>199900 |
| 63     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: NW<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992 | A14NW (NW)                             | 890                          | -       | 274664<br>199951 |
| 64     | <b>Potentially Infilled Land (Non-Water)</b><br>Bearing Ref: SW<br>Use: Unknown Filled Ground (Pit, quarry etc)<br>Date of Mapping: 1992 | A5NE (SW)                              | 891                          | -       | 274403<br>198486 |
| 65     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1964   | A10NE (NW)                             | 0                            | -       | 275073<br>199161 |
| 66     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1964   | A10NE (W)                              | 15                           | -       | 275083<br>199070 |
| 67     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1935   | A10NE (NW)                             | 35                           | -       | 275028<br>199163 |
| 68     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1964   | A10SE (SW)                             | 290                          | -       | 275061<br>198668 |
| 69     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965   | A10SW (SW)                             | 317                          | -       | 274875<br>198814 |
| 70     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1900   | A7NE (SE)                              | 350                          | -       | 275759<br>198594 |
| 71     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965   | A10NW (W)                              | 377                          | -       | 274683<br>199175 |
| 72     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1921   | A7NW (S)                               | 383                          | -       | 275565<br>198422 |
| 73     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965   | A10NW (W)                              | 386                          | -       | 274674<br>199175 |
| 74     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965   | A6NW (SW)                              | 444                          | -       | 274863<br>198630 |
| 75     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1935   | A10SW (SW)                             | 465                          | -       | 274739<br>198708 |
| 76     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965   | A6NW (SW)                              | 468                          | -       | 274861<br>198597 |
| 77     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965   | A9NE (W)                               | 478                          | -       | 274587<br>199227 |
| 78     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965   | A14SW (NW)                             | 483                          | -       | 274698<br>199469 |

| Map ID | Details                                                                                                                                | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 79     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1884 | A13SE (NW)                             | 589                          | -       | 274623 199544 |
| 80     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965 | A13SE (NW)                             | 639                          | -       | 274560 199547 |
| 81     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965 | A9SE (W)                               | 697                          | -       | 274504 198705 |
| 82     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1935 | A9SE (W)                               | 701                          | -       | 274503 198697 |
| 83     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965 | A13NE (NW)                             | 725                          | -       | 274584 199695 |
| 84     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1935 | A6NW (SW)                              | 747                          | -       | 274668 198380 |
| 85     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965 | A6NW (SW)                              | 749                          | -       | 274739 198332 |
| 86     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1884 | A13NE (NW)                             | 767                          | -       | 274592 199755 |
| 87     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965 | A13NE (NW)                             | 847                          | -       | 274474 199760 |
| 88     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1921 | A3NW (S)                               | 872                          | -       | 275471 197919 |
| 89     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1940 | A5NE (SW)                              | 872                          | -       | 274408 198513 |
| 90     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965 | A13NE (NW)                             | 931                          | -       | 274587 199951 |
| 91     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1964 | A13NE (NW)                             | 948                          | -       | 274570 199960 |
| 92     | <b>Potentially Infilled Land (Water)</b><br>Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc)<br>Date of Mapping: 1965 | A13NE (NW)                             | 962                          | -       | 274418 199864 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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| 93     | <b>Registered Landfill Sites</b><br>Licence Holder: Neath B.C.<br>Licence Reference: 2<br>Site Location: Cadoxton Waste Disposal Site, Neath, West Glamorgan<br>Licence Easting: 276200<br>Licence Northing: 198700<br>Operator Location: Civic Centre, NEATH, West Glamorgan, SA11 3QZ<br>Authority: Environment Agency Wales, South West Area<br>Site Category: Landfill<br>Max Input Rate: Undefined<br>Waste Source: No known restriction on source of waste<br>Restrictions:<br>Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled<br>Dated: 1st June 1977<br>Preceded By: Not Given<br>Licence:<br>Superseded By: Not Given<br>Licence:<br>Positional Accuracy: Manually positioned to the road within the address or location<br>Boundary Accuracy: Not Applicable<br>Authorised Waste: Commercial Waste<br>Household Waste<br>Industrial Wastes<br>Prohibited Waste: Empty Used Containers<br>Liquid Wastes<br>Oily Waste<br>Sludge Wastes<br>Toxic/Poisonous Wastes | A12SW (E)                              | 673                          | 5       | 276200<br>198700 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                             | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS 1:625,000 Solid Geology</b><br>Description: South Wales Upper Coal Measures Formation                                                                                                                                                                                                                                                        | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic Concentration: 25 - 35 mg/kg<br>Cadmium Concentration: <1.8 mg/kg<br>Chromium Concentration: 60 - 90 mg/kg<br>Lead Concentration: <100 mg/kg<br>Nickel Concentration: 30 - 45 mg/kg      | A11NW (E)                              | 0                            | 2       | 275500 199067 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic Concentration: 35 - 45 mg/kg<br>Cadmium Concentration: <1.8 mg/kg<br>Chromium Concentration: 60 - 90 mg/kg<br>Lead Concentration: <100 mg/kg<br>Nickel Concentration: 15 - 30 mg/kg      | A11NW (E)                              | 0                            | 2       | 275500 199032 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic Concentration: 35 - 45 mg/kg<br>Cadmium Concentration: 1.8 - 2.2 mg/kg<br>Chromium Concentration: 60 - 90 mg/kg<br>Lead Concentration: <100 mg/kg<br>Nickel Concentration: 15 - 30 mg/kg | A11NW (E)                              | 0                            | 2       | 275447 199000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic Concentration: 35 - 45 mg/kg<br>Cadmium Concentration: 1.8 - 2.2 mg/kg<br>Chromium Concentration: 60 - 90 mg/kg<br>Lead Concentration: <100 mg/kg<br>Nickel Concentration: 15 - 30 mg/kg | A10NE (NW)                             | 0                            | 2       | 275331 199057 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic Concentration: 25 - 35 mg/kg<br>Cadmium Concentration: 1.8 - 2.2 mg/kg<br>Chromium Concentration: 60 - 90 mg/kg<br>Lead Concentration: <100 mg/kg<br>Nickel Concentration: 30 - 45 mg/kg | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic Concentration: 45 - 60 mg/kg<br>Cadmium Concentration: 2.2 - 3.0 mg/kg<br>Chromium Concentration: 60 - 90 mg/kg<br>Lead Concentration: <100 mg/kg<br>Nickel Concentration: 15 - 30 mg/kg | A11SW (SE)                             | 0                            | 2       | 275419 198964 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                         | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A11NW (S)                              | 0                            | 2       | 275343 199000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 45 - 60 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A11NW (E)                              | 0                            | 2       | 275500 199000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 35 - 45 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A10NE (W)                              | 20                           | 2       | 275086 199000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 35 - 45 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A10SE (SW)                             | 28                           | 2       | 275158 198924 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 35 - 45 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration:      | A11NW (NE)                             | 44                           | 2       | 275500 199221 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A10SE (SW)                             | 47                           | 2       | 275153 198901 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                         | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A11SW (SE)                             | 57                           | 2       | 275573 198830 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A11SW (SE)                             | 58                           | 2       | 275500 198747 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration:      | A11NW (E)                              | 63                           | 2       | 275667 199015 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A10SE (SW)                             | 109                          | 2       | 275075 198895 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 45 - 60 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A11SW (SE)                             | 134                          | 2       | 275669 198847 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 15 - 25 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A11SW (SE)                             | 139                          | 2       | 275625 198769 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                         | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 15 - 25 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A7NW (S)                               | 172                          | 2       | 275500 198623 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 35 - 45 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration:      | A11NE (E)                              | 281                          | 2       | 275882 199000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 35 - 45 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A11SE (SE)                             | 357                          | 2       | 275891 198787 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 45 - 60 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration:      | A11NE (E)                              | 394                          | 2       | 276000 199032 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 15 - 25 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A11SE (SE)                             | 409                          | 2       | 275933 198755 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 45 - 60 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration:      | A11NE (E)                              | 414                          | 2       | 276000 199183 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                         | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A11SE (E)                              | 415                          | 2       | 276000 198904 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A7NW (SE)                              | 415                          | 2       | 275644 198418 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 15 - 25 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A7NE (SE)                              | 454                          | 2       | 275885 198589 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A7NE (SE)                              | 455                          | 2       | 275851 198547 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 1.8 - 2.2 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A7NE (SE)                              | 463                          | 2       | 275918 198620 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 15 - 25 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A7NE (SE)                              | 489                          | 2       | 275856 198500 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                         | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 35 - 45 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A6NW (SW)                              | 514                          | 2       | 274871 198526 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration:      | A12NW (E)                              | 520                          | 2       | 276123 199000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 35 - 45 mg/kg<br>Concentration:<br>Cadmium 3.0 - 6.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A9NE (W)                               | 559                          | 2       | 274500 199032 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 15 - 25 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration:      | A12NW (E)                              | 588                          | 2       | 276192 199000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A7SE (SE)                              | 736                          | 2       | 276000 198288 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 35 - 45 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration:      | A15NW (N)                              | 792                          | 2       | 275343 200000 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                         | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration:      | A14NE (N)                              | 798                          | 2       | 275065 200000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 45 - 60 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration:      | A16NW (NE)                             | 802                          | 2       | 276064 199760 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 25 - 35 mg/kg<br>Concentration:<br>Cadmium 3.0 - 6.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration: | A5NE (SW)                              | 844                          | 2       | 274500 198430 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 45 - 60 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 30 - 45 mg/kg<br>Concentration:      | A12NE (E)                              | 870                          | 2       | 276459 199224 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 45 - 60 mg/kg<br>Concentration:<br>Cadmium 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration: | A5SE (SW)                              | 871                          | 2       | 274656 198241 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic 45 - 60 mg/kg<br>Concentration:<br>Cadmium <1.8 mg/kg<br>Concentration:<br>Chromium 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel 15 - 30 mg/kg<br>Concentration:      | A15NE (NE)                             | 885                          | 2       | 275923 199957 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                             | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic: 15 - 25 mg/kg<br>Concentration:<br>Cadmium: 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium: 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel: 15 - 30 mg/kg<br>Concentration: | A12NE (E)                              | 895                          | 2       | 276500 199000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic: 15 - 25 mg/kg<br>Concentration:<br>Cadmium: 3.0 - 6.0 mg/kg<br>Concentration:<br>Chromium: 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel: 15 - 30 mg/kg<br>Concentration: | A6SE (S)                               | 917                          | 2       | 275000 198000 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic: 15 - 25 mg/kg<br>Concentration:<br>Cadmium: 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium: 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel: 15 - 30 mg/kg<br>Concentration: | A3NE (S)                               | 920                          | 2       | 275745 197916 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic: 45 - 60 mg/kg<br>Concentration:<br>Cadmium: <1.8 mg/kg<br>Concentration:<br>Chromium: 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel: 15 - 30 mg/kg<br>Concentration:      | A19SW (N)                              | 931                          | 2       | 275655 200096 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic: 45 - 60 mg/kg<br>Concentration:<br>Cadmium: <1.8 mg/kg<br>Concentration:<br>Chromium: 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel: 15 - 30 mg/kg<br>Concentration:      | A19SE (NE)                             | 940                          | 2       | 275785 200074 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic: 25 - 35 mg/kg<br>Concentration:<br>Cadmium: <1.8 mg/kg<br>Concentration:<br>Chromium: 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel: 15 - 30 mg/kg<br>Concentration:      | A12NE (E)                              | 983                          | 2       | 276587 199000 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic: 25 - 35 mg/kg<br>Concentration:<br>Cadmium: 3.0 - 6.0 mg/kg<br>Concentration:<br>Chromium: 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel: 15 - 30 mg/kg<br>Concentration:                                                                                                           | A2NE (S)                               | 992                          | 2       | 275000 197914 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic: 15 - 25 mg/kg<br>Concentration:<br>Cadmium: 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium: 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel: 30 - 45 mg/kg<br>Concentration:                                                                                                           | A18SW (N)                              | 993                          | 2       | 274945 200176 |
|        | <b>BGS Estimated Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Soil Sample Type: Sediment<br>Arsenic: 25 - 35 mg/kg<br>Concentration:<br>Cadmium: 2.2 - 3.0 mg/kg<br>Concentration:<br>Chromium: 60 - 90 mg/kg<br>Concentration:<br>Lead Concentration: <100 mg/kg<br>Nickel: 30 - 45 mg/kg<br>Concentration:                                                                                                           | A4NW (SE)                              | 1000                         | 2       | 276020 197961 |
| 94     | <b>BGS Recorded Mineral Sites</b><br>Site Name: Leiros Gravel Pit<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154272<br>Type: Opencast<br><b>Status:</b> Ceased<br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sand and Gravel<br>Positional Accuracy: Located by supplier to within 10m | A10NE (NW)                             | 0                            | 2       | 275198 199132 |
| 95     | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cwm-Bach<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154269<br>Type: Underground<br><b>Status:</b> Ceased<br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m           | A11NW (NE)                             | 56                           | 2       | 275532 199225 |
| 96     | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cwm-Bach<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154296<br>Type: Opencast<br><b>Status:</b> Ceased<br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m                | A11SW (E)                              | 66                           | 2       | 275658 198979 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR              |
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| 97     | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cwm-Bach<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154268<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m          | A11NW (NE)                             | 107                          | 2       | 275558<br>199269 |
| 98     | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cadoxton Lodge<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154277<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m    | A11SW (SE)                             | 121                          | 2       | 275641<br>198827 |
| 98     | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cadoxton Lodge<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154297<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Brithdir Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m  | A11SE (SE)                             | 168                          | 2       | 275683<br>198806 |
| 99     | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cwm-Bach<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154270<br>Type: Opencast<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m               | A11NE (E)                              | 160                          | 2       | 275738<br>199149 |
| 100    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cwm-Bach<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154271<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m          | A11NE (E)                              | 161                          | 2       | 275764<br>199019 |
| 101    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Bryn-Tirion<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154273<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Grovesend Formation<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m | A10SW (W)                              | 174                          | 2       | 274978<br>198925 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 102    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Bryn-Tirion<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154274<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Grovesend Formation<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m                 | A10SW (SW)                             | 265                          | 2       | 274993 198753 |
| 103    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cadoxton Lodge<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154275<br>Type: Opencast<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Brithdir Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m                       | A11SE (E)                              | 353                          | 2       | 275937 198908 |
| 104    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Crown Inn<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154389<br>Type: Opencast<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m                              | A6NE (S)                               | 413                          | 2       | 275204 198470 |
| 105    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cadoxton Lodge<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154276<br>Type: Opencast<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Brithdir Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m                       | A12NW (E)                              | 480                          | 2       | 276084 199005 |
| 106    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Cenfaes<br>Location: , Aberdulais, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154303<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m                         | A15NE (NE)                             | 594                          | 2       | 275799 199693 |
| 107    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gylfach Quarry<br>Location: The Rhyddingsgylfach Road, Neath, West Glamorgan, Sa10 8ad<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 3053<br>Type: Opencast<br><b>Status: Dormant</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m | A15NW (N)                              | 609                          | 2       | 275370 199780 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 108    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gilfach Quarries<br>Location: The Rhyddingsgylfach Road, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 228789<br>Type: Opencast<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m          | A14NE (N)                              | 695                          | 2       | 275145 199902 |
| 108    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gilfach Quarry<br>Location: The Rhyddingsgylfach Road, Neath, West Glamorgan, Sa10 8ad<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 228790<br>Type: Opencast<br><b>Status: Dormant</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m | A14NE (N)                              | 727                          | 2       | 275155 199935 |
| 108    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gilfach Quarries<br>Location: The Rhyddingsgylfach Road, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154255<br>Type: Opencast<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m          | A14NE (N)                              | 731                          | 2       | 275135 199938 |
| 109    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gilfach Quarry<br>Location: The Rhyddingsgylfach Road, Neath, West Glamorgan, Sa10 8ad<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 228792<br>Type: Opencast<br><b>Status: Dormant</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m | A14NE (N)                              | 702                          | 2       | 275240 199905 |
| 110    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gelliau<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154258<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m                             | A15NE (NE)                             | 711                          | 2       | 275806 199821 |
| 111    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gilfach Quarry<br>Location: The Rhyddingsgylfach Road, Neath, West Glamorgan, Sa10 8ad<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 228791<br>Type: Opencast<br><b>Status: Dormant</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m | A14NE (N)                              | 723                          | 2       | 275190 199930 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 112    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gelliau<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154261<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m                       | A16NW (NE)                             | 817                          | 2       | 276029 199808 |
| 113    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gelliau<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154259<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m                       | A15NE (NE)                             | 824                          | 2       | 275993 199843 |
| 114    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Fire Engine Pit<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154181<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Grovesend Formation<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m         | A9NW (W)                               | 825                          | 2       | 274239 199233 |
| 115    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gilfach-Fach Coal Level<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154257<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Grovesend Formation<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m | A14NW (NW)                             | 838                          | 2       | 274691 199908 |
| 116    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gilfach-Fach Coal Level<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154256<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Grovesend Formation<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m | A14NW (NW)                             | 858                          | 2       | 274780 199976 |
| 117    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gelliau<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154260<br>Type: Opencast<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m                            | A16NW (NE)                             | 872                          | 2       | 276064 199850 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 118    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gilfach Quarry<br>Location: The Rhyddingsgilfach Road, Neath, West Glamorgan, SA10 8AD<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 228793<br>Type: Opencast<br><b>Status: Active</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Sandstone<br>Positional Accuracy: Located by supplier to within 10m | A19SW (N)                              | 886                          | 2       | 275365 200070 |
| 119    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Bryn-Teg<br>Location: , Rhydding, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154088<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Grovesend Formation<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m                     | A5NE (SW)                              | 905                          | 2       | 274395 198473 |
| 120    | <b>BGS Recorded Mineral Sites</b><br>Site Name: Gelliau<br>Location: , Aberdulais, Neath, West Glamorgan<br>Source: British Geological Survey, National Geoscience Information Service<br>Reference: 154262<br>Type: Underground<br><b>Status: Ceased</b><br>Operator: Not Supplied<br>Operator Location: Not Supplied<br>Periodic Type: Carboniferous<br>Geology: Hughes Member<br>Commodity: Coal - Deep<br>Positional Accuracy: Located by supplier to within 10m                          | A16NW (NE)                             | 972                          | 2       | 276326 199718 |
|        | <b>BGS Measured Urban Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Grid: 275260, 198730<br>Soil Sample Type: Topsoil<br>Sample Area: Swansea<br>Arsenic Measured 84.00 mg/kg<br>Concentration:<br>Cadmium Measured 1.50 mg/kg<br>Concentration:<br>Chromium Measured 65.20 mg/kg<br>Concentration:<br>Lead Measured 113.50 mg/kg<br>Concentration:<br>Nickel Measured 33.40 mg/kg<br>Concentration:                                    | A10SE (S)                              | 184                          | 2       | 275260 198730 |
|        | <b>BGS Measured Urban Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Grid: 275740, 198740<br>Soil Sample Type: Topsoil<br>Sample Area: Swansea<br>Arsenic Measured 30.40 mg/kg<br>Concentration:<br>Cadmium Measured 1.00 mg/kg<br>Concentration:<br>Chromium Measured 70.00 mg/kg<br>Concentration:<br>Lead Measured 126.00 mg/kg<br>Concentration:<br>Nickel Measured 34.40 mg/kg<br>Concentration:                                    | A11SE (SE)                             | 249                          | 2       | 275740 198740 |



| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Measured Urban Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Grid: 274750, 198750<br>Soil Sample Type: Topsoil<br>Sample Area: Swansea<br>Arsenic Measured 57.10 mg/kg<br>Concentration:<br>Cadmium Measured 2.20 mg/kg<br>Concentration:<br>Chromium Measured 56.40 mg/kg<br>Concentration:<br>Lead Measured 90.00 mg/kg<br>Concentration:<br>Nickel Measured 28.30 mg/kg<br>Concentration:    | A10SW (SW)                             | 457                          | 2       | 274750 198750 |
|        | <b>BGS Measured Urban Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Grid: 274750, 198730<br>Soil Sample Type: Topsoil<br>Sample Area: Swansea<br>Arsenic Measured 51.80 mg/kg<br>Concentration:<br>Cadmium Measured 1.40 mg/kg<br>Concentration:<br>Chromium Measured 74.40 mg/kg<br>Concentration:<br>Lead Measured 200.10 mg/kg<br>Concentration:<br>Nickel Measured 32.10 mg/kg<br>Concentration:   | A10SW (SW)                             | 467                          | 2       | 274750 198730 |
|        | <b>BGS Measured Urban Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Grid: 275260, 198230<br>Soil Sample Type: Topsoil<br>Sample Area: Swansea<br>Arsenic Measured 48.30 mg/kg<br>Concentration:<br>Cadmium Measured 2.80 mg/kg<br>Concentration:<br>Chromium Measured 127.90 mg/kg<br>Concentration:<br>Lead Measured 661.00 mg/kg<br>Concentration:<br>Nickel Measured 106.90 mg/kg<br>Concentration: | A6SE (S)                               | 597                          | 2       | 275260 198230 |
|        | <b>BGS Measured Urban Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Grid: 275620, 198170<br>Soil Sample Type: Topsoil<br>Sample Area: Swansea<br>Arsenic Measured 118.10 mg/kg<br>Concentration:<br>Cadmium Measured 0.90 mg/kg<br>Concentration:<br>Chromium Measured 82.00 mg/kg<br>Concentration:<br>Lead Measured 233.20 mg/kg<br>Concentration:<br>Nickel Measured 54.00 mg/kg<br>Concentration:  | A7SW (S)                               | 641                          | 2       | 275620 198170 |
|        | <b>BGS Measured Urban Soil Chemistry</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Grid: 274750, 198250<br>Soil Sample Type: Topsoil<br>Sample Area: Swansea<br>Arsenic Measured 90.60 mg/kg<br>Concentration:<br>Cadmium Measured 2.30 mg/kg<br>Concentration:<br>Chromium Measured 84.50 mg/kg<br>Concentration:<br>Lead Measured 447.70 mg/kg<br>Concentration:<br>Nickel Measured 47.80 mg/kg<br>Concentration:   | A6SW (SW)                              | 809                          | 2       | 274750 198250 |

| Map ID | Details                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>BGS Urban Soil Chemistry Averages</b><br>Source: British Geological Survey, National Geoscience Information Service<br>Sample Area: Swansea<br>Count Id: 368<br>Arsenic Minimum: 8.00 mg/kg<br>Concentration:<br>Arsenic Average: 79.00 mg/kg<br>Concentration:<br>Arsenic Maximum: 2161.00 mg/kg<br>Concentration:<br>Cadmium Minimum: 0.10 mg/kg<br>Concentration:<br>Cadmium Average: 2.90 mg/kg<br>Concentration:<br>Cadmium Maximum: 61.90 mg/kg<br>Concentration:<br>Chromium Minimum: 13.00 mg/kg<br>Concentration:<br>Chromium Average: 72.00 mg/kg<br>Concentration:<br>Chromium Maximum: 562.00 mg/kg<br>Concentration:<br>Lead Minimum: 23.00 mg/kg<br>Concentration:<br>Lead Average: 413.00 mg/kg<br>Concentration:<br>Lead Maximum: 10000.00 mg/kg<br>Concentration:<br>Nickel Minimum: 8.00 mg/kg<br>Concentration:<br>Nickel Average: 52.00 mg/kg<br>Concentration:<br>Nickel Maximum: 384.00 mg/kg<br>Concentration: | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>Coal Mining Affected Areas</b><br>Description: In an area which may be affected by coal mining activity. It is recommended that a coal mining report is obtained from the Coal Authority. Contact details are included in the Useful Contacts section of this report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | A11NW (SE)                             | 0                            | 6       | 275343 199032 |
|        | <b>Mining Instability</b><br>Mining Evidence: Inconclusive Coal Mining<br>Source: Ove Arup & Partners<br>Boundary Quality: As Supplied                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A11NW (SE)                             | 0                            | -       | 275343 199032 |
|        | <b>Non Coal Mining Areas of Great Britain</b><br>No Hazard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                        |                              |         |               |
|        | <b>Potential for Collapsible Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>Potential for Collapsible Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | A10NE (W)                              | 59                           | 2       | 275000 199032 |
|        | <b>Potential for Compressible Ground Stability Hazards</b><br>Hazard Potential: No Hazard<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>Potential for Compressible Ground Stability Hazards</b><br>Hazard Potential: No Hazard<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | A10NE (W)                              | 59                           | 2       | 275000 199032 |
|        | <b>Potential for Ground Dissolution Stability Hazards</b><br>Hazard Potential: No Hazard<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>Potential for Ground Dissolution Stability Hazards</b><br>Hazard Potential: No Hazard<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | A10NE (W)                              | 59                           | 2       | 275000 199032 |
|        | <b>Potential for Landslide Ground Stability Hazards</b><br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>Potential for Landslide Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A11NW (N)                              | 0                            | 2       | 275336 199059 |
|        | <b>Potential for Landslide Ground Stability Hazards</b><br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | A11NW (E)                              | 19                           | 2       | 275621 199067 |

| Map ID | Details                                                                                                                                                                                                                                                                      | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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|        | <b>Potential for Landslide Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                          | A10NE (W)                              | 59                           | 2       | 275000 199032 |
|        | <b>Potential for Landslide Ground Stability Hazards</b><br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                               | A11SW (SE)                             | 73                           | 2       | 275592 198830 |
|        | <b>Potential for Landslide Ground Stability Hazards</b><br>Hazard Potential: Moderate<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                          | A11NW (NE)                             | 127                          | 2       | 275610 199259 |
|        | <b>Potential for Landslide Ground Stability Hazards</b><br>Hazard Potential: Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                               | A11NE (NE)                             | 236                          | 2       | 275766 199238 |
|        | <b>Potential for Running Sand Ground Stability Hazards</b><br>Hazard Potential: No Hazard<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                      | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>Potential for Running Sand Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                       | A10SE (SW)                             | 0                            | 2       | 275179 198894 |
|        | <b>Potential for Running Sand Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                       | A11NW (E)                              | 19                           | 2       | 275621 199067 |
|        | <b>Potential for Running Sand Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                       | A10NE (W)                              | 59                           | 2       | 275000 199032 |
|        | <b>Potential for Running Sand Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                                       | A11SW (SE)                             | 142                          | 2       | 275594 198718 |
|        | <b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                         | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b><br>Hazard Potential: No Hazard<br>Source: British Geological Survey, National Geoscience Information Service                                                                                        | A11NW (N)                              | 0                            | 2       | 275336 199059 |
|        | <b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                         | A10NE (W)                              | 59                           | 2       | 275000 199032 |
|        | <b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b><br>Hazard Potential: Very Low<br>Source: British Geological Survey, National Geoscience Information Service                                                                                         | A11NE (NE)                             | 236                          | 2       | 275766 199238 |
|        | <b>Radon Potential - Radon Affected Areas</b><br>Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level).<br>Source: British Geological Survey, National Geoscience Information Service    | A10NE (N)                              | 0                            | 2       | 275323 199126 |
|        | <b>Radon Potential - Radon Affected Areas</b><br>Affected Area: The property is in an Intermediate probability radon area (3 to 5% of homes are estimated to be at or above the Action Level).<br>Source: British Geological Survey, National Geoscience Information Service | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>Radon Potential - Radon Affected Areas</b><br>Affected Area: The property is in a Lower probability radon area (less than 1% of homes are estimated to be at or above the Action Level).<br>Source: British Geological Survey, National Geoscience Information Service    | A11SW (SE)                             | 0                            | 2       | 275473 198926 |
|        | <b>Radon Potential - Radon Protection Measures</b><br>Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions<br>Source: British Geological Survey, National Geoscience Information Service                        | A10NE (N)                              | 0                            | 2       | 275323 199126 |
|        | <b>Radon Potential - Radon Protection Measures</b><br>Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions<br>Source: British Geological Survey, National Geoscience Information Service                     | A11NW (SE)                             | 0                            | 2       | 275343 199032 |
|        | <b>Radon Potential - Radon Protection Measures</b><br>Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions<br>Source: British Geological Survey, National Geoscience Information Service                        | A11SW (SE)                             | 0                            | 2       | 275473 198926 |



| Map ID | Details                                                                                                                                                                                                                                                                                             | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 121    | <b>Contemporary Trade Directory Entries</b><br>Name: B G Lewis<br>Location: 15, Kestrel Close, Bryncoch, Neath, West Glamorgan, SA10 8DX<br>Classification: Gas Appliances - Sales & Service<br><b>Status:</b> Inactive<br>Positional Accuracy: Automatically positioned to the address             | A10SE (S)                              | 120                          | -       | 275326 198782 |
| 122    | <b>Contemporary Trade Directory Entries</b><br>Name: West Coast Cooling<br>Location: 12, Gilfach Road, Neath, West Glamorgan, SA10 8EH<br>Classification: Air Conditioning & Refrigeration Contractors<br><b>Status:</b> Active<br>Positional Accuracy: Automatically positioned to the address     | A10NW (W)                              | 145                          | -       | 274926 199089 |
| 123    | <b>Contemporary Trade Directory Entries</b><br>Name: Engineering Integrity Neath Ltd<br>Location: 35, Stanley Place, Cadoxton, Neath, SA10 8BE<br>Classification: Engineers - General<br><b>Status:</b> Active<br>Positional Accuracy: Automatically positioned to the address                      | A11SE (SE)                             | 283                          | -       | 275733 198673 |
| 124    | <b>Contemporary Trade Directory Entries</b><br>Name: Country Style Blinds<br>Location: 80, Llygad yr Haul, Neath, West Glamorgan, SA10 7SP<br>Classification: Blinds, Awnings & Canopies<br><b>Status:</b> Inactive<br>Positional Accuracy: Automatically positioned to the address                 | A10SW (SW)                             | 450                          | -       | 274790 198703 |
| 125    | <b>Contemporary Trade Directory Entries</b><br>Name: Pacetech Ltd<br>Location: 11, Glendale, Neath, West Glamorgan, SA10 7PF<br>Classification: Printers<br><b>Status:</b> Inactive<br>Positional Accuracy: Automatically positioned to the address                                                 | A9NE (W)                               | 677                          | -       | 274385 199204 |
| 126    | <b>Contemporary Trade Directory Entries</b><br>Name: Cemex Gilfach Quarry & Asphalt Plant<br>Location: Gilfach Quarry, Gilfach Road, Neath, SA10 8AD<br>Classification: Sand, Gravel & Other Aggregates<br><b>Status:</b> Active<br>Positional Accuracy: Automatically positioned to the address    | A14NE (N)                              | 680                          | -       | 275173 199888 |
| 126    | <b>Contemporary Trade Directory Entries</b><br>Name: Cemex UK<br>Location: Gilfach Quarry, Gilfach Road, NEATH, West Glamorgan, SA10 8AD<br>Classification: Quarries<br><b>Status:</b> Inactive<br>Positional Accuracy: Automatically positioned to the address                                     | A14NE (N)                              | 680                          | -       | 275173 199888 |
| 126    | <b>Contemporary Trade Directory Entries</b><br>Name: R M C Ltd<br>Location: Gilfach Quarry, Gilfach Road, NEATH, West Glamorgan, SA10 8AD<br>Classification: Sand, Gravel & Other Aggregates<br><b>Status:</b> Inactive<br>Positional Accuracy: Automatically positioned to the address             | A14NE (N)                              | 680                          | -       | 275173 199888 |
| 126    | <b>Contemporary Trade Directory Entries</b><br>Name: Cemex<br>Location: Gilfach Quarry, Gilfach Road, Neath, SA10 8AD<br>Classification: Sand, Gravel & Other Aggregates<br><b>Status:</b> Inactive<br>Positional Accuracy: Automatically positioned to the address                                 | A14NE (N)                              | 680                          | -       | 275173 199888 |
| 126    | <b>Contemporary Trade Directory Entries</b><br>Name: Cemex<br>Location: Gilfach Quarry, Gilfach Road, Neath, SA10 8AD<br>Classification: Quarries<br><b>Status:</b> Active<br>Positional Accuracy: Automatically positioned to the address                                                          | A14NE (N)                              | 680                          | -       | 275173 199888 |
| 127    | <b>Contemporary Trade Directory Entries</b><br>Name: Tynygarth Meat Supplies<br>Location: 15, Ffrwd Vale, Neath, West Glamorgan, SA10 7BA<br>Classification: Meat - Wholesale<br><b>Status:</b> Inactive<br>Positional Accuracy: Automatically positioned to the address                            | A6SW (SW)                              | 881                          | -       | 274772 198151 |
| 128    | <b>Contemporary Trade Directory Entries</b><br>Name: Safeway Petrol Station<br>Location: Riverside Dr, Neath, West Glamorgan, SA11 1RS<br>Classification: Petrol Filling Stations<br><b>Status:</b> Inactive<br>Positional Accuracy: Manually positioned to the road within the address or location | A2NE (S)                               | 886                          | -       | 275304 197920 |

| Map ID | Details                                                                                                                                                                                                                                                                                          | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 129    | <b>Contemporary Trade Directory Entries</b><br>Name: Winking Clean<br>Location: 34, Fernlea Park, Neath, West Glamorgan, SA10 7SX<br>Classification: Cleaning Services - Domestic<br>Status: <b>Active</b><br>Positional Accuracy: Automatically positioned to the address                       | A9SW (W)                               | 970                          | -       | 274159 198786 |
| 130    | <b>Contemporary Trade Directory Entries</b><br>Name: Cedryn James Of Neath<br>Location: 54, Underwood Road, Cadoxton, Neath, West Glamorgan, SA10 8BY<br>Classification: Wrought Ironwork<br>Status: <b>Active</b><br>Positional Accuracy: Automatically positioned to the address               | A12NE (E)                              | 972                          | -       | 276557 199256 |
| 131    | <b>Contemporary Trade Directory Entries</b><br>Name: Absolutley Steaming Wales<br>Location: 35, Furzeland Drive, Neath, West Glamorgan, SA10 7UG<br>Classification: Ironing & Home Laundry Services<br>Status: <b>Inactive</b><br>Positional Accuracy: Automatically positioned to the address   | A13NE (NW)                             | 994                          | -       | 274416 199906 |
| 132    | <b>Fuel Station Entries</b><br>Name: Morrisons Neath<br>Location: Angel Street, Neath, West Glamorgan, SA11 1RS<br>Brand: Morrisons<br>Premises Type: Hypermarket<br>Status: <b>Open</b><br>Positional Accuracy: Manually positioned to the address or location                                  | A2NE (S)                               | 904                          | -       | 275301 197902 |
| 133    | <b>Points of Interest - Commercial Services</b><br>Name: A P Mobile Car Valeting<br>Location: 52 Underwood Road, Cadoxton, Neath, SA10 8BY<br>Category: Personal, Consumer and other Services<br>Class Code: Vehicle Cleaning Services<br>Positional Accuracy: Positioned to address or location | A12NE (E)                              | 958                          | 7       | 276545 199249 |
| 133    | <b>Points of Interest - Commercial Services</b><br>Name: A P Mobile Car Valeting<br>Location: 52 Underwood Road, Cadoxton, Neath, SA10 8BY<br>Category: Personal, Consumer and other Services<br>Class Code: Vehicle Cleaning Services<br>Positional Accuracy: Positioned to address or location | A12NE (E)                              | 958                          | 7       | 276544 199249 |
| 133    | <b>Points of Interest - Commercial Services</b><br>Name: Cedryn James of Neath<br>Location: 54 Underwood Road, Cadoxton, Neath, SA10 8BY<br>Category: Construction Services<br>Class Code: Metalworkers Including Blacksmiths<br>Positional Accuracy: Positioned to address or location          | A12NE (E)                              | 972                          | 7       | 276557 199256 |
| 133    | <b>Points of Interest - Commercial Services</b><br>Name: Cedryn James of Neath<br>Location: 54 Underwood Road, Cadoxton, Neath, SA10 8BY<br>Category: Construction Services<br>Class Code: Metalworkers Including Blacksmiths<br>Positional Accuracy: Positioned to address or location          | A12NE (E)                              | 972                          | 7       | 276557 199255 |
| 134    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Shaft (Disused)<br>Location: SA10<br>Category: Extractive Industries<br>Class Code: Unspecified Quarries Or Mines<br>Positional Accuracy: Positioned to address or location                                                    | A11SW (SE)                             | 119                          | 7       | 275634 198817 |
| 135    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Tank<br>Location: SA10<br>Category: Industrial Features<br>Class Code: Tanks (Generic)<br>Positional Accuracy: Positioned to an adjacent address or location                                                                   | A15SW (NE)                             | 243                          | 7       | 275607 199397 |
| 136    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Sheep Wash<br>Location: SA10<br>Category: Farming<br>Class Code: Sheep Dips and Washes<br>Positional Accuracy: Positioned to an adjacent address or location                                                                   | A15SE (NE)                             | 296                          | 7       | 275729 199380 |
| 137    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Tank<br>Location: SA10<br>Category: Industrial Features<br>Class Code: Tanks (Generic)<br>Positional Accuracy: Positioned to an adjacent address or location                                                                   | A9NE (W)                               | 480                          | 7       | 274585 199219 |

| Map ID | Details                                                                                                                                                                                                                                                                          | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 138    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Trevor G Thomas<br>Location: Tyn yr Heol Farm, Main Road, Bryncoch, Neath, SA10 7PD<br>Category: Farming<br>Class Code: Livestock Farming<br>Positional Accuracy: Positioned to address or location            | A9NE (W)                               | 480                          | 7       | 274584 199082 |
| 139    | <b>Points of Interest - Manufacturing and Production</b><br>Name: W J Leyshon<br>Location: Cefnfaes, Cadoxton, Neath, SA10 8AH<br>Category: Farming<br>Class Code: Livestock Farming<br>Positional Accuracy: Positioned to address or location                                   | A15NE (NE)                             | 563                          | 7       | 275680 199712 |
| 139    | <b>Points of Interest - Manufacturing and Production</b><br>Name: W J Leyshon<br>Location: Cefnfaes, Cadoxton, Neath, SA10 8AH<br>Category: Farming<br>Class Code: Livestock Farming<br>Positional Accuracy: Positioned to address or location                                   | A15NE (NE)                             | 563                          | 7       | 275680 199712 |
| 140    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Gilfach Quarry (Sandstone)<br>Location: SA10<br>Category: Extractive Industries<br>Class Code: Stone Quarrying and Preparation<br>Positional Accuracy: Positioned to an adjacent address or location           | A15NW (N)                              | 661                          | 7       | 275342 199844 |
| 141    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Cemex UK<br>Location: Gilfach Quarry, Gilfach Road, Neath, SA10 8AD<br>Category: Extractive Industries<br>Class Code: Unspecified Quarries Or Mines<br>Positional Accuracy: Positioned to address or location  | A14NE (N)                              | 680                          | 7       | 275173 199888 |
| 141    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Cemex Ltd<br>Location: Gilfach Quarry, Gilfach Road, Neath, SA10 8AD<br>Category: Extractive Industries<br>Class Code: Unspecified Quarries Or Mines<br>Positional Accuracy: Positioned to address or location | A14NE (N)                              | 680                          | 7       | 275172 199888 |
| 142    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Vale of Neath Business Park<br>Location: SA10<br>Category: Industrial Features<br>Class Code: Business Parks and Industrial Estates<br>Positional Accuracy: Positioned to an adjacent address or location      | A6SE (S)                               | 769                          | 7       | 275075 198128 |
| 143    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Quarry (Disused)<br>Location: SA10<br>Category: Extractive Industries<br>Class Code: Unspecified Quarries Or Mines<br>Positional Accuracy: Positioned to address or location                                   | A16NW (NE)                             | 877                          | 7       | 276062 199858 |
| 144    | <b>Points of Interest - Manufacturing and Production</b><br>Name: W J Lewis<br>Location: Gilfach Road, Neath, SA10 8AD<br>Category: Farming<br>Class Code: Livestock Farming<br>Positional Accuracy: Positioned to address or location                                           | A18SE (N)                              | 892                          | 7       | 275111 200098 |
| 145    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Tank<br>Location: SA10<br>Category: Industrial Features<br>Class Code: Tanks (Generic)<br>Positional Accuracy: Positioned to address or location                                                               | A16NW (NE)                             | 943                          | 7       | 276252 199765 |
| 145    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Tank<br>Location: SA10<br>Category: Industrial Features<br>Class Code: Tanks (Generic)<br>Positional Accuracy: Positioned to address or location                                                               | A16NW (NE)                             | 945                          | 7       | 276248 199773 |
| 145    | <b>Points of Interest - Manufacturing and Production</b><br>Name: Tanks<br>Location: SA10<br>Category: Industrial Features<br>Class Code: Tanks (Generic)<br>Positional Accuracy: Positioned to an adjacent address or location                                                  | A16NW (NE)                             | 954                          | 7       | 276263 199770 |



| Map ID | Details                                                                                                                                                                                                                                                                | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
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| 146    | <b>Points of Interest - Public Infrastructure</b><br>Name: Sluice<br>Location: SA10<br>Category: Water<br>Class Code: Weirs, Sluices and Dams<br>Positional Accuracy: Positioned to an adjacent address or location                                                    | A7NE (SE)                              | 459                          | 7       | 275834 198520 |
| 147    | <b>Points of Interest - Public Infrastructure</b><br>Name: Outfall<br>Location: SA11<br>Category: Infrastructure and Facilities<br>Class Code: Waste Storage, Processing and Disposal<br>Positional Accuracy: Positioned to an adjacent address or location            | A3NW (S)                               | 900                          | 7       | 275517 197893 |
| 148    | <b>Points of Interest - Public Infrastructure</b><br>Name: W M Morrisons Petrol Station<br>Location: Angel Street, Neath, Neath, SA11 1RS<br>Category: Road And Rail<br>Class Code: Petrol and Fuel Stations<br>Positional Accuracy: Positioned to address or location | A2NE (S)                               | 902                          | 7       | 275301 197904 |
| 148    | <b>Points of Interest - Public Infrastructure</b><br>Name: Morrisons Neath<br>Location: Angel Street, Neath, SA11 1RS<br>Category: Road And Rail<br>Class Code: Petrol and Fuel Stations<br>Positional Accuracy: Positioned to address or location                     | A2NE (S)                               | 904                          | 7       | 275301 197902 |
| 148    | <b>Points of Interest - Public Infrastructure</b><br>Name: Sluice<br>Location: SA11<br>Category: Water<br>Class Code: Weirs, Sluices and Dams<br>Positional Accuracy: Positioned to an adjacent address or location                                                    | A2NE (S)                               | 967                          | 7       | 275217 197856 |
| 149    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Play Area<br>Location: Not Supplied<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to an adjacent address or location                                     | A10SE (SW)                             | 114                          | 7       | 275180 198804 |
| 149    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Play Area<br>Location: Curlew Close, SA10<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to an adjacent address or location                               | A10SE (SW)                             | 114                          | 7       | 275180 198804 |
| 150    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Play Area<br>Location: Not Supplied<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to an adjacent address or location                                     | A11SE (E)                              | 169                          | 7       | 275725 198877 |
| 150    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Play Area<br>Location: (Bryn Catwg), SA10<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to an adjacent address or location                               | A11SE (E)                              | 169                          | 7       | 275725 198877 |
| 151    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Playground<br>Location: (Heol-Y-Felin), SA10<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to address or location                                        | A6NW (SW)                              | 471                          | 7       | 274846 198608 |
| 151    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Playground<br>Location: Not Supplied<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to an adjacent address or location                                    | A6NW (SW)                              | 476                          | 7       | 274840 198608 |
| 152    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Playground<br>Location: Main Road, SA10<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to an adjacent address or location                                 | A12SW (E)                              | 545                          | 7       | 276131 198890 |

| Map ID | Details                                                                                                                                                                                                                                  | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------|---------|---------------|
| 153    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Playground<br>Location: Not Supplied<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to an adjacent address or location      | A13SE (NW)                             | 791                          | 7       | 274445 199646 |
| 153    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Playground<br>Location: Elias Drive, SA10<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to an adjacent address or location | A13SE (NW)                             | 791                          | 7       | 274445 199646 |
| 154    | <b>Points of Interest - Recreational and Environmental</b><br>Name: Playground<br>Location: (Llys Wern), SA10<br>Category: Recreational<br>Class Code: Playgrounds<br>Positional Accuracy: Positioned to address or location             | A9SE (W)                               | 864                          | 7       | 274335 198666 |

| Map ID | Details                                                                                                                                        | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR           |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------|---------|---------------|
| 155    | <b>Ancient Woodland</b><br>Name: Not Supplied<br>Reference: 180<br>Area(m <sup>2</sup> ): 112818.49<br>Type: Ancient and Semi-Natural Woodland | A11NW (E)                              | 0                            | 3       | 275581 199094 |
| 156    | <b>Ancient Woodland</b><br>Name: Not Supplied<br>Reference: 173<br>Area(m <sup>2</sup> ): 362092.16<br>Type: Plantation on Ancient Woodland    | A11NE (E)                              | 83                           | 3       | 275688 199068 |
| 157    | <b>Ancient Woodland</b><br>Name: Not Supplied<br>Reference: 205<br>Area(m <sup>2</sup> ): 11218.44<br>Type: Plantation on Ancient Woodland     | A7NW (S)                               | 173                          | 3       | 275437 198620 |
| 158    | <b>Ancient Woodland</b><br>Name: Not Supplied<br>Reference: 175<br>Area(m <sup>2</sup> ): 15200.36<br>Type: Plantation on Ancient Woodland     | A15NE (NE)                             | 644                          | 3       | 275843 199725 |
| 159    | <b>Ancient Woodland</b><br>Name: Not Supplied<br>Reference: 184<br>Area(m <sup>2</sup> ): 77660.02<br>Type: Ancient and Semi-Natural Woodland  | A9NE (W)                               | 709                          | 3       | 274359 199261 |
| 160    | <b>Ancient Woodland</b><br>Name: Not Supplied<br>Reference: 160<br>Area(m <sup>2</sup> ): 24765.2<br>Type: Ancient and Semi-Natural Woodland   | A18SE (N)                              | 954                          | 3       | 275158 200161 |



| Agency & Hydrological                                                                                                                                                                                                                                   | Version                                | Update Cycle                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------|
| <b>Contaminated Land Register Entries and Notices</b><br>City and County of Swansea - Environmental Health Department<br>Neath Port Talbot County Borough Council - Environmental Health Department                                                     | January 2015<br>March 2015             | Annual Rolling Update<br>Annual Rolling Update             |
| <b>Discharge Consents</b><br>Environment Agency - Welsh Region<br>Natural Resources Wales                                                                                                                                                               | August 2014<br>January 2017            | Quarterly<br>Quarterly                                     |
| <b>Enforcement and Prohibition Notices</b><br>Environment Agency - Welsh Region                                                                                                                                                                         | March 2013                             | As notified                                                |
| <b>Integrated Pollution Controls</b><br>Environment Agency - Welsh Region                                                                                                                                                                               | October 2008                           | Not Applicable                                             |
| <b>Integrated Pollution Prevention And Control</b><br>Environment Agency - Welsh Region<br>Natural Resources Wales                                                                                                                                      | January 2017<br>November 2016          | Quarterly<br>Quarterly                                     |
| <b>Local Authority Integrated Pollution Prevention And Control</b><br>Swansea Bay Port Health Authority<br>Neath Port Talbot County Borough Council - Environmental Health Department<br>City and County of Swansea - Environmental Health Department   | April 2014<br>August 2012<br>June 2014 | Annually<br>Annual Rolling Update<br>Annual Rolling Update |
| <b>Local Authority Pollution Prevention and Controls</b><br>Swansea Bay Port Health Authority<br>City and County of Swansea - Environmental Health Department<br>Neath Port Talbot County Borough Council - Environmental Health Department             | April 2014<br>June 2014<br>March 2014  | Annually<br>Annual Rolling Update<br>Annual Rolling Update |
| <b>Local Authority Pollution Prevention and Control Enforcements</b><br>Swansea Bay Port Health Authority<br>City and County of Swansea - Environmental Health Department<br>Neath Port Talbot County Borough Council - Environmental Health Department | April 2014<br>June 2014<br>March 2014  | Annually<br>Annual Rolling Update<br>Annual Rolling Update |
| <b>Pollution Incidents to Controlled Waters</b><br>Environment Agency - Welsh Region                                                                                                                                                                    | December 1998                          | Not Applicable                                             |
| <b>Prosecutions Relating to Authorised Processes</b><br>Environment Agency - Welsh Region<br>Natural Resources Wales                                                                                                                                    | March 2013<br>March 2013               | As notified<br>As notified                                 |
| <b>Prosecutions Relating to Controlled Waters</b><br>Environment Agency - Welsh Region<br>Natural Resources Wales                                                                                                                                       | March 2013<br>March 2013               | As notified<br>As notified                                 |
| <b>River Quality</b><br>Environment Agency - Head Office                                                                                                                                                                                                | November 2001                          | Not Applicable                                             |
| <b>Substantiated Pollution Incident Register</b><br>Environment Agency Wales - South West Area<br>Natural Resources Wales                                                                                                                               | January 2017<br>January 2017           | Quarterly<br>Quarterly                                     |
| <b>Water Abstractions</b><br>Natural Resources Wales<br>Environment Agency - Welsh Region                                                                                                                                                               | November 2016<br>October 2016          | Quarterly<br>Quarterly                                     |
| <b>Water Industry Act Referrals</b><br>Environment Agency - Welsh Region<br>Natural Resources Wales                                                                                                                                                     | January 2017<br>October 2015           | Quarterly<br>Quarterly                                     |
| <b>Groundwater Vulnerability</b><br>Environment Agency - Head Office                                                                                                                                                                                    | April 2015                             | Not Applicable                                             |
| <b>Drift Deposits</b><br>Environment Agency - Head Office                                                                                                                                                                                               | January 1999                           | Not Applicable                                             |
| <b>Bedrock Aquifer Designations</b><br>British Geological Survey - National Geoscience Information Service                                                                                                                                              | August 2015                            | As notified                                                |
| <b>Superficial Aquifer Designations</b><br>British Geological Survey - National Geoscience Information Service                                                                                                                                          | August 2015                            | As notified                                                |

| Agency & Hydrological                                                                                                 | Version       | Update Cycle |
|-----------------------------------------------------------------------------------------------------------------------|---------------|--------------|
| <b>Source Protection Zones</b><br>Natural Resources Wales                                                             | November 2016 | Quarterly    |
| <b>Extreme Flooding from Rivers or Sea without Defences</b><br>Natural Resources Wales                                | February 2017 | Quarterly    |
| <b>Flooding from Rivers or Sea without Defences</b><br>Natural Resources Wales                                        | February 2017 | Quarterly    |
| <b>Areas Benefiting from Flood Defences</b><br>Natural Resources Wales                                                | February 2017 | Quarterly    |
| <b>Flood Water Storage Areas</b><br>Natural Resources Wales                                                           | February 2017 | Quarterly    |
| <b>Flood Defences</b><br>Natural Resources Wales                                                                      | February 2017 | Quarterly    |
| <b>Surface Water 1 in 30 year Flood Extent</b><br>Natural Resources Wales                                             | October 2013  | As notified  |
| <b>Surface Water 1 in 100 year Flood Extent</b><br>Natural Resources Wales                                            | October 2013  | As notified  |
| <b>Surface Water 1 in 1000 year Flood Extent</b><br>Natural Resources Wales                                           | October 2013  | As notified  |
| <b>Surface Water Suitability</b><br>Natural Resources Wales                                                           | October 2013  | As notified  |
| <b>BGS Groundwater Flooding Susceptibility</b><br>British Geological Survey - National Geoscience Information Service | May 2013      | Annually     |

| Waste                                                                                                                                                                                        | Version                      | Update Cycle                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|------------------------------------------------|
| <b>BGS Recorded Landfill Sites</b><br>British Geological Survey - National Geoscience Information Service                                                                                    | June 1996                    | Not Applicable                                 |
| <b>Historical Landfill Sites</b><br>Natural Resources Wales                                                                                                                                  | January 2017                 | Quarterly                                      |
| <b>Integrated Pollution Control Registered Waste Sites</b><br>Environment Agency - Welsh Region                                                                                              | October 2008                 | Not Applicable                                 |
| <b>Licensed Waste Management Facilities (Landfill Boundaries)</b><br>Environment Agency Wales - South West Area<br>Natural Resources Wales                                                   | August 2016<br>August 2016   | Quarterly<br>Quarterly                         |
| <b>Licensed Waste Management Facilities (Locations)</b><br>Natural Resources Wales<br>Environment Agency Wales - South West Area                                                             | January 2017<br>October 2016 | Quarterly<br>Quarterly                         |
| <b>Local Authority Landfill Coverage</b><br>City and County of Swansea - Environmental Health Department<br>Neath Port Talbot County Borough Council - Environmental Health Department       | May 2000<br>May 2000         | Not Applicable<br>Not Applicable               |
| <b>Local Authority Recorded Landfill Sites</b><br>City and County of Swansea - Environmental Health Department<br>Neath Port Talbot County Borough Council - Environmental Health Department | May 2000<br>September 2003   | Not Applicable<br>Not Applicable               |
| <b>Potentially Infilled Land (Non-Water)</b><br>Landmark Information Group Limited                                                                                                           | December 1999                | Not Applicable                                 |
| <b>Potentially Infilled Land (Water)</b><br>Landmark Information Group Limited                                                                                                               | December 1999                | Not Applicable                                 |
| <b>Registered Landfill Sites</b><br>Environment Agency Wales - South West Area                                                                                                               | March 2003                   | Not Applicable                                 |
| <b>Registered Waste Transfer Sites</b><br>Environment Agency Wales - South West Area                                                                                                         | March 2003                   | Not Applicable                                 |
| <b>Registered Waste Treatment or Disposal Sites</b><br>Environment Agency Wales - South West Area                                                                                            | March 2003                   | Not Applicable                                 |
| Hazardous Substances                                                                                                                                                                         | Version                      | Update Cycle                                   |
| <b>Control of Major Accident Hazards Sites (COMAH)</b><br>Health and Safety Executive                                                                                                        | March 2017                   | Bi-Annually                                    |
| <b>Explosive Sites</b><br>Health and Safety Executive                                                                                                                                        | March 2017                   | Bi-Annually                                    |
| <b>Notification of Installations Handling Hazardous Substances (NIHHS)</b><br>Health and Safety Executive                                                                                    | November 2000                | Not Applicable                                 |
| <b>Planning Hazardous Substance Enforcements</b><br>City and County of Swansea - Planning Department<br>Neath Port Talbot County Borough Council - Planning Department                       | January 2016<br>October 2015 | Annual Rolling Update<br>Annual Rolling Update |
| <b>Planning Hazardous Substance Consents</b><br>City and County of Swansea - Planning Department<br>Neath Port Talbot County Borough Council - Planning Department                           | January 2016<br>October 2015 | Annual Rolling Update<br>Annual Rolling Update |



| Geological                                                                                                                                      | Version      | Update Cycle   |
|-------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------|
| <b>BGS 1:625,000 Solid Geology</b><br>British Geological Survey - National Geoscience Information Service                                       | January 2009 | Not Applicable |
| <b>BGS Estimated Soil Chemistry</b><br>British Geological Survey - National Geoscience Information Service                                      | October 2015 | As notified    |
| <b>BGS Recorded Mineral Sites</b><br>British Geological Survey - National Geoscience Information Service                                        | October 2016 | Bi-Annually    |
| <b>BGS Urban Soil Chemistry</b><br>British Geological Survey - National Geoscience Information Service                                          | October 2015 | As notified    |
| <b>BGS Urban Soil Chemistry Averages</b><br>British Geological Survey - National Geoscience Information Service                                 | October 2015 | As notified    |
| <b>CBSCB Compensation District</b><br>Cheshire Brine Subsidence Compensation Board (CBSCB)                                                      | August 2011  | Not Applicable |
| <b>Coal Mining Affected Areas</b><br>The Coal Authority - Property Searches                                                                     | March 2014   | As notified    |
| <b>Mining Instability</b><br>Ove Arup & Partners                                                                                                | October 2000 | Not Applicable |
| <b>Non Coal Mining Areas of Great Britain</b><br>British Geological Survey - National Geoscience Information Service                            | May 2015     | Not Applicable |
| <b>Potential for Collapsible Ground Stability Hazards</b><br>British Geological Survey - National Geoscience Information Service                | June 2015    | Annually       |
| <b>Potential for Compressible Ground Stability Hazards</b><br>British Geological Survey - National Geoscience Information Service               | June 2015    | Annually       |
| <b>Potential for Ground Dissolution Stability Hazards</b><br>British Geological Survey - National Geoscience Information Service                | June 2015    | Annually       |
| <b>Potential for Landslide Ground Stability Hazards</b><br>British Geological Survey - National Geoscience Information Service                  | June 2015    | Annually       |
| <b>Potential for Running Sand Ground Stability Hazards</b><br>British Geological Survey - National Geoscience Information Service               | June 2015    | Annually       |
| <b>Potential for Shrinking or Swelling Clay Ground Stability Hazards</b><br>British Geological Survey - National Geoscience Information Service | June 2015    | Annually       |
| <b>Radon Potential - Radon Affected Areas</b><br>British Geological Survey - National Geoscience Information Service                            | July 2011    | As notified    |
| <b>Radon Potential - Radon Protection Measures</b><br>British Geological Survey - National Geoscience Information Service                       | July 2011    | As notified    |

| Industrial Land Use                                                  | Version       | Update Cycle |
|----------------------------------------------------------------------|---------------|--------------|
| <b>Contemporary Trade Directory Entries</b><br>Thomson Directories   | January 2017  | Quarterly    |
| <b>Fuel Station Entries</b><br>Catalist Ltd - Experian               | February 2017 | Quarterly    |
| <b>Gas Pipelines</b><br>National Grid                                | July 2014     | Quarterly    |
| <b>Points of Interest - Commercial Services</b><br>PointX            | December 2016 | Quarterly    |
| <b>Points of Interest - Education and Health</b><br>PointX           | December 2016 | Quarterly    |
| <b>Points of Interest - Manufacturing and Production</b><br>PointX   | December 2016 | Quarterly    |
| <b>Points of Interest - Public Infrastructure</b><br>PointX          | December 2016 | Quarterly    |
| <b>Points of Interest - Recreational and Environmental</b><br>PointX | December 2016 | Quarterly    |
| <b>Underground Electrical Cables</b><br>National Grid                | December 2015 | Bi-Annually  |

| Sensitive Land Use                                                                                                             | Version                      | Update Cycle               |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------|
| <b>Ancient Woodland</b><br>Natural Resources Wales                                                                             | January 2014                 | Bi-Annually                |
| <b>Areas of Adopted Green Belt</b><br>City and County of Swansea                                                               | February 2017                | As notified                |
| <b>Areas of Outstanding Natural Beauty</b><br>Natural Resources Wales                                                          | January 2017                 | Bi-Annually                |
| <b>Environmentally Sensitive Areas</b><br>The National Assembly for Wales - GI Services (Department of Planning & Countryside) | January 2017                 | Annually                   |
| <b>Forest Parks</b><br>Forestry Commission                                                                                     | April 1997                   | Not Applicable             |
| <b>Local Nature Reserves</b><br>City and County of Swansea<br>Neath Port Talbot County Borough Council                         | January 2017<br>January 2017 | Bi-Annually<br>Bi-Annually |
| <b>Marine Nature Reserves</b><br>Natural Resources Wales                                                                       | January 2017                 | Bi-Annually                |
| <b>National Nature Reserves</b><br>Natural Resources Wales                                                                     | January 2017                 | Bi-Annually                |
| <b>National Parks</b><br>Natural Resources Wales                                                                               | February 2017                | Annually                   |
| <b>Nitrate Sensitive Areas</b><br>Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)                   | April 2016                   | Not Applicable             |
| <b>Nitrate Vulnerable Zones</b><br>The National Assembly for Wales - GI Services (Department of Planning & Countryside)        | October 2005                 | Annually                   |
| <b>Ramsar Sites</b><br>Natural Resources Wales                                                                                 | January 2017                 | Bi-Annually                |
| <b>Sites of Special Scientific Interest</b><br>Natural Resources Wales                                                         | January 2017                 | Bi-Annually                |
| <b>Special Areas of Conservation</b><br>Natural Resources Wales                                                                | January 2017                 | Bi-Annually                |
| <b>Special Protection Areas</b><br>Natural Resources Wales                                                                     | January 2017                 | Bi-Annually                |

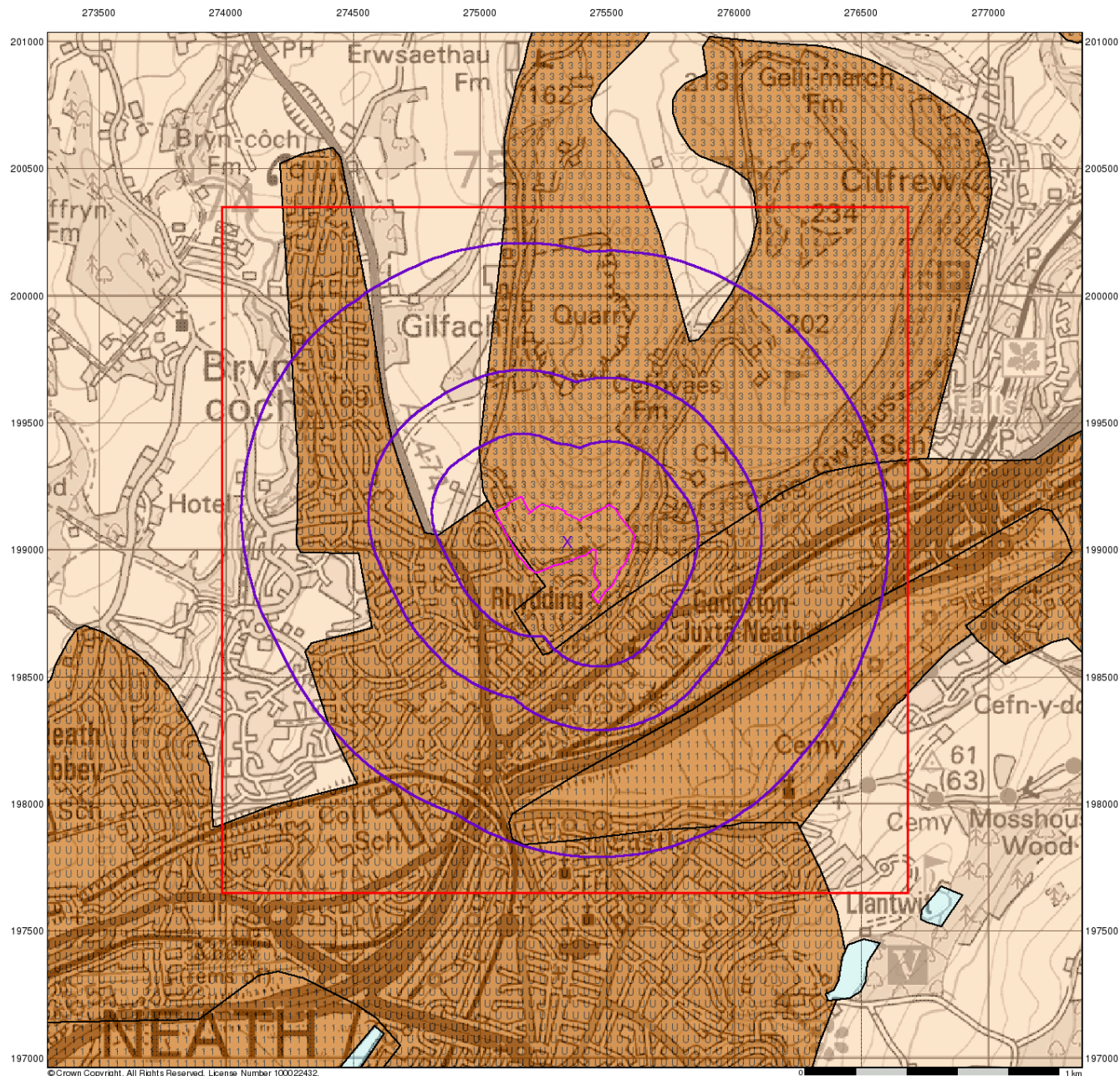


A selection of organisations who provide data within this report

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

| Contact | Name and Address                                                                                                                                            | Contact Details                                                                                                                                                                                                                      |
|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2       | <b>British Geological Survey - Enquiry Service</b><br>British Geological Survey, Kingsley Dunham Centre, Keyworth,<br>Nottingham, Nottinghamshire, NG12 5GG | Telephone: 0115 936 3143<br>Fax: 0115 936 3276<br>Email: <a href="mailto:enquiries@bgs.ac.uk">enquiries@bgs.ac.uk</a><br>Website: <a href="http://www.bgs.ac.uk">www.bgs.ac.uk</a>                                                   |
| 3       | <b>Natural Resources Wales</b><br>Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP                                                                            | Telephone: 0300 065 3000<br>Email: <a href="mailto:enquiries@naturalresourceswales.gov.uk">enquiries@naturalresourceswales.gov.uk</a>                                                                                                |
| 4       | <b>Neath Port Talbot County Borough Council - Environmental Health Department</b><br>Room 322, Neath Civic Centre, Neath, West Glamorgan, SA11 3QZ          | Telephone: 01639 763333<br>Fax: 01693 763444<br>Website: <a href="http://www.neath-porttalbot.gov.uk">www.neath-porttalbot.gov.uk</a>                                                                                                |
| 5       | <b>Environment Agency - National Customer Contact Centre (NCCC)</b><br>PO Box 544, Templeborough, Rotherham, S60 1BY                                        | Telephone: 03708 506 506<br>Email: <a href="mailto:enquiries@environment-agency.gov.uk">enquiries@environment-agency.gov.uk</a>                                                                                                      |
| 6       | <b>The Coal Authority - Property Searches</b><br>200 Lichfield Lane, Mansfield, Nottinghamshire, NG18 4RG                                                   | Telephone: 0345 762 6848<br>Fax: 01623 637 338<br>Email: <a href="mailto:groundstability@coal.gov.uk">groundstability@coal.gov.uk</a>                                                                                                |
| 7       | <b>PointX</b><br>7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY                                                                                   | Website: <a href="http://www.pointx.co.uk">www.pointx.co.uk</a>                                                                                                                                                                      |
| -       | <b>Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards</b><br>Chilton, Didcot, Oxfordshire, OX11 0RQ             | Telephone: 01235 822622<br>Fax: 01235 833891<br>Email: <a href="mailto:radon@phe.gov.uk">radon@phe.gov.uk</a><br>Website: <a href="http://www.ukradon.org">www.ukradon.org</a>                                                       |
| -       | <b>Landmark Information Group Limited</b><br>Imperium, Imperial Way, Reading, Berkshire, RG2 0TD                                                            | Telephone: 0844 844 9952<br>Fax: 0844 844 9951<br>Email: <a href="mailto:customerservices@landmarkinfo.co.uk">customerservices@landmarkinfo.co.uk</a><br>Website: <a href="http://www.landmarkinfo.co.uk">www.landmarkinfo.co.uk</a> |

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



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## Groundwater Vulnerability

### General

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

### Agency and Hydrological

#### Geological Classes

**Major Aquifer  
(Highly Permeable)**

**Minor Aquifer  
(Variably Permeable)**

**Non Aquifer  
(Negligibly Permeable)**

**Water or Sea**

**Drift Deposit**

#### Soil Classes

High (H) 1, 2, 3, U

Intermediate (I) 1, 2

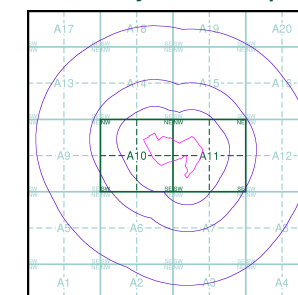
Low

High (H) 1, 2, 3, U

Intermediate (I) 1, 2

Low

### Site Sensitivity Context Map - Slice A



### Order Details

Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

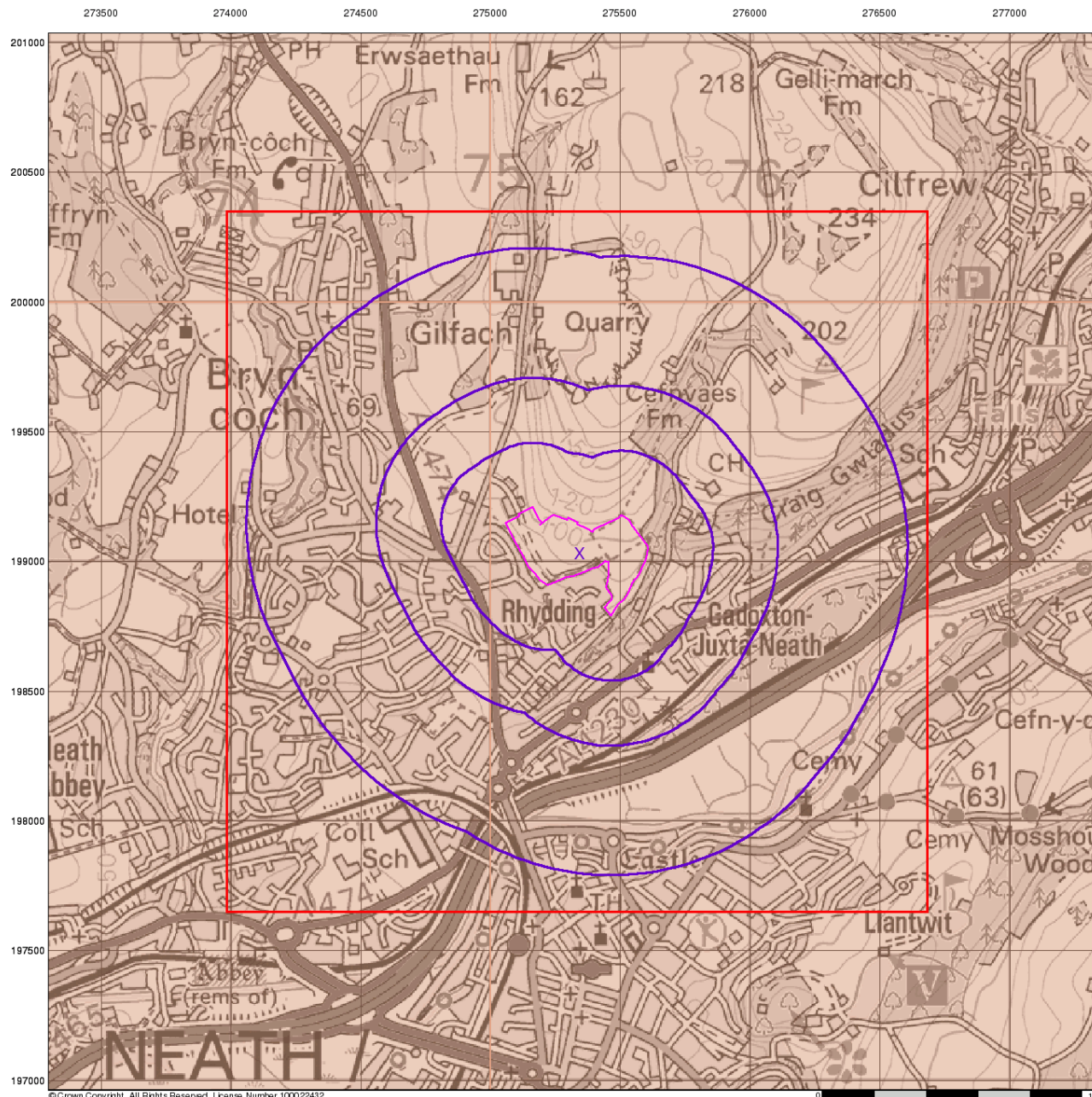
### Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

**Landmark**  
 INFORMATION GROUP

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





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## Bedrock Aquifer Designation

### General

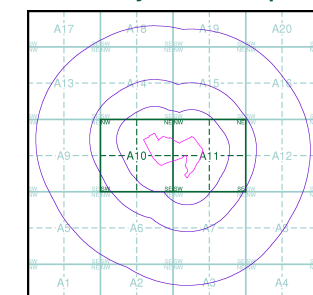
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B Map ID

### Agency and Hydrological

#### Geological Classes

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

### Site Sensitivity Context Map - Slice A



### Order Details

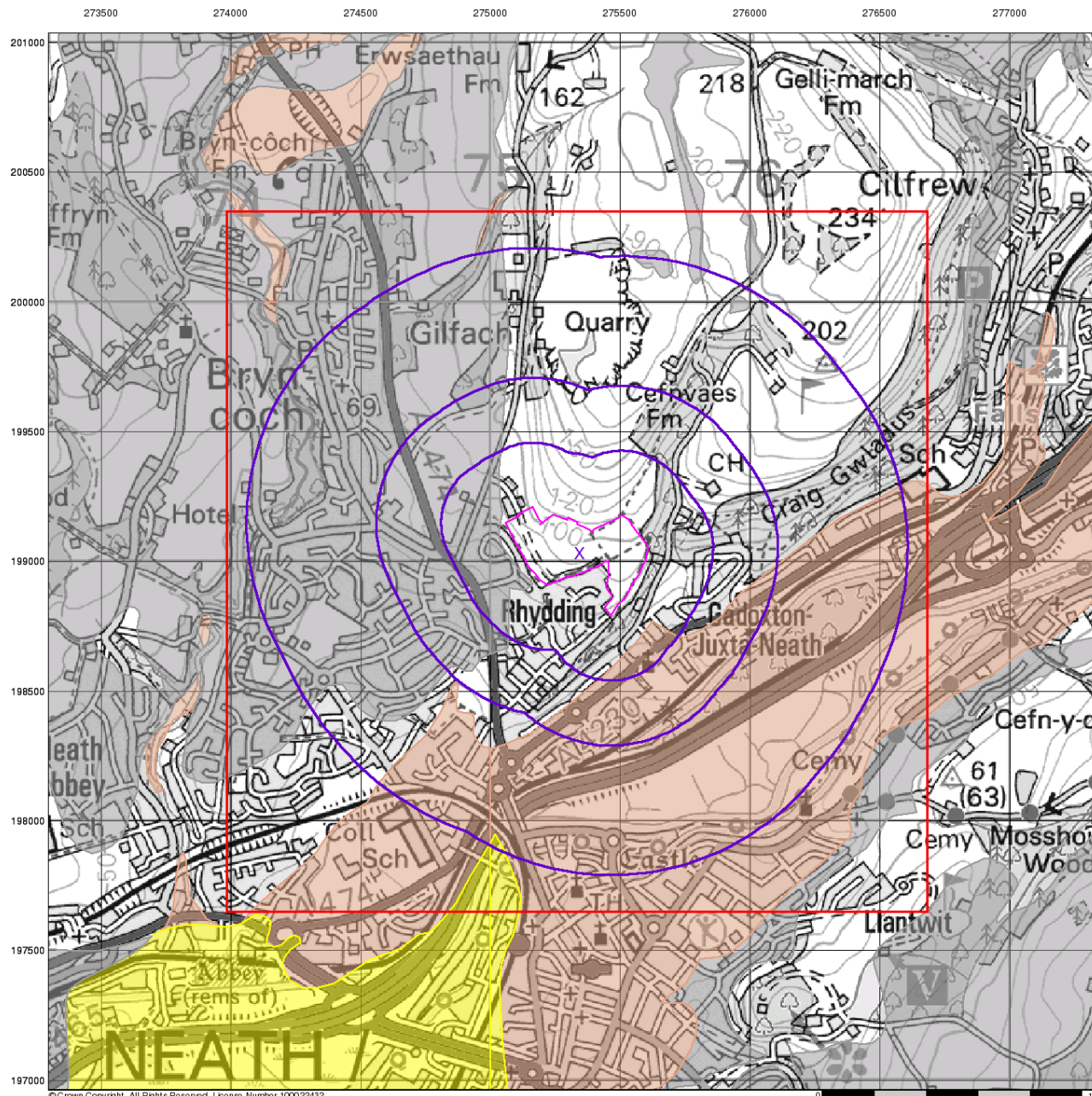
Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

### Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX



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



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## Superficial Aquifer Designation

### General

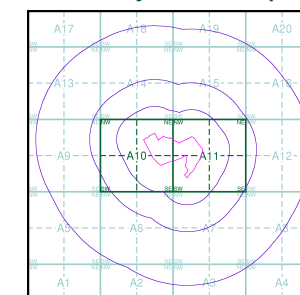
- ◊ Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B Map ID

### Agency and Hydrological

#### Geological Classes

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

### Site Sensitivity Context Map - Slice A



### Order Details

Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

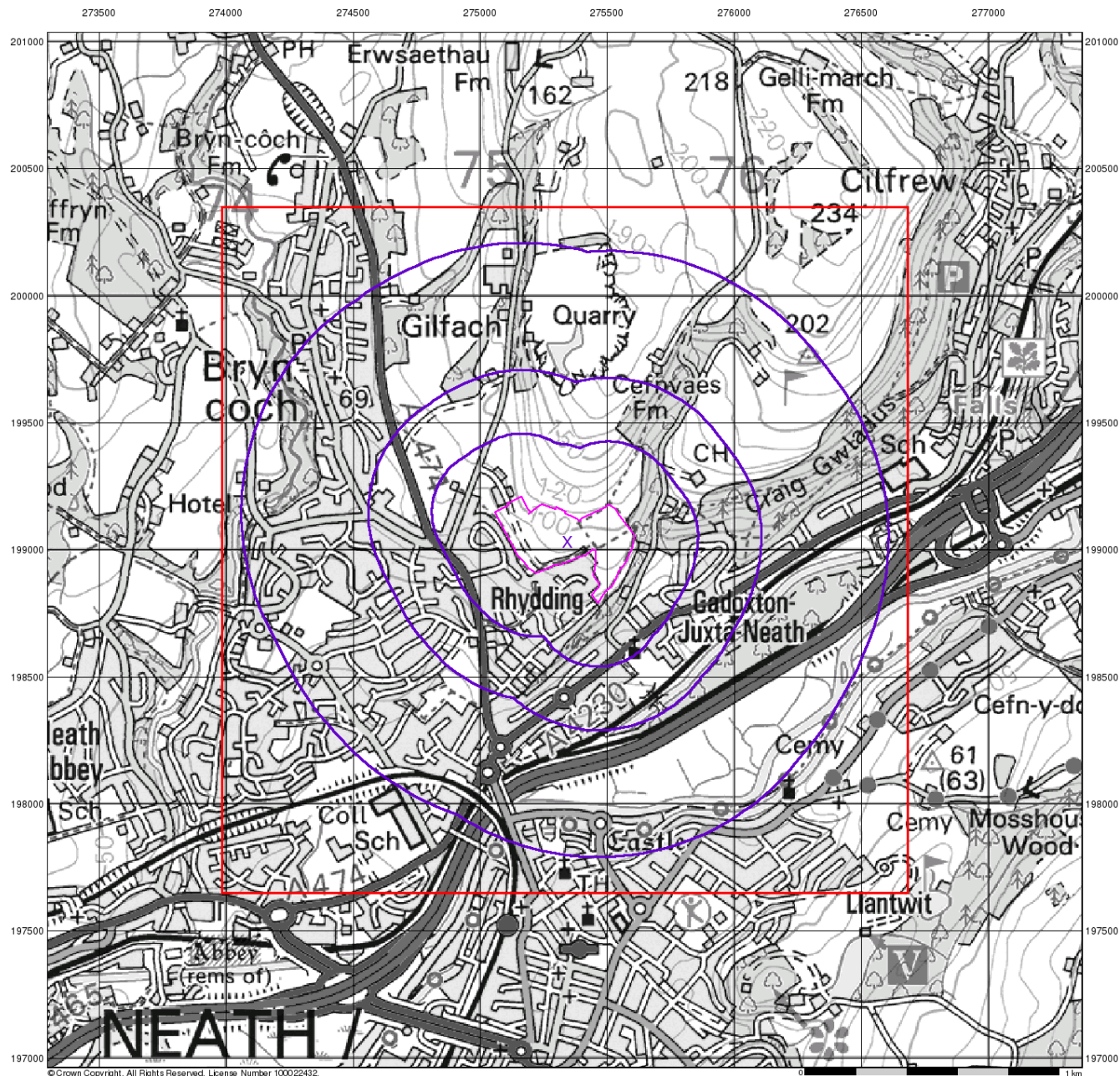
### Site Details

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## Source Protection Zones

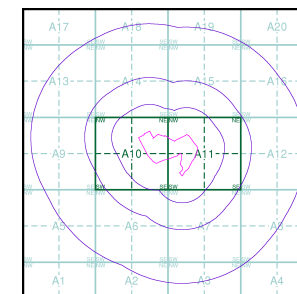
### General

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

### Agency and Hydrological

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

### Site Sensitivity Context Map - Slice A



### Order Details

Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

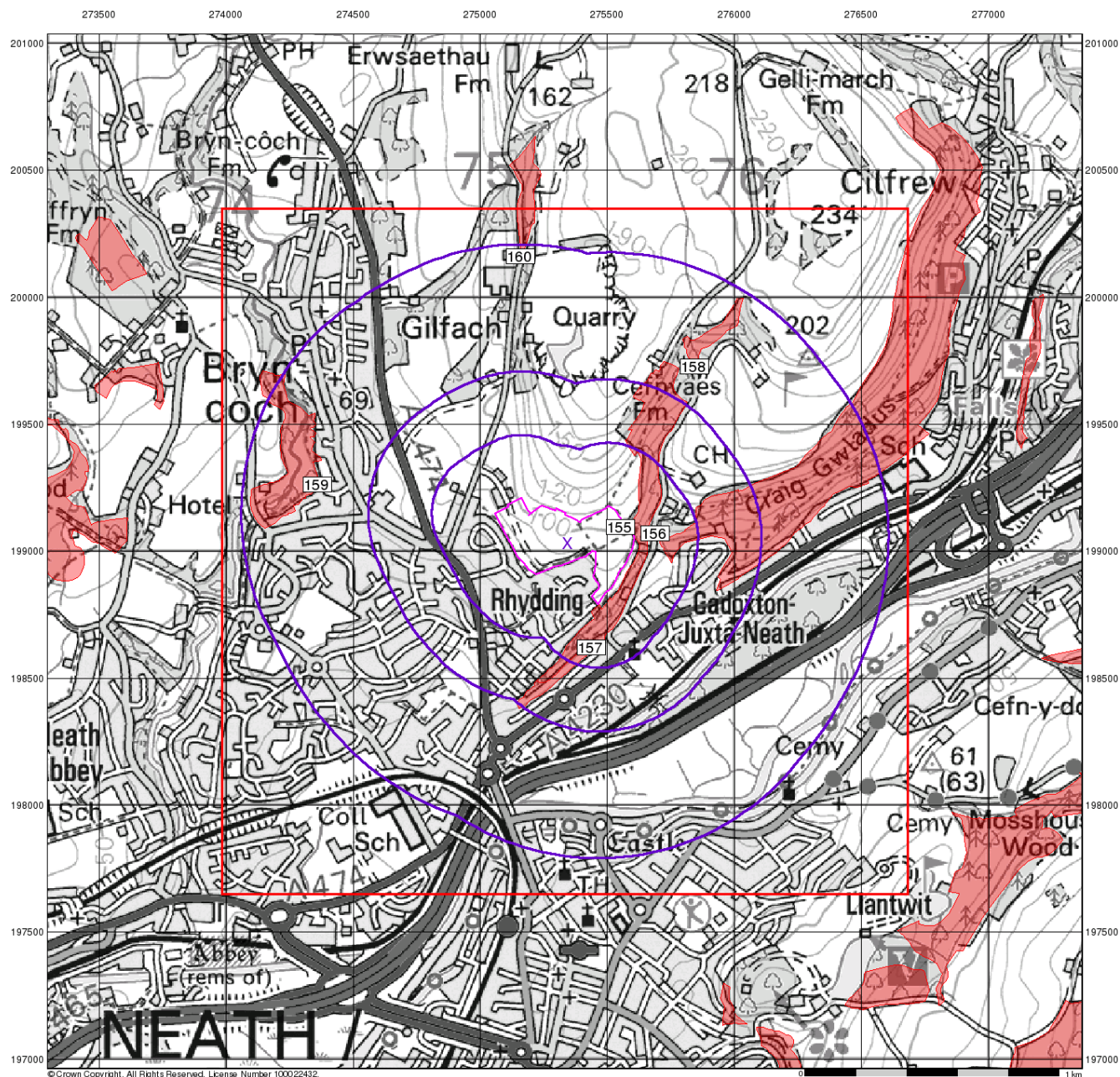
### Site Details

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## Sensitive Land Uses

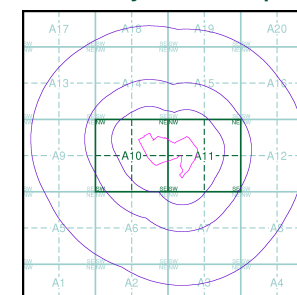
### General

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

### Sensitive Land Uses

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

### Site Sensitivity Context Map - Slice A



### Order Details

Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

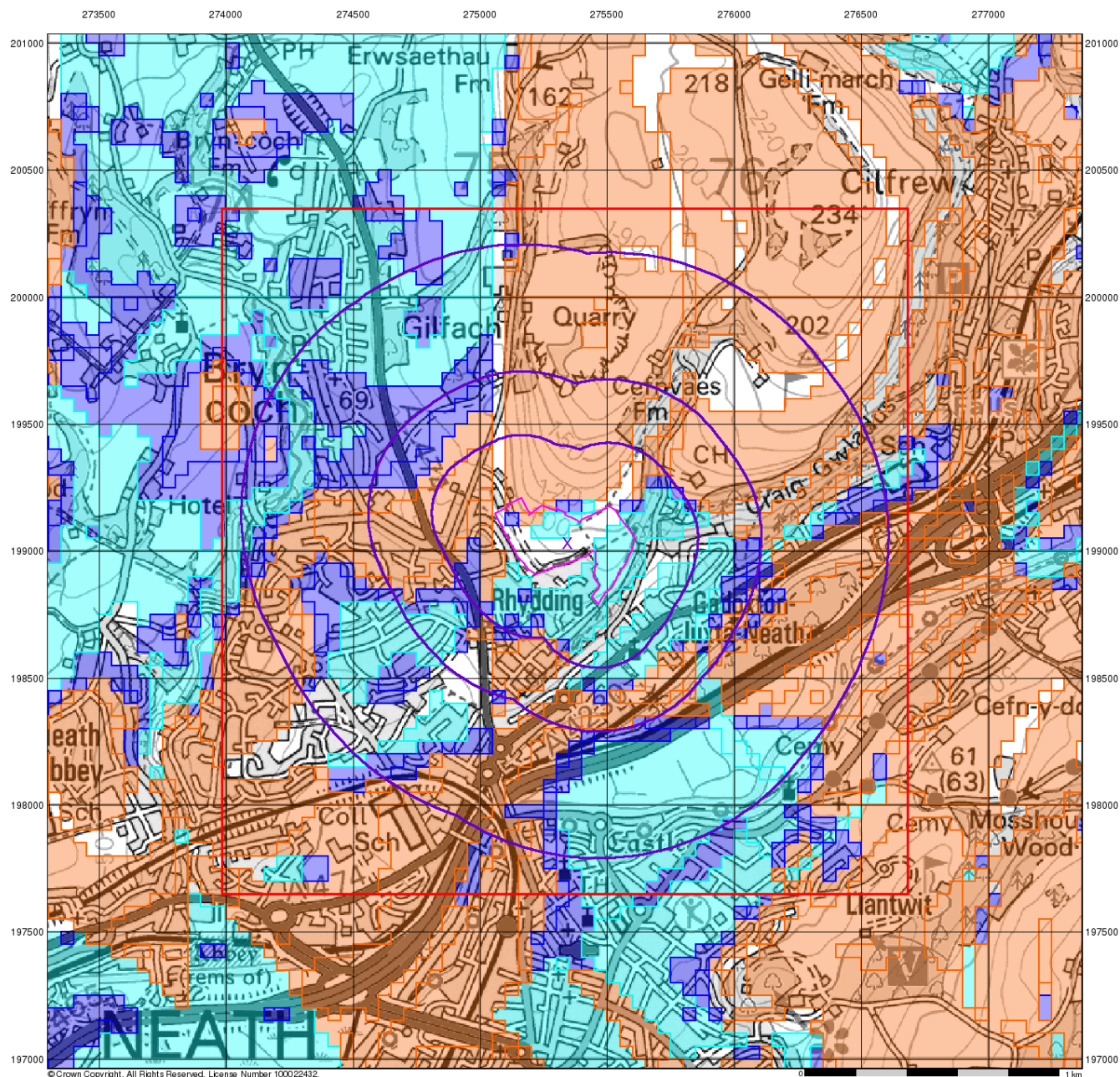
### Site Details

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**Landmark**  
 INFORMATION GROUP

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## BGS Flood GFS Data

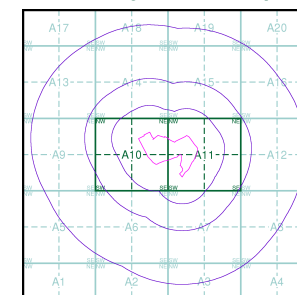
### General

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

### Agency and Hydrological (Flood)

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

## Site Sensitivity Context Map - Slice A



## Order Details

Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

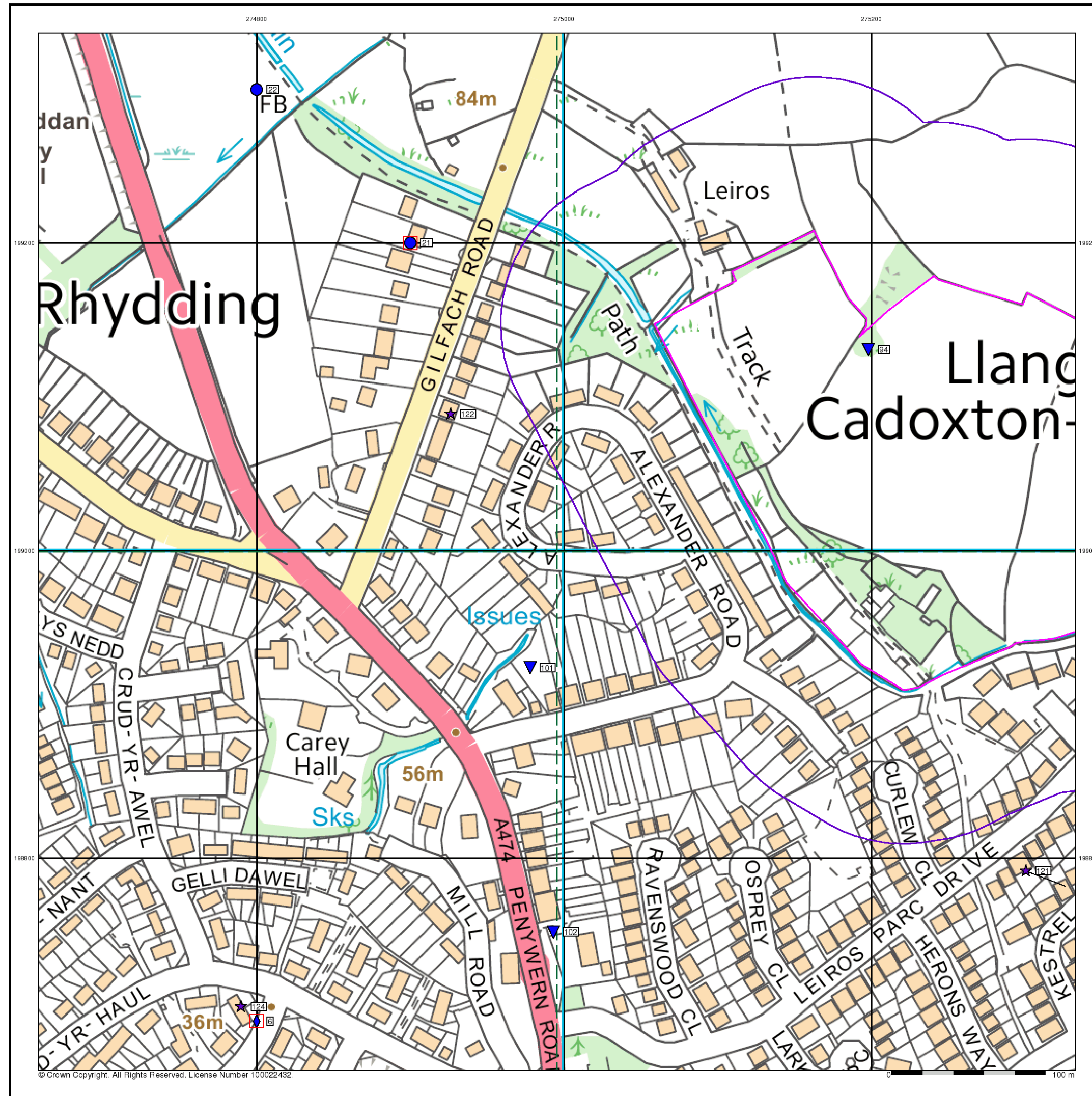
## Site Details

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**General**

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

**Agency and Hydrological**

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

**Waste**

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

**Hazardous Substances**

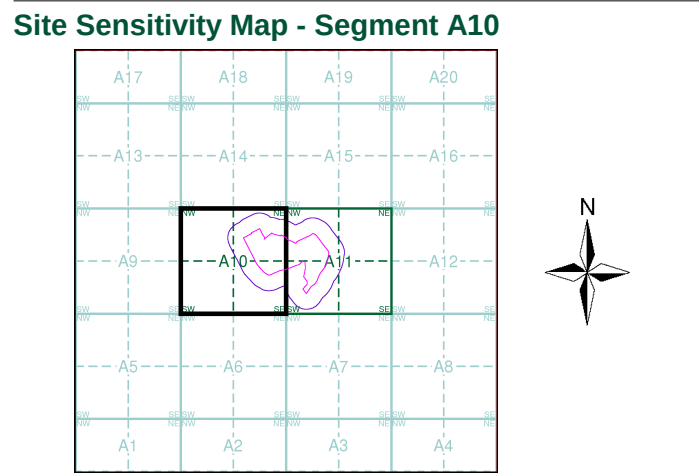
- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

**Geological**

- BGS Recorded Mineral Site

**Industrial Land Use**

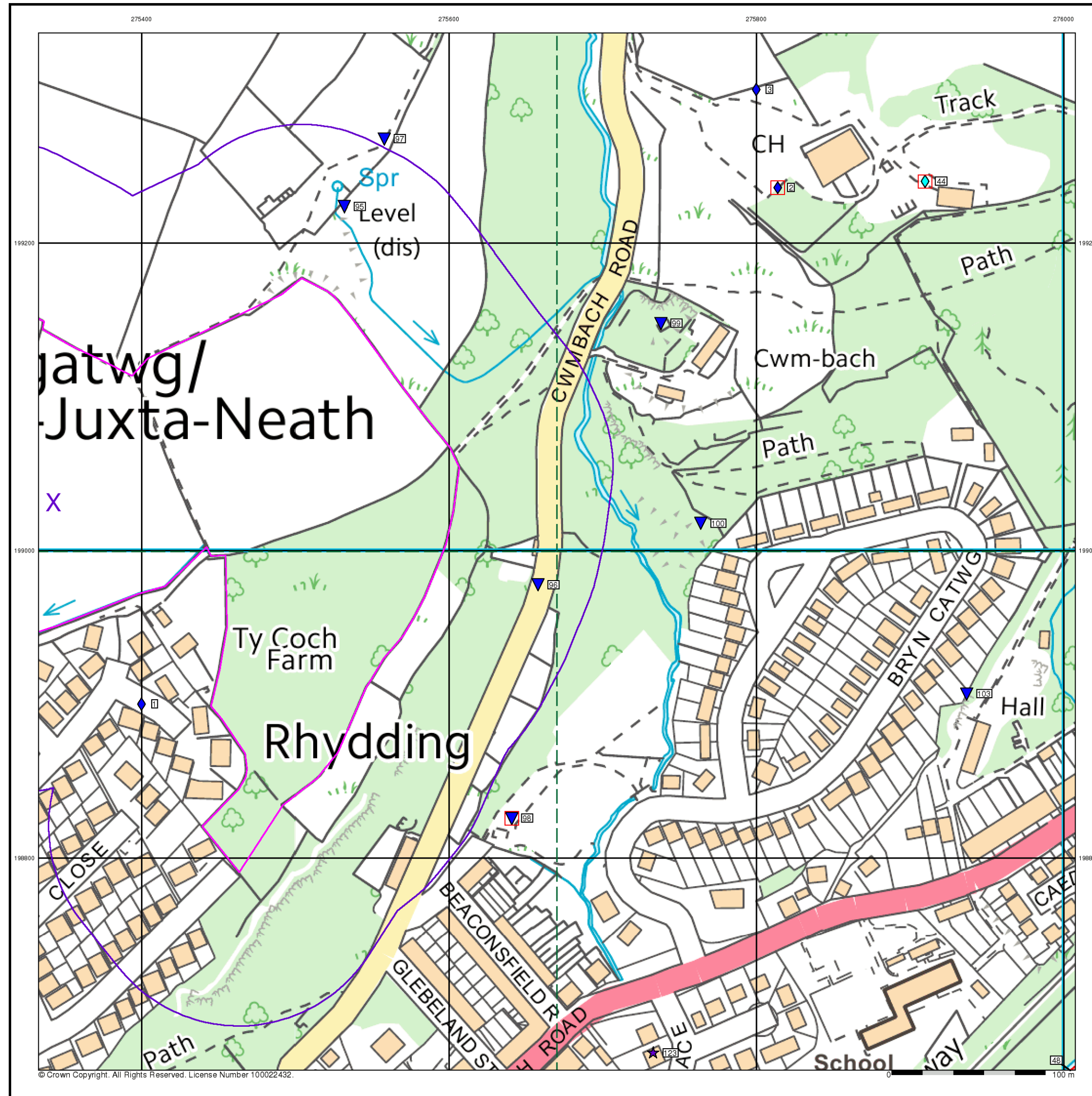
- Contemporary Trade Directory Entry
- Fuel Station Entry



**Order Details**  
Order Number: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09

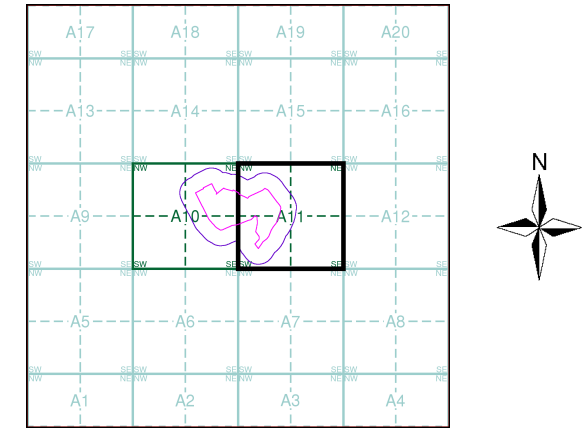
**Site Details**  
Leiros Park, Bryncoch, Neath, SA10 7EX





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

Site Sensitivity Map - Segment A11



**Order Details**

Order Number: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09

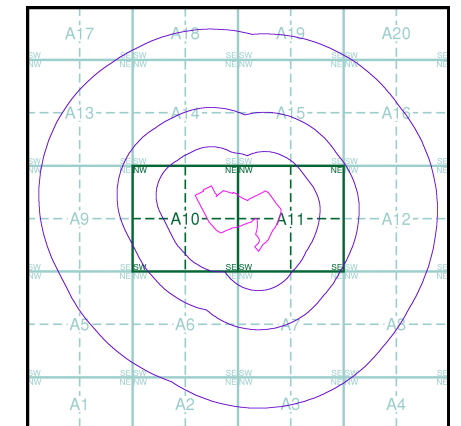
**Site Details**

Leiros Park, Bryncoch, Neath, SA10 7EX



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

## Site Sensitivity Map - Slice A

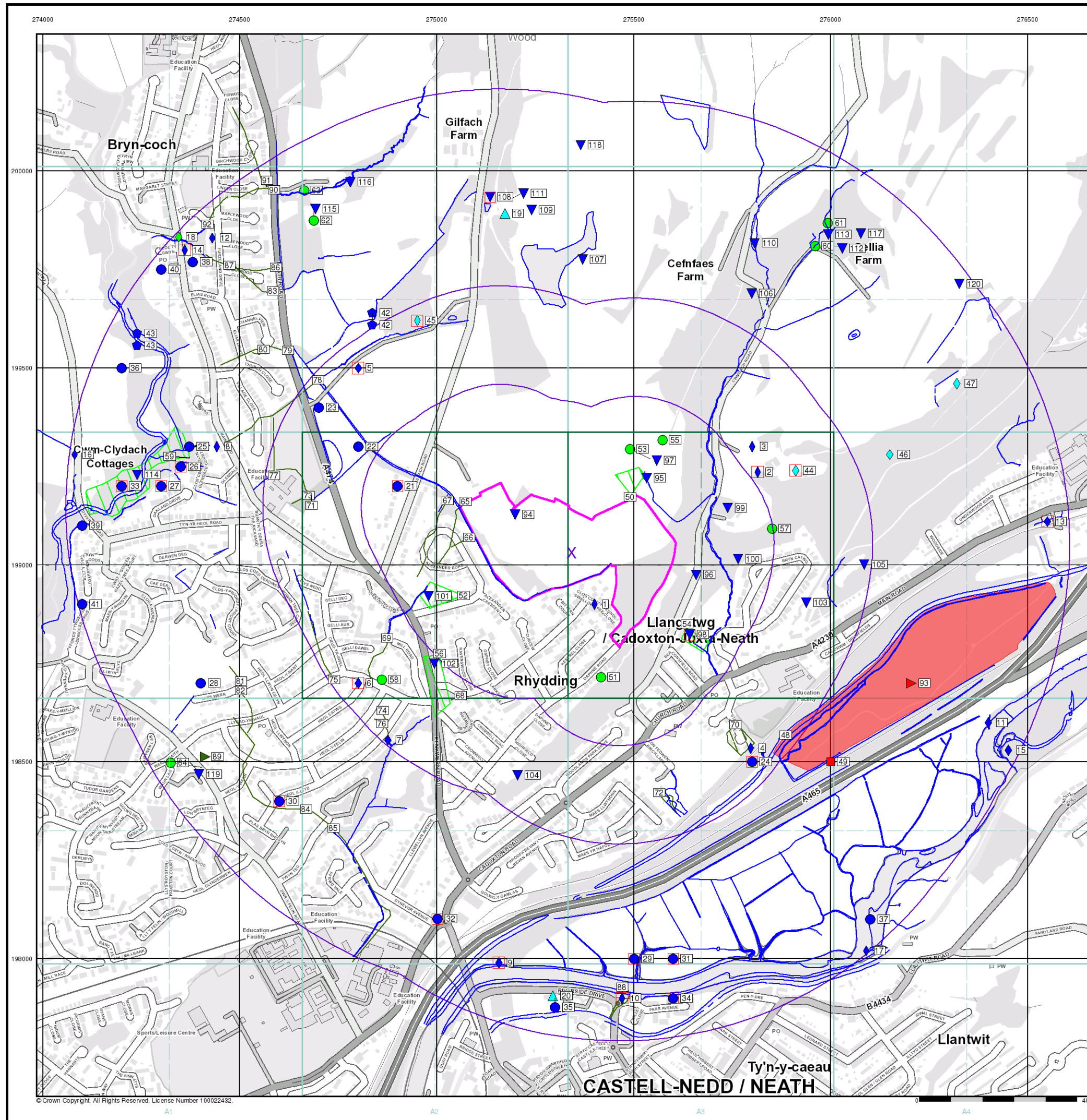


## Order Details

Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

## Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX





## Industrial Land Use Map

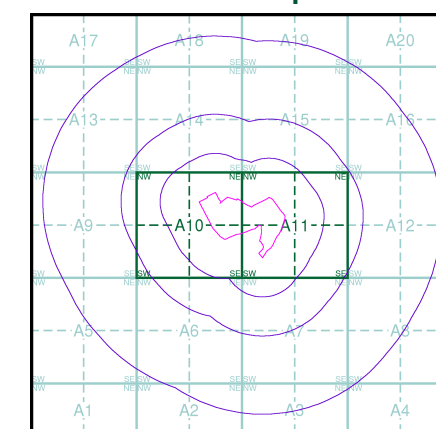
### General

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

### Industrial Land Use

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

### Industrial Land Use Map - Slice A

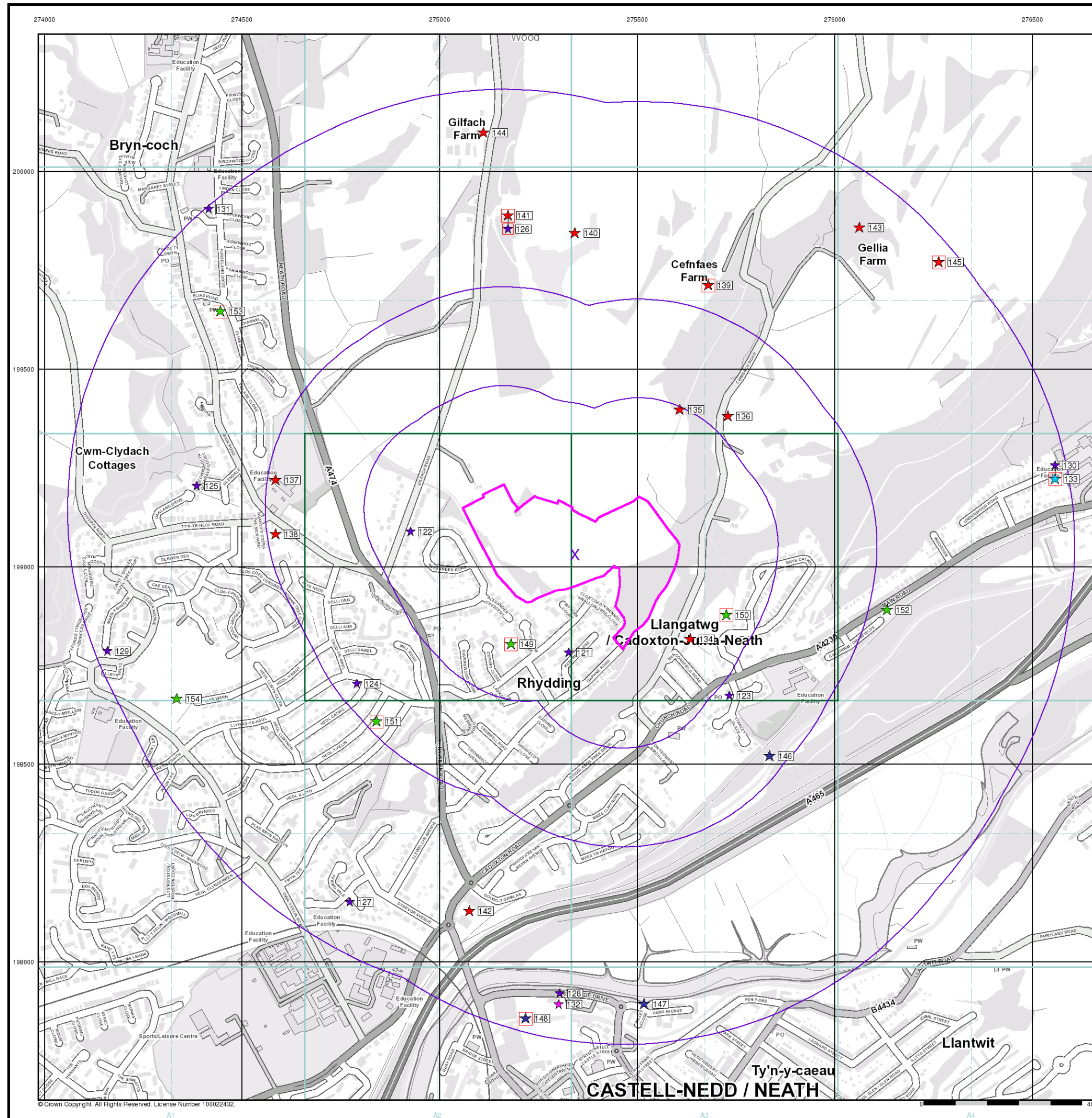


### Order Details

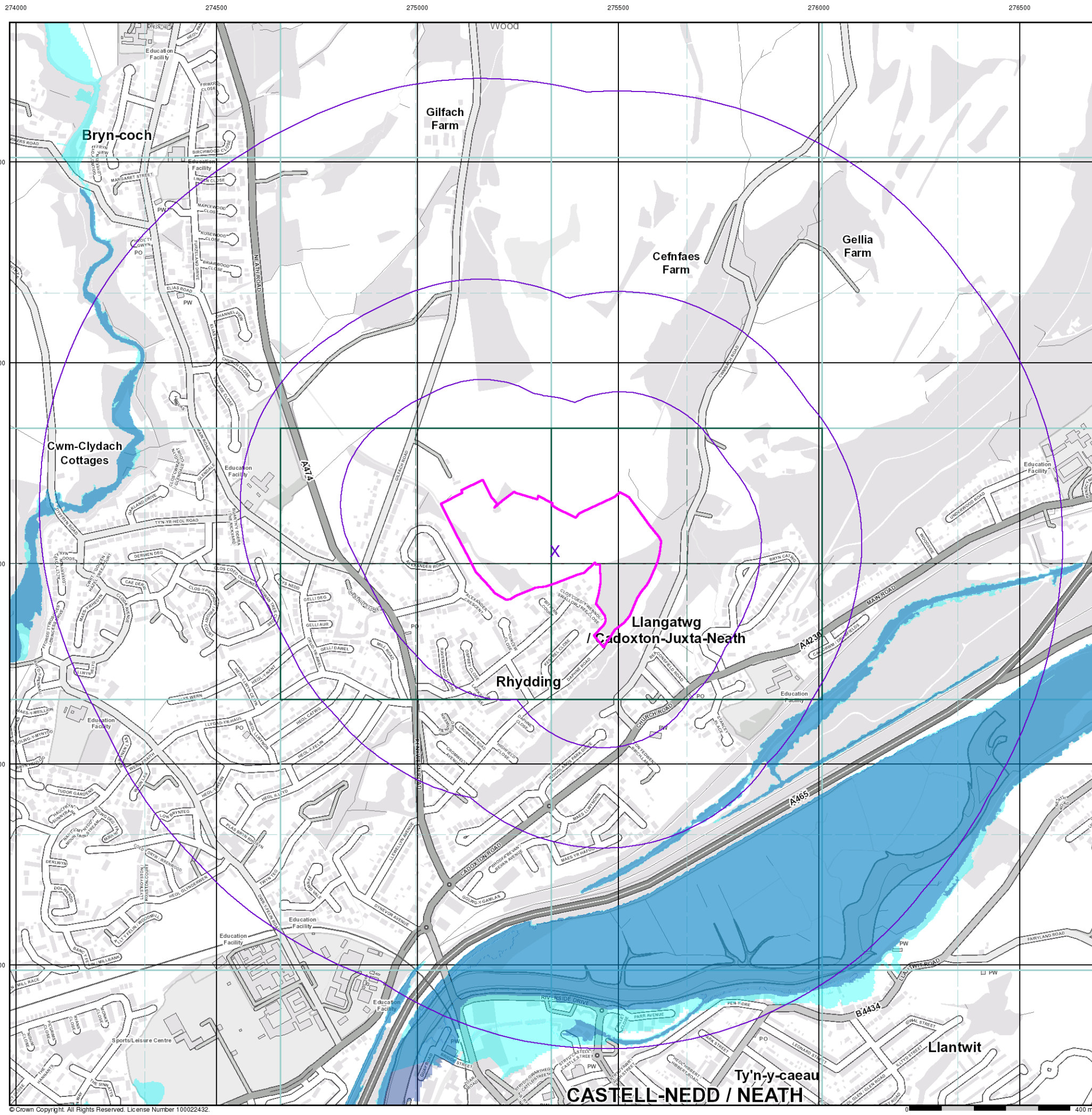
Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

### Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX







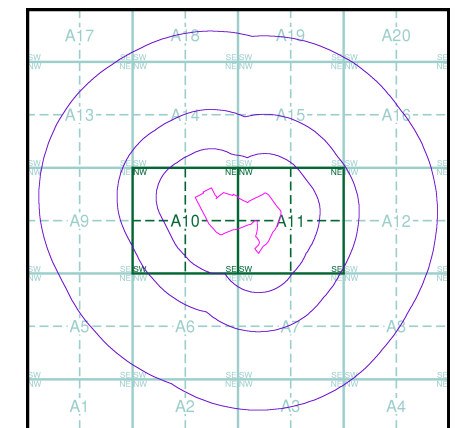
### General

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

### Agency and Hydrological (Flood)

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

### Flood Map - Slice A



### Order Details

Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

### Site Details

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### General

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

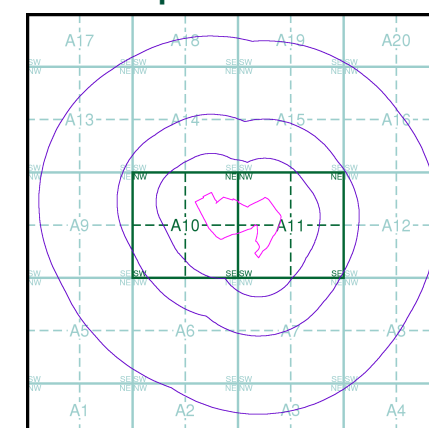
### Agency and Hydrological (Boreholes)

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

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

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

### Borehole Map - Slice A

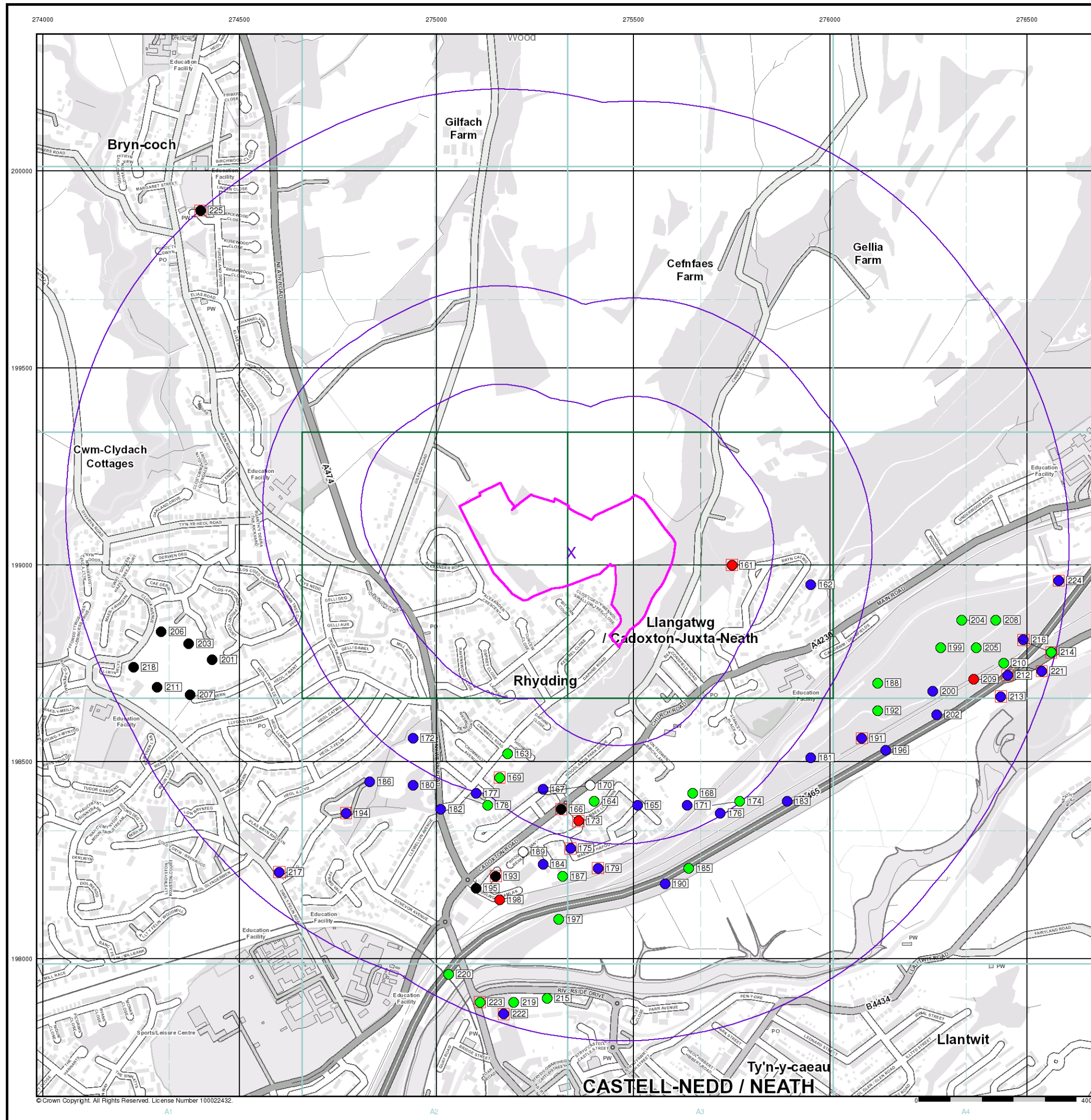


### Order Details

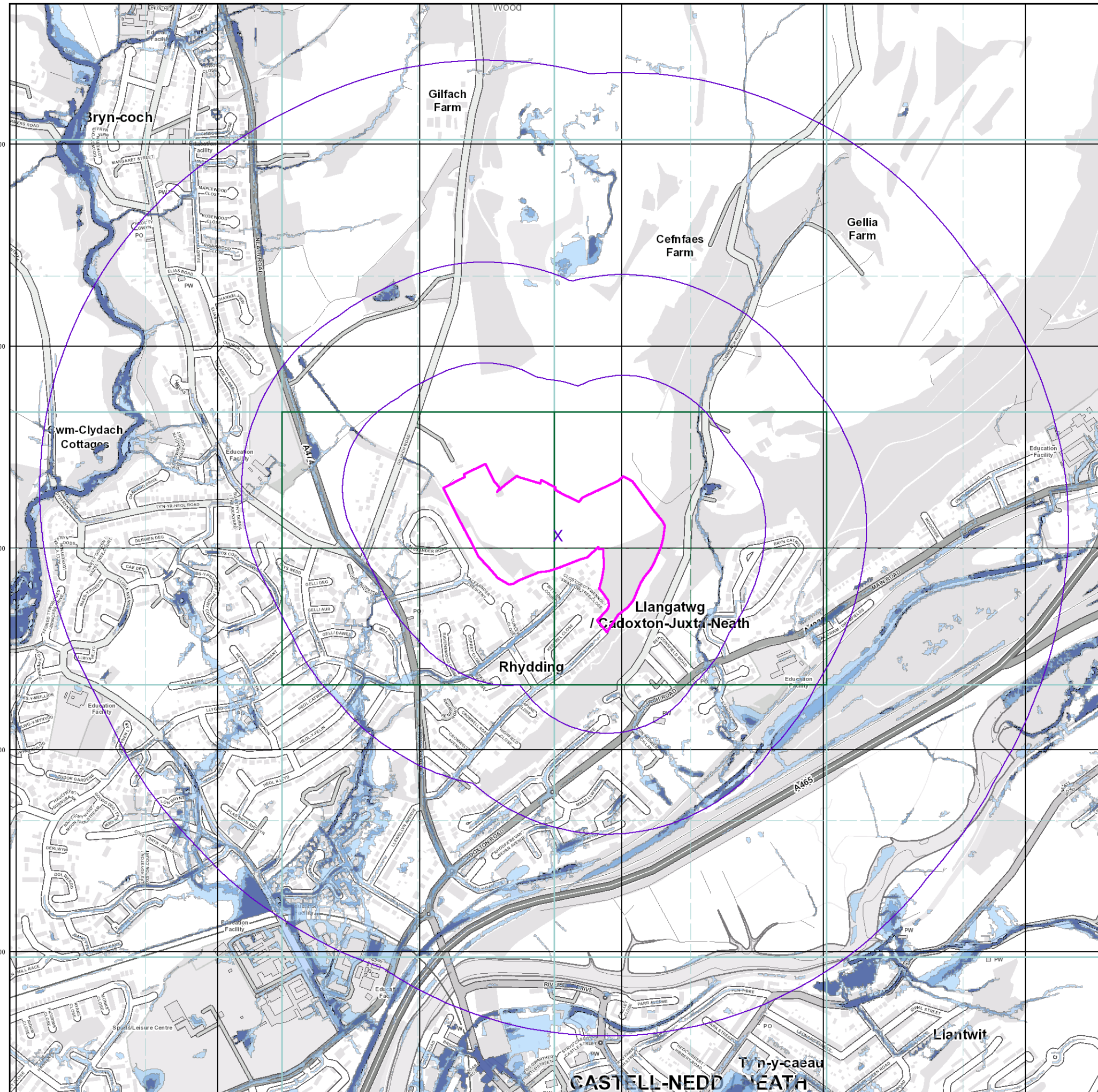
Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

### Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX







### General

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

### Risk of Flooding from Surface Water

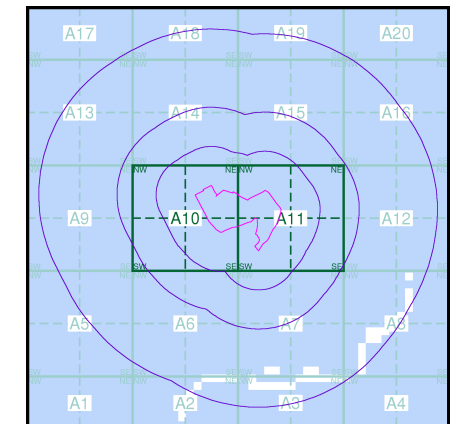
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

### Suitability

See the suitability map below

- National to county
- County to town
- Town to street
- Street to parcels of land
- Property

### EA/NRW Suitability Map - Slice A



### Order Details

Order Number: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search Buffer (m): 1000

### Site Details

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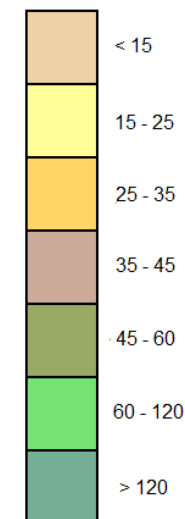
## General

Specified Site Specified Buffer(s) Bearing Reference Point

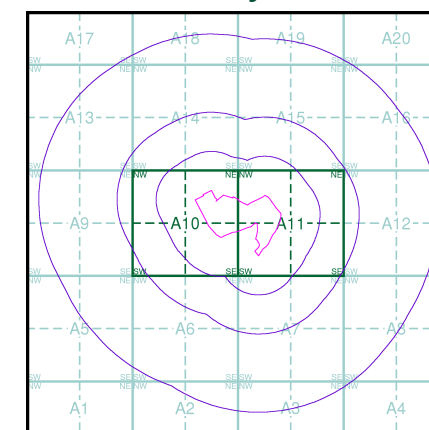
## Urban Soil Chemistry Arsenic

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

Arsenic Concentrations mg/kg



## Urban Soil Chemistry Arsenic - Slice A



## Order Details

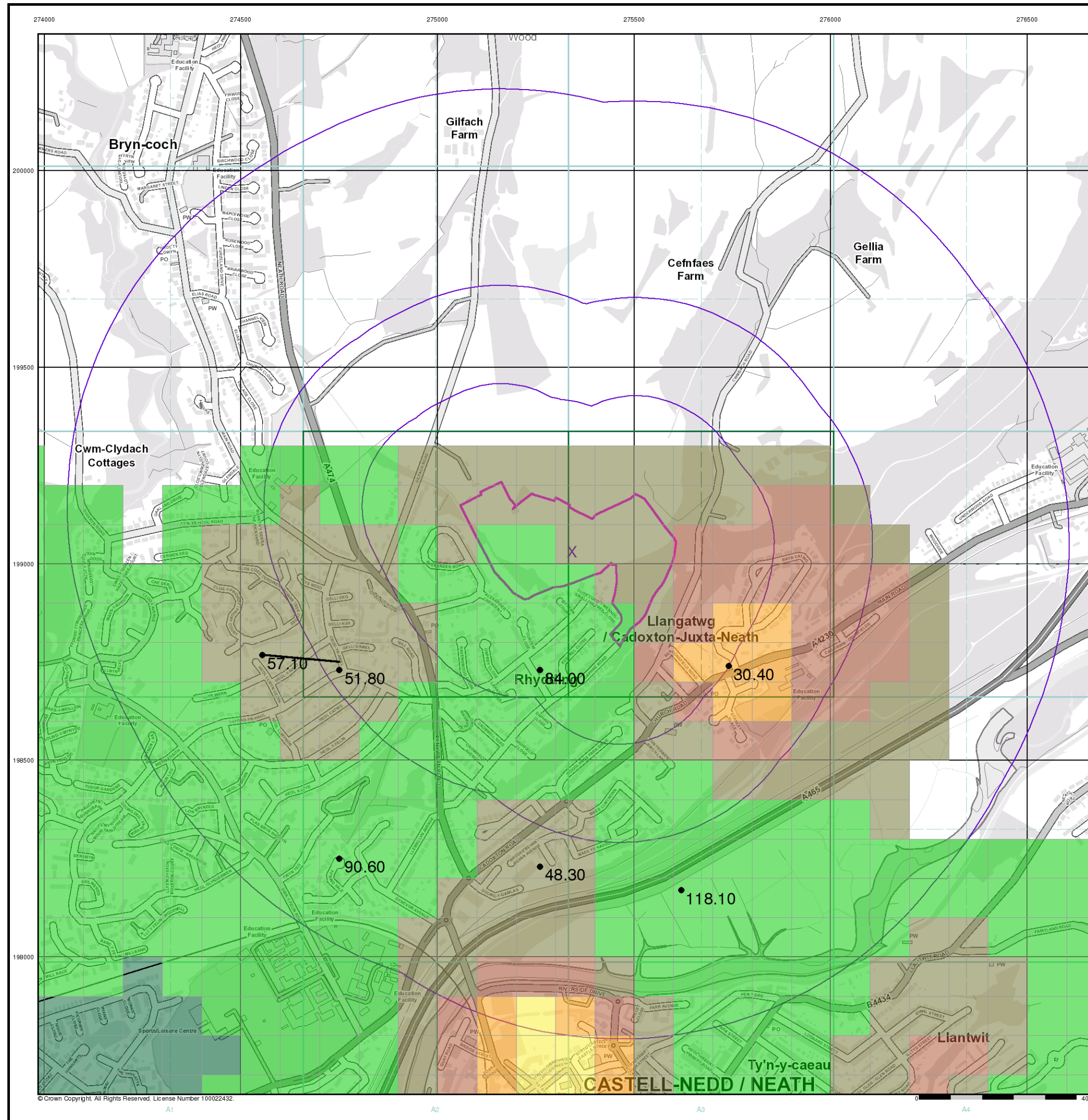
Order Details: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search buffer (m): 1000

## Site Details

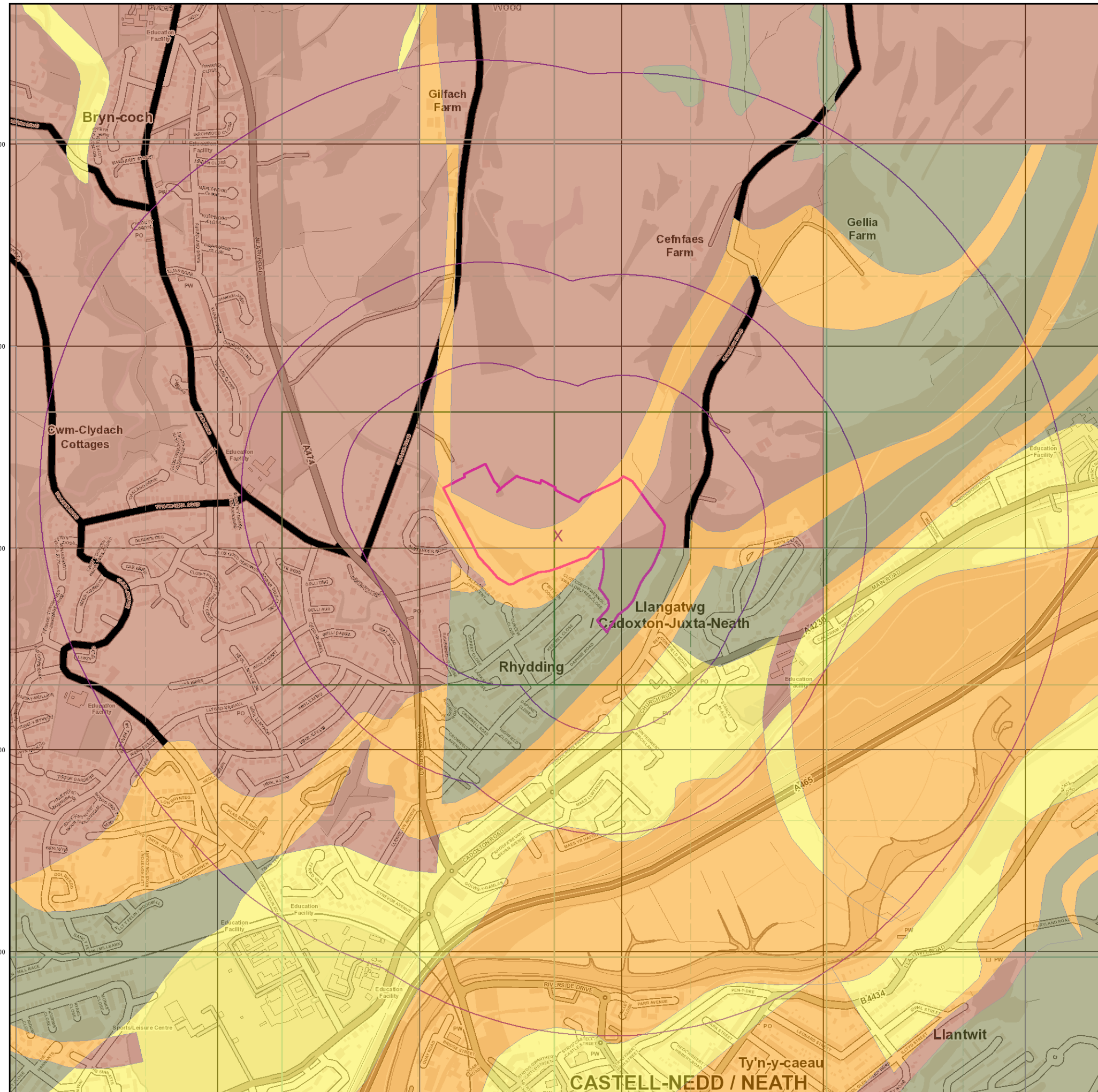
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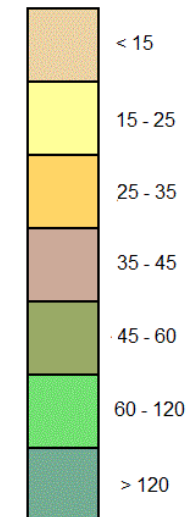


### General

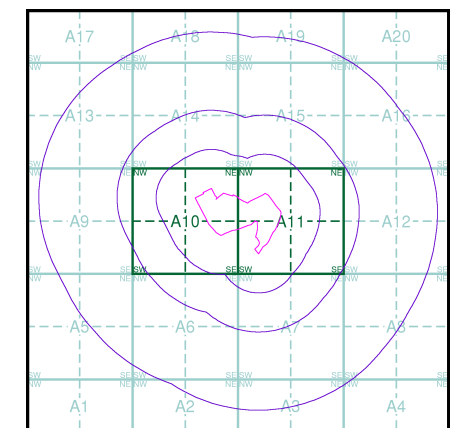
Specified Site Specified Buffer(s) Bearing Reference Point

### Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg



### Estimated Soil Chemistry Arsenic - Slice A



### Order Details

Order Details: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search buffer (m): 1000

### Site Details

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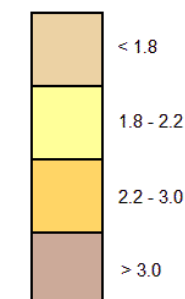
## General

Specified Site Specified Buffer(s) Bearing Reference Point

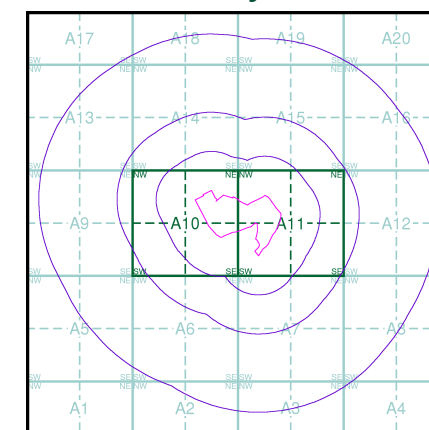
## Urban Soil Chemistry Cadmium

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

Cadmium Concentrations mg/kg



## Urban Soil Chemistry Cadmium - Slice A



## Order Details

Order Details: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search buffer (m): 1000

## Site Details

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**Landmark**  
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Fax: 0844 844 9951  
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274000 274500 275000 275500 276000 276500

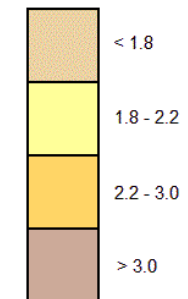


## General

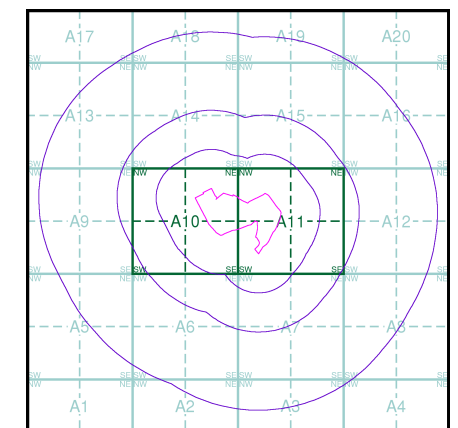
Specified Site Specified Buffer(s) Bearing Reference Point

## Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg



## Estimated Soil Chemistry Cadmium - Slice A



## Order Details

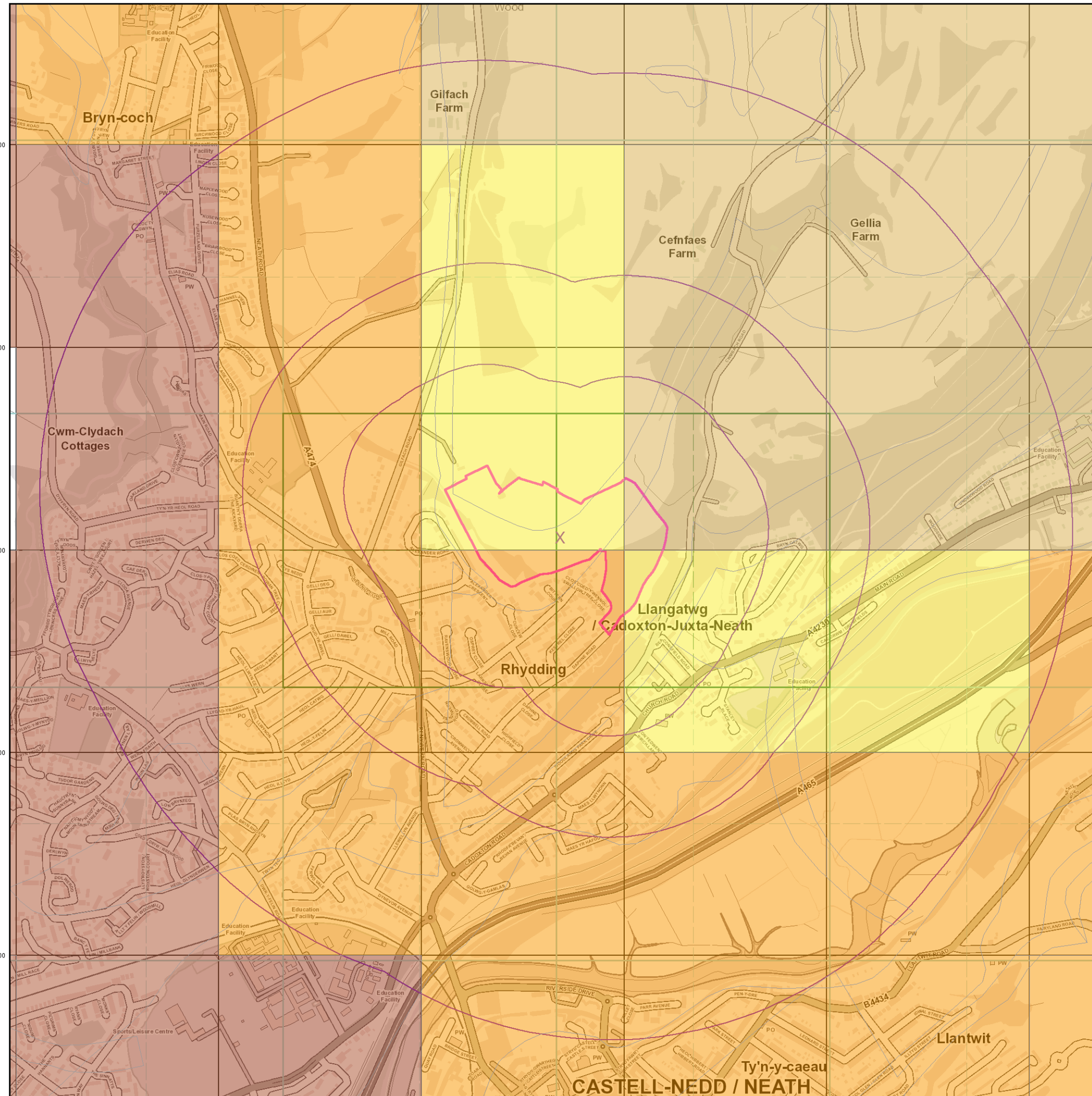
Order Details: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search buffer (m): 1000

## Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

**Landmark**  
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Fax: 0844 844 9951  
Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)





274000 274500 275000 275500 276000 276500



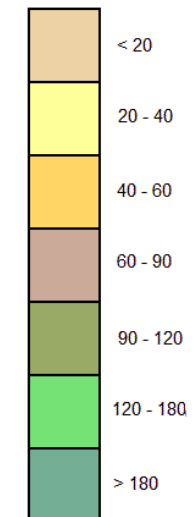
## General

Specified Site Specified Buffer(s) Bearing Reference Point

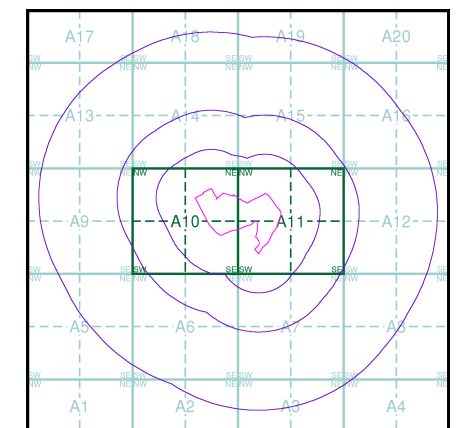
## Urban Soil Chemistry Chromium

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

Chromium Concentrations mg/kg



## Urban Soil Chemistry Chromium - Slice A



## Order Details

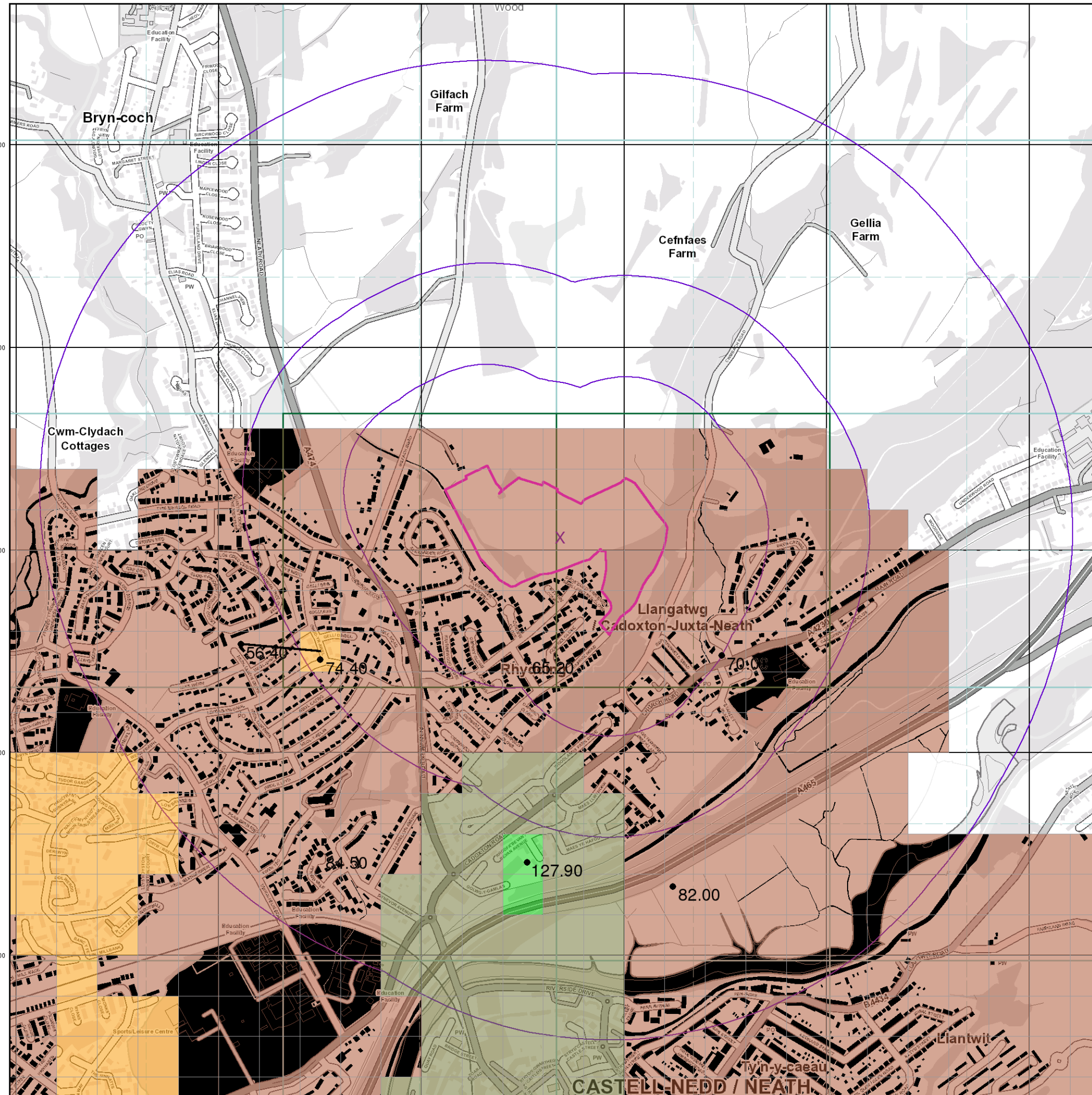
Order Details: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search buffer (m): 1000

## Site Details

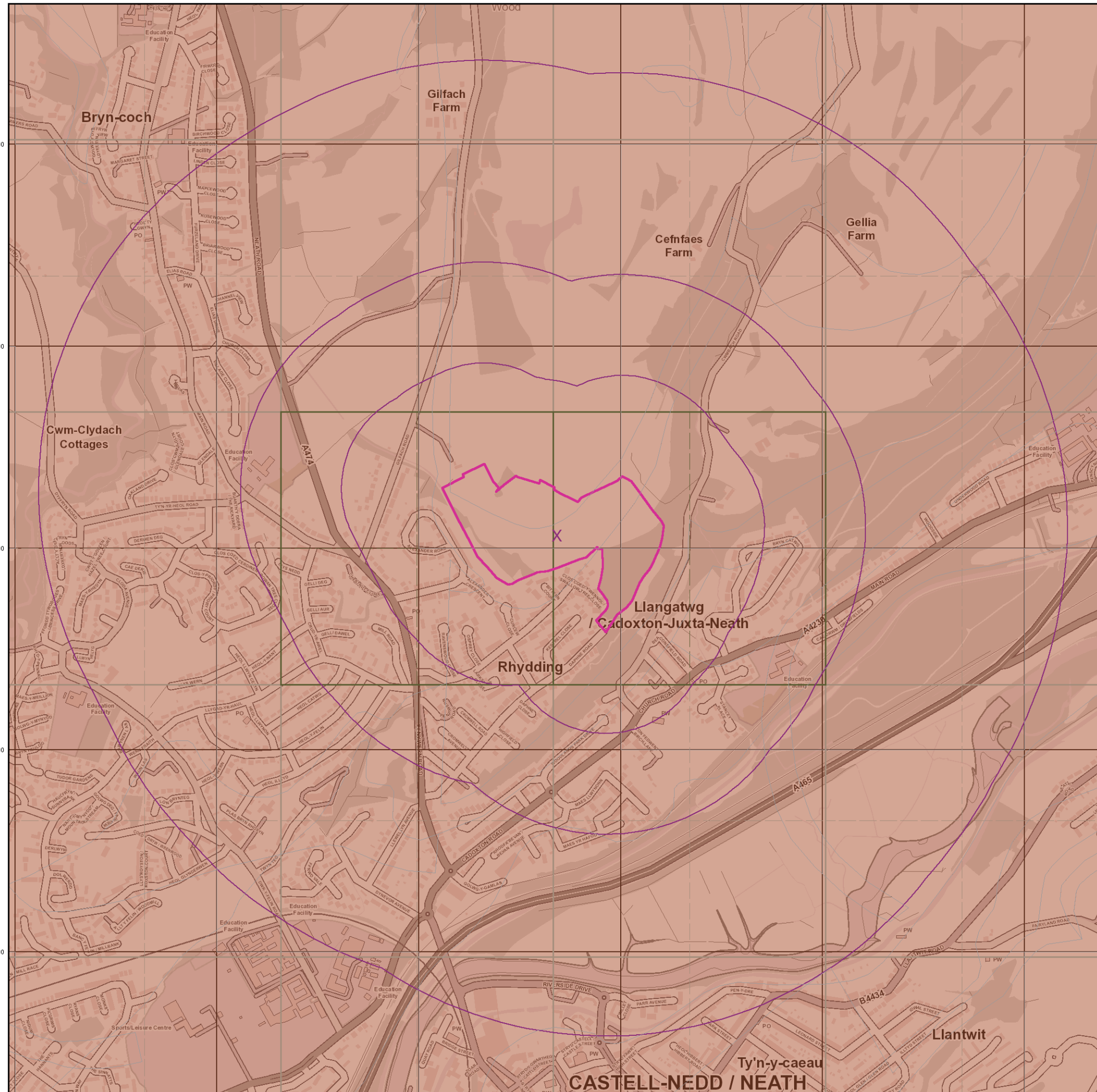
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**Landmark**  
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Fax: 0844 844 9951  
Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)







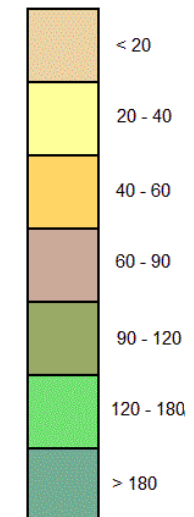
terrafirma

### General

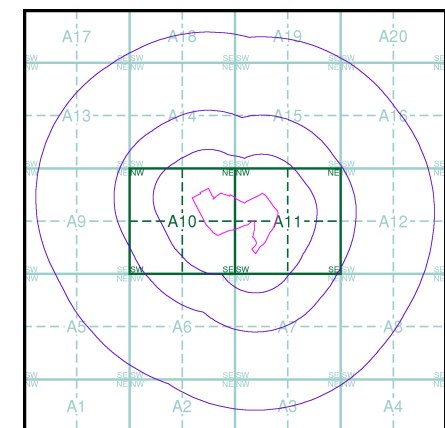
Specified Site Specified Buffer(s) Bearing Reference Point

### Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg



### Estimated Soil Chemistry Chromium - Slice A



### Order Details

Order Details: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search buffer (m): 1000

### Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

**Landmark**  
INFORMATION GROUP

Tel: 0844 844 9952  
Fax: 0844 844 9951  
Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)



274000 274500 275000 275500 276000 276500



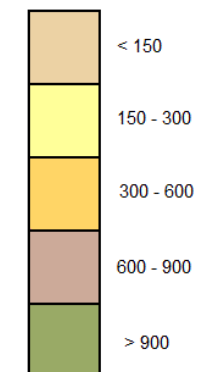
## General

Specified Site Specified Buffer(s) Bearing Reference Point

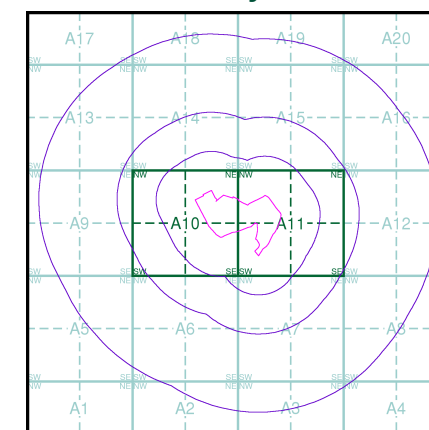
## Urban Soil Chemistry Lead

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

Lead Concentrations mg/kg



## Urban Soil Chemistry Lead - Slice A



## Order Details

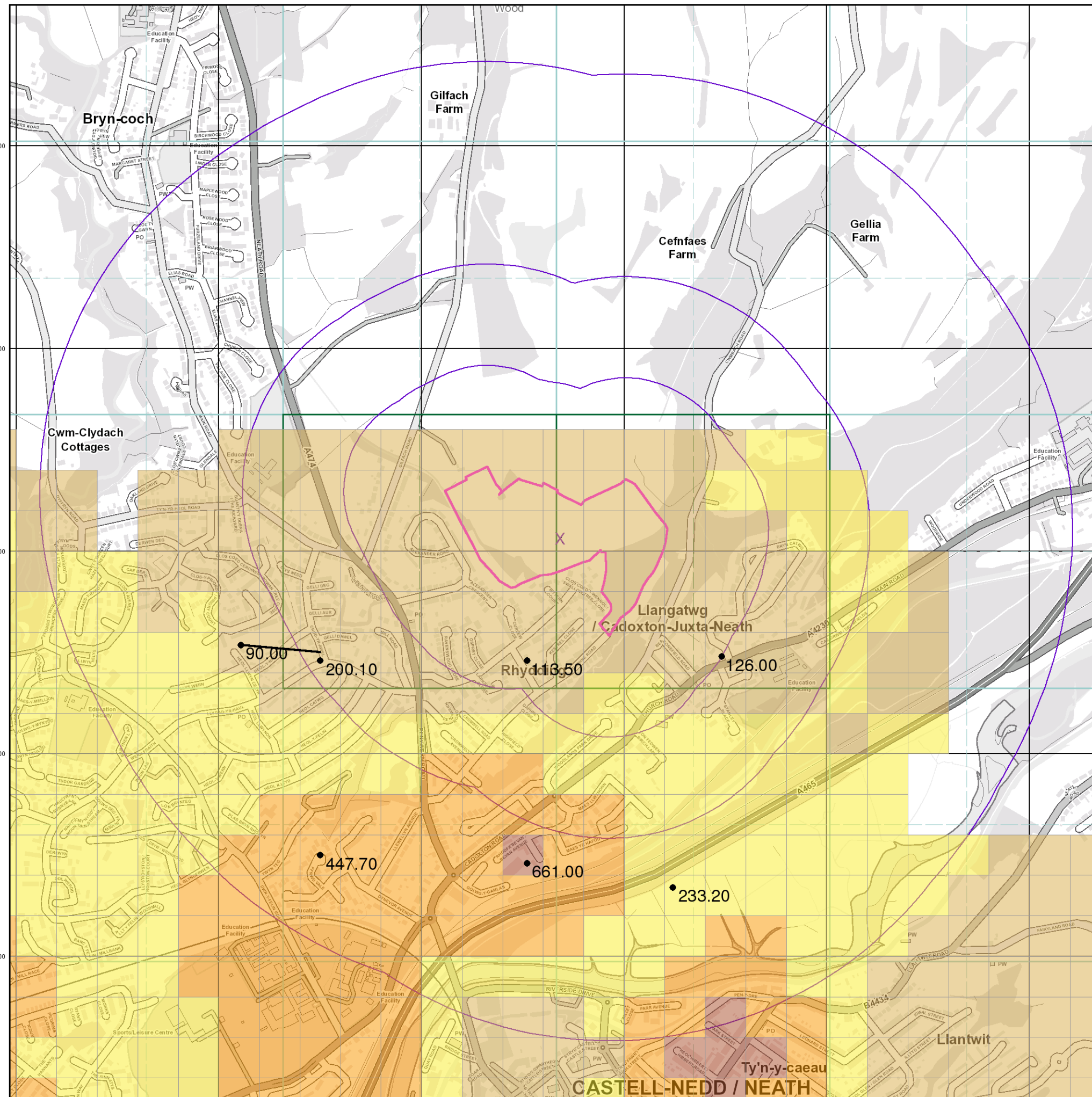
Order Details: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search buffer (m): 1000

## Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

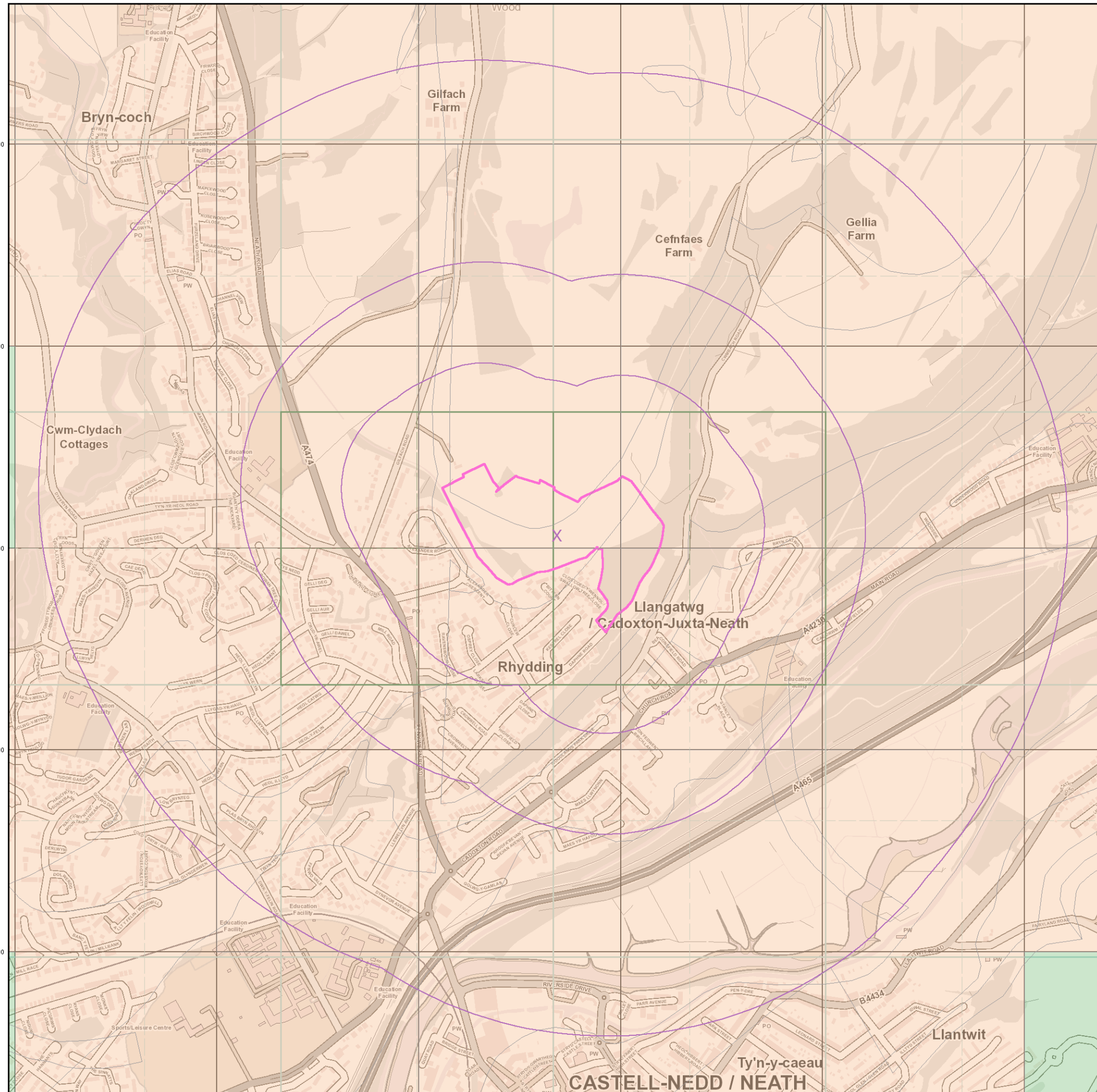
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A1

A2

A3

A4

A20

A16

A12

A8

A4

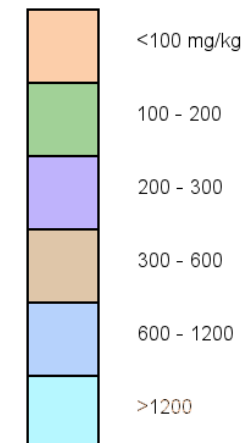


## General

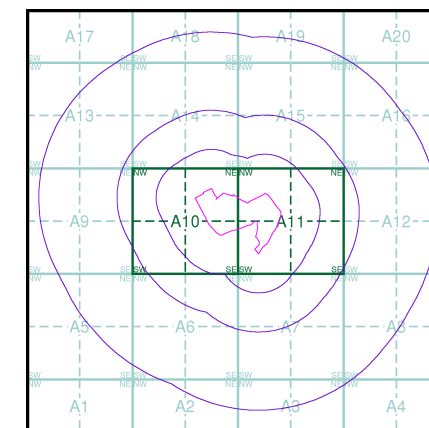
Specified Site Specified Buffer(s) Bearing Reference Point

## Estimated Soil Chemistry Lead

Lead Concentrations mg/kg



## Estimated Soil Chemistry Lead - Slice A



## Order Details

Order Details: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search buffer (m): 1000

## Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

**Landmark**  
INFORMATION GROUP

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Web: [www.envirocheck.co.uk](http://www.envirocheck.co.uk)



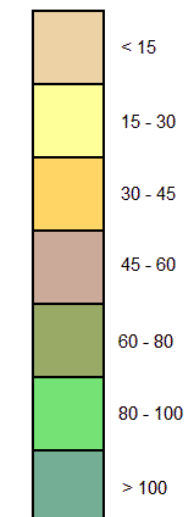
## General

 Specified Site
  Specified Buffer(s)
  Bearing Reference Point

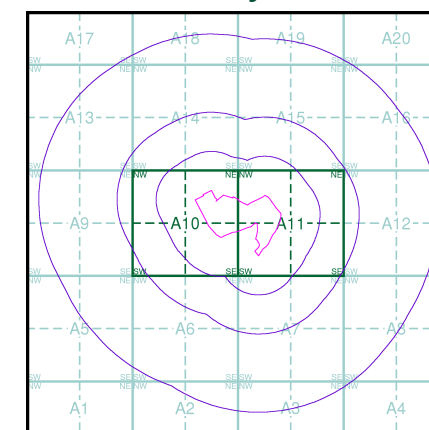
## Urban Soil Chemistry Nickel

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

Nickel Concentrations mg/kg



## Urban Soil Chemistry Nickel - Slice A

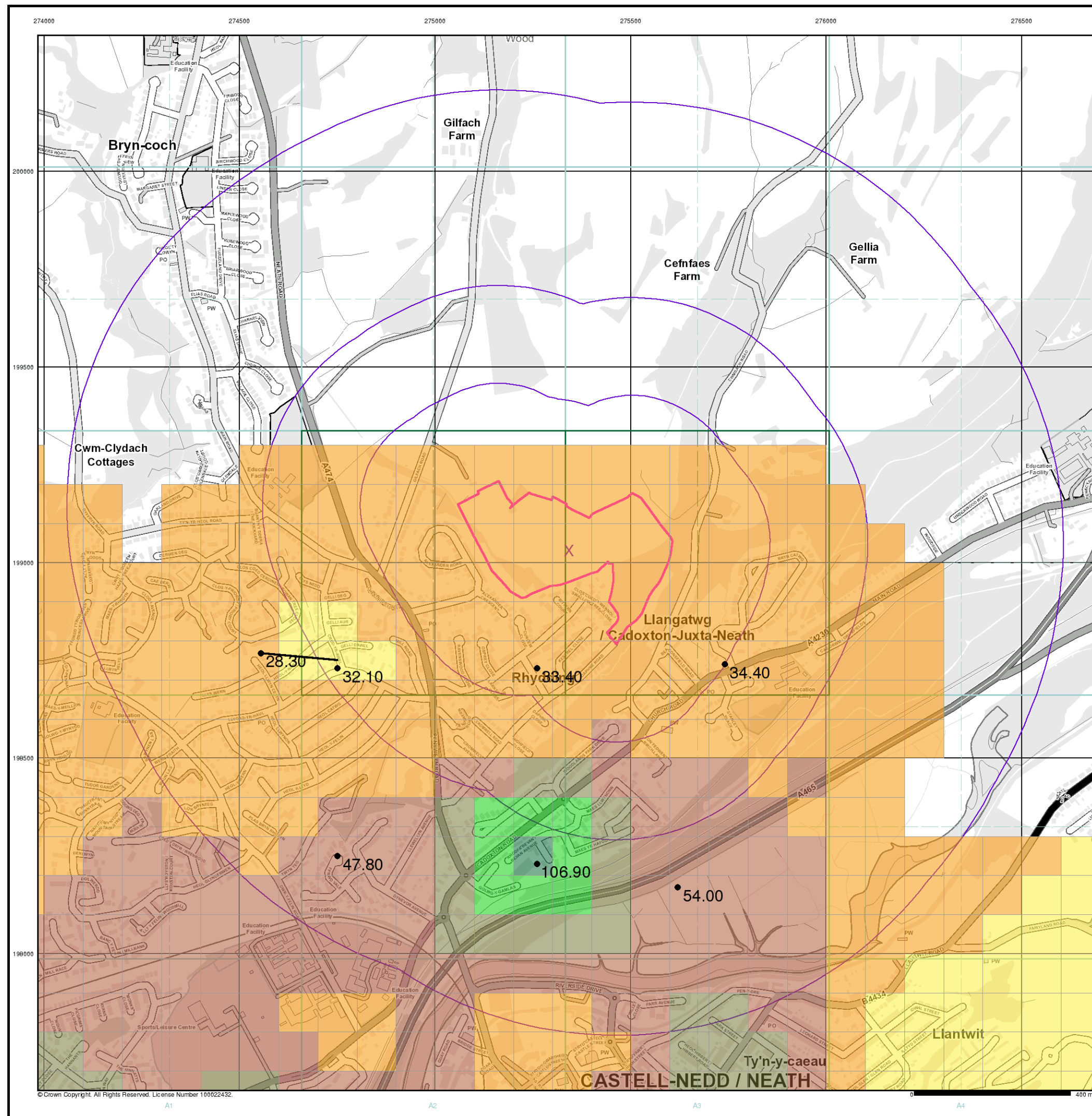


## Order Details

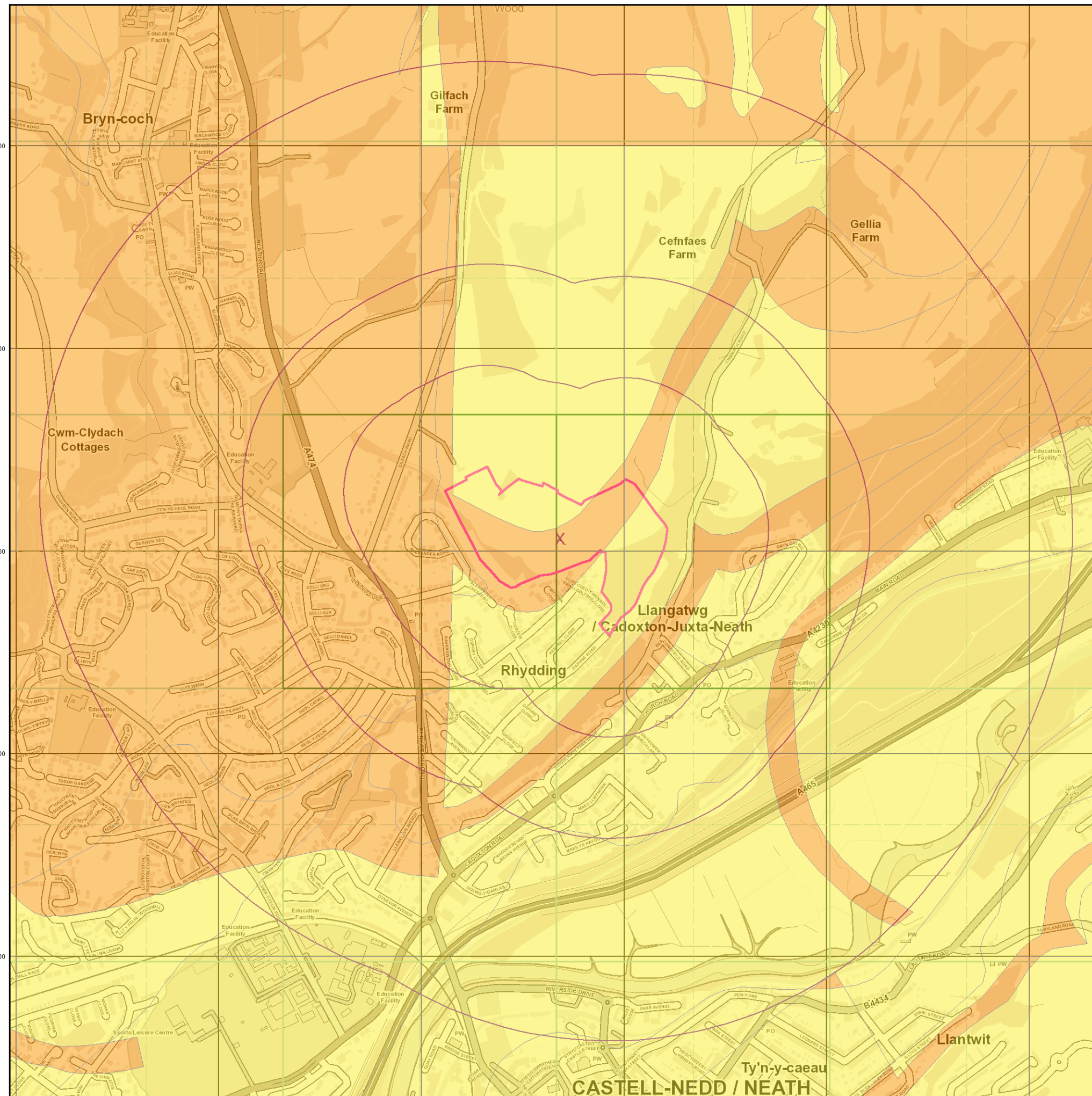
Order Details: 120078810\_1\_1  
 Customer Ref: 14156  
 National Grid Reference: 275340, 199030  
 Slice: A  
 Site Area (Ha): 11.09  
 Search buffer (m): 1000

## Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX





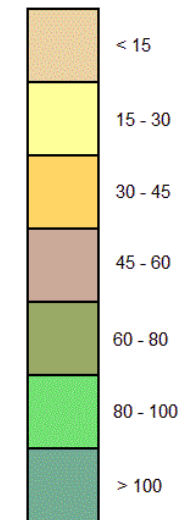


## General

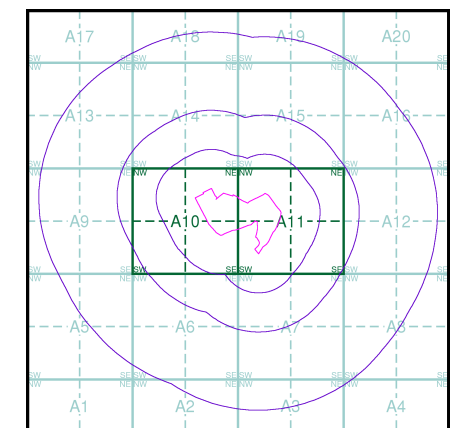
Specified Site Specified Buffer(s) Bearing Reference Point

## Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg



## Estimated Soil Chemistry Nickel - Slice A



## Order Details

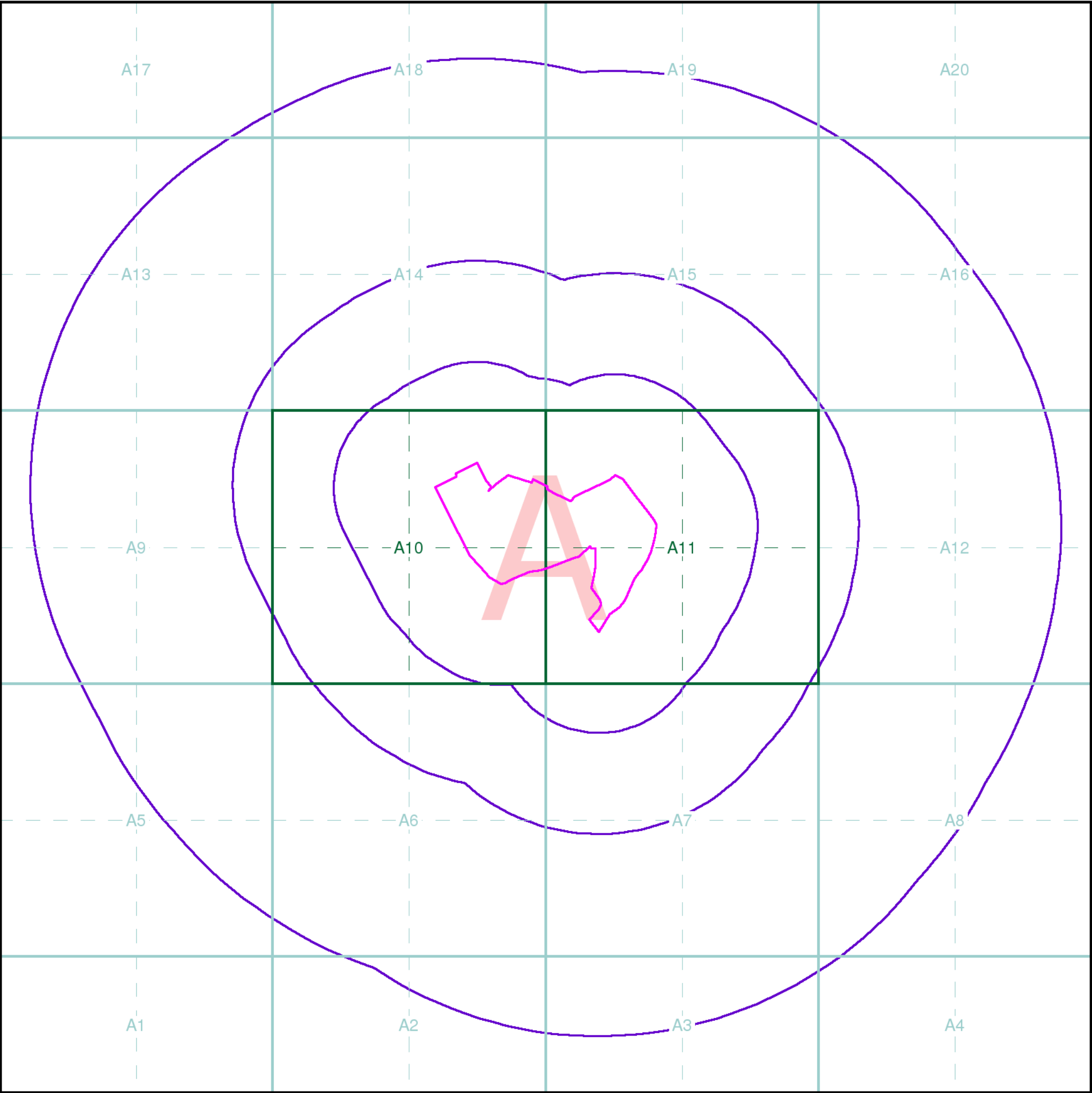
Order Details: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275340, 199030  
Slice: A  
Site Area (Ha): 11.09  
Search buffer (m): 1000

## Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX



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



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:



Envirocheck reports are compiled from 136 different sources of data.

Client Details

Ms N Thomas, Terra Firma (Wales) Ltd, 5 Deryn Court, Wharfdale Road, Pentwyn, Cardiff, CF23 7HB

Order Details

Order Number: 120078810\_1\_1  
Customer Ref: 14156  
National Grid Reference: 275350, 199040  
Site Area (Ha): 11.09  
Search Buffer (m): 1000

Site Details

Leiros Park, Bryncoch, Neath, SA10 7EX

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



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Web: www.envirocheck.co.uk

**ANNEX C**  
**Mining Report**





The Coal  
Authority

Resolving the **impacts** of mining

# Non-Residential Coal Mining Consultants Report



LEIROS PARK, BRYNCOCH, NEATH, NEATH PORT TALBOT,  
SA10 7EX

|                        |               |
|------------------------|---------------|
| Date of enquiry:       | 23 March 2017 |
| Date enquiry received: | 23 March 2017 |
| Issue date:            | 23 March 2017 |

|                 |                |
|-----------------|----------------|
| Our reference:  | 51001400175001 |
| Your reference: | 14156          |

# Non-Residential Coal Mining Consultants 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

Terra Firma (Wales) Ltd

## Enquiry address

LEIROS PARK, BRYNCOCH, NEATH, NEATH PORT  
TALBOT, SA10 7EX

## How to contact us

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

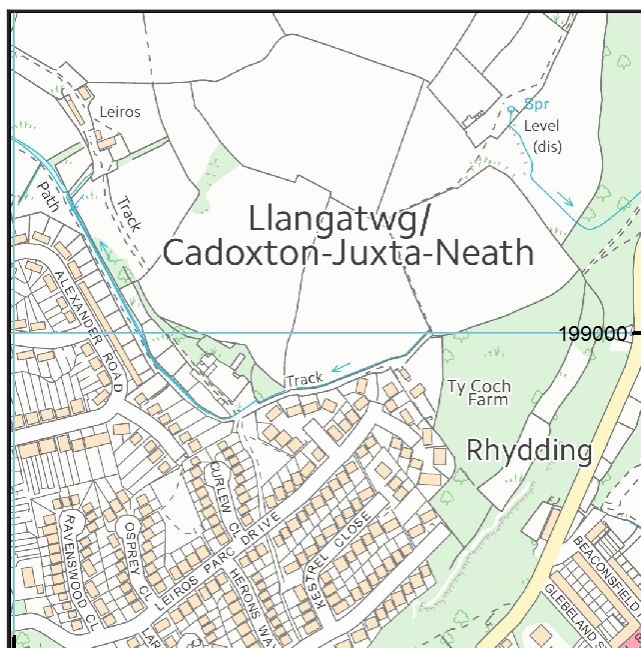
200 Lichfield Lane  
Mansfield  
Nottinghamshire  
NG18 4RG

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

[in /company/the-coal-authority](https://www.linkedin.com/company/the-coal-authority)

[f /thecoalauthority](https://www.facebook.com/thecoalauthority)

[t /coalauthority](https://twitter.com/coalauthority)



Approximate position of property



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# Detailed findings

## Past underground coal mining

| Colliery | Seam                       | Mineral | Panel | Depth (m) | Direction to working | Disposition | Extraction thickness (cm) | Year |
|----------|----------------------------|---------|-------|-----------|----------------------|-------------|---------------------------|------|
| unnamed  | HUGHES                     | Coal    | 4JEL  | 62        | Beneath Property     | 0.0         | 110                       | 1900 |
| unnamed  | HUGHES                     | Coal    | 4KEZ  | 69        | Beneath Property     | 0.0         | 145                       | 1901 |
| unnamed  | HUGHES                     | Coal    | 4JEK  | 82        | Beneath Property     | 0.0         | 110                       | 1900 |
| RYDDING  | MYNYDDISLWYN<br>LOWER LEAF | Coal    | 4JM5  | 137       | SW                   | 0.5         | 200                       | 1882 |

## Probable unrecorded shallow workings

None.

## Outcrops

| Seam name  | Mineral | Thin indicator | Distance to outcrop (m) | Direction to outcrop | Bearing of outcrop |
|------------|---------|----------------|-------------------------|----------------------|--------------------|
| DARREN DDU | Coal    | False          | Beneath property        | N/A                  | 114                |

## Spine roadways at shallow depth

Yes.

## Future underground mining

None recorded.

## Licence details (AOR)

None recorded.

## Section 46 notices

None recorded.



## Geology

Fault under or close to the property recorded.

## Mine entries

| Entry type | Reference  | Grid reference | Treatment description | Mineral | Conveyance details |
|------------|------------|----------------|-----------------------|---------|--------------------|
| Adit       | 275199-019 | 275709 199028  |                       | Coal    |                    |
| Shaft      | 275199-026 | 275094 199112  |                       | Coal    |                    |
| Shaft      | 275198-005 | 275422 198723  |                       | Coal    |                    |
| Shaft      | 275199-025 | 275046 199130  |                       | Coal    |                    |
| Shaft      | 275199-024 | 275051 199054  |                       | Coal    |                    |
| Shaft      | 275199-027 | 275320 199075  |                       | Coal    |                    |
| Adit       | 275199-002 | 275527 199225  |                       | Coal    |                    |
| Shaft      | 275199-007 | 275545 199275  |                       | Coal    |                    |
| Adit       | 275198-016 | 275618 198871  |                       | Coal    |                    |
| Adit       | 275199-020 | 275704 199006  |                       | Coal    |                    |

## Court orders

None recorded.

## Worked out opencast sites

None recorded.

## Coal mining related hazards

None recorded.

## Coal mining subsidence

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

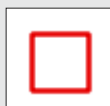
There is no current Stop Notice delaying the start of remedial works or repairs to the property.

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.

# Enquiry boundary

## Key

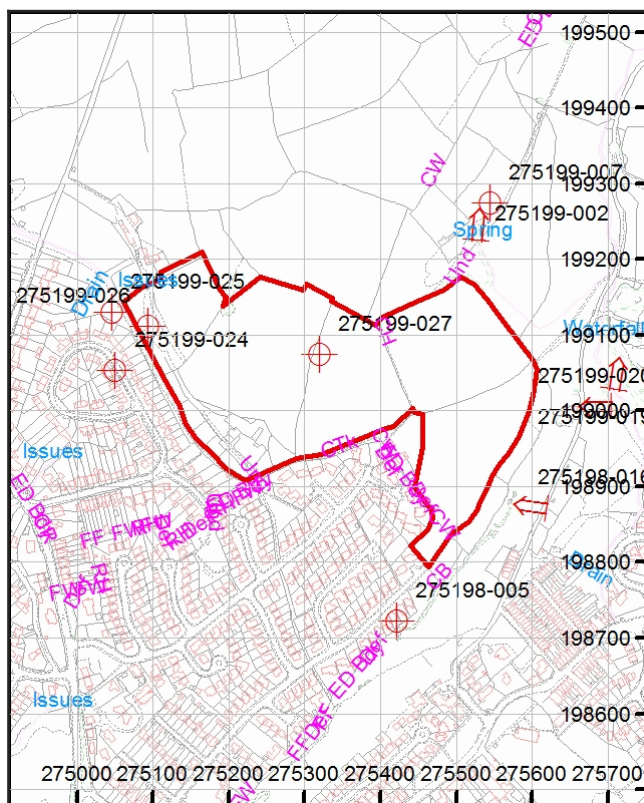
Approximate position of enquiry boundary shown



Disused adit



Disused mineshaft



## How to contact us

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

200 Lichfield Lane  
Mansfield  
Nottinghamshire  
NG18 4RG

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



/company/the-coal-authority



/thecoalauthority



```
/coalauthority
```



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# VAT receipt

|                            |                                                                                                          |
|----------------------------|----------------------------------------------------------------------------------------------------------|
| <b>Issued by</b>           | The Coal Authority<br>200 Lichfield Lane<br>Mansfield<br>Nottinghamshire<br>NG18 4RG                     |
| <b>Tax point date</b>      | 23 March 2017                                                                                            |
| <b>Issued to</b>           | TERRA FIRMA (WALES) LTD<br>5 DERYN COURT<br>WHARFEDALE ROAD<br>PENTWYN<br>CARDIFF<br>CARDIFF<br>CF23 7HA |
| <b>Property search for</b> | LEIROS PARK<br>BRYNCOCH<br>NEATH<br>NEATH PORT TALBOT<br>SA10 7EX                                        |
| <b>Reference number</b>    | 51001400175001                                                                                           |
| <b>Date of issue</b>       | 23 March 2017                                                                                            |
| <b>Cost</b>                | £100.00                                                                                                  |
| <b>VAT @ 20%</b>           | £20.00                                                                                                   |
| <b>Total received</b>      | £120.00                                                                                                  |
| <b>VAT registration</b>    | 598 5850 68                                                                                              |



**ANNEX D**  
**Risk Assessment Definitions**

## **Risk Assessment Definitions**

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

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

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

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

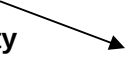
A 'Hazard' is defined as *'a property or situation that in particular circumstances could lead to harm'*.

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

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

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

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

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

#### High Risk

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

#### Medium Risk

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

#### Low Risk

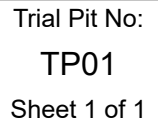
It is possible that harm may arise to a receptor, but it is likely that the harm would be mild.

#### Near Zero Risk

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



**ANNEX E**  
**Trial Pit Logs**



Date:  
05/04/2017

Scale:  
1:25

---

Logged:  
MW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend                                                                            | Stratum Description                                                        |                                                                         |
|-----------------|---------------------------|------|---------|--------------|--------------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------------------------|
|                 | Depth                     | Type | Results |              |              |                                                                                   |                                                                            |                                                                         |
|                 | 0.10                      | ES   |         | 0.30<br>0.40 |              |  | Soft dark brown organic-rich slightly sandy slightly gravelly CLAY. Moist. | <div><div>1</div><div>2</div><div>3</div><div>4</div><div>5</div></div> |
|                 |                           |      |         |              |              |  | Grey mottled orangish brown SANDSTONE.                                     |                                                                         |
|                 |                           |      |         |              |              |                                                                                   | End of Pit at 0.400m                                                       |                                                                         |
|                 |                           |      |         |              |              |                                                                                   |                                                                            |                                                                         |
|                 |                           |      |         |              |              |                                                                                   |                                                                            |                                                                         |
|                 |                           |      |         |              |              |                                                                                   |                                                                            |                                                                         |

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated to perform infiltration test. 4] Trial pit backfilled with arisings on completion of test.







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

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

Trial Pit No:

TP03

Sheet 1 of 1

Project Name: Leiros Park

Project No:  
14156

Co-ords: -  
Level:

Date:  
05/04/2017

Location: Rhydding, Neath

Dimensions: 1.70

Depth  
0.65

0.70

Scale:  
1:25

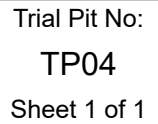
Logged:  
MW

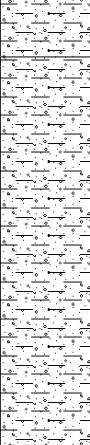
Client: Hale Construction Limited

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend                                                                            | Stratum Description                                                                  |
|--------------|---------------------------|------|---------|-----------|-----------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
|              | Depth                     | Type | Results |           |           |                                                                                   |                                                                                      |
|              |                           |      |         | 0.20      |           |  | Soft dark brown organic-rich slightly sandy slightly gravelly CLAY. Moist.           |
|              |                           |      |         | 0.60      |           |  | Soft to firm brown sandy slightly gravelly CLAY. Gravel is angular sandstone. Moist. |
|              |                           |      |         | 0.65      |           |  | Grey mottled orangish brown SANDSTONE.                                               |
|              |                           |      |         |           |           |                                                                                   | End of Pit at 0.650m                                                                 |
|              |                           |      |         |           |           |                                                                                   | 1                                                                                    |
|              |                           |      |         |           |           |                                                                                   | 2                                                                                    |
|              |                           |      |         |           |           |                                                                                   | 3                                                                                    |
|              |                           |      |         |           |           |                                                                                   | 4                                                                                    |
|              |                           |      |         |           |           |                                                                                   | 5                                                                                    |

Stability: Stable.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated due to hard strata and very slow progress. 4] Trial pit backfilled with arisings.



|                                                                                                                                                                                                                                                                                                                       |                           |      |         |                   |           |                                                                                   |                                                                              |                  |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------|---------|-------------------|-----------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------|--|
| Project Name: Leiros Park                                                                                                                                                                                                                                                                                             |                           |      |         | Project No: 14156 |           | Co-ords: -<br>Level:                                                              |                                                                              | Date: 05/04/2017 |  |
| Location: Rhydding, Neath                                                                                                                                                                                                                                                                                             |                           |      |         |                   |           | Dimensions: 2.10                                                                  |                                                                              | Scale: 1:25      |  |
| Client: Hale Construction Limited                                                                                                                                                                                                                                                                                     |                           |      |         |                   |           | Depth 1.55                                                                        |                                                                              | Logged: MW       |  |
| Water Strike                                                                                                                                                                                                                                                                                                          | Samples & In Situ Testing |      |         | Depth (m)         | Level (m) | Legend                                                                            | Stratum Description                                                          |                  |  |
|                                                                                                                                                                                                                                                                                                                       | Depth                     | Type | Results |                   |           |                                                                                   |                                                                              |                  |  |
|                                                                                                                                                                                                                                                                                                                       | 0.70                      | D    |         | 0.20              |           |  | Soft dark brown organic-rich slightly sandy slightly gravelly CLAY. Moist.   |                  |  |
|                                                                                                                                                                                                                                                                                                                       |                           |      |         |                   |           |                                                                                   | Firm brownish grey and orangish brown slightly sandy slightly gravelly CLAY. |                  |  |
|                                                                                                                                                                                                                                                                                                                       |                           |      |         | 1.50<br>1.55      |           |  | Grey mottled orangish brown SANDSTONE.<br>End of Pit at 1.550m               |                  |  |
|                                                                                                                                                                                                                                                                                                                       |                           |      |         |                   |           |                                                                                   |                                                                              |                  |  |
| Stability: Stable.                                                                                                                                                                                                                                                                                                    |                           |      |         |                   |           |                                                                                   |                                                                              |                  |  |
| Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated to perform infiltration test. 4] Trial pit backfilled with arisings on completion of test. |                           |      |         |                   |           |                                                                                   |                                                                              |                  |  |







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Trial Pit No:  
**TP06**  
Sheet 1 of 1

|                                   |                                     |                      |                  |
|-----------------------------------|-------------------------------------|----------------------|------------------|
| Project Name: Leiros Park         | Project No: 14156                   | Co-ords: -<br>Level: | Date: 05/04/2017 |
| Location: Rhydding, Neath         | Dimensions: 2.00<br>Depth 2.00 0.70 |                      | Scale: 1:25      |
| Client: Hale Construction Limited |                                     |                      | Logged: MW       |

| Water Strike | Samples & In Situ Testing |      |         | Depth (m)            | Level (m) | Legend | Stratum Description                                                                                                                                                                                                                                                                                           |   |
|--------------|---------------------------|------|---------|----------------------|-----------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|              | Depth                     | Type | Results |                      |           |        |                                                                                                                                                                                                                                                                                                               |   |
|              | 0.40                      | ES   |         | 0.25<br>0.50         |           |        | Dark brown organic-rich clayey slightly gravelly SAND. Moist.<br>[Medium dense] grey and brown very clayey gravelly SAND. Gravel is angular sandstone. Moist.<br>Firm grey and orangish brown slightly sandy slightly gravelly CLAY with low cobble content. Gravel and cobbles are angular sandstone. Moist. | 1 |
|              | 1.00                      | D    |         | 1.10<br>1.90<br>2.00 |           |        | [Dense] grey mottled brown clayey sandy GRAVEL of angular sandstone. Moist.<br>Grey mottled orangish brown SANDSTONE.<br>End of Pit at 2.000m                                                                                                                                                                 | 2 |
|              |                           |      |         |                      |           |        |                                                                                                                                                                                                                                                                                                               | 3 |
|              |                           |      |         |                      |           |        |                                                                                                                                                                                                                                                                                                               | 4 |
|              |                           |      |         |                      |           |        |                                                                                                                                                                                                                                                                                                               | 5 |

Stability: Stable.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated due to hard strata and very slow progress. 4] Trial pit backfilled with arisings.



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

|                           |                   |                      |                  |
|---------------------------|-------------------|----------------------|------------------|
| Project Name: Leiros Park | Project No: 14156 | Co-ords: -<br>Level: | Date: 05/04/2017 |
|---------------------------|-------------------|----------------------|------------------|

|                                   |                                |                                                                                          |                           |
|-----------------------------------|--------------------------------|------------------------------------------------------------------------------------------|---------------------------|
| Location: Rhydding, Neath         | Dimensions: 2.70<br>Depth 3.30 | 0.70  | Scale: 1:25<br>Logged: MW |
| Client: Hale Construction Limited |                                |                                                                                          |                           |

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend                                                                            | Stratum Description                                                                                                                 |   |
|--------------|---------------------------|------|---------|-----------|-----------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|---|
|              | Depth                     | Type | Results |           |           |                                                                                   |                                                                                                                                     |   |
|              | 0.10                      | ES   |         | 0.25      |           |  | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                                                                       |   |
|              |                           |      |         | 0.80      |           |  | [Medium dense] brownish orange clayey very sandy GRAVEL of angular sandstone. Moist.                                                |   |
|              |                           |      |         | 1.55      |           |  | [Medium dense] greyish brown clayey very gravelly SAND. Gravel is angular sandstone. Moist.                                         | 1 |
|              |                           |      |         | 2.00      |           |  | [Medium dense] grey and brown clayey very gravelly SAND. Gravel is fine angular mudstone.                                           |   |
|              |                           |      |         | 3.30      |           |  | [Dense] dark grey and brown slightly clayey gravelly SAND. Gravel is tabular and angular mudstone and mudstone lithorelicts. Moist. | 2 |
|              |                           |      |         |           |           |                                                                                   | End of Pit at 3.300m                                                                                                                | 3 |
|              |                           |      |         |           |           |                                                                                   |                                                                                                                                     | 4 |
|              |                           |      |         |           |           |                                                                                   |                                                                                                                                     | 5 |

Stability: Stable.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated at extent of excavator's reach. 4] Trial pit backfilled with arisings.



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

|                           |                   |                      |                  |
|---------------------------|-------------------|----------------------|------------------|
| Project Name: Leiros Park | Project No: 14156 | Co-ords: -<br>Level: | Date: 05/04/2017 |
|---------------------------|-------------------|----------------------|------------------|

Location: Rhydding, Neath

Dimensions: 1.80

Depth

1.45

0.70

Scale:

1:25

Logged:  
MW

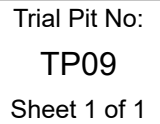
Client: Hale Construction Limited

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                                                                                          |   |
|--------------|---------------------------|------|---------|-----------|-----------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
|              | Depth                     | Type | Results |           |           |        |                                                                                                                                                                              |   |
|              |                           |      |         | 0.25      |           |        | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                                                                                                                |   |
|              |                           |      |         | 0.60      |           |        | [Medium dense] brown and grey clayey gravelly SAND. Gravel is angular sandstone. Moist.                                                                                      |   |
|              |                           |      |         | 1.40      |           |        | Firm grey and orangish brown slightly sandy slightly gravelly CLAY with medium cobble and boulder content. Gravel, cobbles and boulders are angular to subrounded sandstone. | 1 |
|              |                           |      |         | 1.45      |           |        | Grey mottled orangish brown SANDSTONE.                                                                                                                                       |   |
|              |                           |      |         |           |           |        | End of Pit at 1.450m                                                                                                                                                         |   |
|              |                           |      |         |           |           |        |                                                                                                                                                                              | 2 |
|              |                           |      |         |           |           |        |                                                                                                                                                                              | 3 |
|              |                           |      |         |           |           |        |                                                                                                                                                                              | 4 |
|              |                           |      |         |           |           |        |                                                                                                                                                                              | 5 |

Stability: Stable.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated to perform infiltration test. 4] Trial pit backfilled with arisings on completion of test.





Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated to perform infiltration test. 4] Trial pit backfilled with arisings on completion of test.



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Trial Pit No:  
**TP10**  
Sheet 1 of 1

|                                   |                   |                                |                           |
|-----------------------------------|-------------------|--------------------------------|---------------------------|
| Project Name: Leiros Park         | Project No: 14156 | Co-ords: -<br>Level:           | Date: 05/04/2017          |
| Location: Rhydding, Neath         |                   | Dimensions: 1.80<br>Depth 0.90 | Scale: 1:25<br>Logged: MW |
| Client: Hale Construction Limited |                   |                                |                           |

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                           |   |
|--------------|---------------------------|------|---------|-----------|-----------|--------|---------------------------------------------------------------------------------------------------------------|---|
|              | Depth                     | Type | Results |           |           |        |                                                                                                               |   |
|              | 0.10                      | ES   |         | 0.30      |           |        | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                                                 |   |
|              | 0.50                      | D    |         | 0.90      |           |        | [Very dense] dark grey silty sandy GRAVEL with high cobble content. Gravel and cobbles are angular sandstone. |   |
|              |                           |      |         |           |           |        | End of Pit at 0.900m                                                                                          | 1 |
|              |                           |      |         |           |           |        |                                                                                                               | 2 |
|              |                           |      |         |           |           |        |                                                                                                               | 3 |
|              |                           |      |         |           |           |        |                                                                                                               | 4 |
|              |                           |      |         |           |           |        |                                                                                                               | 5 |

Stability: Stable.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated due to hard strata and very slow progress. 4] Trial pit backfilled with arisings.



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

|                           |                   |                      |                  |
|---------------------------|-------------------|----------------------|------------------|
| Project Name: Leiros Park | Project No: 14156 | Co-ords: -<br>Level: | Date: 05/04/2017 |
|---------------------------|-------------------|----------------------|------------------|

|                           |                                |                           |
|---------------------------|--------------------------------|---------------------------|
| Location: Rhydding, Neath | Dimensions: 1.50<br>Depth 0.70 | Scale: 1:25<br>Logged: MW |
|---------------------------|--------------------------------|---------------------------|

Client: Hale Construction Limited

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend                                                                            | Stratum Description                                                                                                                                                                                             |
|--------------|---------------------------|------|---------|-----------|-----------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | Depth                     | Type | Results |           |           |                                                                                   |                                                                                                                                                                                                                 |
|              |                           |      |         | 0.25      |           |  | <div>Dark brown organic-rich clayey slightly gravelly SAND. Moist.</div> <div>Grey mottled orangish brown SANDSTONE. Open fractures are filled with clayey gravelly SAND.</div> <div>End of Pit at 0.700m</div> |
|              | 0.40                      | ES   |         |           |           |  |                                                                                                                                                                                                                 |
|              | 0.60                      | D    |         | 0.70      |           |                                                                                   |                                                                                                                                                                                                                 |
|              |                           |      |         |           |           |                                                                                   | <div>1</div> <div>2</div> <div>3</div> <div>4</div> <div>5</div>                                                                                                                                                |

Stability: Stable.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated due to hard strata and very slow progress. 4] Trial pit backfilled with arisings.





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Trial Pit No:

TP12

Sheet 1 of 1

Project Name: Leiros Park

Project No:  
14156

Co-ords: -  
Level:

Date:  
05/04/2017

Location: Rhydding, Neath

Dimensions: 1.70

Depth  
0.45

0.70

Scale:  
1:25

Logged:  
MW

Client: Hale Construction Limited

| Water Strike | Samples & In Situ Testing |      |         | Depth (m)            | Level (m) | Legend                                                                                                                                                                                                                                                      | Stratum Description                                                                                                                                                                            |                       |
|--------------|---------------------------|------|---------|----------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|              | Depth                     | Type | Results |                      |           |                                                                                                                                                                                                                                                             |                                                                                                                                                                                                |                       |
|              | 0.40                      | ES   |         | 0.30<br>0.40<br>0.45 |           | <br><br> | Dark brown organic-rich clayey slightly gravelly SAND. Moist.<br>[Loose to medium dense] brownish orange clayey SAND. Moist.<br>Grey mottled orangish brown SANDSTONE.<br>End of Pit at 0.450m | 1<br>2<br>3<br>4<br>5 |

Stability: Stable.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated due to hard strata and very slow progress. 4] Trial pit backfilled with arisings.

|                           |                   |                      |                  |
|---------------------------|-------------------|----------------------|------------------|
| Project Name: Leiros Park | Project No: 14156 | Co-ords: -<br>Level: | Date: 05/04/2017 |
|---------------------------|-------------------|----------------------|------------------|

|                                   |                  |             |
|-----------------------------------|------------------|-------------|
| Location: Rhydding, Neath         | Dimensions: 1.80 | Scale: 1:25 |
| Client: Hale Construction Limited | Depth 1.70       | Logged: MW  |

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                                                               |   |
|--------------|---------------------------|------|---------|-----------|-----------|--------|-------------------------------------------------------------------------------------------------------------------|---|
|              | Depth                     | Type | Results |           |           |        |                                                                                                                   |   |
|              | 0.10                      | ES   |         | 0.25      |           |        | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                                                     |   |
|              | 0.60                      | D    |         | 0.80      |           |        | [Loose] brownish orange clayey gravelly SAND. Gravel is angular sandstone. Moist.                                 |   |
|              |                           |      |         | 1.40      |           |        | Firm grey and orangish brown slightly sandy slightly gravelly CLAY with medium cobble and boulder content. Moist. | 1 |
|              |                           |      |         | 1.70      |           |        | [Dense] brownish grey clayey SAND & GRAVEL of angular sandstone.                                                  |   |
|              |                           |      |         |           |           |        | End of Pit at 1.700m                                                                                              | 2 |
|              |                           |      |         |           |           |        |                                                                                                                   | 3 |
|              |                           |      |         |           |           |        |                                                                                                                   | 4 |
|              |                           |      |         |           |           |        |                                                                                                                   | 5 |

Stability: Stable.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated due to hard strata and very slow progress. 4] Trial pit backfilled with arisings.



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Trial Pit No:  
**TP14**  
Sheet 1 of 1

|                                                                                                                                                                                                                                                                                                   |                           |      |         |                   |           |                                                                                   |                                                                                                                                           |                  |             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------|---------|-------------------|-----------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|
| Project Name: Leiros Park                                                                                                                                                                                                                                                                         |                           |      |         | Project No: 14156 |           | Co-ords: -<br>Level:                                                              |                                                                                                                                           | Date: 05/04/2017 |             |
| Location: Rhydding, Neath                                                                                                                                                                                                                                                                         |                           |      |         |                   |           | Dimensions: 2.00<br>Depth 3.00 0.70 <input type="text"/>                          |                                                                                                                                           |                  | Scale: 1:25 |
| Client: Hale Construction Limited                                                                                                                                                                                                                                                                 |                           |      |         |                   |           |                                                                                   |                                                                                                                                           |                  | Logged: MW  |
| Water Strike                                                                                                                                                                                                                                                                                      | Samples & In Situ Testing |      |         | Depth (m)         | Level (m) | Legend                                                                            | Stratum Description                                                                                                                       |                  |             |
|                                                                                                                                                                                                                                                                                                   | Depth                     | Type | Results |                   |           |                                                                                   |                                                                                                                                           |                  |             |
|                                                                                                                                                                                                                                                                                                   | 0.10                      | ES   |         | 0.30              |           |  | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                                                                             |                  |             |
|                                                                                                                                                                                                                                                                                                   |                           |      |         | 0.85              |           |  | [Medium dense] orangish brown clayey gravelly SAND. Gravel is angular sandstone. Moist.                                                   |                  |             |
|                                                                                                                                                                                                                                                                                                   |                           |      |         | 1.30              |           |  | [Medium dense] brownish grey clayey sandy GRAVEL with medium cobble content. Gravel and cobbles are angular and tabular sandstone. Moist. |                  |             |
|                                                                                                                                                                                                                                                                                                   |                           |      |         | 3.00              |           |  | [Medium dense] grey and brown clayey gravelly SAND. Gravel is fine to medium angular mudstone. Slightly wet.                              |                  |             |
|                                                                                                                                                                                                                                                                                                   |                           |      |         |                   |           |                                                                                   | End of Pit at 3.000m                                                                                                                      |                  |             |
| Stability: Stable.                                                                                                                                                                                                                                                                                |                           |      |         |                   |           |                                                                                   |                                                                                                                                           |                  |             |
| Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated at extent of excavator's reach. 4] Trial pit backfilled with arisings. |                           |      |         |                   |           |                                                                                   |                                                                                                                                           |                  |             |



|                                   |                   |                                |                           |
|-----------------------------------|-------------------|--------------------------------|---------------------------|
| Project Name: Leiros Park         | Project No: 14156 | Co-ords: -<br>Level:           | Date: 05/04/2017          |
| Location: Rhydding, Neath         |                   | Dimensions: 2.50<br>Depth 3.00 | Scale: 1:25<br>Logged: MW |
| Client: Hale Construction Limited |                   |                                |                           |

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend                                                                            | Stratum Description                                                                                           |   |
|--------------|---------------------------|------|---------|-----------|-----------|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|---|
|              | Depth                     | Type | Results |           |           |                                                                                   |                                                                                                               |   |
|              | 0.10                      | ES   |         | 0.35      |           |  | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                                                 |   |
|              | 0.30                      | ES   |         |           |           |                                                                                   | [Medium dense] brown clayey SAND & GRAVEL of angular and tabular sandstone. Moist.                            |   |
|              | 0.60                      | D    |         |           |           |                                                                                   |                                                                                                               |   |
|              |                           |      |         | 0.90      |           |  | Firm black SILT.                                                                                              |   |
|              |                           |      |         | 1.00      |           |  | Possible weathered coal seam.                                                                                 |   |
|              |                           |      |         |           |           |                                                                                   | [Medium dense] brownish grey clayey very sandy GRAVEL of fine to medium mudstone. Wet.                        | 1 |
|              |                           |      |         |           |           |                                                                                   |                                                                                                               |   |
|              |                           |      |         |           |           |                                                                                   | Some lenses of stiff grey and brown slightly sandy slightly gravelly CLAY. Gravel is fine to medium mudstone. | 2 |
|              | 2.00                      | D    |         |           |           |                                                                                   |                                                                                                               |   |
|              |                           |      |         | 3.00      |           |                                                                                   | End of Pit at 3.000m                                                                                          | 3 |
|              |                           |      |         |           |           |                                                                                   |                                                                                                               | 4 |
|              |                           |      |         |           |           |                                                                                   |                                                                                                               | 5 |

Stability: Stable.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated at extent of excavator's reach. 4] Trial pit backfilled with arisings. 5] Medium groundwater inflow from 1.50m depth.



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Trial Pit No:

TP16

Sheet 1 of 1

Project Name: Leiros Park

Project No:  
14156

Co-ords: -  
Level:

Date:  
05/04/2017

Location: Rhydding, Neath

Dimensions: 1.50

Depth

0.70

0.70

Scale:  
1:25

Logged:  
MW

Client: Hale Construction Limited

| Water Strike | Samples & In Situ Testing |         |         | Depth (m) | Level (m) | Legend | Stratum Description                                                        |
|--------------|---------------------------|---------|---------|-----------|-----------|--------|----------------------------------------------------------------------------|
|              | Depth                     | Type    | Results |           |           |        |                                                                            |
|              | 0.30<br>0.30              | D<br>ES |         | 0.20      |           |        | Soft dark brown organic-rich slightly sandy slightly gravelly CLAY. Moist. |
|              |                           |         |         | 0.45      |           |        | [Medium dense] brown and orangish brown clayey gravelly SAND. Moist.       |
|              |                           |         |         | 0.70      |           |        | Grey mottled orangish brown SANDSTONE.                                     |
|              |                           |         |         |           |           |        | End of Pit at 0.700m                                                       |

Stability: Slightly unstable during excavation of sandstone.

Remarks: 1] Consistency, strength and density indicators are based upon field judgement. 2] Density indicator is in brackets and is for guidance only, and is not in accordance with BS 5930:2015. 3] Trial pit terminated due to hard strata and very slow progress. 4] Trial pit backfilled with arisings.

**ANNEX F****Laboratory Soil Chemical Test Results**





## Certificate of Analysis

*Certificate Number* 17-96561

18-Apr-17

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

*Our Reference* 17-96561

*Client Reference* (not supplied)

*Order No* (not supplied)

*Contract Title* 14156 LEIROS PARK, NEATH

*Description* 14 Soil samples.

*Date Received* 07-Apr-17

*Date Started* 07-Apr-17

*Date Completed* 18-Apr-17

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

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

*Approved By*

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

Rob Brown  
Business Manager



## Summary of Chemical Analysis

### Matrix Descriptions

*Our Ref* 17-96561

*Client Ref*

*Contract Title* 14156 LEIROS PARK, NEATH

| Sample ID | Depth | Lab No  | Completed  | Matrix Description                                     |
|-----------|-------|---------|------------|--------------------------------------------------------|
| TP01      | 0.1   | 1155989 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP02      | 0.5   | 1155990 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP05      | 0.1   | 1155991 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP06      | 0.4   | 1155992 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP07      | 0.1   | 1155993 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP09      | 0.5   | 1155994 | 18/04/2017 | Brown gravelly, sandy CLAY including odd rootlets      |
| TP10      | 0.1   | 1155995 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP11      | 0.4   | 1155996 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP12      | 0.4   | 1155997 | 18/04/2017 | Brown gravelly, sandy CLAY including odd rootlets      |
| TP13      | 0.1   | 1155998 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP14      | 0.1   | 1155999 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP15      | 0.1   | 1156000 | 18/04/2017 | Dark brown gravelly, sandy CLAY including odd rootlets |
| TP15      | 0.3   | 1156001 | 18/04/2017 | Brown gravelly, sandy CLAY including odd rootlets      |
| TP16      | 0.3   | 1156002 | 18/04/2017 | Brown gravelly, sandy CLAY including odd rootlets      |

# Summary of Chemical Analysis

## Soil Samples

Our Ref 17-96561

Client Ref

Contract Title 14156 LEIROS PARK, NEATH

| Lab No        | 1155989 | 1155990 | 1155991 | 1155992 | 1155993 | 1155994 |
|---------------|---------|---------|---------|---------|---------|---------|
| Sample ID     | TP01    | TP02    | TP05    | TP06    | TP07    | TP09    |
| Depth         | 0.10    | 0.50    | 0.10    | 0.40    | 0.10    | 0.50    |
| Other ID      |         |         |         |         |         |         |
| Sample Type   | SOIL    | SOIL    | SOIL    | SOIL    | SOIL    | SOIL    |
| Sampling Date | n/s     | n/s     | n/s     | n/s     | n/s     | n/s     |
| Sampling Time | n/s     | n/s     | n/s     | n/s     | n/s     | n/s     |

| Test                                | Method      | LOD  | Units |        |        |        |        |        |        |
|-------------------------------------|-------------|------|-------|--------|--------|--------|--------|--------|--------|
| <b>Metals</b>                       |             |      |       |        |        |        |        |        |        |
| Arsenic                             | DETSC 2301# | 0.2  | mg/kg | 160    | 45     | 54     | 59     | 75     | 10     |
| Cadmium                             | DETSC 2301# | 0.1  | mg/kg | 1.7    | 0.8    | 1.0    | 1.3    | 1.2    | 0.1    |
| Chromium                            | DETSC 2301# | 0.15 | mg/kg | 17     | 17     | 17     | 18     | 14     | 17     |
| Chromium III                        | DETSC 2301* | 0.15 | mg/kg | 17     | 17     | 17     | 18     | 14     | 17     |
| Chromium, Hexavalent                | DETSC 2204* | 1    | mg/kg | < 1.0  | < 1.0  | < 1.0  | < 1.0  | < 1.0  | < 1.0  |
| Copper                              | DETSC 2301# | 0.2  | mg/kg | 1500   | 240    | 70     | 71     | 87     | 15     |
| Lead                                | DETSC 2301# | 0.3  | mg/kg | 94     | 42     | 74     | 47     | 75     | 14     |
| Mercury                             | DETSC 2325# | 0.05 | mg/kg | 0.06   | 0.07   | 0.09   | 0.06   | 0.16   | < 0.05 |
| Nickel                              | DETSC 2301# | 1    | mg/kg | 22     | 29     | 21     | 17     | 22     | 33     |
| Selenium                            | DETSC 2301# | 0.5  | mg/kg | 1.2    | 1.2    | 0.7    | 0.9    | < 0.5  | < 0.5  |
| Zinc                                | DETSC 2301# | 1    | mg/kg | 710    | 180    | 130    | 110    | 100    | 75     |
| <b>Inorganics</b>                   |             |      |       |        |        |        |        |        |        |
| pH                                  | DETSC 2008# |      |       | 6.5    | 6.4    | 5.4    | 5.9    | 5.4    | 6.0    |
| Cyanide, Total                      | DETSC 2130# | 0.1  | mg/kg | 0.3    | 0.3    | 0.8    | 0.3    | 0.6    | 0.1    |
| Organic matter                      | DETSC 2002# | 0.1  | %     | 4.9    | 5.6    | 8.6    | 5.1    | 7.7    | 1.3    |
| Sulphate as SO <sub>4</sub> , Total | DETSC 2321# | 0.01 | %     | 0.08   | 0.06   | 0.13   | 0.07   | 0.10   | 0.03   |
| <b>PAHs</b>                         |             |      |       |        |        |        |        |        |        |
| Naphthalene                         | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Acenaphthylene                      | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Acenaphthene                        | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Fluorene                            | DETSC 3303  | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Phenanthrene                        | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | 0.14   | 0.06   | < 0.03 |
| Anthracene                          | DETSC 3303  | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Fluoranthene                        | DETSC 3303# | 0.03 | mg/kg | < 0.03 | 0.04   | 0.07   | 0.19   | 0.13   | < 0.03 |
| Pyrene                              | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | 0.06   | 0.15   | 0.10   | < 0.03 |
| Benzo(a)anthracene                  | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | 0.06   | 0.04   | < 0.03 |
| Chrysene                            | DETSC 3303  | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | 0.09   | 0.05   | < 0.03 |
| Benzo(b)fluoranthene                | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | 0.06   | 0.04   | < 0.03 |
| Benzo(k)fluoranthene                | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Benzo(a)pyrene                      | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Indeno(1,2,3-c,d)pyrene             | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Dibenzo(a,h)anthracene              | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Benzo(g,h,i)perylene                | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| PAH - USEPA 16, Total               | DETSC 3303  | 0.1  | mg/kg | < 0.10 | < 0.10 | 0.12   | 0.71   | 0.42   | < 0.10 |
| <b>Phenols</b>                      |             |      |       |        |        |        |        |        |        |
| Phenol - Monohydric                 | DETSC 2130# | 0.3  | mg/kg | < 0.3  | 0.3    | 0.3    | 0.8    | < 0.3  | < 0.3  |



# Summary of Chemical Analysis

## Soil Samples

Our Ref 17-96561

Client Ref

Contract Title 14156 LEIROS PARK, NEATH

| Lab No        | 1155995 | 1155996 | 1155997 | 1155998 | 1155999 | 1156000 |
|---------------|---------|---------|---------|---------|---------|---------|
| Sample ID     | TP10    | TP11    | TP12    | TP13    | TP14    | TP15    |
| Depth         | 0.10    | 0.40    | 0.40    | 0.10    | 0.10    | 0.10    |
| Other ID      |         |         |         |         |         |         |
| Sample Type   | SOIL    | SOIL    | SOIL    | SOIL    | SOIL    | SOIL    |
| Sampling Date | n/s     | n/s     | n/s     | n/s     | n/s     | n/s     |
| Sampling Time | n/s     | n/s     | n/s     | n/s     | n/s     | n/s     |

| Test                    | Method      | LOD  | Units |        |        |        |        |        |        |
|-------------------------|-------------|------|-------|--------|--------|--------|--------|--------|--------|
| <b>Metals</b>           |             |      |       |        |        |        |        |        |        |
| Arsenic                 | DETSC 2301# | 0.2  | mg/kg | 72     | 51     | 17     | 52     | 66     | 89     |
| Cadmium                 | DETSC 2301# | 0.1  | mg/kg | 1.3    | 1.1    | 0.3    | 1.0    | 1.7    | 1.9    |
| Chromium                | DETSC 2301# | 0.15 | mg/kg | 15     | 15     | 15     | 15     | 15     | 17     |
| Chromium III            | DETSC 2301* | 0.15 | mg/kg | 15     | 15     | 15     | 15     | 15     | 17     |
| Chromium, Hexavalent    | DETSC 2204* | 1    | mg/kg | < 1.0  | < 1.0  | < 1.0  | < 1.0  | < 1.0  | < 1.0  |
| Copper                  | DETSC 2301# | 0.2  | mg/kg | 110    | 72     | 24     | 73     | 81     | 110    |
| Lead                    | DETSC 2301# | 0.3  | mg/kg | 84     | 49     | 19     | 63     | 61     | 77     |
| Mercury                 | DETSC 2325# | 0.05 | mg/kg | 0.07   | < 0.05 | < 0.05 | 0.10   | 0.13   | 0.06   |
| Nickel                  | DETSC 2301# | 1    | mg/kg | 26     | 27     | 20     | 17     | 20     | 25     |
| Selenium                | DETSC 2301# | 0.5  | mg/kg | 1.0    | 0.6    | 1.2    | 0.8    | 0.8    | 1.0    |
| Zinc                    | DETSC 2301# | 1    | mg/kg | 120    | 120    | 65     | 98     | 130    | 150    |
| <b>Inorganics</b>       |             |      |       |        |        |        |        |        |        |
| pH                      | DETSC 2008# |      |       | 5.3    | 6.3    | 6.3    | 5.5    | 5.9    | 5.6    |
| Cyanide, Total          | DETSC 2130# | 0.1  | mg/kg | 0.6    | 0.3    | 0.3    | 0.5    | 0.4    | 0.5    |
| Organic matter          | DETSC 2002# | 0.1  | %     | 5.6    | 2.7    | 2.0    | 6.4    | 5.5    | 7.1    |
| Sulphate as SO4, Total  | DETSC 2321# | 0.01 | %     | 0.08   | 0.04   | 0.03   | 0.10   | 0.08   | 0.08   |
| <b>PAHs</b>             |             |      |       |        |        |        |        |        |        |
| Naphthalene             | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Acenaphthylene          | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Acenaphthene            | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Fluorene                | DETSC 3303  | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Phenanthrene            | DETSC 3303# | 0.03 | mg/kg | 0.04   | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Anthracene              | DETSC 3303  | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Fluoranthene            | DETSC 3303# | 0.03 | mg/kg | 0.06   | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Pyrene                  | DETSC 3303# | 0.03 | mg/kg | 0.05   | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Benzo(a)anthracene      | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Chrysene                | DETSC 3303  | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Benzo(b)fluoranthene    | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Benzo(k)fluoranthene    | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Benzo(a)pyrene          | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Indeno(1,2,3-c,d)pyrene | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Dibenzo(a,h)anthracene  | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| Benzo(g,h,i)perylene    | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 | < 0.03 |
| PAH - USEPA 16, Total   | DETSC 3303  | 0.1  | mg/kg | 0.15   | < 0.10 | < 0.10 | < 0.10 | < 0.10 | < 0.10 |
| <b>Phenols</b>          |             |      |       |        |        |        |        |        |        |
| Phenol - Monohydric     | DETSC 2130# | 0.3  | mg/kg | < 0.3  | < 0.3  | 0.5    | 7.7    | 0.3    | < 0.3  |

## Summary of Chemical Analysis

### Soil Samples

Our Ref 17-96561

Client Ref

Contract Title 14156 LEIROS PARK, NEATH

|               |         |         |
|---------------|---------|---------|
| Lab No        | 1156001 | 1156002 |
| Sample ID     | TP15    | TP16    |
| Depth         | 0.30    | 0.30    |
| Other ID      |         |         |
| Sample Type   | SOIL    | SOIL    |
| Sampling Date | n/s     | n/s     |
| Sampling Time | n/s     | n/s     |

| Test                                | Method      | LOD  | Units |        |        |
|-------------------------------------|-------------|------|-------|--------|--------|
| <b>Metals</b>                       |             |      |       |        |        |
| Arsenic                             | DETSC 2301# | 0.2  | mg/kg | 15     | 23     |
| Cadmium                             | DETSC 2301# | 0.1  | mg/kg | 0.3    | 0.5    |
| Chromium                            | DETSC 2301# | 0.15 | mg/kg | 15     | 20     |
| Chromium III                        | DETSC 2301* | 0.15 | mg/kg | 15     | 20     |
| Chromium, Hexavalent                | DETSC 2204* | 1    | mg/kg | < 1.0  | < 1.0  |
| Copper                              | DETSC 2301# | 0.2  | mg/kg | 25     | 35     |
| Lead                                | DETSC 2301# | 0.3  | mg/kg | 14     | 23     |
| Mercury                             | DETSC 2325# | 0.05 | mg/kg | 0.08   | < 0.05 |
| Nickel                              | DETSC 2301# | 1    | mg/kg | 21     | 24     |
| Selenium                            | DETSC 2301# | 0.5  | mg/kg | < 0.5  | 0.8    |
| Zinc                                | DETSC 2301# | 1    | mg/kg | 69     | 90     |
| <b>Inorganics</b>                   |             |      |       |        |        |
| pH                                  | DETSC 2008# |      |       | 6.2    | 6.2    |
| Cyanide, Total                      | DETSC 2130# | 0.1  | mg/kg | 0.3    | 0.2    |
| Organic matter                      | DETSC 2002# | 0.1  | %     | 1.7    | 2.3    |
| Sulphate as SO <sub>4</sub> , Total | DETSC 2321# | 0.01 | %     | 0.03   | 0.05   |
| <b>PAHs</b>                         |             |      |       |        |        |
| Naphthalene                         | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Acenaphthylene                      | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Acenaphthene                        | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Fluorene                            | DETSC 3303  | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Phenanthrene                        | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Anthracene                          | DETSC 3303  | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Fluoranthene                        | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Pyrene                              | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Benzo(a)anthracene                  | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Chrysene                            | DETSC 3303  | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Benzo(b)fluoranthene                | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Benzo(k)fluoranthene                | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Benzo(a)pyrene                      | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Indeno(1,2,3-c,d)pyrene             | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Dibenzo(a,h)anthracene              | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| Benzo(g,h,i)perylene                | DETSC 3303# | 0.03 | mg/kg | < 0.03 | < 0.03 |
| PAH - USEPA 16, Total               | DETSC 3303  | 0.1  | mg/kg | < 0.10 | < 0.10 |
| <b>Phenols</b>                      |             |      |       |        |        |
| Phenol - Monohydric                 | DETSC 2130# | 0.3  | mg/kg | < 0.3  | < 0.3  |

## Information in Support of the Analytical Results

Our Ref 17-96561

Client Ref

Contract 14156 LEIROS PARK, NEATH

### Containers Received & Deviating Samples

| Lab No  | Sample ID      | Date Sampled | Containers Received | Holding time exceeded for tests                                                                                                                                                                                                                                                                                              | Inappropriate container for tests |
|---------|----------------|--------------|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| 1155989 | TP01 0.10 SOIL |              | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1155990 | TP02 0.50 SOIL |              | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1155991 | TP05 0.10 SOIL |              | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1155992 | TP06 0.40 SOIL |              | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1155993 | TP07 0.10 SOIL |              | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1155994 | TP09 0.50 SOIL |              | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |



## Information in Support of the Analytical Results

Our Ref 17-96561

Client Ref

Contract 14156 LEIROS PARK, NEATH

| Lab No  | Sample ID      | Date    |  | Containers Received | Holding time exceeded for tests                                                                                                                                                                                                                                                                                              | Inappropriate container for tests |
|---------|----------------|---------|--|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|
|         |                | Sampled |  |                     |                                                                                                                                                                                                                                                                                                                              |                                   |
| 1155995 | TP10 0.10 SOIL |         |  | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1155996 | TP11 0.40 SOIL |         |  | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1155997 | TP12 0.40 SOIL |         |  | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1155998 | TP13 0.10 SOIL |         |  | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1155999 | TP14 0.10 SOIL |         |  | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |
| 1156000 | TP15 0.10 SOIL |         |  | GJ 250ml, PT 1L     | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |                                   |

## Information in Support of the Analytical Results

Our Ref 17-96561

Client Ref

Contract 14156 LEIROS PARK, NEATH

|         |                |  |                 |                                                                                                                                                                                                                                                                                                                              |  |
|---------|----------------|--|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| 1156001 | TP15 0.30 SOIL |  | GJ 250ml, PT 1L | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |  |
| 1156002 | TP16 0.30 SOIL |  | GJ 250ml, PT 1L | Sample date not supplied, Chromium, Hexavalent (365 days), Mercury (365 days), Total Sulphate ICP (730 days), Metals ICP (365 days), Metals ICP Prep (365 days), Kone Cr6 (1095 days), Naphthalene (14 days), Organic Matter (Manual) (730 days), PAH MS (14 days), pH + Conductivity (7 days), Cyanide/Mono pHoh (365 days) |  |

Key: G-Glass P-Plastic J-Jar T-Tub

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

### Soil Analysis Notes

Inorganic soil analysis was carried out on a dried sample, crushed to pass a 425µm sieve, in accordance with BS1377.

Organic soil analysis was carried out on an 'as received' sample. Organics results are corrected for moisture and expressed on a dry weight basis.

The Loss on Drying, used to express organics analysis on an air dried basis, is carried out at a temperature of 28°C +/-2°C.

### Disposal

From the issue date of this test certificate, samples will be held for the following times prior to disposal :-

Soils - 1 month, Liquids - 2 weeks, Asbestos (test portion) - 6 months

## Appendix A - Details of Analysis

| Method     | Parameter                                   | Units    | Limit of Detection | Sample Preparation | Sub-Contracted | UKAS | MCERTS |
|------------|---------------------------------------------|----------|--------------------|--------------------|----------------|------|--------|
| DETSC 2002 | Organic matter                              | %        | 0.1                | Air Dried          | No             | Yes  | Yes    |
| DETSC 2003 | Loss on ignition                            | %        | 0.01               | Air Dried          | No             | Yes  | Yes    |
| DETSC 2008 | pH                                          | pH Units | 1                  | Air Dried          | No             | Yes  | Yes    |
| DETSC 2024 | Sulphide                                    | mg/kg    | 10                 | Air Dried          | No             | Yes  | Yes    |
| DETSC 2076 | Sulphate Aqueous Extract as SO <sub>4</sub> | mg/l     | 10                 | Air Dried          | No             | Yes  | Yes    |
| DETSC 2084 | Total Carbon                                | %        | 0.5                | Air Dried          | No             | Yes  | Yes    |
| DETSC 2084 | Total Organic Carbon                        | %        | 0.5                | Air Dried          | No             | Yes  | Yes    |
| DETSC 2119 | Ammoniacal Nitrogen as N                    | mg/kg    | 0.5                | Air Dried          | No             | Yes  | Yes    |
| DETSC 2130 | Cyanide free                                | mg/kg    | 0.1                | Air Dried          | No             | Yes  | Yes    |
| DETSC 2130 | Cyanide total                               | mg/kg    | 0.1                | Air Dried          | No             | Yes  | Yes    |
| DETSC 2130 | Phenol - Monohydric                         | mg/kg    | 0.3                | Air Dried          | No             | Yes  | Yes    |
| DETSC 2130 | Thiocyanate                                 | mg/kg    | 0.6                | Air Dried          | No             | Yes  | Yes    |
| DETSC 2321 | Total Sulphate as SO <sub>4</sub>           | %        | 0.01               | Air Dried          | No             | Yes  | Yes    |
| DETSC 2325 | Mercury                                     | mg/kg    | 0.05               | Air Dried          | No             | Yes  | Yes    |
| DETSC 3049 | Sulphur (free)                              | mg/kg    | 0.75               | Air Dried          | No             | Yes  | Yes    |
| DETSC2123  | Boron (water soluble)                       | mg/kg    | 0.2                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Arsenic                                     | mg/kg    | 0.2                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Barium                                      | mg/kg    | 1.5                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Beryllium                                   | mg/kg    | 0.2                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Cadmium Available                           | mg/kg    | 0.1                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Cadmium                                     | mg/kg    | 0.1                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Cobalt                                      | mg/kg    | 0.7                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Chromium                                    | mg/kg    | 0.15               | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Copper                                      | mg/kg    | 0.2                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Manganese                                   | mg/kg    | 20                 | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Molybdenum                                  | mg/kg    | 0.4                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Nickel                                      | mg/kg    | 1                  | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Lead                                        | mg/kg    | 0.3                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Selenium                                    | mg/kg    | 0.5                | Air Dried          | No             | Yes  | Yes    |
| DETSC2301  | Zinc                                        | mg/kg    | 1                  | Air Dried          | No             | Yes  | Yes    |
| DETSC 3072 | Ali/Aro C10-C35                             | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aliphatic C10-C12                           | mg/kg    | 1.5                | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aliphatic C10-C12                           | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aliphatic C10-C35                           | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aliphatic C12-C16                           | mg/kg    | 1.2                | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aliphatic C12-C16                           | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aliphatic C16-C21                           | mg/kg    | 1.5                | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aliphatic C16-C21                           | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aliphatic C21-C35                           | mg/kg    | 3.4                | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aliphatic C21-C35                           | mg/kg    | 3.4                | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aromatic C10-C12                            | mg/kg    | 0.9                | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aromatic C10-C12                            | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aromatic C10-C35                            | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aromatic C12-C16                            | mg/kg    | 0.5                | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aromatic C12-C16                            | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aromatic C16-C21                            | mg/kg    | 0.6                | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aromatic C16-C21                            | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aromatic C21-C35                            | mg/kg    | 1.4                | As Received        | No             | Yes  | Yes    |
| DETSC 3072 | Aromatic C21-C35                            | mg/kg    | 1.4                | As Received        | No             | Yes  | Yes    |
| DETS 062   | Benzene                                     | mg/kg    | 0.01               | As Received        | No             | Yes  | Yes    |
| DETS 062   | Ethylbenzene                                | mg/kg    | 0.01               | As Received        | No             | Yes  | Yes    |
| DETS 062   | Toluene                                     | mg/kg    | 0.01               | As Received        | No             | Yes  | Yes    |
| DETS 062   | Xylene                                      | mg/kg    | 0.01               | As Received        | No             | Yes  | Yes    |
| DETS 062   | m+p Xylene                                  | mg/kg    | 0.01               | As Received        | No             | Yes  | Yes    |
| DETS 062   | o Xylene                                    | mg/kg    | 0.01               | As Received        | No             | Yes  | Yes    |
| DETSC 3311 | C10-C24 Diesel Range Organics (DRO)         | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3311 | C24-C40 Lube Oil Range Organics (LORO)      | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |
| DETSC 3311 | EPH (C10-C40)                               | mg/kg    | 10                 | As Received        | No             | Yes  | Yes    |



## Appendix A - Details of Analysis

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

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

**Annex G**  
**Soakaway Test Results**

Site Name: Leiros Park, Neath

Number: TP1

Date Undertaken: 5/4/17

Test No.: 1

| Depth to Water (m) | Time (Mins) |                                              |
|--------------------|-------------|----------------------------------------------|
| 0.19               | 0           | (Test restarted at 0.19m due to water spill) |
| 0.2                | 9           |                                              |
| 0.22               | 33          |                                              |
| 0.23               | 54          |                                              |
| 0.26               | 93          |                                              |
| 0.32               | 159         |                                              |
| 0.32               | 159         |                                              |
| 0.32               | 159         |                                              |
| 0.32               | 159         |                                              |
| 0.32               | 159         |                                              |
| 0.350              | 207         | Achieved                                     |

|                                          |        |
|------------------------------------------|--------|
| Length of Trial Pit (m)                  | 1.20   |
| Width of Trial Pit (m)                   | 0.70   |
| Depth of Trial Pit (m)                   | 0.35   |
| Effective Storage Depth (m)              | 0.160  |
| Vp25                                     | 0.2300 |
| Vp75                                     | 0.3100 |
| Vp75-25                                  | 0.067  |
| 50% effective depth (m)                  | 0.080  |
| Mean Surface area ap50 (m <sup>2</sup> ) | 1.144  |

|                              |             |          |
|------------------------------|-------------|----------|
| Time for 25% Outflow (tp25)  | 55          | Achieved |
| Time for 75% Outflow (tp75)  | 150         | Achieved |
| tp75 - 25                    | 95          | Achieved |
| Soil Infiltration Rate (m/s) | 1.03055E-05 | Achieved |

**Soil Infiltration Worksheet:** This worksheet has been produced in combination with the document 'BRE Digest 365- September 1991'. Worksheet options are identified by a green background. This worksheet can be used to determine soil infiltration rates from trial pit field measurements.

Soil Infiltration Measurements- TP1





Site Name: Leiros Park, Neath

Number: TP2

Date Undertaken: 5/4/17

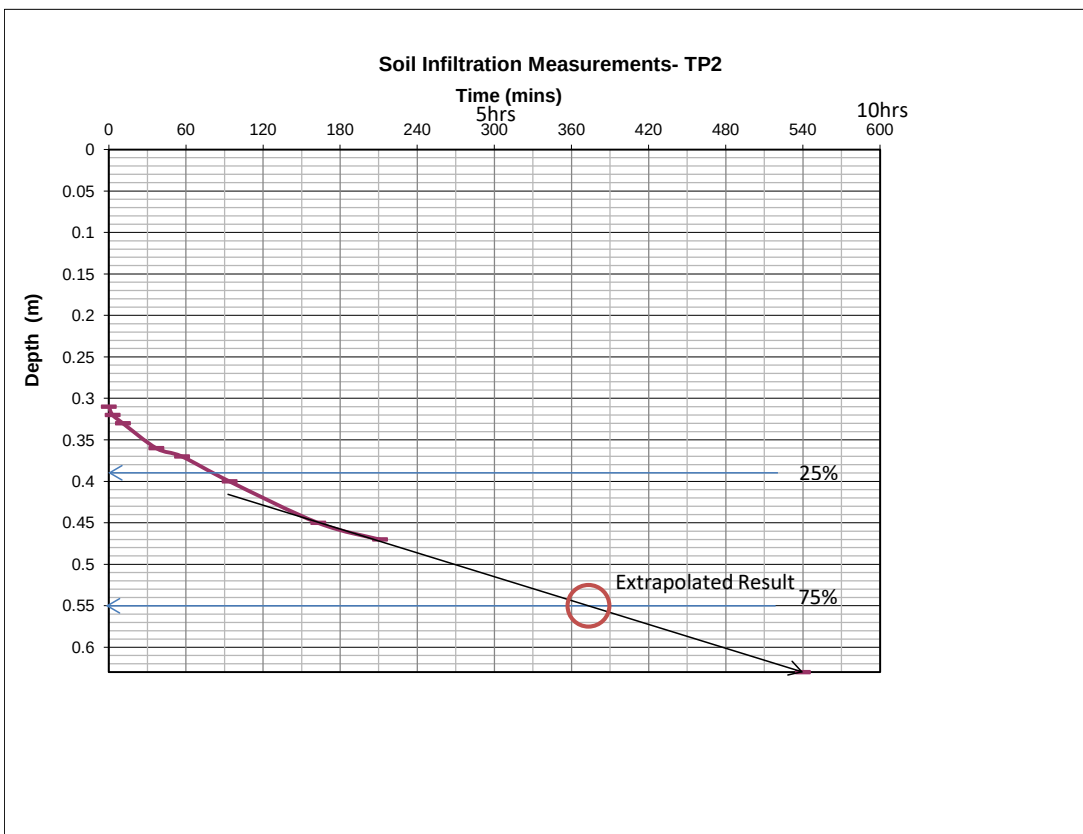
Test No.: 1

| Depth to Water (m)                         | Time (Mins) |                                 |
|--------------------------------------------|-------------|---------------------------------|
| 0.31                                       | 0           |                                 |
| 0.32                                       | 3           |                                 |
| 0.33                                       | 11          |                                 |
| 0.36                                       | 37          |                                 |
| 0.37                                       | 57          |                                 |
| 0.4                                        | 94          |                                 |
| 0.45                                       | 163         |                                 |
| 0.47                                       | 211         | Last Reading of Working Day     |
|                                            |             |                                 |
|                                            |             |                                 |
|                                            |             |                                 |
| (Base of pit / effective depth - 0%) 0.630 | 540         | Not Achieved Within Working Day |

|                             |        |
|-----------------------------|--------|
| Length of Trial Pit (m)     | 1.40   |
| Width of Trial Pit (m)      | 0.70   |
| Depth of Trial Pit (m)      | 0.63   |
| Effective Storage Depth (m) | 0.320  |
| Vp25                        | 0.3900 |
| Vp75                        | 0.5500 |
| Vp75-25                     | 0.157  |
| 50% effective depth (m)     | 0.160  |
| Mean Surface area ap50 (m2) | 1.652  |

|                              |             |                           |
|------------------------------|-------------|---------------------------|
| Time for 25% Outflow (tp25)  | 80          | Achieved                  |
| Time for 75% Outflow (tp75)  | 375         | (Extrapolated from Graph) |
| tp75 - 25                    | 295         | (Extrapolated from Graph) |
| Soil Infiltration Rate (m/s) | 5.36244E-06 | (Extrapolated from Graph) |

**Soil Infiltration Worksheet:** This worksheet has been produced in combination with the document 'BRE Digest 365- September 1991'. Worksheet options are identified by a green background. This worksheet can be used to determine soil infiltration rates from trial pit field measurements.



Site Name: Leiros Park, Neath

Number: TP4

Date Undertaken: 5/4/17

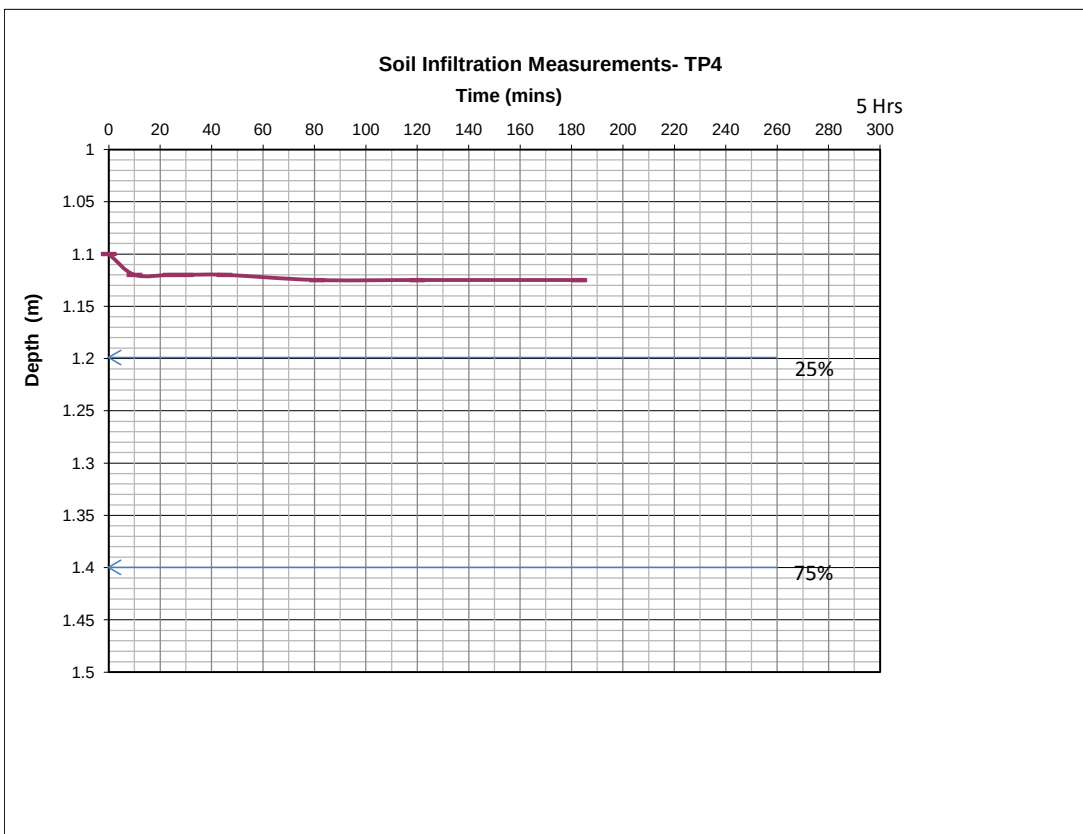
Test No.: 1

| Depth to Water (m)                         | Time (Mins) |                                     |
|--------------------------------------------|-------------|-------------------------------------|
| 1.1                                        | 0           |                                     |
| 1.12                                       | 10          |                                     |
| 1.12                                       | 24          |                                     |
| 1.12                                       | 30          |                                     |
| 1.12                                       | 45          |                                     |
| 1.125                                      | 81          |                                     |
| 1.125                                      | 120         |                                     |
| 1.125                                      | 183         | Soakaway Test Terminated after 3hrs |
|                                            |             |                                     |
|                                            |             |                                     |
|                                            |             |                                     |
| (Base of pit / effective depth - 0%) 1.500 |             | Not Achieved                        |

|                             |        |
|-----------------------------|--------|
| Length of Trial Pit (m)     | 1.70   |
| Width of Trial Pit (m)      | 0.70   |
| Depth of Trial Pit (m)      | 1.50   |
| Effective Storage Depth (m) | 0.400  |
| Vp25                        | 1.2000 |
| Vp75                        | 1.4000 |
| Vp75-25                     | 0.238  |
| 50% effective depth (m)     | 0.200  |
| Mean Surface area ap50 (m2) | 2.150  |

|                              |         |                         |
|------------------------------|---------|-------------------------|
| Time for 25% Outflow (tp25)  | N/A     | Not Achieved            |
| Time for 75% Outflow (tp75)  | N/A     | Not Achieved            |
| tp75 - 25                    | #VALUE! | Not Achieved            |
| Soil Infiltration Rate (m/s) | #VALUE! | Could not be calculated |

**Soil Infiltration Worksheet:** This worksheet has been produced in combination with the document 'BRE Digest 365- September 1991'. Worksheet options are identified by a green background. This worksheet can be used to determine soil infiltration rates from trial pit field measurements.



Site Name: Leiros Park, Neath

Number: TP8

Date Undertaken: 5/4/17

Test No.: 1

| Depth to Water (m) | Time (Mins) |
|--------------------|-------------|
| 0.7                | 0           |
| 0.8                | 8           |
| 0.81               | 9           |
| 0.83               | 11          |
| 0.86               | 13          |
| 0.9                | 15          |
| 0.95               | 17          |
| 1                  | 19          |
| 1                  | 19          |
| 1                  | 19          |
| 1.100              | 22          |

(Top of test / effective depth - 100%)

(Base of pit / effective depth - 0%)

Achieved

|                         |      |
|-------------------------|------|
| Length of Trial Pit (m) | 1.60 |
| Width of Trial Pit (m)  | 0.60 |
| Depth of Trial Pit (m)  | 1.10 |

Effective Storage Depth (m) 0.400

Vp25 0.8000

Vp75 1.0000

Vp75-25 0.192

50% effective depth (m) 0.200

Mean Surface area ap50 (m<sup>2</sup>) 1.840

Time for 25% Outflow (tp25) 8 Achieved

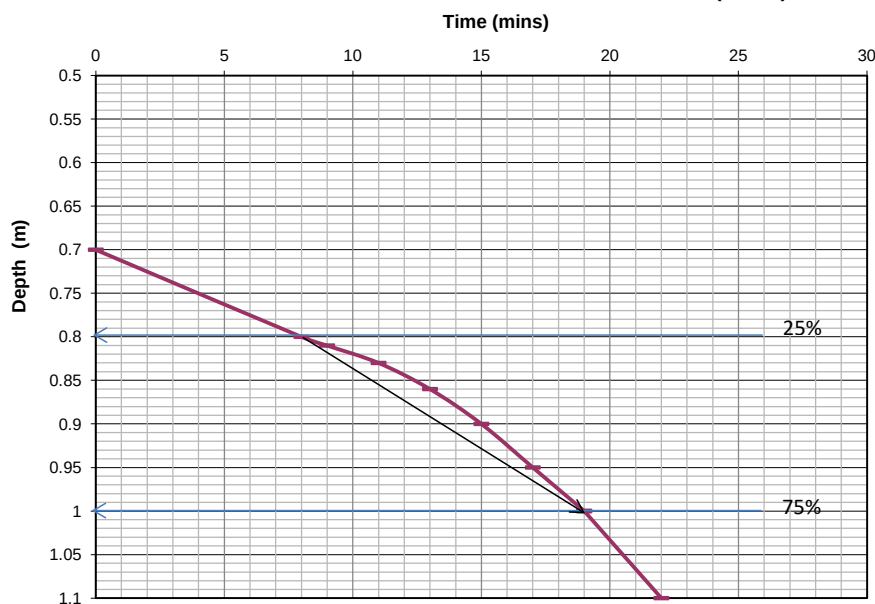
Time for 75% Outflow (tp75) 19 Achieved

tp75 - 25 11 Achieved

Soil Infiltration Rate (m/s) 0.000158103 Achieved 1.58E-04

**Soil Infiltration Worksheet:** This worksheet has been produced in combination with the document 'BRE Digest 365- September 1991'. Worksheet options are identified by a green background. This worksheet can be used to determine soil infiltration rates from trial pit field measurements.

Soil Infiltration Measurements- TP8 (Test 1)







Site Name: Leiros Park, Neath

Number: TP8

Date Undertaken: 5/4/17

Test No.: 2

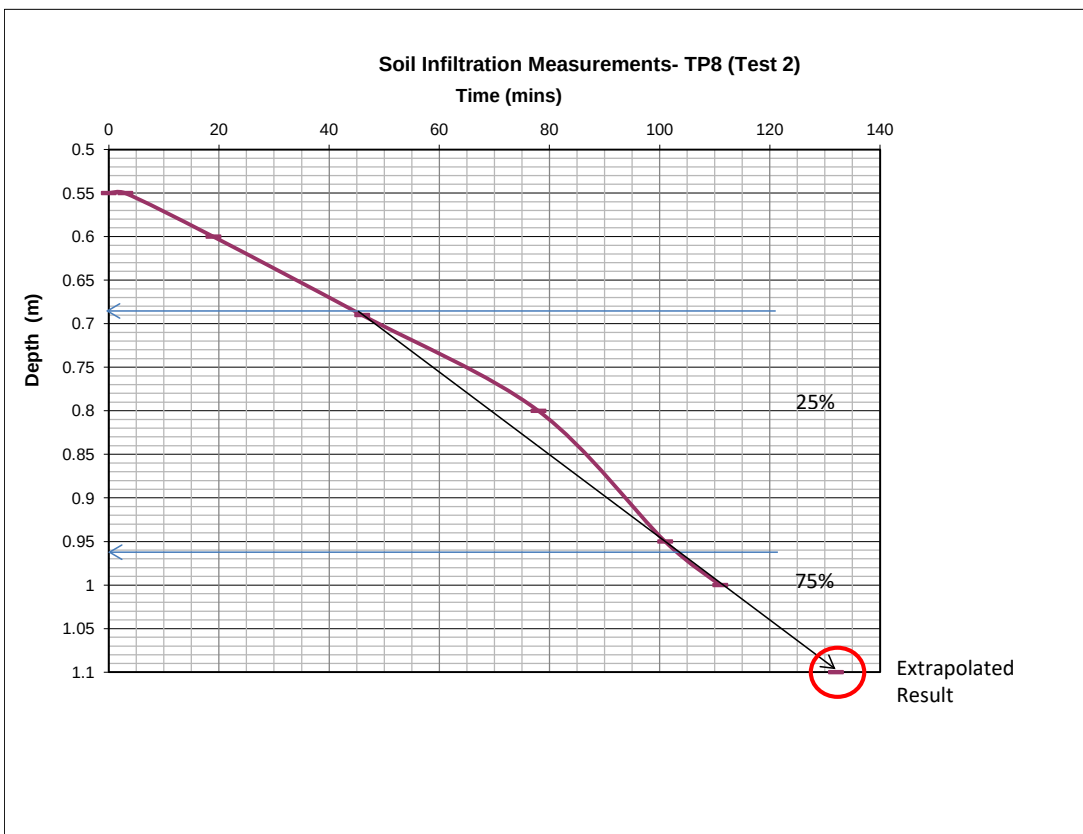
| Depth to Water (m)                         | Time (Mins)      |
|--------------------------------------------|------------------|
| 0.55                                       | 0                |
| 0.55                                       | 3                |
| 0.6                                        | 19               |
| 0.69                                       | 46               |
| 0.8                                        | 78               |
| 0.95                                       | 101              |
| 1                                          | 111              |
|                                            |                  |
|                                            |                  |
|                                            |                  |
| (Base of pit / effective depth - 0%) 1.100 | 132 Extrapolated |

|                         |      |
|-------------------------|------|
| Length of Trial Pit (m) | 1.60 |
| Width of Trial Pit (m)  | 0.60 |
| Depth of Trial Pit (m)  | 1.10 |

|                             |        |
|-----------------------------|--------|
| Effective Storage Depth (m) | 0.550  |
| Vp25                        | 0.6875 |
| Vp75                        | 0.9625 |
| Vp75-25                     | 0.264  |
| 50% effective depth (m)     | 0.275  |
| Mean Surface area ap50 (m2) | 2.170  |

|                              |             |          |
|------------------------------|-------------|----------|
| Time for 25% Outflow (tp25)  | 45          | Achieved |
| Time for 75% Outflow (tp75)  | 103         | Achieved |
| tp75 - 25                    | 58          | Achieved |
| Soil Infiltration Rate (m/s) | 3.49595E-05 | Achieved |

**Soil Infiltration Worksheet:** This worksheet has been produced in combination with the document 'BRE Digest 365- September 1991'. Worksheet options are identified by a green background. This worksheet can be used to determine soil infiltration rates from trial pit field measurements.



Site Name: Leiros Park, Neath

Number: TP9

Date Undertaken: 5/4/17

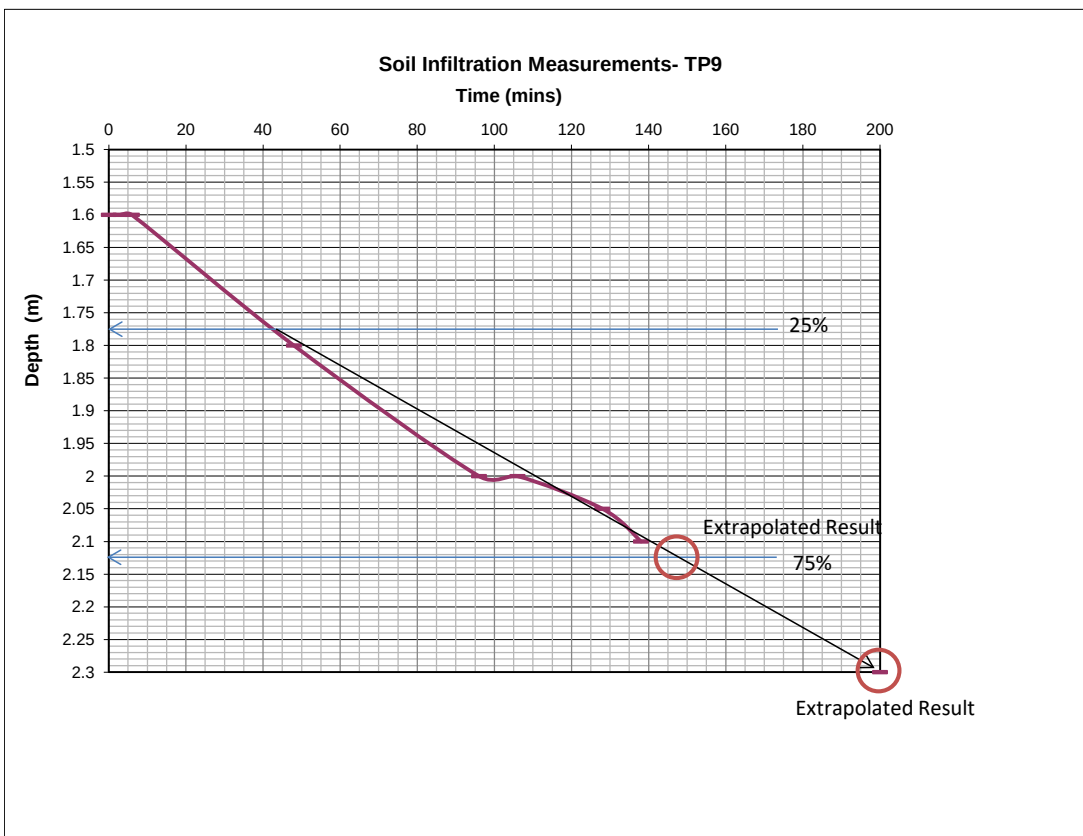
Test No.: 1

| Depth to Water (m)                         | Time (Mins)                   |
|--------------------------------------------|-------------------------------|
| 1.6                                        | 0                             |
| 1.6                                        | 3                             |
| 1.6                                        | 6                             |
| 1.8                                        | 48                            |
| 2                                          | 96                            |
| 2                                          | 106                           |
| 2.05                                       | 128                           |
| 2.1                                        | 138                           |
|                                            |                               |
|                                            |                               |
|                                            |                               |
| (Base of pit / effective depth - 0%) 2.300 | 200 (Extrapolated from Graph) |

|                             |                                     |
|-----------------------------|-------------------------------------|
| Length of Trial Pit (m)     | 1.50                                |
| Width of Trial Pit (m)      | 0.70                                |
| Depth of Trial Pit (m)      | 2.30 (Groundwater observed at 2.3m) |
| Effective Storage Depth (m) | 0.700                               |
| Vp25                        | 1.7750                              |
| Vp75                        | 2.1250                              |
| Vp75-25                     | 0.368                               |
| 50% effective depth (m)     | 0.350                               |
| Mean Surface area ap50 (m2) | 2.590                               |

|                              |             |                           |
|------------------------------|-------------|---------------------------|
| Time for 25% Outflow (tp25)  | 43          | Achieved                  |
| Time for 75% Outflow (tp75)  | 148         | (Extrapolated from Graph) |
| tp75 - 25                    | 105         | (Extrapolated from Graph) |
| Soil Infiltration Rate (m/s) | 2.25225E-05 | (Extrapolated from Graph) |

**Soil Infiltration Worksheet:** This worksheet has been produced in combination with the document 'BRE Digest 365- September 1991'. Worksheet options are identified by a green background. This worksheet can be used to determine soil infiltration rates from trial pit field measurements.



**ANNEX H****Laboratory Geotechnical Test Results**





## Contract Number: 34825

Client's Reference: **14111**

Report Date: **24-04-2017**

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

Contract Title: **Leiros Park, Neath**  
For the attention of: **Michael Watkins**

Date Received: **08-04-2017**  
Date Commenced: **08-04-2017**  
Date Completed: **24-04-2017**

| Test Description                                                                                                                                                 | Qty |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| <b>Moisture Content</b><br>1377 : 1990 Part 2 : 3.2 - * UKAS                                                                                                     | 3   |
| <b>4 Point Liquid &amp; Plastic Limit (LL/PL)</b><br>1377 : 1990 Part 2 : 4.3 & 5.3 - * UKAS                                                                     | 3   |
| <b>(GI) BRE SD1 Reduced Suite pH, Acid Soluble Sulphate, Water Soluble Sulphate and Total Sulphur</b><br>1377 : 1990 Part 3 & BRE CP2/79 - @ Non Accredited Test | 8   |
| <b>Disposal of Samples on Project</b>                                                                                                                            | 1   |

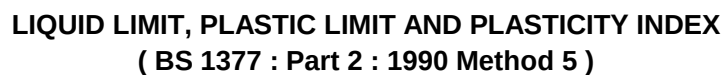
Notes: **Observations and Interpretations are outside the UKAS Accreditation**  
\* - denotes test included in laboratory scope of accreditation  
# - denotes test carried out by approved contractor  
@ - denotes non accredited tests

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

#### Approved Signatories:

Alex Wynn (Associate Director) - Ben Sharp (Contracts Manager) - Emma Sharp (Office Manager)  
Paul Evans (Quality/Technical Manager) - Richard John (Advanced Testing Manager) - Sean Penn (Administrative/Quality Assistant)  
Vaughan Edwards (Managing Director) - Wayne Honey (Administrative/Quality Assistant)





Contract Number

34825

Site Name

**14111**

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

The Plasticity Chart (Figure 1) is a graph with Plasticity Index (%) on the vertical axis (0 to 90) and Liquid Limit (%) on the horizontal axis (0 to 120). The chart is divided into regions labeled CL, CI, CH, CV, CE, ML, MI, MH, MV, and ME. A solid line represents the A-line, and a dashed line represents the U-line. Data points are plotted at (0, 0), (45, 25), (58, 32), and (60, 30).



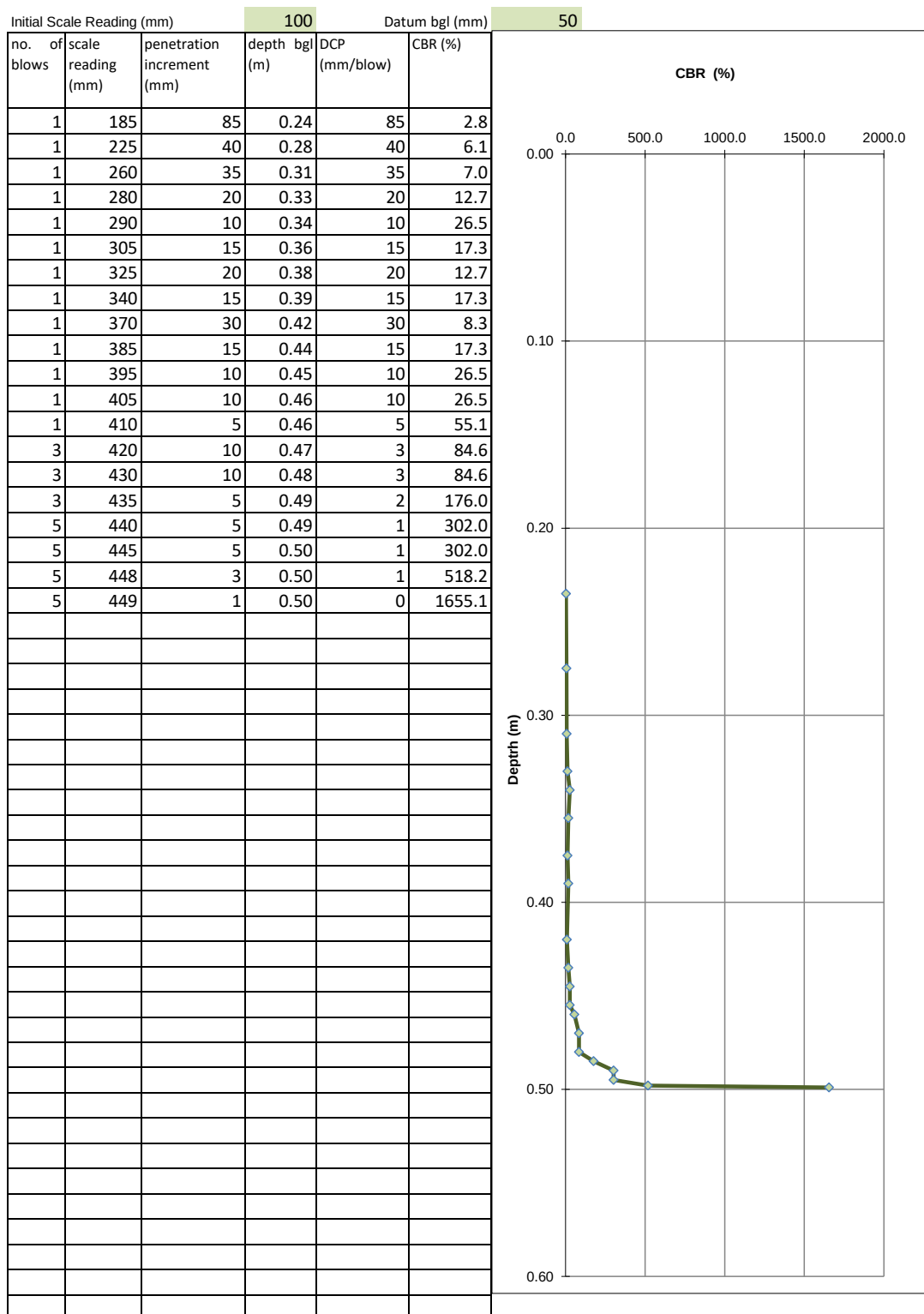




**ANNEX I****Dynamic Cone Penetrometer Test Results**



**TP02**



Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)





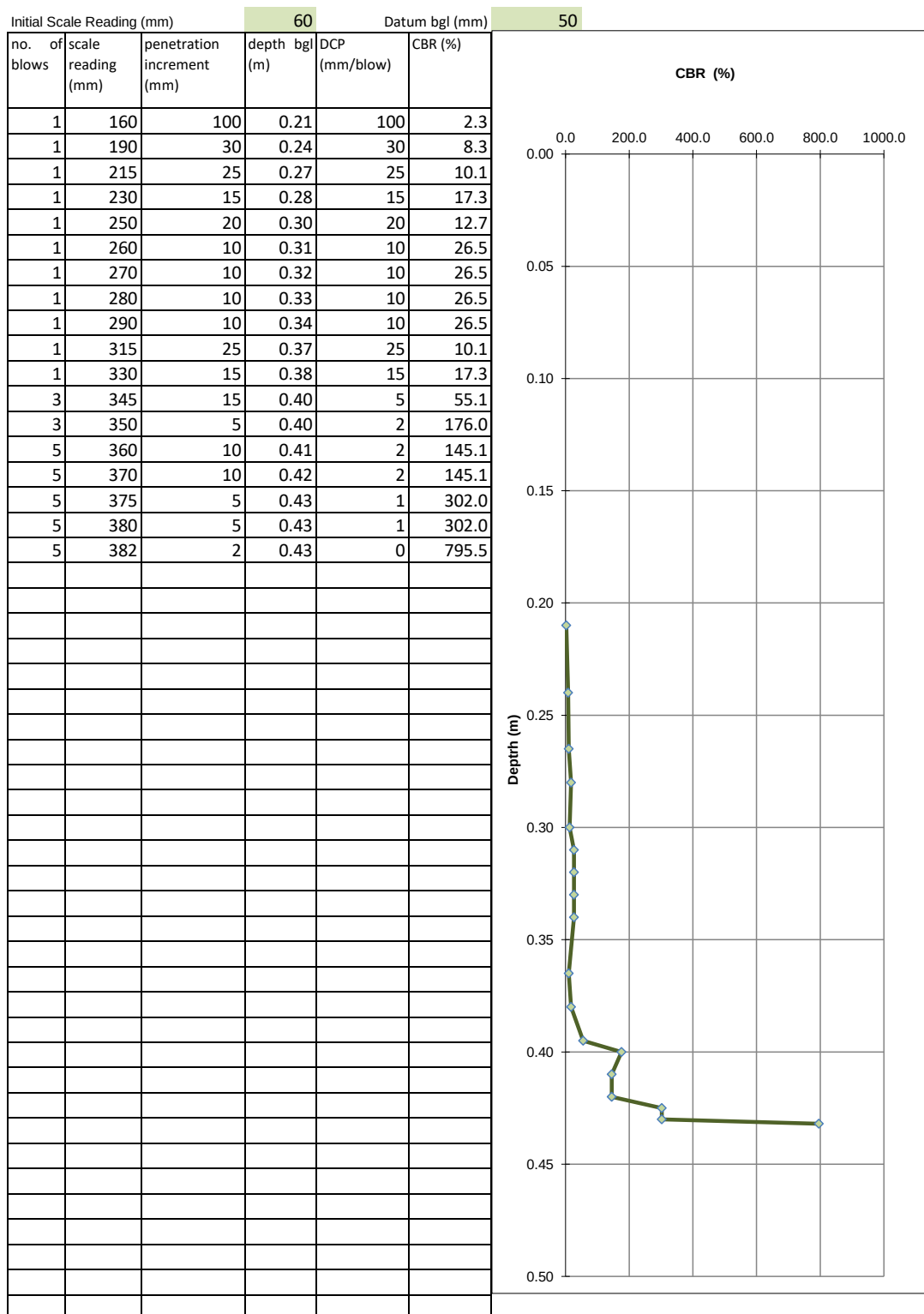
**Client:** Hale Construction Limited

**Site Name:** Leiros Park

**Project Number: 14156**

**Date:** 11/04/2017

TP03



## REMARKS:

Test carried out in accordance with operating instructions for the dynamic cone penetrometer Model A2465 by CNS Farnell Ltd.

CBR correlation based on the relationship  $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{mm/blow})$  developed by TRL taken from The

Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)

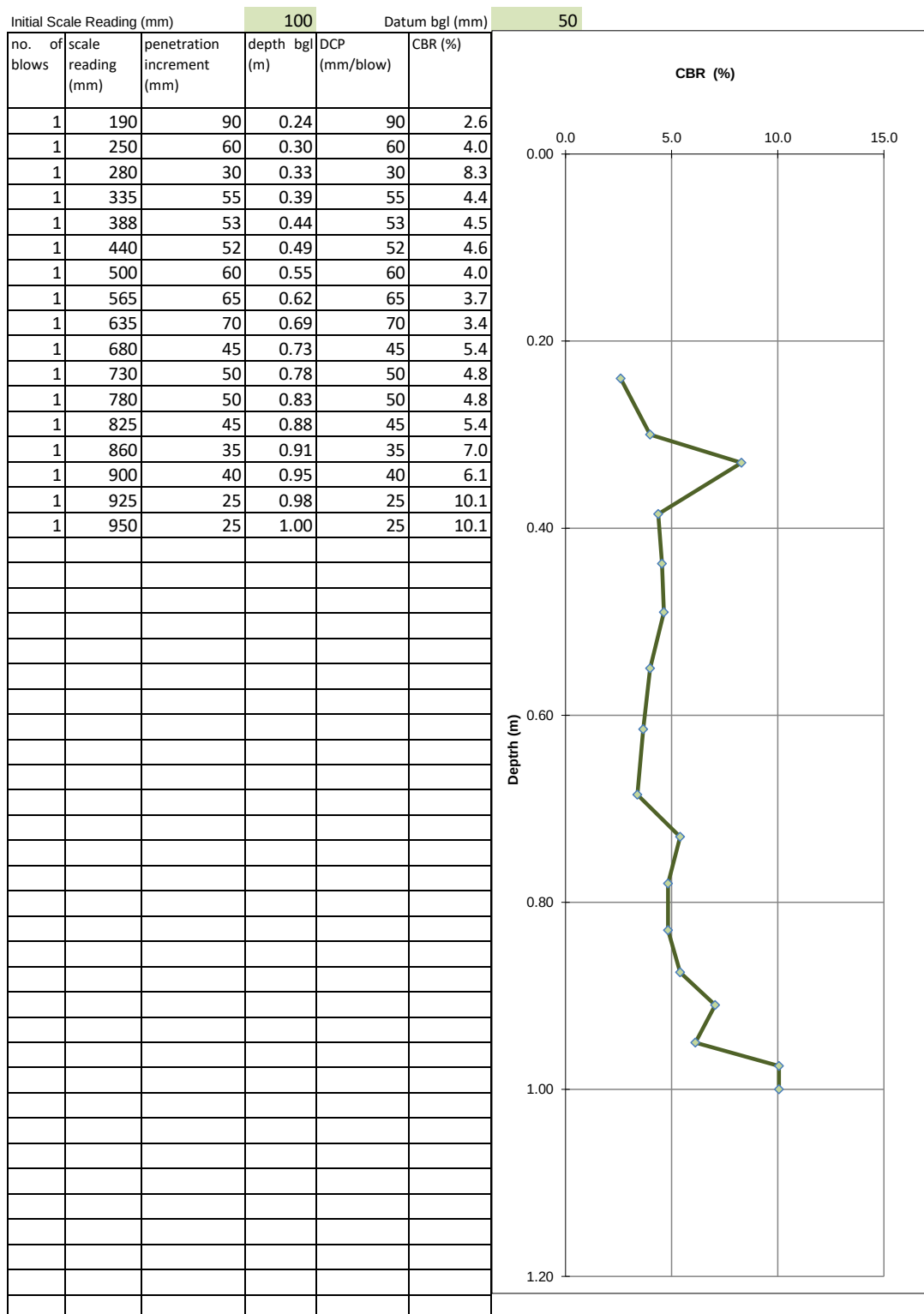
**Client:** Hale Construction Limited

**Site Name:** Leiros Park

**Project Number: 14156**

**Date:** 11/04/2017

TP06



## REMARKS:

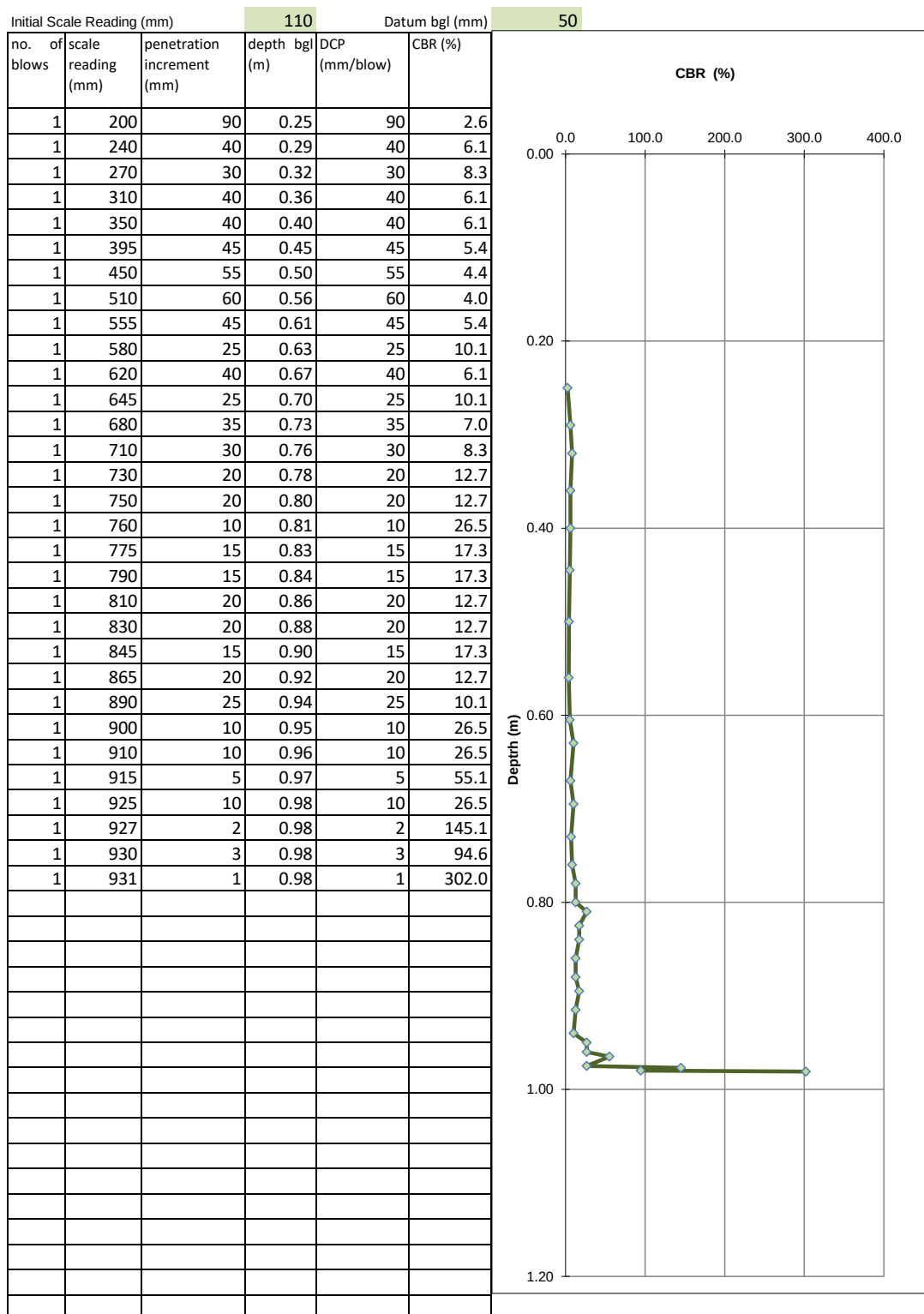
Test carried out in accordance with operating instructions for the dynamic cone penetrometer Model A2465 by CNS Farnell Ltd.

CBR correlation based on the relationship  $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{mm/blow})$  developed by TRL taken from The

Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)



**TP08**



Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)





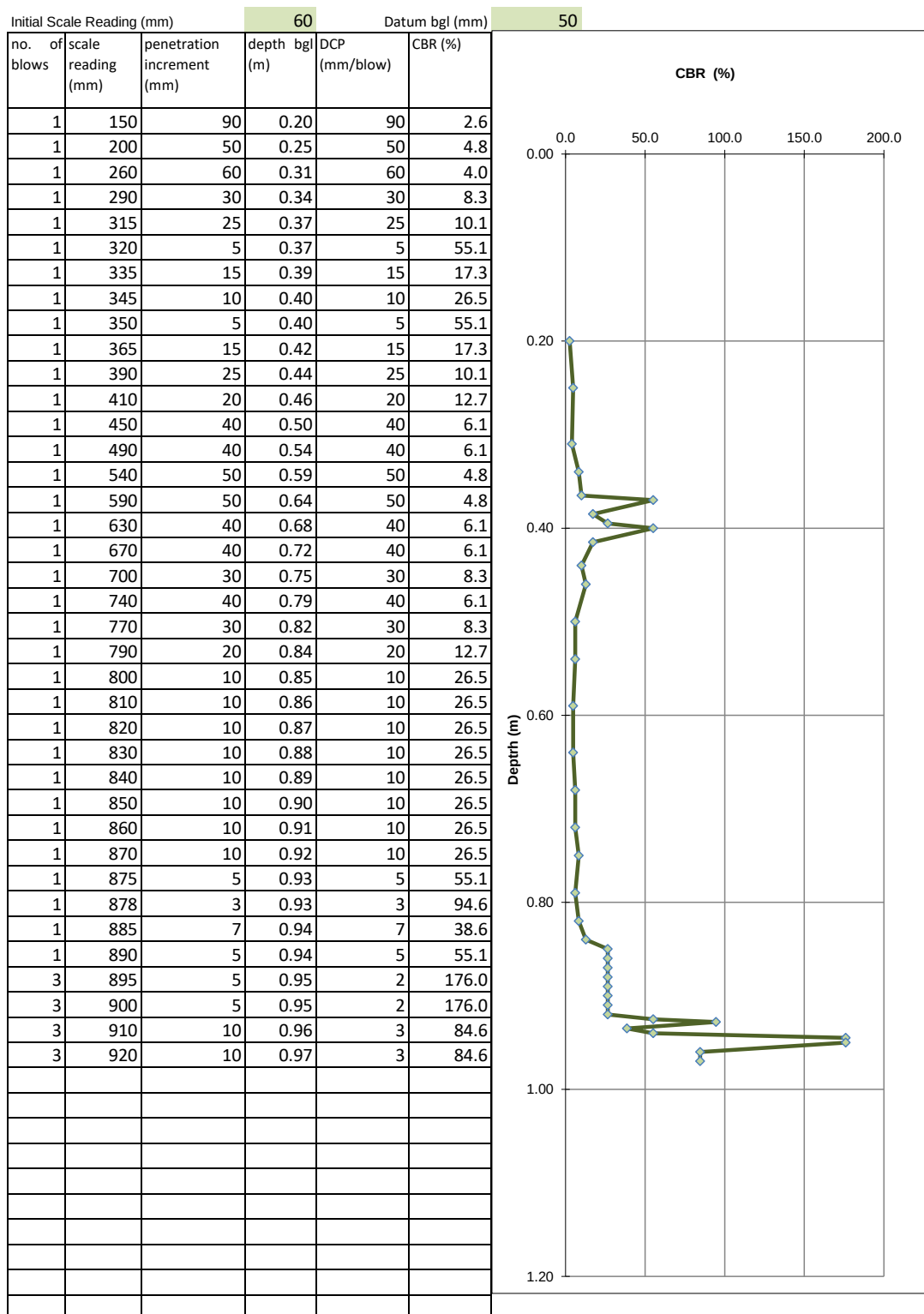
**Client:** Hale Construction Limited

**Site Name:** Leiros Park

**Project Number: 14156**

**Date:** 11/04/2017

TP09



## REMARKS:

Test carried out in accordance with operating instructions for the dynamic cone penetrometer Model A2465 by CNS Farnell Ltd.

CBR correlation based on the relationship  $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{mm/blow})$  developed by TRL taken from The

Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)

# Dynamic Cone Penetrometer Testing



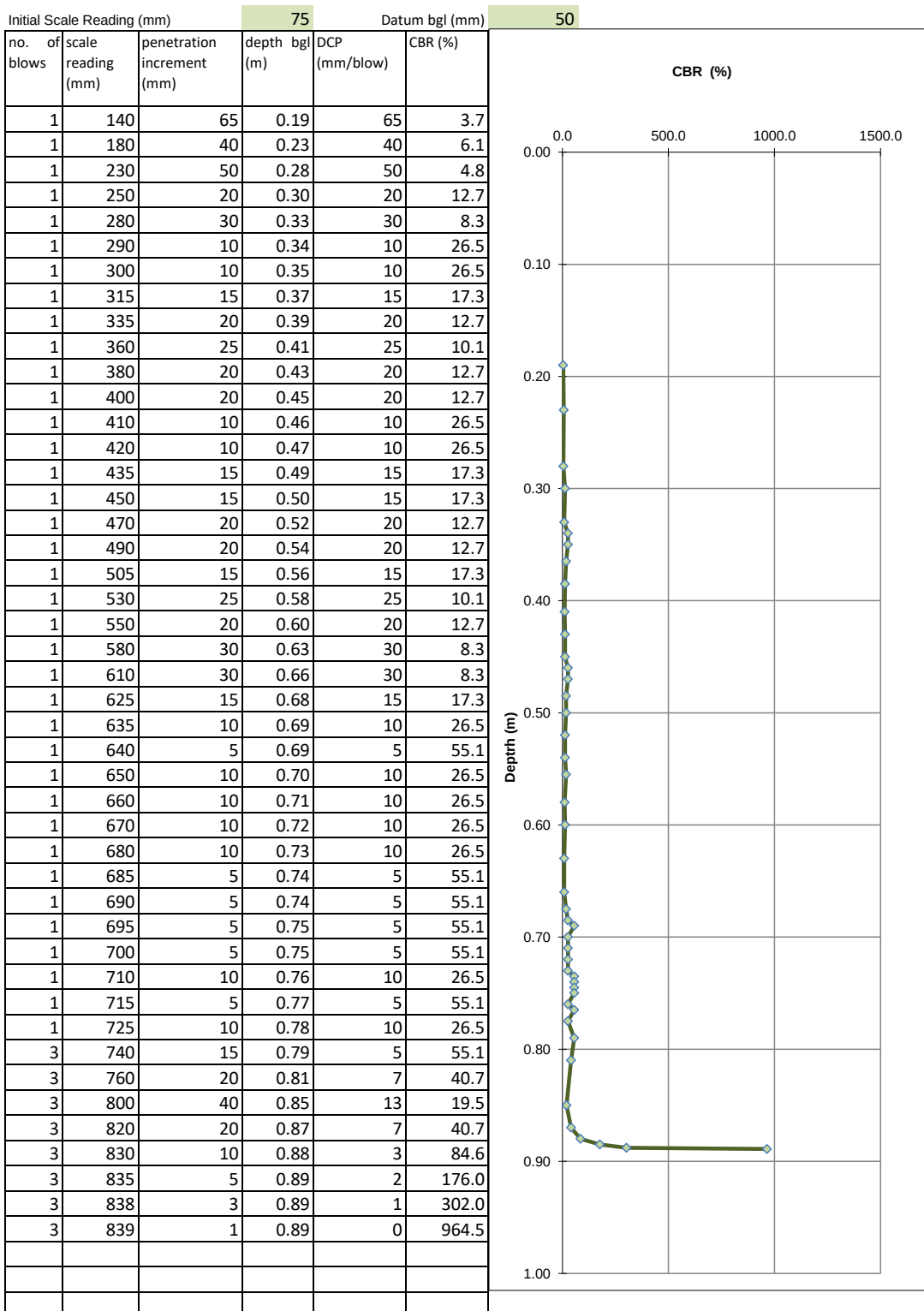
Client: Hale Construction Limited

Site Name: Leiros Park

Project Number: 14156

Date: 11/04/2017

TP11



## REMARKS:

Test carried out in accordance with operating instructions for the dynamic cone penetrometer Model A2465 by CNS Farnell Ltd.

CBR correlation based on the relationship  $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{mm/blow})$  developed by TRL taken from The

Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)

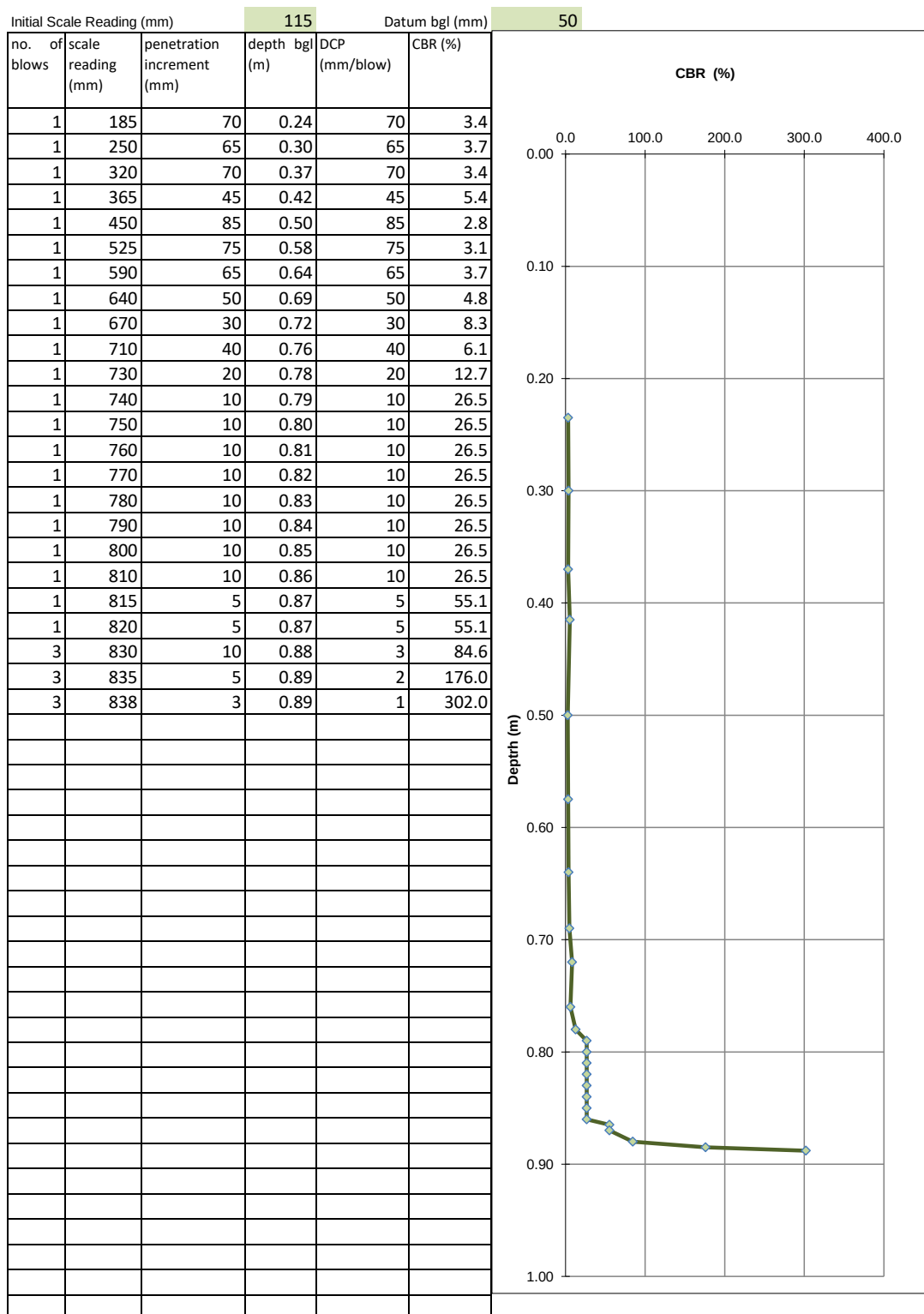
**Client:** Hale Construction Limited

**Site Name:** Leiros Park

**Project Number: 14156**

**Date:** 11/04/2017

# TP13



## REMARKS:

Test carried out in accordance with operating instructions for the dynamic cone penetrometer Model A2465 by CNS Farnell Ltd.

CBR correlation based on the relationship  $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{mm/blow})$  developed by TRL taken from The

Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)



# Dynamic Cone Penetrometer Testing



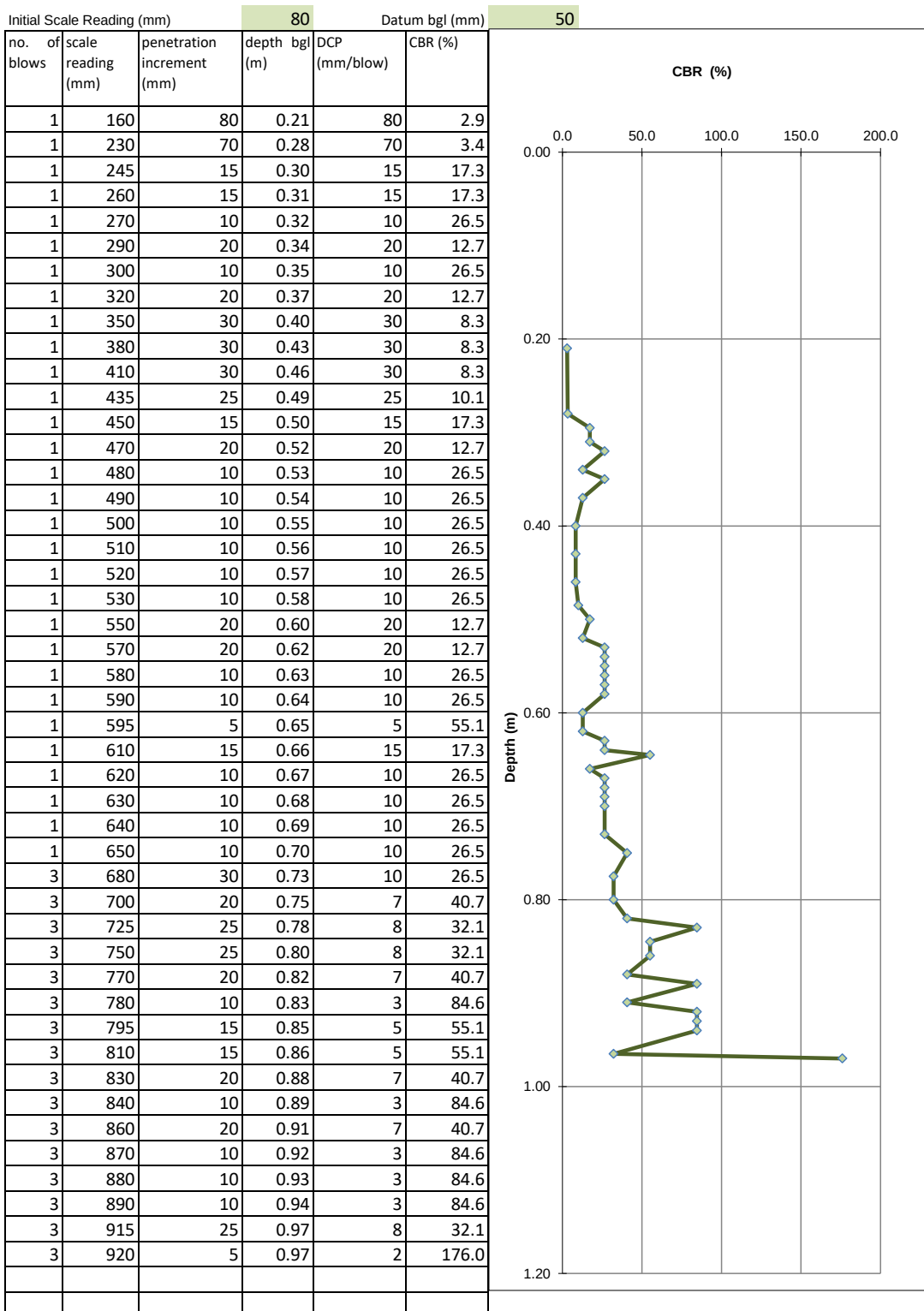
Client: Hale Construction Limited

Site Name: Leiros Park

Project Number: 14156

Date: 11/04/2017

TP14



## REMARKS:

Test carried out in accordance with operating instructions for the dynamic cone penetrometer Model A2465 by CNS Farnell Ltd.

CBR correlation based on the relationship  $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{mm/blow})$  developed by TRL taken from The

Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)

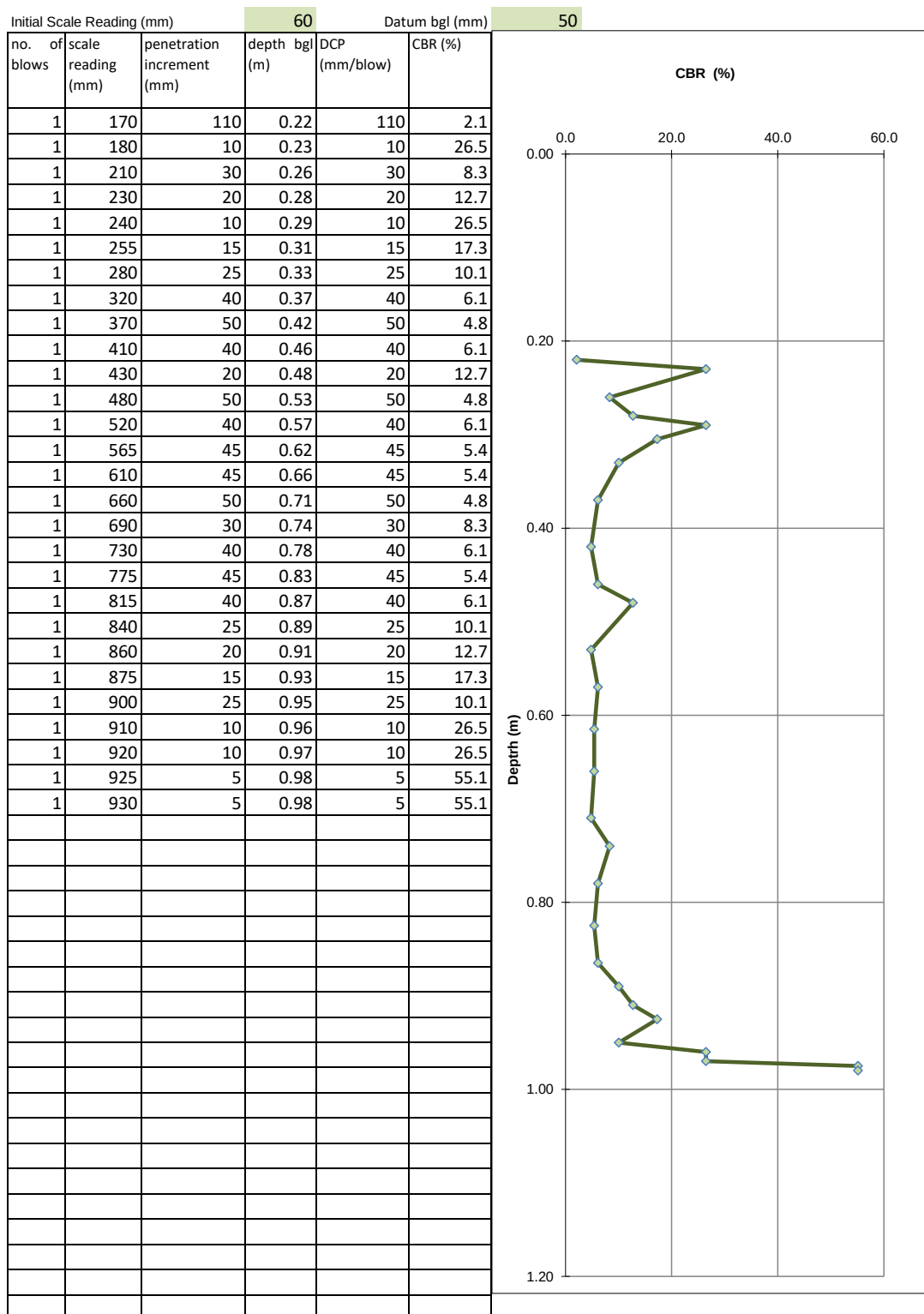
**Client:** Hale Construction Limited

**Site Name:** Leiros Park

**Project Number: 14156**

**Date:** 11/04/2017

# TP15



## REMARKS:

Test carried out in accordance with operating instructions for the dynamic cone penetrometer Model A2465 by CNS Farnell Ltd.

CBR correlation based on the relationship  $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{mm/blow})$  developed by TRL taken from The

Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)

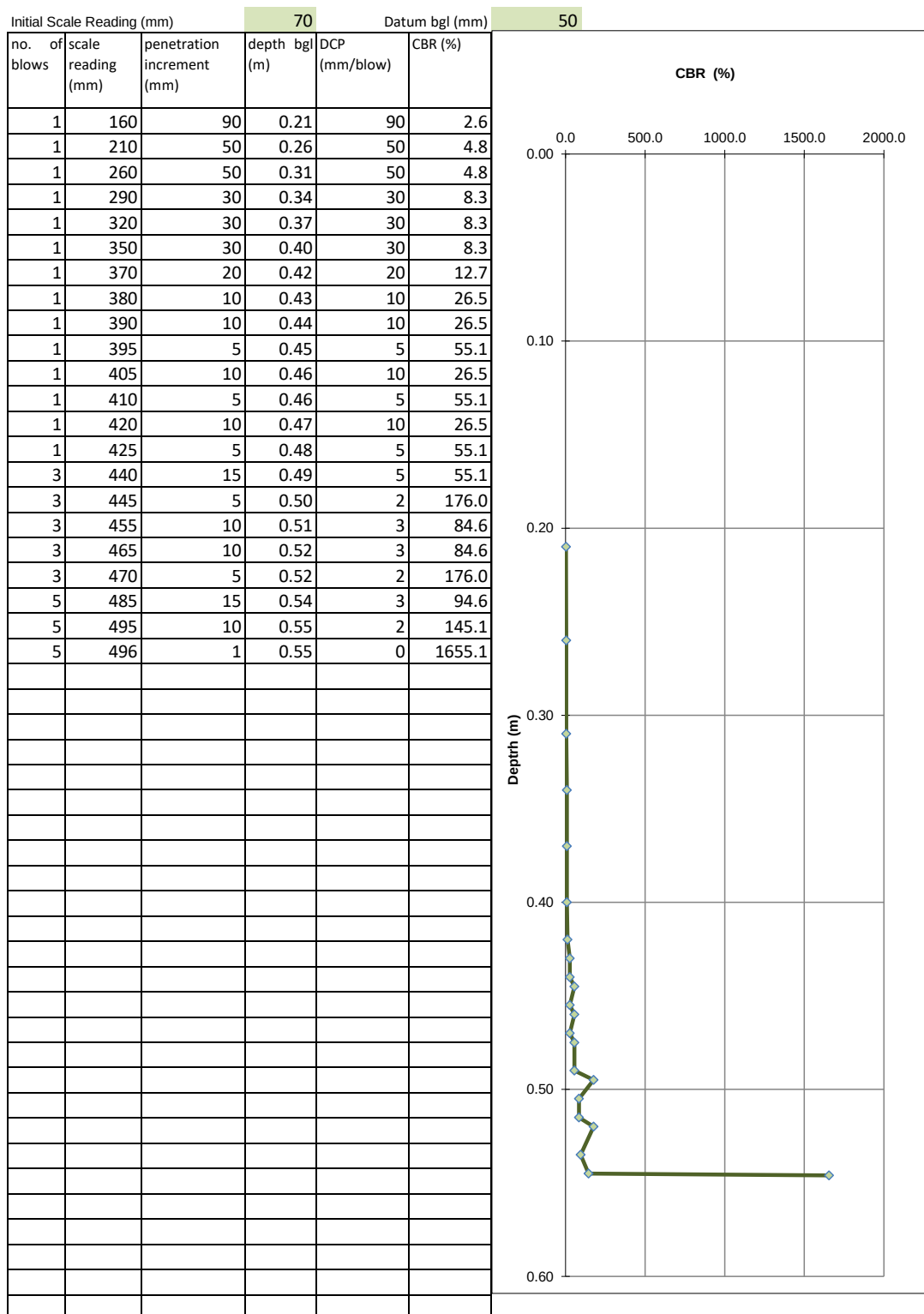
**Client:** Hale Construction Limited

**Site Name:** Leiros Park

**Project Number: 14156**

**Date:** 11/04/2017

**TP16**



## REMARKS:

Test carried out in accordance with operating instructions for the dynamic cone penetrometer Model A2465 by CNS Farnell Ltd.

CBR correlation based on the relationship  $\text{Log}_{10}(\text{CBR}) = 2.48 - 1.057 * \text{Log}_{10}(\text{mm/blow})$  developed by TRL taken from The

Highways Agency Interim Advice Note 73/06 - Design Guidance for Road Pavement Foundations (2009)

**DRAWINGS**



Job Number:

14156

Job Title:

Leiros Park, Rhydding, Neath

Drawing Title:

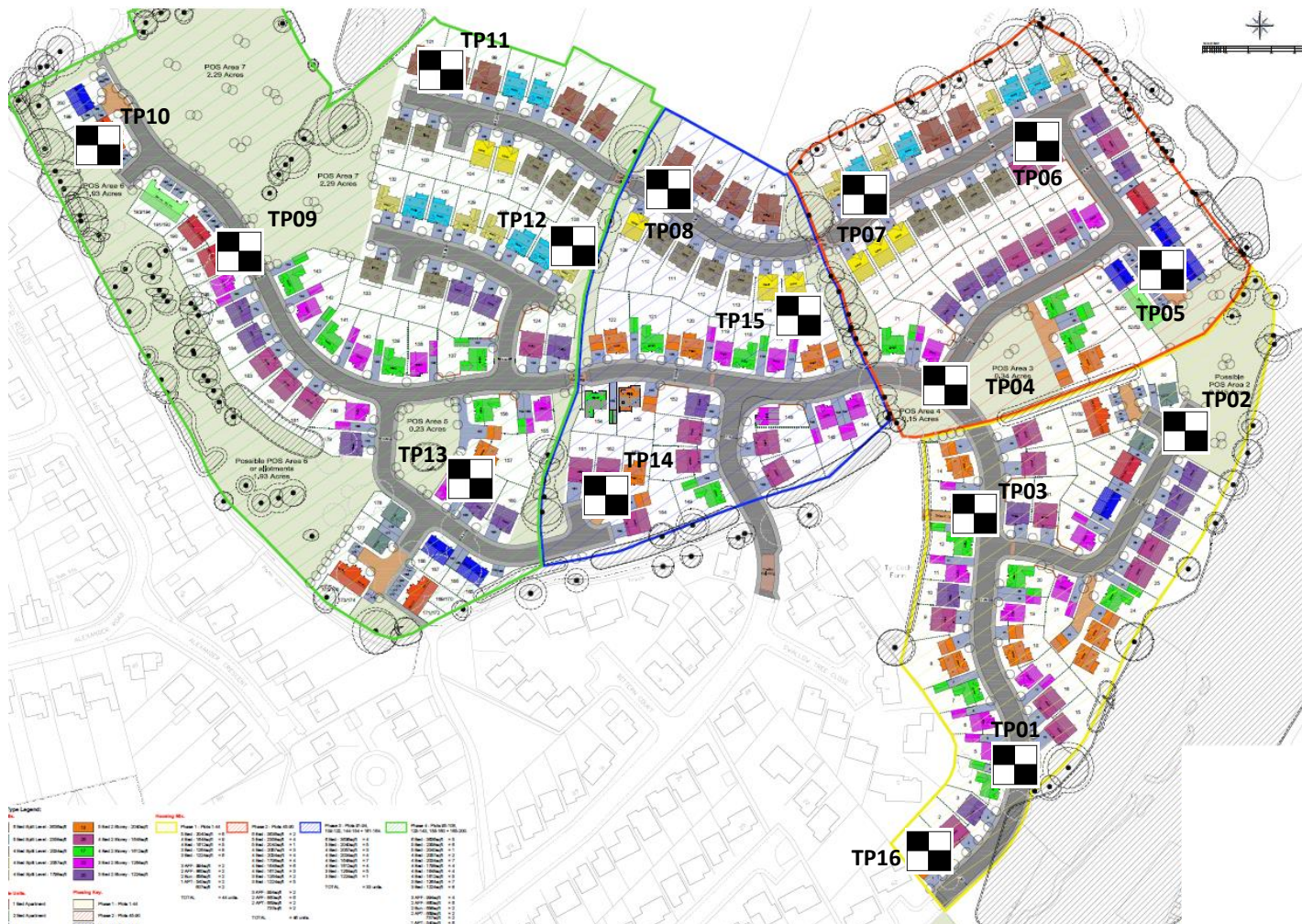
Exploratory Hole Layout

Drawing Number:

01

Scale:

Not To Scale



North



**Annex B**  
Trial Pit Logs



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

Trial Pit No:  
**TP01-2020**  
Sheet 1 of 1

Project Name: Leiros Park  
Project No: 14156  
Co-ords: -  
Level: -  
Date: 19/08/2020

Location: Rhydding, Neath  
Dimensions: 0.70  
Depth 0.40  
0.50  
Scale: 1:25  
Client: Hale Construction Limited  
Logged: MW

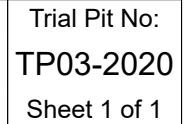
| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                           |
|--------------|---------------------------|------|---------|-----------|-----------|--------|---------------------------------------------------------------|
|              | Depth                     | Type | Results |           |           |        |                                                               |
|              |                           |      |         | 0.25      |           |        | Dark brown organic-rich clayey slightly gravelly SAND. Moist. |
|              |                           |      |         | 0.40      |           |        | [Loose to medium dense] brownish orange clayey SAND. Moist.   |
|              |                           |      |         |           |           |        | End of Pit at 0.400m                                          |
|              |                           |      |         |           |           |        | 1                                                             |
|              |                           |      |         |           |           |        | 2                                                             |
|              |                           |      |         |           |           |        | 3                                                             |
|              |                           |      |         |           |           |        | 4                                                             |
|              |                           |      |         |           |           |        | 5                                                             |

Stability:

Remarks:







Date:  
19/08/2020

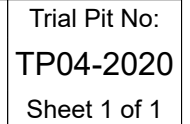
Scale:  
1:25

---

Logged:  
MW

| Water Strike | Samples & In Situ Testing |      |         | Depth (m)    | Level (m) | Legend               | Stratum Description                                                               |  |  |  |
|--------------|---------------------------|------|---------|--------------|-----------|----------------------|-----------------------------------------------------------------------------------|--|--|--|
|              | Depth                     | Type | Results |              |           |                      |                                                                                   |  |  |  |
|              |                           |      |         | 0.25<br>0.40 |           |                      | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                     |  |  |  |
|              |                           |      |         |              |           |                      | [Loose] brownish orange clayey gravelly SAND. Gravel is angular sandstone. Moist. |  |  |  |
|              |                           |      |         |              |           | End of Pit at 0.400m |                                                                                   |  |  |  |
|              |                           |      |         |              |           |                      |                                                                                   |  |  |  |
|              |                           |      |         |              |           |                      |                                                                                   |  |  |  |
|              |                           |      |         |              |           |                      |                                                                                   |  |  |  |

Remarks:



Date:  
19/08/2020

Scale:  
1:25

---

Logged:  
MW

| Water<br>Strike | Samples & In Situ Testing |      |         | Depth<br>(m) | Level<br>(m) | Legend                                                                            | Stratum Description                                                                     |
|-----------------|---------------------------|------|---------|--------------|--------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                 | Depth                     | Type | Results |              |              |                                                                                   |                                                                                         |
|                 |                           |      |         | 0.20         |              |  | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                           |
|                 |                           |      |         |              |              |  | [Medium dense] brown and grey clayey gravelly SAND. Gravel is angular sandstone. Moist. |
|                 |                           |      |         |              |              |                                                                                   | End of Pit at 0.400m                                                                    |
|                 |                           |      |         |              |              |                                                                                   |                                                                                         |
|                 |                           |      |         |              |              |                                                                                   |                                                                                         |

Remarks:



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5 Deryn Court, Wharfedale Road  
Pentwyn, Cardiff  
CF23 7HA

Trial Pit No:  
**TP05-2020**  
Sheet 1 of 1

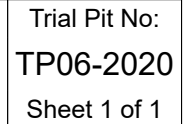
|                           |                   |                      |                  |
|---------------------------|-------------------|----------------------|------------------|
| Project Name: Leiros Park | Project No: 14156 | Co-ords: -<br>Level: | Date: 19/08/2020 |
|---------------------------|-------------------|----------------------|------------------|

|                           |                                |                           |
|---------------------------|--------------------------------|---------------------------|
| Location: Rhydding, Neath | Dimensions: 0.50<br>Depth 0.40 | Scale: 1:25<br>Logged: MW |
|---------------------------|--------------------------------|---------------------------|

| Water Strike | Samples & In Situ Testing |      |         | Depth (m)    | Level (m) | Legend | Stratum Description                                                                     |
|--------------|---------------------------|------|---------|--------------|-----------|--------|-----------------------------------------------------------------------------------------|
|              | Depth                     | Type | Results |              |           |        |                                                                                         |
|              |                           |      |         | 0.30<br>0.40 |           |        | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                           |
|              |                           |      |         |              |           |        | [Medium dense] orangish brown clayey gravelly SAND. Gravel is angular sandstone. Moist. |
|              |                           |      |         |              |           |        | End of Pit at 0.400m                                                                    |
|              |                           |      |         |              |           |        | 1                                                                                       |
|              |                           |      |         |              |           |        | 2                                                                                       |
|              |                           |      |         |              |           |        | 3                                                                                       |
|              |                           |      |         |              |           |        | 4                                                                                       |
|              |                           |      |         |              |           |        | 5                                                                                       |

Stability:

Remarks:



Date:  
19/08/2020

Scale:  
1:25

---

Logged:  
MW

[illegible]

Remarks:







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

Trial Pit No:  
**TP08-2020**  
Sheet 1 of 1

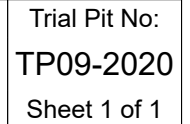
|                           |                   |                      |                  |
|---------------------------|-------------------|----------------------|------------------|
| Project Name: Leiros Park | Project No: 14156 | Co-ords: -<br>Level: | Date: 19/08/2020 |
|---------------------------|-------------------|----------------------|------------------|

|                                   |                                |                                                                                          |                           |
|-----------------------------------|--------------------------------|------------------------------------------------------------------------------------------|---------------------------|
| Location: Rhydding, Neath         | Dimensions: 0.50<br>Depth 0.40 | 0.70  | Scale: 1:25<br>Logged: MW |
| Client: Hale Construction Limited |                                |                                                                                          |                           |

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend                                                                            | Stratum Description                                                                                                              |   |
|--------------|---------------------------|------|---------|-----------|-----------|-----------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---|
|              | Depth                     | Type | Results |           |           |                                                                                   |                                                                                                                                  |   |
|              |                           |      |         | 0.20      |           |  | Dark brown organic-rich clayey slightly gravelly SAND. Moist.                                                                    |   |
|              |                           |      |         | 0.40      |           |  | [Medium dense] brown clayey very gravelly SAND with medium cobble content. Gravel and cobbles are angular and tabular sandstone. |   |
|              |                           |      |         |           |           |                                                                                   | End of Pit at 0.400m                                                                                                             |   |
|              |                           |      |         |           |           |                                                                                   |                                                                                                                                  | 1 |
|              |                           |      |         |           |           |                                                                                   |                                                                                                                                  | 2 |
|              |                           |      |         |           |           |                                                                                   |                                                                                                                                  | 3 |
|              |                           |      |         |           |           |                                                                                   |                                                                                                                                  | 4 |
|              |                           |      |         |           |           |                                                                                   |                                                                                                                                  | 5 |

Stability:

Remarks:



Date:  
19/08/2020

Scale:  
1:25

---

Logged:  
MW

[illegible]

Remarks:



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

Trial Pit No:  
**TP10-2020**  
Sheet 1 of 1

|                                   |                   |                                |                           |
|-----------------------------------|-------------------|--------------------------------|---------------------------|
| Project Name: Leiros Park         | Project No: 14156 | Co-ords: -<br>Level:           | Date: 19/08/2020          |
| Location: Rhydding, Neath         |                   | Dimensions: 0.50<br>Depth 0.40 | Scale: 1:25<br>Logged: MW |
| Client: Hale Construction Limited |                   |                                |                           |

| Water Strike | Samples & In Situ Testing |      |         | Depth (m) | Level (m) | Legend | Stratum Description                                                        |   |
|--------------|---------------------------|------|---------|-----------|-----------|--------|----------------------------------------------------------------------------|---|
|              | Depth                     | Type | Results |           |           |        |                                                                            |   |
|              |                           |      |         | 0.20      |           |        | Soft dark brown organic-rich slightly sandy slightly gravelly CLAY. Moist. |   |
|              |                           |      |         | 0.40      |           |        | [Medium dense] brown and orangish brown clayey gravelly SAND. Moist.       |   |
|              |                           |      |         |           |           |        | End of Pit at 0.400m                                                       |   |
|              |                           |      |         |           |           |        |                                                                            | 1 |
|              |                           |      |         |           |           |        |                                                                            | 2 |
|              |                           |      |         |           |           |        |                                                                            | 3 |
|              |                           |      |         |           |           |        |                                                                            | 4 |
|              |                           |      |         |           |           |        |                                                                            | 5 |

Stability:

Remarks:



**Annex C**  
Soil Chemical Test Results



2183

## Amended Report

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|                               |                                                                                    |                          |             |
|-------------------------------|------------------------------------------------------------------------------------|--------------------------|-------------|
| <b>Report No.:</b>            | 20-22195-2                                                                         |                          |             |
| <b>Initial Date of Issue:</b> | 28-Aug-2020                                                                        | <b>Date of Re-Issue:</b> | 23-Sep-2020 |
| <b>Client</b>                 | Terra Firma (Wales) Ltd                                                            |                          |             |
| <b>Client Address:</b>        | 5 Deryn Court<br>Wharfedale Road<br>Pentwyn<br>Cardiff<br>CF23 7HA                 |                          |             |
| <b>Contact(s):</b>            | michael@terrafirmawales.co.uk                                                      |                          |             |
| <b>Project</b>                | Leiros Park                                                                        |                          |             |
| <b>Quotation No.:</b>         | Q20-21058                                                                          | <b>Date Received:</b>    | 21-Aug-2020 |
| <b>Order No.:</b>             | 14156-MW                                                                           | <b>Date Instructed:</b>  | 21-Aug-2020 |
| <b>No. of Samples:</b>        | 10                                                                                 |                          |             |
| <b>Turnaround (Wkdays):</b>   | 23                                                                                 | <b>Results Due:</b>      | 23-Sep-2020 |
| <b>Date Approved:</b>         | 23-Sep-2020                                                                        |                          |             |
| <b>Approved By:</b>           |  |                          |             |
| <b>Details:</b>               | Glynn Harvey, Technical Manager                                                    |                          |             |

---

## Results - Soil

**Project: Leiros Park**

|                                        |                             |            |              |            |             |             |             |             |             |             |             |             |
|----------------------------------------|-----------------------------|------------|--------------|------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>Client: Terra Firma (Wales) Ltd</b> | <b>Chemtest Job No.:</b>    |            |              |            | 20-22195    | 20-22195    | 20-22195    | 20-22195    | 20-22195    | 20-22195    | 20-22195    | 20-22195    |
| Quotation No.: Q20-21058               | <b>Chemtest Sample ID.:</b> |            |              |            | 1052147     | 1052148     | 1052149     | 1052150     | 1052151     | 1052152     | 1052153     | 1052154     |
|                                        | Client Sample ID.:          |            |              |            | TP01        | TP02        | TP03        | TP04        | TP05        | TP06        | TP07        | TP08        |
|                                        | Sample Type:                |            |              |            | SOIL        | SOIL        | SOIL        | SOIL        | SOIL        | SOIL        | SOIL        | SOIL        |
|                                        | Top Depth (m):              |            |              |            | 0.1         | 0.3         | 0.1         | 0.4         | 0.1         | 0.1         | 0.1         | 0.4         |
|                                        | Date Sampled:               |            |              |            | 19-Aug-2020 | 19-Aug-2020 | 19-Aug-2020 | 19-Aug-2020 | 19-Aug-2020 | 19-Aug-2020 | 19-Aug-2020 | 19-Aug-2020 |
|                                        | Time Sampled:               |            |              |            | 12:00       | 12:00       | 12:00       | 12:00       | 12:00       | 12:00       | 12:00       | 12:00       |
| <b>Determinand</b>                     | <b>Accred.</b>              | <b>SOP</b> | <b>Units</b> | <b>LOD</b> |             |             |             |             |             |             |             |             |
| Moisture                               | N                           | 2030       | %            | 0.020      | 31          | 17          | 20          | 17          | 27          | 26          | 28          | 17          |
| pH                                     | U                           | 2010       |              | 4.0        | 5.9         | 6.8         | 6.2         | 6.6         | 6.0         | 5.6         | 5.6         | 6.3         |
| Arsenic                                | U                           | 2450       | mg/kg        | 1.0        | 78          | 20          | 77          | 27          | 85          | 100         | 72          | 24          |
| Organic Matter                         | U                           | 2625       | %            | 0.40       | 7.9         | 2.2         | 7.2         | 2.8         | 11          | 7.6         | 7.2         | 1.9         |
| As Barge Stomach Phase                 | N                           | 2630       | mg/kg        | N/A        | 0.55        | 0.090       | 0.49        | 0.20        | 0.77        | 0.58        | 0.53        | 0.13        |
| As Barge Stomach + Intestinal Phase    | N                           | 2630       | mg/kg        | N/A        | 1.5         | 0.34        | 1.1         | 0.35        | 1.4         | 1.0         | 1.6         | 0.52        |
| As Barge Bioaccessible Fraction        | N                           | 2630       | %            | N/A        | 2.0         | 1.7         | 1.4         | 1.3         | 1.7         | 1.1         | 2.3         | 2.2         |

## Results - Soil

**Project: Leiros Park**

|                                     |                      |      |       |       |             |             |
|-------------------------------------|----------------------|------|-------|-------|-------------|-------------|
| Client: Terra Firma (Wales) Ltd     | Chemtest Job No.:    |      |       |       | 20-22195    | 20-22195    |
| Quotation No.: Q20-21058            | Chemtest Sample ID.: |      |       |       | 1052155     | 1052156     |
|                                     | Client Sample ID.:   |      |       |       | TP09        | TP10        |
|                                     | Sample Type:         |      |       |       | SOIL        | SOIL        |
|                                     | Top Depth (m):       |      |       |       | 0.1         | 0.1         |
|                                     | Date Sampled:        |      |       |       | 19-Aug-2020 | 19-Aug-2020 |
|                                     | Time Sampled:        |      |       |       | 12:00       | 12:00       |
| Determinand                         | Accred.              | SOP  | Units | LOD   |             |             |
| Moisture                            | N                    | 2030 | %     | 0.020 | 25          | 22          |
| pH                                  | U                    | 2010 |       | 4.0   | 6.1         | 6.3         |
| Arsenic                             | U                    | 2450 | mg/kg | 1.0   | 100         | 97          |
| Organic Matter                      | U                    | 2625 | %     | 0.40  | 12          | 6.0         |
| As Barge Stomach Phase              | N                    | 2630 | mg/kg | N/A   | 0.88        | 1.1         |
| As Barge Stomach + Intestinal Phase | N                    | 2630 | mg/kg | N/A   | 1.9         | 2.9         |
| As Barge Bioaccessible Fraction     | N                    | 2630 | %     | N/A   | 1.9         | 3.0         |



## Test Methods

| SOP  | Title                                                      | Parameters included                                                                                                                                      | Method summary                                                                                       |
|------|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
| 2010 | pH Value of Soils                                          | pH                                                                                                                                                       | pH Meter                                                                                             |
| 2030 | Moisture and Stone Content of Soils(Requirement of MCERTS) | Moisture content                                                                                                                                         | Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C. |
| 2040 | Soil Description(Requirement of MCERTS)                    | Soil description                                                                                                                                         | As received soil is described based upon BS5930                                                      |
| 2450 | Acid Soluble Metals in Soils                               | Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc | Acid digestion followed by determination of metals in extract by ICP-MS.                             |
| 2625 | Total Organic Carbon in Soils                              | Total organic Carbon (TOC)                                                                                                                               | Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.           |
| 2630 | PBET                                                       | PBET                                                                                                                                                     | Extraction at 37C / ICP-MS                                                                           |

## **Report Information**

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### **Key**

|     |                                                                                                               |
|-----|---------------------------------------------------------------------------------------------------------------|
| U   | UKAS accredited                                                                                               |
| M   | MCERTS and UKAS accredited                                                                                    |
| N   | Unaccredited                                                                                                  |
| S   | This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis     |
| SN  | This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis |
| T   | This analysis has been subcontracted to an unaccredited laboratory                                            |
| I/S | Insufficient Sample                                                                                           |
| U/S | Unsuitable Sample                                                                                             |
| N/E | not evaluated                                                                                                 |
| <   | "less than"                                                                                                   |
| >   | "greater than"                                                                                                |

Comments or interpretations are beyond the scope of UKAS accreditation

The results relate only to the items tested

Uncertainty of measurement for the determinands tested are available upon request

None of the results in this report have been recovery corrected

All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis

All Asbestos testing is performed at the indicated laboratory

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

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### **Sample Deviation Codes**

- A - Date of sampling not supplied
- B - Sample age exceeds stability time (sampling to extraction)
- C - Sample not received in appropriate containers
- D - Broken Container
- E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

---

### **Sample Retention and Disposal**

All soil samples will be retained for a period of 45 days from the date of receipt

All water samples will be retained for 14 days from the date of receipt

Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:  
[customerservices@chemtest.com](mailto:customerservices@chemtest.com)

**Annex D**  
CLEA v1.07 Model Worksheets

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Report generated 24-Sep-20

Report title TP01, 0.1m Leiros Park

Created by Michael Watkins at Terra Firma (Wales) Limited



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**RESULTS**

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[illegible]

[illegible]

[illegible]



Environment  
Agency

[illegible]



[illegible]

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**RESULTS**

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Report generated

24-Sep-20

Report title

TP03, 0.1m Leiros Park

Created by

Michael Watkins at Terra Firma (Wales) Limited



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**RESULTS**

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Environment  
Agency

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[illegible]

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Report generated 24-Sep-20

Report title TP04, 0.4m Leiros Park

Created by Michael Watkins at Terra Firma (Wales) Limited



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**RESULTS**

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Environment  
Agency

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|                        | Average Daily Exposure ( $\text{mg kg}^{-1} \text{ bw day}^{-1}$ )                                                                                                                                             | Distribution by Pathway (%)                                                                                                                                                                                                                               |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | Direct soil ingestion<br>Consumption of homegrown produce and attached soil<br>Dermal contact with soil and dust<br>Inhalation of dust<br>Inhalation of vapour<br>Background (oral)<br>Background (inhalation) | Direct soil ingestion<br>Consumption of homegrown produce and attached soil<br>Dermal contact with soil and dust<br>Inhalation of dust<br>Inhalation of vapour (indoor)<br>Inhalation of vapour (outdoor)<br>Background (oral)<br>Background (inhalation) |
| 1 Arsenic (C4SL child) | 2.26E-05    1.20E-04    2.33E-05    3.88E-06    0.00E+00    0.00E+00    0.00E+00                                                                                                                               | 13.31    70.72    13.69    2.28    0.00    0.00    0.00    0.00                                                                                                                                                                                           |
| 2                      |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 3                      |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 4                      |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 5                      |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 6                      |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 7                      |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 8                      |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 9                      |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 10                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 11                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 12                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 13                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 14                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 15                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 16                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 17                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 18                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 19                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |
| 20                     |                                                                                                                                                                                                                |                                                                                                                                                                                                                                                           |



|    | Average Daily Exposure ( $\text{mg kg}^{-1} \text{ bw day}^{-1}$ )                                                                                                                                             | Distribution by Pathway (%)                                                                                                                                                                                                             |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Direct soil ingestion<br>Consumption of homegrown produce and attached soil<br>Dermal contact with soil and dust<br>Inhalation of dust<br>Inhalation of vapour<br>Background (oral)<br>Background (inhalation) | Direct soil ingestion<br>Consumption of homegrown produce<br>Dermal contact with soil and dust<br>Inhalation of dust<br>Inhalation of vapour (indoor)<br>Inhalation of vapour (outdoor)<br>Background (oral)<br>Background (inhalation) |
| 21 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 22 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 23 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 24 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 25 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 26 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 27 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 28 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 29 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 30 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |

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**RESULTS**

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[illegible]

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Environment  
Agency

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**RESULTS**

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Environment  
Agency

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Report generated

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Report title

TP07, 0.1m Leiros Park

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**RESULTS**

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[illegible]

[illegible]

[illegible]



Environment  
Agency

[illegible]

[illegible]





|    | Average Daily Exposure ( $\text{mg kg}^{-1} \text{ bw day}^{-1}$ )                                                                                                                                             | Distribution by Pathway (%)                                                                                                                                                                                                             |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Direct soil ingestion<br>Consumption of homegrown produce and attached soil<br>Dermal contact with soil and dust<br>Inhalation of dust<br>Inhalation of vapour<br>Background (oral)<br>Background (inhalation) | Direct soil ingestion<br>Consumption of homegrown produce<br>Dermal contact with soil and dust<br>Inhalation of dust<br>Inhalation of vapour (indoor)<br>Inhalation of vapour (outdoor)<br>Background (oral)<br>Background (inhalation) |
| 21 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 22 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 23 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 24 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 25 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 26 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 27 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 28 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 29 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
| 30 |                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |

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**RESULTS**

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**RESULTS**

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Environment  
Agency

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Report title TP10, 0.1m Leiros Park

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**RESULTS**

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Environment  
Agency

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**Annex E**

CLEA v1.07 Model Worksheets: Chemical Settings

## CLEA Software Version 1.071

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Report generated 24/09/2020

Report title TP01, 0.1m Leiros Park



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**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion

Consumption of homegrown produce

Soil attached to homegrown produce

Dermal contact with indoor dust

Dermal contact with soil

Inhalation of indoor dust

Inhalation of soil dust

Inhalation of indoor vapour

Inhalation of outdoor vapour





Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor                  |                                           |                                   |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|------------------------------------------|-------------------------------------------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     | Indoor (m <sup>2</sup> m <sup>-2</sup> ) | Outdoor (m <sup>2</sup> m <sup>-2</sup> ) | Total skin area (m <sup>2</sup> ) |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                                     | 0.26                                      | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                                     | 0.26                                      | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                                     | 0.25                                      | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                                     | 0.28                                      | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                                     | 0.28                                      | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                                     | 0.26                                      | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                                     | 0.14                                      | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                                     | 0.14                                      | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                                     | 0.14                                      | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                                     | 0.14                                      | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                                     | 0.27                                      | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                                     | 0.27                                      | 1.80E+00                          |

## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 5.90E+00 |
| Soil Organic Matter content (%)                                     | 7.90E+00 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 4.58E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$

**Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

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Report generated 24/09/2020

Report title TP02, 0.3m Leiros Park



Created by Michael Watkins at Terra Firma (Wales) Limited

**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion

Consumption of homegrown produce

Soil attached to homegrown produce

Dermal contact with indoor dust

Dermal contact with soil

Inhalation of indoor dust

Inhalation of soil dust

Inhalation of indoor vapour

Inhalation of outdoor vapour





Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor |      | Total skin area (m <sup>2</sup> ) |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|-------------------------|------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     |                         |      |                                   |
|           |                                               |                                  |                                 |                          |                                       |                                        |                                            |          |                                                      |         |                                                   |                  |                 |                                                     |                         |      |                                   |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                    | 0.26 | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                    | 0.26 | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                    | 0.25 | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                    | 0.28 | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                    | 0.28 | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                    | 0.26 | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                    | 0.15 | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                    | 0.15 | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                    | 0.15 | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                    | 0.15 | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                    | 0.14 | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                    | 0.14 | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                    | 0.14 | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                    | 0.14 | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                    | 0.14 | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                    | 0.14 | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                    | 0.27 | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                    | 0.27 | 1.80E+00                          |

## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 6.80E+00 |
| Soil Organic Matter content (%)                                     | 2.20E+00 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 1.28E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$

**Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

## CLEA Software Version 1.071

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Report generated 24/09/2020

Report title TP03, 0.1m Leiros Park



Created by Michael Watkins at Terra Firma (Wales) Limited

**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion



Consumption of homegrown produce



Soil attached to homegrown produce



Dermal contact with indoor dust



Dermal contact with soil



Inhalation of indoor dust



Inhalation of soil dust



Inhalation of indoor vapour



Inhalation of outdoor vapour







Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor                  |                                           |                                   |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|------------------------------------------|-------------------------------------------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     | Indoor (m <sup>2</sup> m <sup>-2</sup> ) | Outdoor (m <sup>2</sup> m <sup>-2</sup> ) | Total skin area (m <sup>2</sup> ) |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                                     | 0.26                                      | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                                     | 0.26                                      | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                                     | 0.25                                      | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                                     | 0.28                                      | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                                     | 0.28                                      | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                                     | 0.26                                      | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                                     | 0.14                                      | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                                     | 0.14                                      | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                                     | 0.14                                      | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                                     | 0.14                                      | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                                     | 0.27                                      | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                                     | 0.27                                      | 1.80E+00                          |

## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 6.20E+00 |
| Soil Organic Matter content (%)                                     | 7.20E+00 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 4.18E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$ **Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

## CLEA Software Version 1.071

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Report generated 24/09/2020

Report title TP04, 0.4m Leiros Park



Created by Michael Watkins at Terra Firma (Wales) Limited

**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion

Consumption of homegrown produce

Soil attached to homegrown produce

Dermal contact with indoor dust

Dermal contact with soil

Inhalation of indoor dust

Inhalation of soil dust

Inhalation of indoor vapour

Inhalation of outdoor vapour





Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor                  |                                           |                                   |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|------------------------------------------|-------------------------------------------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     | Indoor (m <sup>2</sup> m <sup>-2</sup> ) | Outdoor (m <sup>2</sup> m <sup>-2</sup> ) | Total skin area (m <sup>2</sup> ) |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                                     | 0.26                                      | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                                     | 0.26                                      | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                                     | 0.25                                      | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                                     | 0.28                                      | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                                     | 0.28                                      | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                                     | 0.26                                      | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                                     | 0.14                                      | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                                     | 0.14                                      | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                                     | 0.14                                      | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                                     | 0.14                                      | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                                     | 0.27                                      | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                                     | 0.27                                      | 1.80E+00                          |

## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 6.60E+00 |
| Soil Organic Matter content (%)                                     | 2.80E+00 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 1.62E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$ **Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

## CLEA Software Version 1.071

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Report generated 24/09/2020

Report title TP05, 0.1m Leiros Park



Created by Michael Watkins at Terra Firma (Wales) Limited

**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion

Consumption of homegrown produce

Soil attached to homegrown produce

Dermal contact with indoor dust

Dermal contact with soil

Inhalation of indoor dust

Inhalation of soil dust

Inhalation of indoor vapour

Inhalation of outdoor vapour





Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor |      | Total skin area (m <sup>2</sup> ) |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|-------------------------|------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     |                         |      |                                   |
|           |                                               |                                  |                                 |                          |                                       |                                        |                                            |          |                                                      |         |                                                   |                  |                 |                                                     |                         |      |                                   |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                    | 0.26 | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                    | 0.26 | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                    | 0.25 | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                    | 0.28 | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                    | 0.28 | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                    | 0.26 | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                    | 0.15 | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                    | 0.15 | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                    | 0.15 | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                    | 0.15 | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                    | 0.14 | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                    | 0.14 | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                    | 0.14 | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                    | 0.14 | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                    | 0.14 | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                    | 0.14 | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                    | 0.27 | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                    | 0.27 | 1.80E+00                          |

## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 6.00E+00 |
| Soil Organic Matter content (%)                                     | 1.10E+01 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 6.38E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$ **Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

## CLEA Software Version 1.071

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Report generated 24/09/2020

Report title TP06, 0.1m Leiros Park



Created by Michael Watkins at Terra Firma (Wales) Limited

**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion

Consumption of homegrown produce

Soil attached to homegrown produce

Dermal contact with indoor dust

Dermal contact with soil

Inhalation of indoor dust

Inhalation of soil dust

Inhalation of indoor vapour

Inhalation of outdoor vapour





Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor                  |                                           |                                   |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|------------------------------------------|-------------------------------------------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     | Indoor (m <sup>2</sup> m <sup>-2</sup> ) | Outdoor (m <sup>2</sup> m <sup>-2</sup> ) | Total skin area (m <sup>2</sup> ) |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                                     | 0.26                                      | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                                     | 0.26                                      | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                                     | 0.25                                      | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                                     | 0.28                                      | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                                     | 0.28                                      | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                                     | 0.26                                      | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                                     | 0.14                                      | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                                     | 0.14                                      | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                                     | 0.14                                      | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                                     | 0.14                                      | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                                     | 0.27                                      | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                                     | 0.27                                      | 1.80E+00                          |

## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 5.60E+00 |
| Soil Organic Matter content (%)                                     | 7.60E+00 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 4.41E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$ **Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

## CLEA Software Version 1.071

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Report generated 24/09/2020

Report title TP07, 0.1m Leiros Park



Created by Michael Watkins at Terra Firma (Wales) Limited

**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion

Consumption of homegrown produce

Soil attached to homegrown produce

Dermal contact with indoor dust

Dermal contact with soil

Inhalation of indoor dust

Inhalation of soil dust

Inhalation of indoor vapour

Inhalation of outdoor vapour





Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor |      | Total skin area (m <sup>2</sup> ) |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|-------------------------|------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     |                         |      |                                   |
|           |                                               |                                  |                                 |                          |                                       |                                        |                                            |          |                                                      |         |                                                   |                  |                 |                                                     |                         |      |                                   |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                    | 0.26 | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                    | 0.26 | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                    | 0.25 | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                    | 0.28 | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                    | 0.28 | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                    | 0.26 | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                    | 0.15 | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                    | 0.15 | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                    | 0.15 | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                    | 0.15 | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                    | 0.14 | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                    | 0.14 | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                    | 0.14 | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                    | 0.14 | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                    | 0.14 | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                    | 0.14 | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                    | 0.27 | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                    | 0.27 | 1.80E+00                          |

## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 5.60E+00 |
| Soil Organic Matter content (%)                                     | 7.20E+00 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 4.18E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$ **Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

## CLEA Software Version 1.071

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Report generated 24/09/2020

Report title TP08, 0.4m Leiros Park



Created by Michael Watkins at Terra Firma (Wales) Limited

**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion

Consumption of homegrown produce

Soil attached to homegrown produce

Dermal contact with indoor dust

Dermal contact with soil

Inhalation of indoor dust

Inhalation of soil dust

Inhalation of indoor vapour

Inhalation of outdoor vapour





Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor                  |                                           |                                   |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|------------------------------------------|-------------------------------------------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     | Indoor (m <sup>2</sup> m <sup>-2</sup> ) | Outdoor (m <sup>2</sup> m <sup>-2</sup> ) | Total skin area (m <sup>2</sup> ) |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                                     | 0.26                                      | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                                     | 0.26                                      | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                                     | 0.25                                      | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                                     | 0.28                                      | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                                     | 0.28                                      | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                                     | 0.26                                      | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                                     | 0.14                                      | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                                     | 0.14                                      | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                                     | 0.14                                      | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                                     | 0.14                                      | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                                     | 0.27                                      | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                                     | 0.27                                      | 1.80E+00                          |

## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 6.30E+00 |
| Soil Organic Matter content (%)                                     | 1.90E+00 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 1.10E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$

**Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

## CLEA Software Version 1.071

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Report generated 24/09/2020

Report title TP09, 0.1m Leiros Park



Created by Michael Watkins at Terra Firma (Wales) Limited

**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion

Consumption of homegrown produce

Soil attached to homegrown produce

Dermal contact with indoor dust

Dermal contact with soil

Inhalation of indoor dust

Inhalation of soil dust

Inhalation of indoor vapour

Inhalation of outdoor vapour



Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor |      | Total skin area (m <sup>2</sup> ) |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|-------------------------|------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     |                         |      |                                   |
|           |                                               |                                  |                                 |                          |                                       |                                        |                                            |          |                                                      |         |                                                   |                  |                 |                                                     |                         |      |                                   |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                    | 0.26 | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                    | 0.26 | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                    | 0.25 | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                    | 0.28 | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                    | 0.28 | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                    | 0.26 | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                    | 0.15 | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                    | 0.15 | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                    | 0.15 | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                    | 0.15 | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                    | 0.14 | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                    | 0.14 | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                    | 0.14 | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                    | 0.14 | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                    | 0.14 | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                    | 0.14 | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                    | 0.27 | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                    | 0.27 | 1.80E+00                          |



## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.

**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 6.10E+00 |
| Soil Organic Matter content (%)                                     | 1.20E+01 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 6.96E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$

**Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

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Report generated 24/09/2020

Report title TP10, 0.1m Leiros Park



Created by Michael Watkins at Terra Firma (Wales) Limited

**BASIC SETTINGS**

Land Use Residential with produce (C4SL)

Building Semi-detached house

Receptor Female (res C4SL)

Start age class 1

End age class 6

Exposure Duration 6 years

Soil Sandy clay loam

**Exposure Pathways**

Direct soil and dust ingestion

Consumption of homegrown produce

Soil attached to homegrown produce

Dermal contact with indoor dust

Dermal contact with soil

Inhalation of indoor dust

Inhalation of soil dust

Inhalation of indoor vapour

Inhalation of outdoor vapour



Land Use Residential with produce (C4SL)

Receptor Female (res C4SL)

| Age Class | Exposure Frequencies (days yr <sup>-1</sup> ) |                                  |                                 |                          |                                       |                                        | Occupation Periods (hr day <sup>-1</sup> ) |          | Soil to skin adherence factors (mg cm <sup>2</sup> ) |         | Direct soil ingestion rate (g day <sup>-1</sup> ) | Body weight (kg) | Body height (m) | Inhalation rate (m <sup>3</sup> day <sup>-1</sup> ) | Max exposed skin factor                  |                                           |                                   |
|-----------|-----------------------------------------------|----------------------------------|---------------------------------|--------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------|------------------------------------------------------|---------|---------------------------------------------------|------------------|-----------------|-----------------------------------------------------|------------------------------------------|-------------------------------------------|-----------------------------------|
|           | Direct soil ingestion                         | Consumption of homegrown produce | Dermal contact with indoor dust | Dermal contact with soil | Inhalation of dust and vapour, indoor | Inhalation of dust and vapour, outdoor | Indoors                                    | Outdoors | Indoor                                               | Outdoor |                                                   |                  |                 |                                                     | Indoor (m <sup>2</sup> m <sup>-2</sup> ) | Outdoor (m <sup>2</sup> m <sup>-2</sup> ) | Total skin area (m <sup>2</sup> ) |
| 1         | 180                                           | 180                              | 180                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 5.60             | 0.7             | 5.4                                                 | 0.32                                     | 0.26                                      | 3.43E-01                          |
| 2         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 9.80             | 0.8             | 8.0                                                 | 0.33                                     | 0.26                                      | 4.84E-01                          |
| 3         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 12.70            | 0.9             | 8.9                                                 | 0.32                                     | 0.25                                      | 5.82E-01                          |
| 4         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 23.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 15.10            | 0.9             | 10.1                                                | 0.35                                     | 0.28                                      | 6.36E-01                          |
| 5         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 16.90            | 1.0             | 10.1                                                | 0.35                                     | 0.28                                      | 7.04E-01                          |
| 6         | 365                                           | 365                              | 365                             | 170                      | 365                                   | 365                                    | 19.0                                       | 1.0      | 0.06                                                 | 0.10    | 0.10                                              | 19.70            | 1.1             | 10.1                                                | 0.33                                     | 0.26                                      | 7.94E-01                          |
| 7         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 22.10            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 8.73E-01                          |
| 8         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 25.30            | 1.2             | 12.0                                                | 0.22                                     | 0.15                                      | 9.36E-01                          |
| 9         | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 27.50            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.01E+00                          |
| 10        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 31.40            | 1.3             | 12.0                                                | 0.22                                     | 0.15                                      | 1.08E+00                          |
| 11        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 35.70            | 1.4             | 12.0                                                | 0.22                                     | 0.14                                      | 1.19E+00                          |
| 12        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 41.30            | 1.4             | 15.2                                                | 0.22                                     | 0.14                                      | 1.29E+00                          |
| 13        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 47.20            | 1.5             | 15.2                                                | 0.22                                     | 0.14                                      | 1.42E+00                          |
| 14        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 51.20            | 1.6             | 15.2                                                | 0.22                                     | 0.14                                      | 1.52E+00                          |
| 15        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 56.70            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.60E+00                          |
| 16        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 59.00            | 1.6             | 15.2                                                | 0.21                                     | 0.14                                      | 1.63E+00                          |
| 17        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.00            | 1.6             | 15.7                                                | 0.33                                     | 0.27                                      | 1.78E+00                          |
| 18        | 0                                             | 0                                | 0                               | 0                        | 0                                     | 0                                      | 0.0                                        | 0.0      | 0.00                                                 | 0.00    | 0.00                                              | 70.90            | 1.6             | 13.6                                                | 0.33                                     | 0.27                                      | 1.80E+00                          |

## Consumption Rates



| Age Class | Consumption rates (q FW kg <sup>-1</sup> bodyweight day <sup>-1</sup> ) by Produce Group |          |           |             |             |            |                       |          |           |             |             |            |
|-----------|------------------------------------------------------------------------------------------|----------|-----------|-------------|-------------|------------|-----------------------|----------|-----------|-------------|-------------|------------|
|           | MEAN RATES                                                                               |          |           |             |             |            | 90TH PERCENTILE RATES |          |           |             |             |            |
|           | Green veg                                                                                | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit | Green veg             | Root veg | Tuber veg | Herb. Fruit | Shrub fruit | Tree fruit |
| 1         | 3.47E+00                                                                                 | 5.22E+00 | 9.22E+00  | 8.90E-01    | 1.07E+00    | 1.87E+00   | 7.12E+00              | 1.07E+01 | 1.60E+01  | 1.83E+00    | 2.23E+00    | 3.82E+00   |
| 2         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 3         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 4         | 3.34E+00                                                                                 | 1.61E+00 | 3.14E+00  | 1.93E+00    | 2.60E-01    | 5.84E+00   | 5.87E+00              | 2.83E+00 | 6.60E+00  | 3.39E+00    | 4.60E-01    | 1.03E+01   |
| 5         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 6         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 7         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 8         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 9         | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 10        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 11        | 2.54E+00                                                                                 | 1.20E+00 | 2.65E+00  | 1.25E+00    | 1.10E-01    | 2.89E+00   | 4.53E+00              | 2.14E+00 | 4.95E+00  | 2.24E+00    | 1.90E-01    | 5.16E+00   |
| 12        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 13        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 14        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 15        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 16        | 1.03E+00                                                                                 | 4.90E-01 | 1.60E+00  | 5.10E-01    | 4.00E-02    | 1.18E+00   | 1.87E+00              | 8.90E-01 | 3.05E+00  | 9.30E-01    | 8.00E-02    | 2.13E+00   |
| 17        | 1.26E+00                                                                                 | 6.00E-01 | 1.18E+00  | 6.90E-01    | 9.00E-02    | 1.27E+00   | 2.36E+00              | 1.12E+00 | 2.35E+00  | 1.29E+00    | 1.80E-01    | 2.38E+00   |
| 18        | 1.35E+00                                                                                 | 6.40E-01 | 1.25E+00  | 7.40E-01    | 1.00E-01    | 1.36E+00   | 2.34E+00              | 1.12E+00 | 2.36E+00  | 1.28E+00    | 1.80E-01    | 2.37E+00   |

Top 2 applied? Yes

Where top 2 method is applied, two produce categories use 90th percentile rates, while the remainder use the mean. Produce categories vary on a chemical-by-chemical basis. Where top 2 method is not used, all produce categories for all chemicals assume 90th percentile rates.



**Building** Semi-detached house**Soil** Sandy clay loam

|                                                    |          |
|----------------------------------------------------|----------|
| Building footprint (m <sup>2</sup> )               | 4.30E+01 |
| Living space air exchange rate (hr <sup>-1</sup> ) | 5.00E-01 |
| Living space height (above ground, m)              | 4.80E+00 |
| Living space height (below ground, m)              | 0.00E+00 |
| Pressure difference (soil to enclosed space, Pa)   | 3.10E+00 |
| Foundation thickness (m)                           | 1.50E-01 |
| Floor crack area (cm <sup>2</sup> )                | 5.25E+02 |
| Dust loading factor (µg m <sup>-3</sup> )          | 5.00E+01 |

|                                                                     |          |
|---------------------------------------------------------------------|----------|
| Porosity, Total (cm <sup>3</sup> cm <sup>-3</sup> )                 | 5.30E-01 |
| Porosity, Air-Filled (cm <sup>3</sup> cm <sup>-3</sup> )            | 1.60E-01 |
| Porosity, Water-Filled (cm <sup>3</sup> cm <sup>-3</sup> )          | 3.70E-01 |
| Residual soil water content (cm <sup>3</sup> cm <sup>-3</sup> )     | 1.50E-01 |
| Saturated hydraulic conductivity (cm s <sup>-1</sup> )              | 2.37E-03 |
| van Genuchten shape parameter <i>m</i> (dimensionless)              | 3.10E-01 |
| Bulk density (g cm <sup>-3</sup> )                                  | 1.20E+00 |
| Threshold value of wind speed at 10m (m s <sup>-1</sup> )           | 7.20E+00 |
| Empirical function (F <sub>x</sub> ) for dust model (dimensionless) | 1.22E+00 |
| Ambient soil temperature (K)                                        | 2.83E+02 |
| Soil pH                                                             | 6.30E+00 |
| Soil Organic Matter content (%)                                     | 6.00E+00 |
| Fraction of organic carbon (g g <sup>-1</sup> )                     | 3.48E-02 |
| Effective total fluid saturation (unitless)                         | 5.79E-01 |
| Intrinsic soil permeability (cm <sup>2</sup> )                      | 3.16E-08 |
| Relative soil air permeability (unitless)                           | 5.78E-01 |
| Effective air permeability (cm <sup>2</sup> )                       | 1.83E-08 |

**Soil - Vapour Model**

|                                                           |          |
|-----------------------------------------------------------|----------|
| Depth to top of source (no building) (cm)                 | 0        |
| Depth to top of source (beneath building) (cm)            | 65       |
| Default soil gas ingress rate?                            | Yes      |
| Soil gas ingress rate ( $\text{cm}^3 \text{s}^{-1}$ )     | 2.50E+01 |
| Building ventilation rate ( $\text{cm}^3 \text{s}^{-1}$ ) | 2.87E+04 |
| Averaging time surface emissions (yr)                     | 6        |
| Finite vapour source model?                               | No       |
| Thickness of contaminated layer (cm)                      | 200      |

**Air Dispersion Model**

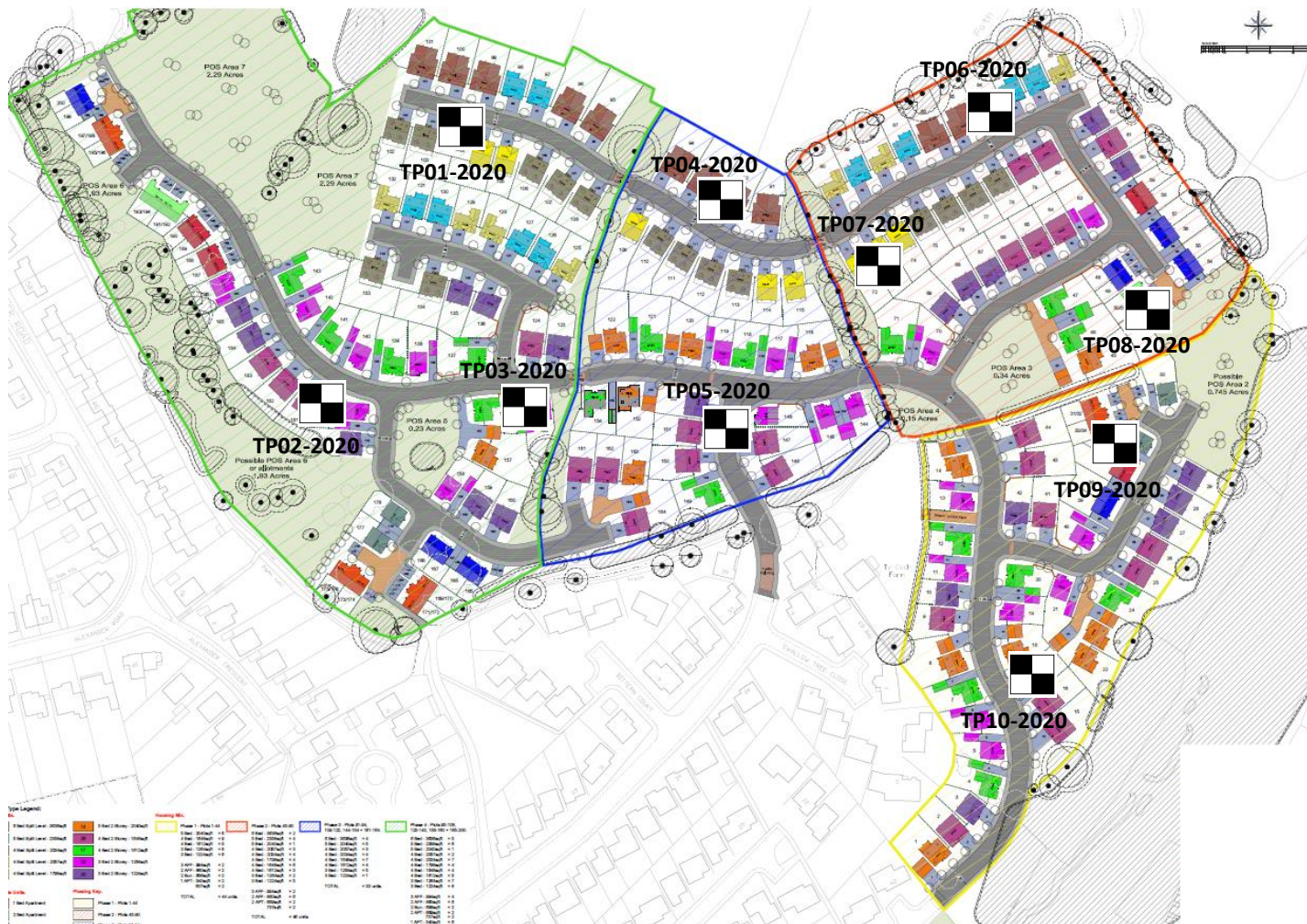
|                                                       |         |
|-------------------------------------------------------|---------|
| Mean annual windspeed at 10m ( $\text{m s}^{-1}$ )    | 5.00    |
| Air dispersion factor at height of 0.8m *             | 2400.00 |
| Air dispersion factor at height of 1.6m *             | 0.00    |
| Fraction of site cover ( $\text{m}^2 \text{m}^{-2}$ ) | 0.75    |

\* Air dispersion factor in  $\text{g m}^{-2} \text{s}^{-1}$  per  $\text{kg m}^{-3}$ **Soil - Plant Model**

|                  | Dry weight conversion factor   | Homegrown fraction |      | Soil loading factor         | Preparation correction factor |
|------------------|--------------------------------|--------------------|------|-----------------------------|-------------------------------|
|                  |                                | Average            | High |                             |                               |
|                  | $\text{g DW g}^{-1} \text{FW}$ | dimensionless      |      | $\text{g g}^{-1} \text{DW}$ | dimensionless                 |
| Green vegetables | 0.096                          | 0.05               | 0.33 | 1.00E-03                    | 2.00E-01                      |
| Root vegetables  | 0.103                          | 0.06               | 0.40 | 1.00E-03                    | 1.00E+00                      |
| Tuber vegetables | 0.210                          | 0.02               | 0.13 | 1.00E-03                    | 1.00E+00                      |
| Herbaceous fruit | 0.058                          | 0.06               | 0.40 | 1.00E-03                    | 6.00E-01                      |
| Shrub fruit      | 0.166                          | 0.09               | 0.60 | 1.00E-03                    | 6.00E-01                      |
| Tree fruit       | 0.157                          | 0.04               | 0.27 | 1.00E-03                    | 6.00E-01                      |

Gardener type    Average

Drawings



Job Number:

14156

Job Title:

Leiros Park, Rhydding, Neath

Drawing Title:

Exploratory Hole Layout

Drawing Number:

01 - Site Specific C4SL

Scale:

Not To Scale

North

