

PMG

TOBIN LAND, OLD ST MELLONS, CARDIFF

Site Investigation Report

12564/JJ/20/SI

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1.0 INTRODUCTION

1.1 GENERAL

PMG are proposing to acquire a site referred to as Tobin Land, Old St Mellons, Cardiff for residential development. The location of the site is indicated on Figure 1.

Intégral Géotechnique (Wales) Limited have been appointed as the Geotechnical Engineers to undertake an intrusive site investigation to enable a geotechnical and geoenvironmental appraisal of the site and provide a basis for design.

This report presents the findings of the intrusive site investigation and gives recommendations for the design of foundations, floor slabs and other geotechnical and geoenvironmental aspects of the project.

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1.2 PROPOSED DEVELOPMENT

PMG are proposing to acquire and develop the site for residential end use. The proposed development will likely comprise the construction of a number of residential dwellings with private gardens and associated infrastructure including access roads, car parking areas and driveways. It is understood that an existing residential dwelling situated in the northwest corner of the site (St Julian's House) is to be retained. However, a number of associated outbuildings are to be demolished.

At the time of writing, no proposed development layouts had been made available for review.

1.3 SCOPE OF WORKS

The work instructed included a desk study of available information, site reconnaissance and intrusive site investigation. This was followed by laboratory testing and geotechnical and geoenvironmental reporting.

1.3 SCOPE OF WORKS (CONTINUED)

The desk study comprised a review of:

- An Envirocheck Report obtained for the site
- Old Ordnance Survey maps covering the site, included within the Envirocheck Report
- A Radon GeoReport obtained from the British Geological Survey (BGS)
- Geological maps of the area provided by the BGS
- the Natural Resources Wales (NRW) groundwater vulnerability map and aquifer database for the area.

The desk study information was used to make an initial assessment of the site and to design an intrusive investigation to be carried out by Intégral Géotechnique. The intrusive site investigation was designed in accordance with BS5930+A2:2010, the Code of Practice for Site Investigations, BS10175:2011, the Code of Practice for Investigation of potentially contaminated sites, and 'Development of Land Affected by Contamination: A Guide for Developers' prepared by Welsh Local Government Association (WLGA)/Natural Resources Wales (NRW) Land Contamination Working Group, 2017.

The intrusive site investigation comprised:

- 15 No. trial pits excavated during February 2020
- Soil infiltration testing undertaken within 4 No. trial pits
- Sampling of soil for laboratory chemical and geotechnical testing.

1.4 LIMITATIONS

This document is intended to be a working document for further development in discussion with all concerned including the Local Planning Authority, Natural Resources Wales (NRW), and the NHBC as appropriate.

It should be noted that vertical and lateral changes in ground conditions may be present between exploratory hole locations.

"Contamination" is taken throughout the report to mean the "presence of one or more potentially harmful substances as a result of human activity". The use of the term in this way does not imply that harm is being or might be caused by the contamination. It should be noted that "contamination" can have different meanings under different regulatory regimes, for example, planning, building control and Part IIA of the Environmental Protection Act 1990.

1.4 LIMITATIONS (CONTINUED)

It is important to recognise that there may be areas of contamination that have not been found, or that contaminants are present at concentrations above those that have been found. It is also important to recognise that contamination may be localised and that no investigation, however comprehensive, is capable of finding such occurrences other than by chance.

Access for the intrusive site investigation was restricted in the north-western area of the site due to the presence of a number of existing buildings including a residential dwelling and a number of associated outbuildings.

2.0 THE SITE

2.1 SITE LOCATION AND DESCRIPTION

The site is located off B4562 (Bridge Road), Old St Mellons, Cardiff. The site is centred at a National Grid Reference of 322120 182760, see Figure 1.

The site is irregular in shape and occupies an area of approximately 4.8 hectares. The boundaries of the site are defined by an access lane to the north, existing residential properties to the northwest, the B4562 (Bridge Road) to the west, and new residential developments to the south and east.

The majority of the site comprises undeveloped grass covered field land that has been split into a number of separate paddocks that are utilised for grazing horses and sheep. The northwest corner of the site is occupied by an existing residential dwelling (St Julian's House) and its associated gardens and areas of car parking. A number of outbuildings, including several stable blocks, are also present in the north-western area of the site.

A site plan is presented in Figure 2.

The majority of the site area slopes downhill towards the east. However, the western fringes of the site slope towards the west. The topographic elevation of the site varies from approximately 46m AOD in the central-western area, to approximately 35m AOD along the eastern site boundary and approximately 43m AOD along the western site boundary.

At the time of the intrusive site investigation works the site surface was notably waterlogged/boggy. Significant areas of standing water were present.

A number of mature trees and hedgerows are present along the edges of the site.

Although no invasive plant species were observed at the time of the site investigation works, it is recommended that a full invasive plant vegetation survey of the entire site area is undertaken.

2.2 SITE OPERATIONS

The majority of the site area is currently utilised for grazing horses and sheep. However, an existing residential dwelling and a number of associated outbuildings (including several stable blocks) are present in the northwest corner of the site.

2.3 SURROUNDING LAND USE

The surrounding areas are utilised for a combination of residential and agricultural use. Existing residential developments are located to the south, west and east. Undeveloped fields are located to the north.

2.4 AVAILABLE SITE INVESTIGATION DATA

There is no available site investigation data to our knowledge.

3.0 SITE HISTORY

The recent history of the site has been traced with the aid of an Envirocheck Report, a copy of which is included in Appendix A. The Envirocheck Report includes the following scaled historical maps:

| Map Scale | Dates |
|-----------|---|
| 1:2,500 | 1875-1882, 1883-1891, 1900, 1919-1920, 1940, 1967, 1984-1990, 1986-1991, 1992, 1996, 2000 |
| 1:1,250 | 1992, 1994, 1996 |
| 1:10,560 | 1885-1887, 1886, 1887, 1901, 1902, 1922, 1938-1953, 1947, 152-1954 |
| 1:10,000 | 1964, 1972, 1982, 1983, 1993, 1999, 2006, 2020 |

The earliest map covering the site, dated 1882 (1:2,500 scale), recorded the entire site area as one open undeveloped field parcel. A 'smithy' and a 'well' associated with 'New Forge' were situated to the northwest of the site. 'St Julian's Farm' was situated the northeast of the site.

By 1972 'New Forge' was known as 'St Julian's Forge'. No notable changes were recorded on site.

By 1990, 'St Julian's House' and a number of associated outbuildings had been constructed in the northwest corner of the site. By this time, the site had been divided into a number of separate field parcels/paddocks. The M4 motorway was recorded approximately 200m to the north of the site by this time.

By 1996, 'Cardiff Gate Retail Park' and 'Pentwyn Link Road' had been constructed approximately 100m to the west of the site. The site itself remained unchanged.

The site has remained largely unchanged to the present day. Although new residential developed are present/underway immediately to the south and east of the site.

4.0 SITE ENVIRONMENTAL SETTING

4.1 PHYSICAL SETTING

The site is situated on sloping ground, the vast majority of which falls towards the east, although the western fringes of the site slope towards the west. The topographic elevation of the site varies from approximately 46m AOD in the central-western area, to approximately 35m AOD along the eastern site boundary and approximately 43m AOD along the western site boundary.

4.2 GEOLOGY

The 1:50,000 scale geological map of the area indicates the site to be underlain by bedrock strata of the Raglan Mudstone Formation of the Devonian period. These rocks typically comprise red mudstones and silty mudstones with calcretes and sandstones.

Superficial Glacial Till deposits of the Quaternary period are indicated to overlie the bedrock strata beneath the site. These deposits generally comprise poorly sorted and variable in nature clays, sands and gravels.

A variable thickness of made ground is anticipated above the superficial deposits across the developed northwest corner of the site.

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

| Table 1: Summary of Anticipated Site Geology | | |
|--|---|--|
| Geological unit | Horizon | Description |
| Recent | Topsoil and potential localised made ground | Various materials |
| Quaternary | Glacial Till | Clay, sand and gravel with varying matrix |
| Devonian | Raglan Mudstone Formation | Red mudstones and silty mudstones with calcretes and sandstones. |

4.3 RADON

Information with regard to Radon Protective Measures is provided within the Envirocheck Report in Appendix A and the BGS Radon GeoReport as presented in Appendix B.

4.3 RADON (CONTINUED)

The reports indicate lateral variability in the required levels of radon protective measures across the site.

The majority of the site does not require any radon protective measures. However, the eastern extents of the site require basic radon protective measures.

A plan indicating the different radon zones is presented in Figure 3. Note that all radon zones should be reviewed on a plot by plot basis upon confirmation of the final proposed development layout.

4.4 MINING

The site is not located within an area that would be affected by past, present or future underground mining.

4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK

The nearest surface water feature to the site is an unnamed inland river situated approximately 93m to the southeast of the site. The nearest named is the Rhymney River which flows in a southerly direction approximately 200m to the east of the site.

The Environment Agency/Natural Resources Wales groundwater vulnerability map and aquifer database classifies the bedrock beneath the site as a Secondary 'A' Aquifer. Secondary 'A' Aquifers 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. These are generally aquifers formerly classified as minor aquifers.

The Environment Agency/Natural Resources Wales groundwater vulnerability map and aquifer database classifies the superficial deposits beneath the site as a Secondary Aquifer-Undifferentiated. This classification has been assigned in cases where it has not been possible to attribute either category A or B to a strata type. In most cases, this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics of the strata type.

A perched water body could be encountered within the superficial deposits.

4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK (CONTINUED)

There are no recorded discharge consents within 250m of the site. The nearest recorded discharge consents comprise two effective consents situated approximately 254m to the east of the site and operated by Welsh Water. These permit the discharge of storm water overflow into the Rhymney River.

The Envirocheck Report states that there are no groundwater abstractions recorded within 1,000m of the site boundary. There are two recorded surface water abstractions situated approximately 247m to the northeast of the site. These are located at the Rhymney River and are utilised for dust suppression purposes.

Tables 2 and 3 present a summary of the hydrological features and key hydrogeological nature of the site.

| Table 2: Summary of Site Hydrology | | | | | |
|---|--------------------|--------------------------|----------------|-------------|-----------------|
| Feature | Distance from site | Flow | Classification | Abstraction | Discharge |
| Unnamed | 93m southwest | Not known | Not known | No | Rhymney River |
| Rhymney River | 200m east | Not known | Not known | Yes | Bristol Channel |
| Surface run-off | On site | Flows into site drainage | N/A | No | Not known |
| Site Drainage | On site | Not known | N/A | No | Not known |

| Table 3: Summary of Site Hydrogeology | | | | |
|--|------------------------------------|---|------------------------|--------------------------|
| Geological Unit | Aquifer Classification | Aquifer Characteristics | Source Protection Zone | Groundwater Abstractions |
| Glacial Till | Secondary Aquifer Undifferentiated | Variable low permeability and porosity with intergranular flow possible. High clay content likely to restrict flow. | No | None |
| Raglan Mudstone Formation | Secondary 'A' Aquifer | Variable low permeability mudstones interbedded with siltstones and sandstones | No | None |

4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK (CONTINUED)

The Groundwater Vulnerability map of the area indicates that the aquifers underlying the site are classified as having a medium vulnerability.

The Environment Agency/Natural Resources Wales Flood Risk Map as presented within the Envirocheck Report indicates that the site is not at risk to extreme flooding from rivers or sea without defences.

4.6 LANDFILL SITES

An historical landfill site is recorded approximately 123m to the northeast of the site at 'St Julian's Farm'. The last input date is recorded at 31st December 1990. The deposited waste is listed as industrial and household waste. There are no further historical landfills recorded within 250m of the site.

There are no recorded active landfill sites within 1,000m of the site.

4.7 POTENTIAL CONTAMINATION

Previous and Current Uses

The various activities in the vicinity of the site which may have resulted in ground or water resource contamination on this site are listed below in Tables 4 and 5.

| Table 4: Potential Contaminants | | |
|---|--|-------------------------------|
| Land Use: Green Field until 1990's | | |
| Material/Process | Contamination/Hazard | Evidence |
| Possible grazing land | No potential contaminants | Historical Maps |
| Land Use: St Julian's House and Green Fields 1990's to present | | |
| Material/Process | Contamination/Hazard | Evidence |
| Potential localised made ground associated with construction of St Julian's House and associated outbuildings | Metals, semi metals, non-metals, PAH, asbestos | Historical Maps/Site Walkover |
| Grazing land | No potential contaminants | Historical Maps/Site Walkover |

4.7 POTENTIAL CONTAMINATION (CONTINUED)

Adjacent Site Uses

| Table 5: Potential Contaminants - Adjacent Site Uses | | |
|--|----------------------------|-------------------------------------|
| Potential Contamination Source | Boundary | Associated Contaminants and Hazards |
| Undeveloped fields | Northern | No Potential Contaminants |
| Residential | Western, Eastern, Southern | No Potential Contaminants |

4.8 OTHER ENVIRONMENTAL ISSUES

The Envirocheck Report indicates that there have been no pollution incidents to controlled waters recorded on site or within 250m of the site. The nearest recorded pollution incident to controlled waters was recorded approximately 299m to the east of the site in 1991. The pollutant is listed as light oil, the receiving waters is not given. The incident severity is listed as a Category 2 – Significant Incident.

There have been no substantiated pollution incidents registered on site or within 250m of the site boundary. The nearest recorded substantiated pollution incident was recorded approximately 432m to the southeast of the site in 2018. The pollutant is listed as 'other pollutant', the receiving waters is not given. The incident severity is listed as a Category 2 – Significant Incident with regards to water impact.

There have been no recorded prosecutions related to authorised processes on site or within 500m of the site boundary.

Invasive plants were not noted during the site walkover, but it is recommended that a full invasive plant vegetation survey of the site is carried out prior to development.

5.0 PRELIMINARY CONCEPTUAL SITE MODEL

5.1 RISK ASSESSMENT FRAMEWORK

In order to be consistent with current UK government policies and legislation, it is necessary to identify, make decisions on, and take appropriate action to deal with land contamination, in accordance with the procedures specified in the Environment Agency document 'Model Procedures for the Management of Land Contamination CLR-11' (Environment Agency 2004).

The risk assessment process is designed to provide a reasoned, structured and pragmatic mechanism for the identification of any potential human health and controlled waters risks associated with land contamination and where necessary to develop a robust remediation strategy to ensure protection of the sensitive receptors (human health of future residents, controlled waters, etc).

In accordance with the CLR-11 framework, risk is defined as:

'a combination of the probability, or frequency, of occurrence of a defined hazard and the magnitude of the consequence of the occurrence'.

The three essential elements to any risk are defined by CLR-11 as follows:

- A contaminant, or hazard, which is in, on, or under the land and has the potential to cause harm (Source)
- A means by which a receptor can be exposed to, or affected by a contaminant or hazard (Pathway)
- A receptor, i.e. something which could be adversely affected by a contaminant or hazard, such as human health or groundwater (Receptor).

In order for there to be a potential risk, all three of the above elements must be present. If there is a source of contamination and a receptor (for example a resident or site user), then there is only a potential risk if there is a pathway linking the two. Such an active pathway is known as a relevant pollutant linkage. It is possible for the same contaminant to be linked to a receptor via a number of pathways, and hence it is important that all relevant pollutant linkages, to both human health and controlled waters, are separately identified on a site in order that a comprehensive conceptual model can be formed and ultimately a robust remediation strategy designed.

5.1 RISK ASSESSMENT FRAMEWORK (CONTINUED)

Current practice during Generic Quantitative Risk Assessment of land affected by contamination is to use generic soil screening values based on the appropriate proposed end use. These usually comprise risk-based Soil Guideline Values (SGVs) or Generic Assessment Criteria (GACs) derived by the Environment Agency's Contaminated Land Exposure Assessment Model (CLEA). The SGVs and the supporting technical guidance were developed in order to assist in the assessment of long-term risk to human health from the exposure to contaminated soils.

Revised Statutory Guidance, published in 2012, to support Part 2A of the Environmental Protection Act 1990, introduced a new four category system for classifying land under Part 2A. Category 1 includes land where the level of risk is clearly unacceptable, and Category 4 includes land where the level of risk posed is considered to be acceptably low. Under Part 2A, land would be determined as contaminated if it falls within Categories 1 or 2.

The revised Part 2A Statutory Guidance was accompanied by an Impact Assessment that identified a role for new 'Category 4 Screening Levels' (C4SLs) that would provide a simple test for determining when land is suitable for use and definitely not contaminated land. A Policy Companion Document including the C4SLs was published in March 2014 (England) and May 2014 (Wales).

The C4SLs have been based on the CLEA methodology and derived using the CLEA model, with modified toxicological and exposure parameters. To date, C4SLs have been released for six substances (arsenic, cadmium, chromium (VI), lead, benzo(a)pyrene and benzene).

The C4SLs have been derived on the assumption that where they exist, they will be used as generic screening criteria within generic quantitative risk assessment.

Following publication of the C4SLs, Land Quality Management (LQM), in conjunction with the Chartered Institute for Environmental Health (CIEH) released Suitable 4 Use Levels (S4ULs) in January 2015.

The S4ULs have been derived in accordance with UK legislation, and using a modified version of the Environment Agency's CLEA software. As such, the S4ULs are based on the concept of minimal or tolerable risk as described in Human Health Toxicological Assessment of Contaminants in Soil (Science Report SR2, Environment Agency 2009a).

S4ULs have been derived for a wider number of substances.

5.1 RISK ASSESSMENT FRAMEWORK (CONTINUED)

In addition to the existing SGVs, C4SLs and S4ULs, Atkins ATRISK^{soil} also provide a set of Soil Screening Values. These are currently intended to be used in conjunction with SGVs, although they intend to update these values in line with the C4SLs in due course.

We have reviewed all sets of values and intend to use the most appropriate assessment criteria as Tier 1 screening values in the first instance. Where a published S4UL is available, and considered appropriate, this will be used in the first instance.

5.2 CONCEPTUAL MODEL FRAMEWORK

The preliminary stage of the risk assessment process is to develop and define a conceptual site model, based on the desk study and any existing site investigation data. This is used to establish any potential contaminant sources, identify existing and future receptors and assess if there are any potentially active pathways by which a potential risk may be present.

The preliminary conceptual site model will be developed and refined as site specific data is gathered, such as actual ground conditions and chemical data, resulting in a more robust conceptual understanding of the site.

5.3 CRITICAL SENSITIVE RECEPTOR – HUMAN HEALTH

The proposed redevelopment of the site is for a residential end use. Therefore, the critical sensitive receptor from a human health perspective is an on-site residential receptor.

In accordance with S4UL/C4SL and CLEA guidance for a standard residential with homegrown produce scenario, the critical sensitive receptor for a residential end use risk assessment is a female child, with exposure from 0 to 6 years.

The standard residential with homegrown produce end use conceptual model defined by S4UL/C4SL and CLEA is considered to be suitable for the purposes of this assessment.

5.4 CRITICAL SENSITIVE RECEPTOR – CONTROLLED WATERS

Based on the proposed redevelopment of the site for a residential end use, and the findings of the desk study, the critical sensitive receptor from a controlled water perspective is groundwater within the Secondary 'A' Aquifer of the bedrock strata underlying the site.

5.4 CRITICAL SENSITIVE RECEPTOR – CONTROLLED WATERS (CONTINUED)

By considering groundwater as the critical sensitive receptor for controlled waters, the groundwater/hydrogeological risk assessment will also be protective of any nearby surface water features.

5.5 POTENTIAL CONTAMINANT SOURCES

As identified in the desk study, the vast majority of the site has remained undeveloped up until the present day. Significant made ground deposits are not anticipated but localised areas could be encountered in the vicinity of St Julian's House and its associated outbuildings.

If any made ground was encountered, the potential types of contaminants of concern are listed below:

- Metals, semi-metals, and inorganics within the shallow made ground
- Polyaromatic hydrocarbons (PAH) within the shallow made ground
- Asbestos within the shallow made ground.

5.6 POTENTIAL EXPOSURE PATHWAYS

Potential exposure pathways for the critical receptors (both human health and controlled waters) are listed below:

- Dermal contact with soil and/or soil derived dust
- Ingestion of soil and/or soil attached to home-grown produce
- Ingestion of home-grown produce
- Inhalation of soil derived dust
- Inhalation of vapours – indoor and outdoor air
- Leaching of contaminants from made ground to groundwater
- Transportation of contaminants within groundwater.

In addition, the following exposure pathways have also been considered:

- Ground gas generation and migration
- Building materials durability.

5.7 SUMMARY OF CONCEPTUAL EXPOSURE MODEL

A preliminary conceptual exposure model has been developed for the site. This is based on the findings of the desk study and historical review and includes all potential sources, pathways and receptors that may be present on site. Those that have been identified as being potentially active require further investigation in the form of sampling and testing of soils and/or groundwater, followed by appropriate risk assessment.

The preliminary conceptual exposure model will be reviewed and refined following the completion of the site works and laboratory testing.

The preliminary conceptual exposure model is presented below in Table 6.

| Table 6: Preliminary Conceptual Exposure Model | | | | |
|--|--|-------------------------------|--|-----------------------------|
| Source | | Receptor | Pathway | Potentially Active Pathway? |
| Origin | Contaminant | | | |
| Potential localised made ground of unknown origin and historical land uses In situ topsoil and natural ground | Metals, semi-metals, non-metals, PAH, asbestos | Resident – human health | Dermal Contact with made ground/dust | ✓ |
| | | | Ingestion of soil and/or soil attached to home-grown produce | ✓ |
| | | | Ingestion of home-grown produce | ✓ |
| | | | Inhalation of dust | ✓ |
| | | | Inhalation of vapours – indoor/outdoor | ✓ |
| | Metals, semi-metals, inorganics, PAH | Groundwater quality | Leaching from made ground | ✓ |
| | | Surface water quality | Transportation within groundwater | ✓ |
| Potential localised made ground of unknown origin and natural ground | pH and water-soluble sulphate | Building Materials Durability | Direct contact | ✓ |
| Ground gas – organic, gas producing materials | Methane, carbon dioxide | Human health | Accumulation of gases in confined spaces, and/or migration off site, leading to asphyxiation, or risk of explosion | ✓ |

6.0 THE SITE INVESTIGATION

6.1 FIELDWORKS

An intrusive site investigation was designed in accordance with BS5930+A2:2010, the Code of Practice for Site Investigations, BS10175:2011, the Code of Practice for Investigation of Potentially Contaminated Sites, and 'Development of Land Affected by Contamination: A Guide for Developers' prepared by Welsh Local Government Association (WLGA)/Natural Resources Wales (NRW) Land Contamination Working Group, 2017.

The intrusive site investigation was also designed to provide information to support and refine the preliminary conceptual site model/conceptual exposure model.

An intrusive site investigation comprising 15 No. machine excavated trial pits was carried out during February 2020.

The trial pits (referenced TP01 to TP15) were positioned across accessible areas of the site and excavated to a maximum depth of 3.0m below existing ground level (bgl) using an 8-tonne tracked excavator.

Soil infiltration testing was carried out within 4 No. trial pits (see TP02, TP12, TP14 and TP15) in order to assess the likely infiltration potential of the natural strata across the site.

Representative soil samples were taken from the trial pits for laboratory chemical and geotechnical testing and placed in the appropriate sample containers deemed suitable for the analysis required. Strict protocols were adopted during this process to limit the cross contamination of samples.

The fieldworks were supervised by a qualified Geotechnical Engineer from Intégral Géotechnique (Wales) Limited who also logged the trial pits and prepared their detailed engineering logs in accordance with the requirements of BS5930+A2: 2010. The engineering logs provide descriptions of the materials encountered in accordance with BSEN ISO 14688-1 (2002) and 14689-1 (2003) for soils and rocks respectively.

The approximate locations of the trial pits are shown on Figure 2. The trial pit logs are presented in Appendix C. The results of the soil infiltration tests are presented in Appendix D.

6.2 FIELD OBSERVATIONS

No visual or olfactory evidence of any contamination was observed during the intrusive site investigation works.

6.3 LABORATORY CHEMICAL TESTING

Representative soil samples were taken from the trial pits excavated across the site, stored at the appropriate temperature and dispatched to the laboratories of i2 Analytical for laboratory chemical testing within 24 hours.

The samples were tested for a range of contaminants that reflects the historical use of the site, the findings of the desk study and the preliminary conceptual site model/conceptual exposure model. A list of the soil testing carried out is given below:

| | |
|--|--------------------------|
| Beryllium | Cadmium |
| Total Chromium | Hexavalent Chromium (VI) |
| Copper | Lead |
| Mercury | Nickel |
| Vanadium | Zinc |
| Arsenic | Boron |
| Selenium | Elemental Sulphur |
| Total Cyanide | Total Sulphate |
| Sulphide | Water Soluble Sulphate |
| pH | Monohydric Phenol |
| Polycyclic Aromatic Hydrocarbons (PAH) | Asbestos Screen |

The results of the chemical testing are presented in Appendix E.

6.4 LABORATORY GEOTECHNICAL TESTING

Representative soil samples taken from the trial pits were sent to the laboratories of i2 Analytical for geotechnical testing. The samples were tested for Atterberg Limits in order to determine their volume change potential.

A copy of the geotechnical test results is presented in Appendix F.

7.0 GROUND CONDITIONS

A summary of the typical ground conditions encountered across the site is presented below in Table 7.

| Table 7: Summary of Ground Conditions | | |
|---------------------------------------|-------------|---|
| Depth (m) | | Stratum |
| From | To | |
| 0.00 | 0.20/0.30 | TOPSOIL: Soft brown silty CLAY with rootlets. |
| 0.20/0.30 | 0.60/>3.00 | GLACIAL TILL deposits: Soft to firm, locally firm, brown or red brown variably sandy variably gravelly CLAY with low to medium cobble content. and (Loose to medium dense) brown clayey gravelly SAND or clayey sandy GRAVEL with variable cobble content. |
| 0.60/2.50 | >2.50/>2.70 | COMPLETELY WEATHERED BEDROCK: Firm red brown gravelly CLAY. <i>Encountered at TP02, TP04, TP06. TP08, TP13, TP14 and TP15 only.</i> |

Excavation instability (comprising overbreak and spalling of excavation sides) was noted at a number of trial pit locations. Localised running sand conditions were also noted below approximately 1.7m bgl within TP01.

7.1 TOPSOIL

A layer of topsoil, typically between approximately 0.20m and 0.30m thick, was encountered immediately below the ground surface at each trial pit location. The encountered topsoil typically comprised soft brown silty clay with rootlets.

7.3 GLACIAL TILL

A variable thickness of superficial glacial till underlies the topsoil across the site. These deposits typically comprise soft to firm, locally firm, brown or red brown variably sandy variably gravelly clay with low to medium cobble content, (loose to medium dense) locally (loose) brown clayey gravelly sand, or clayey sandy gravel with variable cobble content.

7.3 GLACIAL TILL (CONTINUED)

Where encountered, the base of the glacial till deposits was proven at depths ranging between approximately 0.60m bgl (at TP13) and 2.7m bgl (at TP02).

Note that the base of the glacial till deposits was not proven at TP01, TP03, TP05, TP07, TP09, TP10, TP11 and TP12.

The laboratory plasticity test results for tested samples of the glacial till deposits indicate plasticity indices ranging between 13% and 14%. The modified plasticity indices range between 10% and 11%, indicating that these soils have a low volume change potential.

7.4 COMPLETELY WEATHERED BEDROCK

Where the base of the superficial glacial till deposits was proven, they were recorded to be underlain by firm or firm to stiff red brown slightly gravelly clay considered to represent completely weathered bedrock strata of the Raglan Mudstone Formation.

Note that the completely weathered bedrock strata were not encountered within the excavated depths of TP01, TP03, TP05, TP07, TP09, TP10, TP11 and TP12 due to the presence of thicker overlying glacial till deposits. The depth to the completely weathered bedrock strata appears to deepen towards the south.

The laboratory plasticity test results for a tested sample of the completely weathered bedrock deposits indicate a plasticity index of 14% and a modified plasticity index of 13% indicating that these soils have a low volume change potential.

7.5 GROUNDWATER

Minor groundwater seepages were recorded at depths ranging between approximately 2.0m and 2.5m bgl within TP02, TP07, TP08 and TP12.

A fast groundwater inflow and associated running sand conditions was recorded below approximately 1.7m bgl within TP01.

Groundwater was not encountered within the excavated depths of any of the other trial pits positioned across the site.

The groundwater conditions are based on observations made at the time of the fieldwork. It should be noted that groundwater levels may vary due to seasonal and other effects.

7.6 SOIL INFILTRATION TESTS

Soil infiltration testing was carried out within 4 No. trial pits (see TP02, TP12, TP14 and TP15).

The trial pits were rapidly filled with water from a tractor-towed agricultural bowser and the water level monitored over a period of time. Where infiltration and time allowed, repeat cycle tests were carried out in general accordance with BRE365.

The results of the soakaway testing are summarised below and presented in Appendix E. A summary of the results is presented in Table 8.

| Table 8: Summary of Soil Infiltration Test Results | | | | |
|---|-----------------------|------------------------------|----------------------|--------------|
| Test Location | Test Depth (m bgl) | Soil Infiltration Rate (m/s) | | |
| | | Test Cycle 1 | Test Cycle 2 | Test Cycle 3 |
| TP02 | 2.7 | 2.5×10^{-6} | 2.1×10^{-6} | n/a |
| TP12 | 1.0 | 1.9×10^{-6} | 1.7×10^{-6} | n/a |
| TP14 | 1.0 | n/a | n/a | n/a |
| TP15 | 2.5 | n/a | n/a | n/a |

No infiltration was recorded at TP14 and TP15. As such, no infiltration rates have been calculated for these locations.

It should be noted that the results of the soil infiltration testing had to be extrapolated in order to determine the soil infiltration rates, and therefore actual infiltration may vary. It should also be noted that the soakaway test results are specific to the locations and depths of the tests undertaken.

If it should be proposed to use soakaways for this site, then it is recommended that more extensive location and depth specific follow-up tests should be undertaken and should fully comply with BRE 365.

8.0 CONTAMINATION

8.1 AVERAGING AREAS

In order to assess the laboratory test results reliably and in context, the data have been grouped into an averaging area. An averaging area (or area of interest) is that area of soil to which a receptor is exposed, or which otherwise contributes to the creation of hazardous conditions. This may be an area of historical industrial usage, a soil type, or a specific proposed end use.

In the case of this analysis, a site wide averaging area has been determined according to the proposed residential end use.

8.2 SOIL CONTAMINATION

The Suitable 4 Use Levels (S4ULs) derived by LQM have been adopted as critical concentrations against which soil contaminant concentrations can be compared. In the absence of additional published S4ULs for lead and cyanide, the Category 4 Screening Levels (C4SLs) derived by DEFRA and Soil Screening Values (SSVs) derived by Atkins ATRISK^{soil} for a residential with homegrown produce end use have been adopted, respectively.

A total of 6 No. soil samples (comprising topsoil and natural subsoil) were tested for contamination.

The soil test results have been summarised separately and are shown in Appendices H.

The results have been compared to the respective guidelines, where applicable, for 1% soil organic matter content (SOM), this being the most conservative.

The results indicate that all of the analysed chemical elements and compounds are present at concentrations below the appropriate thresholds.

Asbestos was not detected in any of the tested soil samples.

9.0 REVISED CONCEPTUAL EXPOSURE MODEL

The preliminary conceptual exposure model has been reviewed and revised to reflect the findings of the intrusive site investigation and the results of the laboratory testing of soils. Pathways identified as a relevant pollutant linkage require appropriate risk assessment or mitigation measures (see Section 10).

| Table 9: Revised Conceptual Exposure Model | | | | | | |
|--|--|-------------------------------|--|---|----------------------------|---|
| Source | | Receptor | Pathway | Preliminary Active Pathway? (see Sect. 5.8) | Relevant Pollutant Linkage | Justification/ Mitigation |
| Origin | Contaminant | | | | | |
| Potential localised made ground of unknown origin and historical land uses In situ topsoil and natural ground | Metals, semi-metals, non-metals, PAH, asbestos | Resident – human health | Dermal Contact with made ground/dust | ✓ | X | No elevated soil contaminant concentrations identified. |
| | | | Ingestion of soil and/or soil attached to home-grown produce | ✓ | X | |
| | | | Ingestion of home-grown produce | ✓ | X | |
| | | | Inhalation of dust | ✓ | X | |
| | | | Inhalation of vapours – indoor/outdoor | ✓ | X | No sufficiently volatile contaminants identified. |
| | Metals, semi-metals, inorganics, PAH | Groundwater quality | Leaching from made ground | ✓ | X | No elevated soil contaminant concentrations identified |
| | | Surface water quality | Transportation within groundwater | ✓ | X | |
| Potential localised made ground of unknown origin and historical land uses Natural ground | Sulphates and pH | Building Materials Durability | Direct contact | ✓ | ✓ | Building materials will be in contact with natural ground – risk assess |

9.0 REVISED CONCEPTUAL EXPOSURE MODEL

| Source | | Receptor | Pathway | Preliminary Active Pathway? | Relevant Pollutant Linkage | Justification/ Mitigation |
|--|----------------------------|--------------|---|-----------------------------------|----------------------------------|--|
| Origin | Contaminant | | | | | |
| Ground Gas – organic, gas producing materials | Methane, carbon dioxide | Human health | Accumulation of gases in confined spaces, and/or migration off site, leading to asphyxiation, or risk of explosion | ✓ | ✓ | Historical landfill recorded within 250m of the site – risk assess. |

10.0 RISK ASSESSMENT

10.1 METHODOLOGY

The risk of pollution, health effects or environmental harm occurring as a result of ground contamination is dependent upon three principal factors:

- The scale of the contamination sources
- The presence of sensitive “receptors”, eg Humans: health of the general public, site occupiers, redevelopment workers. Environment: flora, fauna, etc
- The existence of migration pathways by which contaminants can reach the sensitive receptors.

This section assesses each of these factors in order to evaluate the overall level of risk and potential harm to receptors. The receptor may be human, a water resource, an eco-system or construction materials. Pathways connecting a perceived hazard to a receptor are referred to as exposure pathways.

The sources of contamination and the links connecting the hazards to the sensitive receptors will represent the basis for the risk assessment.

10.2 SOURCE-PATHWAY-RECEPTOR MODEL

The preliminary conceptual site model was based on the findings of the desk study. This was later reviewed and refined according to the findings of the site investigation, allowing for the ground conditions encountered and the results of laboratory testing of soil and groundwater. Any pathways considered to be inactive were removed from the model and all remaining potentially active pathways require risk assessment.

The pathways shown as potentially active in the Revised Conceptual Site Model in Section 9.0 above have been assessed below.

10.3 HUMAN HEALTH RISK ASSESSMENT

10.3.1 *Site in its Present Condition*

The site does not pose any risks to casual visitors or trespassers.

10.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

10.3.2 Future Site Users

The contamination test results have not recorded any elevated contaminant concentrations in the tested samples of topsoil and natural subsoil from across the site.

It is considered that no specific remedial measures are required within areas of the site situated outside the footprints of the existing buildings and areas of hardstanding (i.e. the vast majority of the site area) – see Figure 2.

It should be noted that access to the northwest corner of the site (i.e. the area surrounding St Julian's House) was restricted at the time of the intrusive site investigation works due to the presence of numerous outbuildings and areas of hardstanding. Following demolition / site clearance, it is recommended that further contamination compliance checks are undertaken across this area. These works should include visual inspection of exposed formations, additional soil sampling, laboratory chemical testing and supplementary contamination risk assessment.

Note that the results of the post-demolition contamination checks may identify levels of contamination greater than those already recorded, which may require localised remedial mitigation measures such as the localised placement of a 600mm clean capping layer in any gardens or areas of soft landscaping that are underlain by any identified contaminated soils.

10.3.3 Construction Workers

Appropriate measures are recommended for construction works involving the in-situ soils beneath the site.

All excavations should be regularly checked for safe atmospheres.

Normal good hygiene practices should be adequate to protect the health and safety of redevelopment workers, and should include:

- Minimum handling of materials
- Washing of hands prior to all meal breaks, which should be taken in a designated clean area
- The use of standard protective clothing such as boots and overalls and gloves, where considered relevant.

10.3 HUMAN HEALTH RISK ASSESSMENT (CONTINUED)

In dry weather, inhalation of dust and gases should be avoided preferably by the use of dust suppression techniques to minimise fugitive emissions and minimisation of exposed materials at any particular time.

Additionally, a system should be established by which any 'unusual' materials (including any suspected asbestos containing materials) that may be encountered are reported rapidly to the site management, so that the appropriate action may be taken, following specialist advice if necessary. An unusual material may be identified on site by colour, odour or physical nature.

Reference should be made to the Health and Safety Executive document "Protection of Workers and the General Public during the development of contaminated land" for detailed guidance on these matters

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10.4 RISKS TO VEGETATION

The concentrations of phytotoxic elements in the tested soil samples, do not indicate the potential for adverse effects to vegetation. Accordingly, no specific protective measures are considered necessary with respect to the protection of vegetation.

This assessment should be reviewed upon completion of the recommended post-demolition / site clearance contamination checks detailed in Section 10.3 above.

10.5 GROUNDWATER RISK ASSESSMENT

The vast majority of the site comprises undeveloped green field land. The results of the laboratory chemical testing on representative soil samples have not identified any elevated contaminant concentrations. Additionally, no visual or olfactory evidence of contamination was observed during the intrusive site investigation works.

Considering the results of the intrusive site investigation and the undeveloped history of the site, the potential risk to controlled waters from site sourced contamination is considered to be very low.

This assessment should be reviewed upon completion of the recommended post-demolition / site clearance contamination checks detailed in Section 10.3 above.

10.6 GROUND GAS RISK ASSESSMENT

No made ground or potential gas producing materials were encountered during the intrusive site investigation. However, it is noted that a historical landfill, registered to have been authorised to accept industrial and household waste is situated within 250m of the site at St Julian's Farm, to the northeast of the site. This feature could present a potential ground gas risk.

It is recommended that a programme of ground gas monitoring is undertaken at the site in order to quantify the overall ground gas risk and confirm any requirement for specific ground gas protection measures in relation methane and carbon dioxide.

The BGS Radon GeoReport presented in Appendix B indicates that the majority of the site does not require any radon protective measures. However, the eastern extents of the site require basic radon protective measures. A plan indicating the different radon zones is presented in Figure 3. Note that all radon zones should be reviewed on a plot by plot basis upon confirmation of the final proposed development layout.

10.7 RISKS TO BUILDINGS AND MATERIALS DURABILITY

10.7.1 Concrete Classification

A summary of the laboratory chemical test results for the chemicals water soluble sulphate, and pH, which may adversely affect the durability of building materials is presented in Appendix E.

In accordance with BRE Digest SD1:2005 and adopting the assessment procedure specified therein for greenfield sites, the laboratory chemical test results indicate a characteristic value (taking the highest test result) for water soluble sulphate within the natural ground of 9.7mg/l.

Using Table C2 of BRE Digest SD1:2005, this characteristic value corresponds to Design Sulphate Class DS-1.

The groundwater regime of the site has been assessed as 'mobile' and a characteristic pH value within the natural ground of 6.8 has been determined (adopting the lowest test result). The Design Sulphate Class has been modified to give a site ACEC class of AC-1 for concrete structures constructed within the natural ground.

10.7 RISKS TO BUILDINGS AND MATERIALS DURABILITY (CONTINUED)

10.7.2 Water Services

Water supply pipes will need to be protected from any contamination present within the ground. In particular, the presence of organic contaminants should be addressed when selecting pipe materials.

Based on the results of the soil contamination testing and the largely undeveloped history of the site, measures to protect pipes will likely comprise clean backfill to trenches only. The use of alternative pipe material is unlikely to be required.

10.8 WASTE DISPOSAL

Excavated materials generated by the development may be considered as waste and subject to waste controls. Any re-use of excavated materials on-site should be undertaken in accordance with current waste and environmental legislation and which may require the production of an approved Materials Management Plan (MMP) prepared in accordance with the CL:AIRE Code of Practice.

It is recommended that a sustainable development strategy is adopted which reduces to a practicable minimum the generation of waste materials and the need for disposal to a licensed tip. Emphasis should be on recovery and re-use rather than disposal.

However, any waste or surplus materials that are generated will need to be classified in accordance with current EC regulations and Environment Agency guidance prior to disposal. It is the responsibility of the waste producer to classify the waste.

Based on the data obtained from the site investigation works, any waste materials comprising of the existing natural ground are likely to be classified as non-hazardous waste.

Any asbestos containing materials (ACMs) will be classified as hazardous waste.

This classification is provisional, and indicative of the likely waste classification based on the data obtained to date (including chemical composition, moisture content, etc.). It also assumes that the materials tested will be representative of future generated waste.

10.8 WASTE DISPOSAL (CONTINUED)

In order to minimise disposal, the materials generated should be segregated and examined, with appropriate testing as necessary, to enable the materials to be sorted or treated into lower classifications, with the resultant benefit of potentially generating re-use rather than disposal.

Once final waste sources and volumes are known, the waste stockpile to be disposed off-site will need to be classified in accordance with Environment Agency/Natural Resources Wales Waste Classification – Guidance on the Classification and Assessment of Waste Technical Guidance WM3 (2015). This is likely to require additional sampling and testing of the generated waste materials to provide an up to date current basis for classification.

Depending on the waste classification, waste acceptance criteria (WAC) testing may be required, in order to determine which class of landfill site the waste can be sent to. It is recommended that the results of the waste classification and any WAC test results are sent to the intended licensed waste operator prior to disposal in order to confirm their classification and acceptance.

10.9 UNCERTAINTIES

It is important to recognise that there may be areas of contamination within the site that have not been found or that contaminants may be present at concentrations above those that have been found.

It is also important to recognise that contamination may be localised and that no investigation, however comprehensive, is capable of finding such occurrences, other than by chance.

The near-surface drainage patterns have not been fully established.

At the time of the intrusive site investigation access to the north-western areas of the site around St Julian's House was restricted due to the presence of numerous outbuildings and areas of hardstanding. Some degree of made ground material should be expected across previously developed areas of the site.

11.0 ENGINEERING CONSIDERATIONS AND RECOMMENDATIONS

11.1 DETAILS OF PROPOSED DEVELOPMENT

PMG are proposing to acquire and develop the site for residential end use. The proposed development will likely comprise the construction of a number of residential dwellings with private gardens and associated infrastructure including access roads, car parking areas and driveways. It is understood that an existing residential dwelling situated in the northwest corner of the site (St Julian's House) is to be retained. However, a number of associated outbuildings are to be demolished.

At the time of writing, no proposed development layouts had been made available for review.

11.2 SITE PREPARATION

Prior to any works commencing on site, the locations of any services should be established and either relocated or protected. Any diversion works should be carried out under the supervision, and to the specification, of the appropriate statutory authorities. Any resulting excavations should be backfilled with suitable fill materials.

Dense vegetation surrounds much of the site. Although Japanese Knotweed was not observed at the time of the site works, it is recommended that a full vegetation survey of the site is carried out. Any areas where invasive plant species are identified should undergo appropriate treatment/eradication by a specialist contractor.

Prior to demolition of the existing buildings in the north-western corner of the site, demolition strategies should be developed to ensure the safe demolition and re-use of materials. All buildings to be demolished should be subject to a 'Demolition Asbestos Survey', soft strip, and disposal of asbestos containing materials to a licensed tip.

Following demolition of the above ground structures, all redundant footings, services and surface hardstanding associated with the former buildings will need to be fully broken out and removed, with the resulting debris crushed and screened to a structural specification, typically 150mm maximum particle size. All excavated materials should be screened for unsuitable materials such as timber, metal etc. Visual checks should be made for potential asbestos containing materials (ACM). Any encountered ACM should be handpicked by a specialist contractor and disposed off-site to a suitably licenced facility as hazardous waste. Reduced formations revealed by the demolition process should be inspected by a geotechnical engineer for signs of contamination and in the event that potential contamination is observed, appropriate testing and risk assessment carried out.

11.2 SITE PREPARATION (CONTINUED)

There are a number of mature trees/hedges along the edges of the site. Allowances should be made for the removal of any associated roots that may become exposed in any proposed nearby earthworks and foundation excavations. Any such works should be conducted in accordance with the code of practice recommended by the National House Building Council (NHBC).

All protection orders relating to existing vegetation/ecology should be adhered to during the development of the site.

All existing topsoil should be stripped off from beneath the proposed buildings and access roads. These excavated materials will be unacceptable as structural fill and should be stockpiled for re-use in landscaped areas and gardens, with any surplus materials being removed from site.

Exposed formations should be protected from site traffic and inclement weather in order to preserve their integrity. Any soft spots/areas should be removed and replaced with well compacted site won or imported granular fill material.

A system should be established by which any 'unusual' materials (including any suspected asbestos containing materials) that may be encountered are reported rapidly to the site management so that appropriate action can be taken following specialist advice if necessary. Any unusual material may be identified on site by colour, odour or physical nature.

The site slopes down towards the east and west and cut and fill earthworks will likely be required in order to create suitable development plateaux.

If any fill is to be placed onto an existing sloping area, then the original ground should be adequately cut and benched, in order to prevent the possibility of slippage at the interface between the new fill and the original ground. All works should be carried out in accordance with the DTp Specification for Highway Works.

Any cut and/or fill slopes should be no steeper than 1v in 2h. Cut off drains should be provided at the top and French drains at the bottom of any cut and/or fill slopes. In areas of cut and/or fill, the slopes should be topsoiled and seeded with grass, in order to minimise any future maintenance problems caused by surface water run-offs.

11.2 SITE PREPARATION (CONTINUED)

The existing in-situ soils are considered to be suitable for re-use as structural fill, subject to appropriate handling. Any shortfall in fill quantities should be made up with clean, inert, imported granular materials in accordance with an agreed specification. These materials will need to be placed and compacted in accordance with the DTp Specification for Highway Works.

Any reduced formations should be brought back up to the required level with granular fill materials. All fill materials should be placed and well compacted in layers, in accordance with Department of Transport Specification for Highway Works.

Some surface water management will be required in order to ensure the protection of the earthworks and materials. Surface water protective measures should be implemented to prevent surface water run-off leaving the site.

11.3 FOUNDATIONS AND FLOOR SLABS

The site is underlain by variable ground conditions resulting from laterally variable thicknesses of superficial glacial till overlying bedrock strata of the Raglan Mudstones Formation.

Due to the observed variations in the ground conditions, the site has been zoned with respect to foundation and floor slab recommendations. A Foundation Zone Plan is presented in Figure 4.

Note that the following foundation and floor slab recommendations should be reviewed upon confirmation of the final proposed development layout and engineering levels.

11.3.1 Zone 1 – 100kN/m² Strip/Trench Fill Foundations

The ground conditions encountered across Zone 1 (as indicated on Figure 4) are characterised by a relatively thin layer of superficial glacial till deposits over completely weathered bedrock strata of the Raglan Mudstone Formation.

It is considered that the proposed buildings within Zone 1 can be founded using conventional strip/trench fill foundations bearing onto the completely weathered bedrock strata which typically comprise firm red brown gravelly clay deposits encountered at shallow depths of between approximately 0.6m and 1.0m bgl across this area.

11.3 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

An allowable bearing pressure of 100kN/m² can be used for design purposes. At this intensity of loading, total settlements should not exceed 25mm, and any angular distortions caused by differential movements should be less than 1:750.

Foundations should penetrate the founding strata by a minimum of 200mm and be at a minimum depth of 900mm below development level in order to protect against the effects of frost heave and/or thermal shrinkage, unless constructed completely within mudstone or sandstone bedrock.

Laboratory Atterberg Limits have been determined for the completely weathered bedrock strata. The results show that these materials have a low volume change potential. Footings should be deepened in accordance with NHBC guidance for foundations constructed adjacent to mature trees and hedgerows.

Foundations should be deepened to fully penetrate any encountered made ground and any encountered soft clay deposits.

Ideally, footings should be founded on similar strata throughout to reduce the risk of differential settlement. Any foundations bearing onto a combination of different bearing strata should be reinforced with top and bottom face mesh across the change in strata.

All formations should be protected from deterioration and should be concreted in good weather immediately after excavation and preparation.

Ground bearing floor slabs may be used where less than 600mm of structural make-up or made ground is present beneath the slab, otherwise suspended floor slabs will be required.

In construction of floor slabs and, in particular, adjacent to the hedgerows and trees, consideration should be given to the laboratory plasticity results. At these locations, in order to satisfy the requirements of the NHBC, precast suspended floor slabs may need to be used.

There is lateral variability in the levels of required radon protection measures across the site. The majority of the site does not require any radon protection measures. However, the eastern extents of the site require basic radon protective measures. A plan indicating the different radon zones is presented in Figure 3. Note that all radon zones should be reviewed on a plot by plot basis upon confirmation of the final proposed development layout.

11.3 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

Considering the sloping nature of the site, a degree of cut and fill earthworks is anticipated. In the case of any buildings which span cut and fill sections, all the foundations should be taken down and founded upon similar in-situ natural materials. Reinforcement should also be incorporated into the floor slabs in these instances in order to minimise the potential for any potential differential settlement that may occur across the cut and fill sections.

11.3.2 Zone 2 – 75kN/m² Reinforced Strip/Trench Fill Foundations

The ground conditions encountered across Zone 2 (as indicated on Figure 4) are characterised by greater thicknesses of variable strength and consistency glacial till deposits.

It is considered that proposed buildings within Zone 2 can be founded using reinforced strip/trench fill foundations bearing onto the glacial till deposits encountered from approximately 0.2/0.3m bgl.

A reduced allowable bearing pressure of 75kN/m² can be used for design purposes. At this intensity of loading, total settlements should not exceed 25mm, and any angular distortions caused by differential movements should be less than 1:750.

Due to the inherent variability of glacial till deposits, and their observed variability in shear strength and consistency, it is recommended that all strip/trench fill foundations within Zone 2 are designed to span a 1.0m soft spot and a 1.0m cantilever at build corners with top and bottom face reinforcement, in order to protect against potential adverse levels of differential settlement.

Foundations should penetrate the founding strata by a minimum of 200mm and be at a minimum depth of 900mm below development level in order to protect against the effects of frost heave and/or thermal shrinkage, unless constructed completely within mudstone or sandstone bedrock.

Laboratory Atterberg Limits have been determined for the glacial till deposits. The results show that these materials have a low volume change potential. Footings should be deepened in accordance with NHBC guidance for foundations constructed adjacent to mature trees and hedgerows.

Foundations should be deepened to fully penetrate any encountered made ground and any encountered soft clay deposits.

11.3 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

Ideally, footings should be founded on similar strata throughout to reduce the risk of differential settlement.

All formations should be protected from deterioration and should be concreted in good weather immediately after excavation and preparation.

Ground bearing floor slabs may be used where less than 600mm of structural make-up or made ground is present beneath the slab, otherwise suspended floor slabs will be required.

In construction of floor slabs and, in particular, adjacent to the hedgerows and trees, consideration should be given to the laboratory plasticity results. At these locations, in order to satisfy the requirements of the NHBC, precast suspended floor slabs may need to be used.

There is lateral variability in the levels of required radon protection measures across the site. The majority of the site does not require any radon protection measures. However, the eastern extents of the site require basic radon protective measures. A plan indicating the different radon zones is presented in Figure 3. Note that all radon zones should be reviewed on a plot by plot basis upon confirmation of the final proposed development layout.

Considering the sloping nature of the site, a degree of cut and fill earthworks is anticipated. In the case of any buildings which span cut and fill sections, all the foundations should be taken down and founded upon similar in-situ natural materials. Reinforcement should also be incorporated into the floor slabs in these instances in order to minimise the potential for any potential differential settlement that may occur across the cut and fill sections.

11.3.3 Zones 1 and 2 (Site Wide) – Raft Foundations

An alternative foundation solution comprising lightly loaded raft foundations could also be considered across the site (i.e. across both Zone 1 and Zone 2).

Following completion of the site preparation works detailed in Section 11.2, it is considered that proposed raft foundations could either bear onto the existing natural superficial glacial till deposits or suitably prepared engineered fill.

11.3 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

To minimise the potential for differential movements, it is recommended that beneath the raft foundations there should be a suitably thick layer of well compacted imported granular fill throughout the plan area of the building. Department of Transport Type 1 sub-base, or similar approved, could be used and should be compacted in layers in accordance with current DTp Specification for Highway Works.

The proposed rafts should be designed to an allowable maximum bearing pressure of 50kN/m^2 , with an average pressure of less than 30kN/m^2 . At this intensity of loading, the total settlements should not exceed 30mm and any angular distortions caused by differential movements should be less than 1:750. Rafts should be designed to span a 1.0m soft spot and 1.0m cantilever at build corners.

All foundations should be designed for low shrinkability tree influence criteria in accordance with NHBC guidelines.

All formations should be proof rolled with any soft spots and / or any obstructions that could form hard spots removed.

Thickening of the raft is likely to be required beneath the load bearing walls/columns.

There is lateral variability in the levels of required radon protection measures across the site. The majority of the site does not require any radon protection measures. However, the eastern extents of the site require basic radon protective measures. A plan indicating the different radon zones is presented in Figure 3. Note that all radon zones should be reviewed on a plot by plot basis upon confirmation of the final proposed development layout.

11.4 EXCAVATIONS AND FORMATIONS

Excavations should be possible with normal soil excavating machinery, without the use of hydraulic breaker attachments.

Based on the findings of the site investigation works, excavations deeper than 2.0m (below existing ground level) are likely to encounter groundwater inflows. It should also be noted that localised running sand conditions and excavation instability was noted during the intrusive site investigation. Allowances should be made for these constraints during construction.

11.4 EXCAVATIONS AND FORMATIONS (CONTINUED)

Allowances should be made for overbreak and spalling/collapse in the sides of the excavations and for the requirement for increased volumes of concrete.

The sides of excavations deeper than 1.0m should be supported by trench boxes or temporarily battered at gradients of typically 30°.

The exposed formations within the in-situ materials will be extremely susceptible to damage, softening and deterioration by wet weather and site traffic. They should therefore be protected by blinding concrete or a 100mm thick layer of hard-core immediately after exposure.

11.5 ACCESS ROADS AND CAR PARKING AREAS

For access roads and car parking areas, a California Bearing Ratio (CBR) value of between 2% and 4% could be assumed for pavement formations within the shallow soils.

The design CBR could be increased to greater than 5% if the pavement formations are within well compacted granular fill materials.

After proof rolling, the pavement formations, any 'soft spots/areas' and any obstructions that could form hard spots should be removed and replaced with well-compacted imported granular materials. Department of Transport (DTp) Type 1 Sub-Base, or similar approved, could be used and should be compacted in layers in accordance with the current DTp Specification for Highway Works.

Formations within cohesive deposits should be regarded as frost susceptible.

11.6 DRAINAGE

Soil infiltration testing was carried out within 4 No. trial pits (see TP02, TP12, TP14 and TP15), as indicated on Figure 2.

The results of soil infiltration tests are summarised in Section 7.3 above (see Table 8).

It should be noted that the results of the soil infiltration testing had to be extrapolated in order to determine the soil infiltration rates, and therefore actual infiltration may vary. It should also be noted that the soakaway test results are specific to the locations and depths of the tests undertaken.

11.6 DRAINAGE (CONTINUED)

If it should be proposed to use soakaways for this site, then it is recommended that more extensive location and depth specific follow-up tests should be undertaken and should fully comply with BRE 365.

11.7 RECOMMENDED FURTHER WORKS

Access to the northwest corner of the site (i.e. the area surrounding St Julian's House) was restricted at the time of the intrusive site investigation works due to the presence of existing outbuildings and areas of hardstanding, see Figure 2. Following demolition / site clearance, it is recommended that further contamination compliance checks are undertaken across this previously developed area. These works should include visual inspection of exposed formations, additional soil sampling, laboratory chemical testing and supplementary contamination risk assessment.

It is recommended that a programme of ground gas monitoring is undertaken at the site in order to quantify the overall ground gas risk and confirm any requirement for ground gas protection measures in relation methane and carbon dioxide.

If it should be proposed to use soakaways for this site, then it is recommended that more extensive location and depth specific follow-up tests should be undertaken and should fully comply with BRE 365.

APPENDIX A

ENVIROCHECK REPORT

Envirocheck[®] Report:

Datasheet

Order Details:

Order Number:

239204756_1_1

Customer Reference:

12564/JJ

National Grid Reference:

322120, 182760

Slice:

A

Site Area (Ha):

4.81

Search Buffer (m):

1000

Site Details:

Tobin Land
CARDIFF

Client Details:

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

| Report Section | Page Number |
|-----------------------|-------------|
| Summary | - |
| Agency & Hydrological | 1 |
| Waste | 31 |
| Hazardous Substances | - |
| Geological | 33 |
| Industrial Land Use | 37 |
| Sensitive Land Use | 45 |
| Data Currency | 47 |
| Data Suppliers | 53 |
| Useful Contacts | 54 |

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

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Report Version v53.0

| Data Type | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|---|-------------|---------|-----------|-------------|-----------------------------|
| Agency & Hydrological | | | | | |
| BGS Groundwater Flooding Susceptibility | pg 1 | Yes | Yes | Yes | n/a |
| Contaminated Land Register Entries and Notices | | | | | |
| Discharge Consents | pg 2 | | | 8 | 9 |
| 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 6 | | | 2 | 1 |
| Local Authority Pollution Prevention and Control Enforcements | | | | | |
| Nearest Surface Water Feature | pg 7 | | Yes | | |
| Pollution Incidents to Controlled Waters | pg 7 | | | 2 | 5 |
| Prosecutions Relating to Authorised Processes | pg 8 | | | | 1 |
| Registered Radioactive Substances | | | | | |
| River Quality | pg 8 | | 1 | | |
| River Quality Biology Sampling Points | | | | | |
| River Quality Chemistry Sampling Points | | | | | |
| Substantiated Pollution Incident Register | pg 8 | | | 1 | 1 |
| Water Abstractions | pg 9 | | | 2 | (*9) |
| Water Industry Act Referrals | | | | | |
| Groundwater Vulnerability Map | pg 11 | Yes | n/a | n/a | n/a |
| Bedrock Aquifer Designations | pg 12 | Yes | n/a | n/a | n/a |
| Superficial Aquifer Designations | pg 12 | Yes | n/a | n/a | n/a |
| Source Protection Zones | | | | | |
| Extreme Flooding from Rivers or Sea without Defences | pg 12 | | Yes | n/a | n/a |
| Flooding from Rivers or Sea without Defences | pg 12 | | Yes | 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 |
| OS Water Network Lines | pg 12 | | 7 | 44 | 110 |

| Data Type | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|---|-------------|---------|-----------|-------------|-----------------------------|
| Waste | | | | | |
| BGS Recorded Landfill Sites | | | | | |
| Historical Landfill Sites | pg 31 | | 1 | | 2 |
| Integrated Pollution Control Registered Waste Sites | | | | | |
| Licensed Waste Management Facilities (Landfill Boundaries) | | | | | |
| Licensed Waste Management Facilities (Locations) | | | | | |
| Local Authority Landfill Coverage | | 1 | n/a | n/a | n/a |
| Local Authority Recorded Landfill Sites | | | | | |
| Potentially Infilled Land (Non-Water) | | | | | |
| Potentially Infilled Land (Water) | pg 31 | | | | 7 |
| Registered Landfill Sites | pg 32 | | | | 1 |
| Registered Waste Transfer Sites | | | | | |
| Registered Waste Treatment or Disposal Sites | | | | | |
| Hazardous Substances | | | | | |
| 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) |
|---|-------------|---------|-----------|-------------|-----------------------------|
| Geological | | | | | |
| BGS 1:625,000 Solid Geology | pg 33 | Yes | n/a | n/a | n/a |
| BGS Estimated Soil Chemistry | pg 33 | Yes | Yes | | |
| BGS Recorded Mineral Sites | | | | | |
| BGS Urban Soil Chemistry | pg 33 | | Yes | Yes | Yes |
| BGS Urban Soil Chemistry Averages | pg 35 | Yes | | | |
| CBSCB Compensation District | | | n/a | n/a | n/a |
| Coal Mining Affected Areas | | | n/a | n/a | n/a |
| Mining Instability | | | n/a | n/a | n/a |
| Man-Made Mining Cavities | | | | | |
| Natural Cavities | | | | | |
| Non Coal Mining Areas of Great Britain | pg 35 | Yes | Yes | n/a | n/a |
| Potential for Collapsible Ground Stability Hazards | pg 35 | Yes | | n/a | n/a |
| Potential for Compressible Ground Stability Hazards | pg 36 | | Yes | n/a | n/a |
| Potential for Ground Dissolution Stability Hazards | | | | n/a | n/a |
| Potential for Landslide Ground Stability Hazards | pg 36 | Yes | Yes | n/a | n/a |
| Potential for Running Sand Ground Stability Hazards | pg 36 | Yes | Yes | n/a | n/a |
| Potential for Shrinking or Swelling Clay Ground Stability Hazards | pg 36 | Yes | | n/a | n/a |
| Radon Potential - Radon Affected Areas | pg 36 | Yes | n/a | n/a | n/a |
| Radon Potential - Radon Protection Measures | pg 36 | Yes | n/a | n/a | n/a |
| Industrial Land Use | | | | | |
| Contemporary Trade Directory Entries | pg 37 | | 2 | 18 | 24 |
| Fuel Station Entries | pg 41 | | | 2 | |
| Points of Interest - Commercial Services | pg 41 | | | 3 | |
| Points of Interest - Education and Health | | | | | |
| Points of Interest - Manufacturing and Production | pg 41 | | | 6 | 14 |
| Points of Interest - Public Infrastructure | pg 43 | | | 8 | 7 |
| Points of Interest - Recreational and Environmental | pg 44 | | | | 3 |
| Gas Pipelines | | | | | |
| Underground Electrical Cables | | | | | |

| Data Type | Page Number | On Site | 0 to 250m | 251 to 500m | 501 to 1000m (*up to 2000m) |
|--------------------------------------|-------------|---------|-----------|-------------|--------------------------------|
| Sensitive Land Use | | | | | |
| Ancient Woodland | pg 45 | | 1 | 2 | 20 |
| 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 |
|--------|---|--|------------------------------|---------|---------------|
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A13NE (N) | 0 | 1 | 322119 182800 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A13NE (W) | 0 | 1 | 322119 182757 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A13NE (NE) | 0 | 1 | 322200 182800 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A13NE (E) | 0 | 1 | 322200 182757 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A13NE (E) | 0 | 1 | 322250 182757 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A13NE (E) | 12 | 1 | 322250 182750 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A13SE (E) | 80 | 1 | 322300 182700 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding to Occur at Surface | A13NE (E) | 91 | 1 | 322350 182750 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A13SE (SE) | 99 | 1 | 322300 182650 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A13SE (E) | 118 | 1 | 322350 182700 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A13NE (NE) | 162 | 1 | 322250 183050 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A13SE (SE) | 165 | 1 | 322350 182600 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A13NE (NE) | 175 | 1 | 322300 183050 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A13SE (SE) | 204 | 1 | 322300 182500 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A8NW (S) | 208 | 1 | 322100 182400 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A13SE (SE) | 210 | 1 | 322400 182600 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A13NW (NW) | 244 | 1 | 321850 183000 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A12NE (W) | 252 | 1 | 321750 182850 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A8NE (S) | 264 | 1 | 322119 182350 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A13NW (NW) | 312 | 1 | 321800 183050 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A8NE (S) | 326 | 1 | 322150 182300 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A12NE (W) | 326 | 1 | 321650 182757 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|--|--|------------------------------|---------|------------------|
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A8NE (S) | 345 | 1 | 322200 182300 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A8NW (S) | 358 | 1 | 322100 182250 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A18SW (NW) | 372 | 1 | 321850 183150 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A12NE (W) | 374 | 1 | 321600 182750 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A19SW (NE) | 381 | 1 | 322550 183100 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A8NE (SE) | 407 | 1 | 322350 182300 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A18SW (N) | 419 | 1 | 321950 183250 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur | A19SW (NE) | 423 | 1 | 322600 183100 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A18SW (NW) | 439 | 1 | 321900 183250 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A17SE (NW) | 466 | 1 | 321750 183200 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A19SW (NE) | 467 | 1 | 322650 183100 |
| | BGS Groundwater Flooding Susceptibility Flooding Type: Potential for Groundwater Flooding of Property Situated Below Ground Level | A12SE (W) | 479 | 1 | 321500 182650 |
| 1 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Began Road Cso, North Of Pistyll-Yr-Achddu, Began Road, St. Mellons, Cardiff, Cf3 6yj Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: Af3001309 Permit Version: 3 Effective Date: 7th August 2019 Issued Date: 7th August 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Rhymney River Status: Effective Positional Accuracy: Located by supplier to within 10m | A14SW (E) | 254 | 2 | 322466 182630 |
| 1 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Rhymney Valley Trunk Sewer Sto, Near Beagn Road, Old St Mellons, Cardiff Authority: Natural Resources Wales Catchment Area: River Rhymney Reference: Af3001309 Permit Version: 2 Effective Date: 29th April 2016 Issued Date: 29th April 2016 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Rhymney Status: Varied under EPR 2010 Positional Accuracy: Located by supplier to within 10m | A14SW (E) | 254 | 2 | 322466 182630 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|--|--|------------------------------|---------|------------------|
| 1 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Rhymney Valley Trunk Sewer Sto, Near Beagn Road, Old St Mellons, Cardiff Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: Af3001309 Permit Version: 2 Effective Date: 29th April 2016 Issued Date: 29th April 2016 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Rhymney Status: Effective Positional Accuracy: Located by supplier to within 10m | A14SW (E) | 254 | 2 | 322466 182630 |
| 1 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Rhymney Valley Trunk Sewer Sto, Near Beagn Road, Old St Mellons, Cardiff Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: Af3001309 Permit Version: 2 Effective Date: 29th April 2016 Issued Date: 29th April 2016 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Rhymney Status: Effective Positional Accuracy: Located by supplier to within 10m | A14SW (E) | 254 | 2 | 322466 182630 |
| 1 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Rhymney Valley Trunk Sewer Sto, Near Beagn Road, Old St Mellons, Cardiff Authority: Natural Resources Wales Catchment Area: River Rhymney Reference: AF3001309 Permit Version: 1 Effective Date: 27th February 1967 Issued Date: 27th February 1967 Revocation Date: Not Supplied Discharge Type: Public Sewage: Storm Sewage Overflow Discharge: Freshwater Stream/River Environment: Receiving Water: Rhymney Status: New Consent, by Application (Water Resources Act 1991, Section 88) Positional Accuracy: Located by supplier to within 100m | A14SW (E) | 256 | 2 | 322480 182650 |
| 2 | Discharge Consents Operator: St Johns College Limited Property Type: Domestic Property (Single) Location: St Johns College Sports Pavilion, Began Road Playing Fields, Old St Mellons, Cardiff, South Glamorgan, Cf3 6xl Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: Dp3922xg Permit Version: 2 Effective Date: 2nd January 2018 Issued Date: 12th July 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: River Rhymney Status: Effective Positional Accuracy: Located by supplier to within 10m | A18SE (NE) | 339 | 2 | 322446 183152 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|---------------|
| 2 | Discharge Consents Operator: St Johns College Limited Property Type: Domestic Property (Single) Location: St Johns College Sports Pavilion, Began Road Playing Fields, Old St Mellons, Cardiff, South Glamorgan, Cf3 6xl Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: Dp3922xg Permit Version: 1 Effective Date: 1st January 2018 Issued Date: 29th October 2010 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: River Rhymney Status: Effective Positional Accuracy: Located by supplier to within 10m | A18SE (NE) | 339 | 2 | 322446 183152 |
| 2 | Discharge Consents Operator: St Johns College Limited Property Type: Domestic Property (Single) Location: St Johns College Sports Pavilion, Began Road Playing Fields, Old St Mellons, Cardiff, South Glamorgan, Cf3 6xl Authority: Natural Resources Wales Catchment Area: River Rhymney Reference: Eprdp3922xg Permit Version: 1 Effective Date: 1st January 2018 Issued Date: 29th October 2010 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: River Rhymney Status: New issued under EPR 2010 Positional Accuracy: Located by supplier to within 10m | A18SE (NE) | 339 | 2 | 322446 183152 |
| 3 | Discharge Consents Operator: Blake J Property Type: Domestic Property (Single) Location: Cardiff Llandeyrn Glebe Cottage Authority: Natural Resources Wales Catchment Area: River Rhymney Reference: An0040601 Permit Version: 1 Effective Date: 10th September 1987 Issued Date: 10th September 1987 Revocation Date: 29th April 1993 Discharge Type: Unspecified Discharge: Not Supplied Environment: Receiving Water: Soakaway Status: Consent expired Positional Accuracy: Located by supplier to within 10m | A8SW (S) | 560 | 2 | 322000 182050 |
| 4 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Stormwater Overflows, Nr Began Road, Old St Mellons, Cardiff Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: Ae2017201 Permit Version: 1 Effective Date: 17th October 1963 Issued Date: 17th October 1963 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: River Rhymney Status: Effective Positional Accuracy: Located by supplier to within 10m | A19NW (NE) | 659 | 2 | 322517 183483 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|---------------|
| 4 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Stormwater Overflows, Nr Began Road, Old St Mellons, Cardiff Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: Ae2017201 Permit Version: 1 Effective Date: 17th October 1963 Issued Date: 17th October 1963 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: River Rhymney Status: Effective Positional Accuracy: Located by supplier to within 10m | A19NW (NE) | 659 | 2 | 322517 183483 |
| 5 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Bridge Road, St Mellons, Cardiff, Bridge Rd Sso, St Mellons, Cardiff, Cardiff Cbc, Cf3 6uz Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: An0086101 Permit Version: 2 Effective Date: 8th September 2010 Issued Date: 8th September 2010 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: River Rhymney Status: Effective Positional Accuracy: Located by supplier to within 10m | A9NW (SE) | 695 | 2 | 322630 182130 |
| 5 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Bridge Road, St Mellons, Cardiff, Bridge Rd Sso, St Mellons, Cardiff, Cardiff Cbc, Cf3 6uz Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: An0086101 Permit Version: 2 Effective Date: 8th September 2010 Issued Date: 8th September 2010 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: River Rhymney Status: Effective Positional Accuracy: Located by supplier to within 10m | A9NW (SE) | 695 | 2 | 322630 182130 |
| 5 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Bridge Road, St Mellons, Cardiff, Bridge Rd Sso, St Mellons, Cardiff, Cardiff Cbc, Cf3 6uz Authority: Natural Resources Wales Catchment Area: River Rhymney Reference: AN0086101 Permit Version: 1 Effective Date: 20th October 1989 Issued Date: 20th October 1989 Revocation Date: 7th September 2010 Discharge Type: Public Sewage: Storm Sewage Overflow Discharge: Freshwater Stream/River Environment: Receiving Water: Rhymney Status: New Consent, by Application (Water Resources Act 1991, Section 88) Positional Accuracy: Located by supplier to within 100m | A9NW (SE) | 695 | 2 | 322630 182130 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|--|--|------------------------------|---------|------------------|
| 6 | Discharge Consents Operator: Haygrove Limited Property Type: Not Supplied Location: St Mellons Rhymney Valley Nurseries, Began Road, Old St Mellons, Cardiff, Cf3 6xl Authority: Natural Resources Wales Catchment Area: RHYMNEY R - CONF NANT CYLLA TO CHAPEL WOOD Reference: Af4020601 Permit Version: 1 Effective Date: 12th January 1977 Issued Date: 12th January 1977 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Final/Treated Effluent - Not Water Company Discharge: Freshwater Stream/River Environment: Receiving Water: Groundwater Via Infiltration System Status: Effective Positional Accuracy: Located by supplier to within 10m | A19NW (NE) | 725 | 2 | 322590 183520 |
| 7 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Water Supply Grid Location: Cefn Mably (No. 1) Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: An0211101 Permit Version: 1 Effective Date: 2nd October 1989 Issued Date: 2nd October 1989 Revocation Date: 14th March 1994 Discharge Type: Unspecified Discharge: Not Supplied Environment: Receiving Water: Soakaway Status: Consent expired Positional Accuracy: Located by supplier to within 10m | A17NE (NW) | 805 | 2 | 321660 183540 |
| 8 | Discharge Consents Operator: Dwr Cymru Cyfyngedig Property Type: Water Supply Grid Location: Cefn Mably (No. 2) Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: An0211102 Permit Version: 1 Effective Date: 2nd October 1989 Issued Date: 2nd October 1989 Revocation Date: 14th March 1994 Discharge Type: Unspecified Discharge: Not Supplied Environment: Receiving Water: Soakaway Status: Consent expired Positional Accuracy: Located by supplier to within 10m | A17NE (NW) | 886 | 2 | 321720 183660 |
| 9 | Prosecutions Relating to Controlled Waters Location: Machen & Began Road, Rhymney Valley Trunk Road, Old St. Mellons, CARDIFF, South Glamorgan, CF Prosecution Text: EA Welsh Data 02/09/1999 (Legal Ref: R302), Polluting the River Rhymney with Plc sewage. Offence committed 08/04/1991. Prosecution Act: SAFFA75 s4(1) [2] Hearing Date: 16th March 1992 Verdict: Guilty Fine: 8000 Cost: 21516.6 Positional Accuracy: Manually positioned to the road within the address or location | A14SE (E) | 650 | 4 | 322873 182577 |
| 10 | Local Authority Pollution Prevention and Controls Name: Asda Stores Ltd Location: 8 Dering Road, Cardiff Gate Retail Park, Pontprennau, CARDIFF, South Glamorgan, CF23 8NL Authority: Cardiff Council, Pollution Control Division Permit Reference: PPC/100/1.2 Dated: 26th January 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station Status: Permitted Positional Accuracy: Automatically positioned to the address | A8NW (SW) | 302 | 3 | 321849 182379 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| 11 | Local Authority Pollution Prevention and Controls Name: Cardiff Gate (3053) Service Station Location: Junction 30 M4, North Pentwyn, Marshfield, CARDIFF, South Glamorgan, CF3 2TX Authority: Cardiff Council, Pollution Control Division Permit Reference: PPC/106/1.2 Dated: 11th October 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station Status: Permitted Positional Accuracy: Manually positioned to the address or location | A12NE (W) | 327 | 3 | 321677 182869 |
| 12 | Local Authority Pollution Prevention and Controls Name: B James Skip Hire (Cardiff) Ltd Location: Church Road, Llanederyn, Cardiff, Cf3 9ya Authority: Cardiff Council, Pollution Control Division Permit Reference: PPC/61/3.5 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG3/16 Mobile screening and crushing processes Status: Permitted Positional Accuracy: Manually positioned to the road within the address or location | A8SW (S) | 556 | 3 | 322043 182052 |
| | Nearest Surface Water Feature | A13SW (SW) | 93 | - | 321987 182537 |
| 13 | Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Storm Overflow Location: Michaelstone-Y-Fedw, LLANRUMNEY Authority: Environment Agency, Welsh Region Pollutant: Light Oil Note: Weather Incident Date: 8th April 1991 Incident Reference: 30 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Overflow Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m | A14SW (E) | 299 | 4 | 322500 182600 |
| 14 | Pollution Incidents to Controlled Waters Property Type: Not Given Location: Bagan Farm, Cefn Mably Authority: Environment Agency, Welsh Region Pollutant: Miscellaneous - Fire water / Foam Note: Not Supplied Incident Date: 1st November 1995 Incident Reference: 26569 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m | A19SW (NE) | 317 | 4 | 322450 183120 |
| 15 | Pollution Incidents to Controlled Waters Property Type: Not Given Location: Down Stream Weir At, Bridge Street, ST MELLONS Authority: Environment Agency, Welsh Region Pollutant: Natural Foam Note: Natural Occurrence Incident Date: 22nd April 1997 Incident Reference: 32054 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Natural Causes Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m | A9SW (SE) | 741 | 4 | 322500 182000 |
| 16 | Pollution Incidents to Controlled Waters Property Type: Building Sites Location: Pontprennau Development, CARDIFF Authority: Environment Agency, Welsh Region Pollutant: Cement/Mortar Note: Inadequate Design/Capacity Incident Date: 23rd October 1995 Incident Reference: 26565 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Direct Discharge Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m | A7SE (SW) | 754 | 4 | 321600 182000 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| 17 | Pollution Incidents to Controlled Waters Property Type: Not Given Location: ST MELLONS Authority: Environment Agency, Welsh Region Pollutant: Unknown Note: Natural Occurrence Incident Date: 2nd April 1997 Incident Reference: 32050 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Natural Causes Incident Severity: Category 3 - Minor Incident Positional Accuracy: Unknown | A17NE (NW) | 854 | 4 | 321500 183500 |
| 18 | Pollution Incidents to Controlled Waters Property Type: Water Company Sewage: Surface Water Outfall Location: Pontpennau Development Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: Not Supplied Incident Date: 11th October 1995 Incident Reference: 26563 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m | A7SW (SW) | 887 | 4 | 321400 182000 |
| 18 | Pollution Incidents to Controlled Waters Property Type: Building Sites Location: Pontpennau Development Authority: Environment Agency, Welsh Region Pollutant: Foam/Soap Suds Note: Not Supplied Incident Date: 11th October 1995 Incident Reference: 26564 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Unknown Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m | A7SW (SW) | 890 | 4 | 321400 181995 |
| 19 | Prosecutions Relating to Authorised Processes Location: Pontpennau, CARDIFF, CF23 Prosecution Text: Two Separate Incidents Of Controlled Waste Being Dumped On Dis-Used Land Prosecution Act: Epa90 S33(1)(A) Hearing Date: 28th March 2002 Verdict: Guilty Fine: 500 Costs: 500 Positional Accuracy: Manually positioned to the road within the address or location | A8SW (S) | 666 | 4 | 322001 181944 |
| | River Quality Name: Rhymney GQA Grade: River Quality C Reach: Tidal Limit - Conf.Nant Fawr Estimated Distance (km): 5.6 Flow Rate: Flow less than 10 cumecs Flow Type: River Year: 2000 | A13SE (E) | 108 | 4 | 322331 182692 |
| 20 | Substantiated Pollution Incident Register Authority: Natural Resources Wales Incident Date: 1st June 2018 Incident Reference: 1803024 Water Impact: Category 2 - Significant Incident Air Impact: Category 4 - No Impact Land Impact: Category 4 - No Impact Positional Accuracy: Located by supplier to within 10m Pollutant: Other Pollutant | A9NW (SE) | 432 | 2 | 322479 182346 |
| 21 | Substantiated Pollution Incident Register Authority: Natural Resources Wales Incident Date: 30th April 2001 Incident Reference: 9270 Water Impact: Category 4 - No Impact Air Impact: Category 4 - No Impact Land Impact: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 10m Pollutant: Inert : Other | A8SW (S) | 822 | 2 | 321807 181822 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| 22 | Water Abstractions Operator: Carillion Plc Licence Number: 21/57/12/0103 Permit Version: 2 Location: River Rhymney At Old St Mellons Cardiff Authority: Environment Agency, Welsh Region Abstraction: Construction: Dust Suppression Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 May Authorised End: 31 October Permit Start Date: 10th September 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m | A19SW (NE) | 347 | 4 | 322470 183142 |
| 22 | Water Abstractions Operator: Alfred Mcalpine Plc Licence Number: 21/57/12/0103 Permit Version: 1 Location: River Rhymney At Old St Mellons Cardiff Authority: Environment Agency, Welsh Region Abstraction: Construction: Dust Suppression Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 May Authorised End: 31 October Permit Start Date: 26th June 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m | A19SW (NE) | 347 | 4 | 322470 183142 |
| | Water Abstractions Operator: Mr S Thomas Licence Number: 21/57/12/0088 Permit Version: 100 Location: Storage Lake At Fairwater Farm Authority: Natural Resources Wales Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Storage Lake Authorised Start: 01 March Authorised End: 31 October Permit Start Date: 19th August 1992 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m | A24SE (NE) | 1289 | 2 | 323080 183860 |
| | Water Abstractions Operator: Stanley Thomas Licence Number: 21/57/12/0088 Permit Version: Not Supplied Location: Storage Lake At Fairwater Farm Authority: Natural Resources Wales Abstraction: Golf Courses: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m | A24SE (NE) | 1289 | 2 | 323080 183860 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|------------------|
| | Water Abstractions Operator: Messrs E Richards & Partners Licence Number: 21/57/12/0028 Permit Version: 100 Location: Nant Fawr (Point C) Authority: Natural Resources Wales Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Nant Fawr Authorised Start: 01 April Authorised End: 30 September Permit Start Date: 11th June 1999 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m | A24NW (N) | 1439 | 2 | 322700 184250 |
| | Water Abstractions Operator: Mr S Thomas Licence Number: 21/57/12/0087 Permit Version: 100 Location: River Rhymney At Fairwater Farm Authority: Natural Resources Wales Abstraction: Golf Courses: Transfer Between Sources Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: River Rhymney Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2006 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m | A24SE (NE) | 1462 | 2 | 323080 184080 |
| | Water Abstractions Operator: Stanley Thomas Licence Number: 21/57/12/0087 Permit Version: Not Supplied Location: Transfer From The River Rhymney At Fairwater Farm Authority: Natural Resources Wales Abstraction: Golf Courses: Transfer Between Sources Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m | A24SE (NE) | 1462 | 2 | 323080 184080 |
| | Water Abstractions Operator: Mr S Thomas Licence Number: 21/57/12/0030 Permit Version: 100 Location: Spring Fed Reservoir Authority: Natural Resources Wales Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 March Authorised End: 30 September Permit Start Date: 19th August 1992 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m | A25SE (NE) | 1657 | 2 | 323530 183920 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| | Water Abstractions Operator: Stanley Thomas Licence Number: 21/57/12/0030 Permit Version: Not Supplied Location: Abstraction From Spring Fed Reservoir Authority: Natural Resources Wales Abstraction: General Agriculture: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m | A25SE (NE) | 1657 | 2 | 323530 183920 |
| | Water Abstractions Operator: Jones & Sons Licence Number: 21/57/12/0085 Permit Version: Not Supplied Location: Not Supplied Authority: Natural Resources Wales Abstraction: Impounding Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m | (N) | 1803 | 2 | 322800 184600 |
| | Water Abstractions Operator: Jones & Sons Licence Number: 21/57/12/0085 Permit Version: Not Supplied Location: Not Supplied Authority: Natural Resources Wales Abstraction: Impounding Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Not Supplied Authorised Start: 01 January Authorised End: 31 December Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m | (N) | 1994 | 2 | 322800 184800 |
| | Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Medium Vulnerability Combined Vulnerability: Medium Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: <40% Superficial Patchiness: <90% Superficial Thickness: 3-10m Superficial Recharge: High | A13NW (W) | 0 | 2 | 322000 182757 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| | Groundwater Vulnerability Map Combined Classification: Secondary Superficial Aquifer - Medium Vulnerability Combined Vulnerability: Medium Combined Aquifer: Productive Bedrock Aquifer, Productive Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: >70% Superficial Patchiness: >90% Superficial Thickness: 3-10m Superficial Recharge: High | A13NE (W) | 0 | 2 | 322119 182757 |
| | Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - A | A13NE (W) | 0 | 2 | 322119 182757 |
| | Superficial Aquifer Designations Aquifer Designation: Secondary Aquifer - Undifferentiated | A13NE (W) | 0 | 2 | 322119 182757 |
| | Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied | A13SE (E) | 192 | 2 | 322435 182711 |
| | Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied | A13SE (E) | 201 | 2 | 322448 182729 |
| | Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied | A14SW (E) | 213 | 2 | 322458 182715 |
| | Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models and Fluvial Events Boundary Accuracy: As Supplied | A14SW (E) | 227 | 2 | 322469 182698 |
| | Extreme Flooding from Rivers or Sea without Defences Type: Extent of Extreme Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Events Boundary Accuracy: As Supplied | A14NW (E) | 227 | 2 | 322477 182764 |
| | Flooding from Rivers or Sea without Defences Type: Extent of Flooding from Rivers or Sea without Defences Flood Plain Type: Fluvial Models Boundary Accuracy: As Supplied | A13SE (E) | 192 | 2 | 322435 182711 |
| | Areas Benefiting from Flood Defences None | | | | |
| | Flood Water Storage Areas None | | | | |
| | Flood Defences None | | | | |
| 23 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 151.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A13SW (SW) | 93 | 5 | 321987 182537 |
| 24 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 303.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A13SW (SW) | 164 | 5 | 321912 182514 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| 25 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 11.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A13SW (S) | 200 | 5 | 321992 182415 |
| 26 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 196.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8NW (S) | 208 | 5 | 321997 182406 |
| 27 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 304.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A14SW (E) | 215 | 5 | 322453 182692 |
| 28 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 440.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A14SW (E) | 243 | 5 | 322459 182639 |
| 29 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 85.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A14SW (E) | 243 | 5 | 322459 182639 |
| 30 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 568.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SE (N) | 252 | 5 | 322154 183146 |
| 31 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 6.1 Watercourse Level: Underground Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A14SW (E) | 287 | 5 | 322526 182686 |
| 32 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 126.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A14SW (E) | 292 | 5 | 322532 182688 |
| 33 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 39.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SE (NE) | 305 | 5 | 322384 183154 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| 34 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 365.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A14NW (NE) | 327 | 5 | 322501 183079 |
| 35 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 6.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8NE (S) | 339 | 5 | 322148 182285 |
| 36 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 35.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A18SE (NE) | 339 | 5 | 322420 183171 |
| 37 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 54.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SW (N) | 344 | 5 | 322051 183204 |
| 38 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 81.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8NE (S) | 345 | 5 | 322153 182281 |
| 39 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 85.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SE (NE) | 361 | 5 | 322404 183207 |
| 40 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 341.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A18SE (NE) | 364 | 5 | 322413 183205 |
| 41 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 77.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 2 | A14NW (E) | 365 | 5 | 322612 182880 |
| 42 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 240.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SW (N) | 365 | 5 | 322087 183234 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| 43 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 41.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SW (N) | 369 | 5 | 322069 183234 |
| 44 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 202.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14NW (NE) | 379 | 5 | 322566 183072 |
| 45 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 53.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14SW (E) | 385 | 5 | 322635 182745 |
| 46 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 33.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A14SW (E) | 385 | 5 | 322635 182745 |
| 47 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 248.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19SW (NE) | 386 | 5 | 322527 183138 |
| 48 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 50.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 2 | A14NW (E) | 406 | 5 | 322656 182770 |
| 49 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 196.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A14NW (E) | 406 | 5 | 322656 182770 |
| 50 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 66.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8NE (SE) | 407 | 5 | 322411 182329 |
| 51 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12SE (SW) | 415 | 5 | 321603 182532 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|------------------|
| 52 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 56.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12SE (SW) | 419 | 5 | 321599 182532 |
| 53 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 11.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8NE (S) | 421 | 5 | 322200 182217 |
| 54 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 29.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SE (NE) | 424 | 5 | 322393 183281 |
| 55 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 281.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14SW (E) | 425 | 5 | 322655 182617 |
| 56 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 8.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NE (W) | 429 | 5 | 321576 182882 |
| 57 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 8.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NE (W) | 430 | 5 | 321575 182883 |
| 58 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 185.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8NE (S) | 433 | 5 | 322205 182207 |
| 59 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NE (W) | 435 | 5 | 321569 182878 |
| 60 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 25.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12NE (W) | 438 | 5 | 321566 182878 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| 61 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 26.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 2 | A12NE (W) | 438 | 5 | 321566 182878 |
| 62 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 246.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SW (NW) | 441 | 5 | 321850 183229 |
| 63 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 15.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NE (W) | 442 | 5 | 321556 182863 |
| 64 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 79.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 2 | A12NE (W) | 451 | 5 | 321560 182912 |
| 65 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 145.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SE (N) | 451 | 5 | 322274 183344 |
| 66 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 161.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 2 | A12NE (W) | 454 | 5 | 321578 182979 |
| 67 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 4.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18SE (N) | 456 | 5 | 322274 183344 |
| 68 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 69.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12NE (W) | 457 | 5 | 321542 182869 |
| 69 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 55.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8NE (SE) | 465 | 5 | 322410 182262 |

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| 70 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 7.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12SE (SW) | 473 | 5 | 321546 182517 |
| 71 | OS Water Network Lines Watercourse Form: Lake Watercourse Length: 31.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12SE (SW) | 481 | 5 | 321540 182512 |
| 72 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 12.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NE (W) | 490 | 5 | 321497 182827 |
| 73 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 35.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 2 | A17SE (NW) | 497 | 5 | 321607 183113 |
| 74 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 106.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12NE (W) | 501 | 5 | 321485 182829 |
| 75 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 10.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8NE (SE) | 519 | 5 | 322447 182221 |
| 76 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 109.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A9NW (SE) | 522 | 5 | 322457 182223 |
| 77 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 68.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 2 | A17SE (NW) | 524 | 5 | 321600 183147 |
| 78 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 227.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A17SE (NW) | 561 | 5 | 321613 183214 |

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| 79 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 11.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12NW (W) | 562 | 5 | 321413 182751 |
| 80 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 8.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NW (W) | 564 | 5 | 321412 182753 |
| 81 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 101.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12SW (W) | 565 | 5 | 321410 182746 |
| 82 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12NW (W) | 565 | 5 | 321411 182755 |
| 83 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 183.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NW (W) | 566 | 5 | 321410 182757 |
| 84 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.5 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19SW (NE) | 574 | 5 | 322763 183111 |
| 85 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 41.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19SW (NE) | 577 | 5 | 322767 183111 |
| 86 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 87.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14SE (E) | 579 | 5 | 322828 182734 |
| 87 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 4.5 Watercourse Level: Underground Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A14NE (E) | 581 | 5 | 322829 182863 |

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| 88 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 454.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14SW (SE) | 582 | 5 | 322750 182461 |
| 89 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 23.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwan Catchment Name: Rhymney Primacy: 1 | A14NE (E) | 585 | 5 | 322833 182864 |
| 90 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 5.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14SE (E) | 587 | 5 | 322797 182551 |
| 91 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 297.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14SE (E) | 587 | 5 | 322799 182556 |
| 92 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14NE (E) | 593 | 5 | 322841 182821 |
| 93 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 54.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14NE (E) | 594 | 5 | 322842 182821 |
| 94 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 143.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8SE (S) | 594 | 5 | 322223 182042 |
| 95 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A8NE (SE) | 606 | 5 | 322444 182123 |
| 96 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 161.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8NE (SE) | 606 | 5 | 322444 182123 |

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| 97 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 170.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwan Catchment Name: Rhymney Primacy: 1 | A14NE (E) | 607 | 5 | 322855 182874 |
| 98 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 209.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A8NE (SE) | 609 | 5 | 322444 182120 |
| 99 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 5.7 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19SW (NE) | 613 | 5 | 322771 183183 |
| 100 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 28.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19SW (NE) | 619 | 5 | 322777 183184 |
| 101 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 182.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12SW (W) | 628 | 5 | 321348 182665 |
| 102 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 263.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 638 | 5 | 322577 183426 |
| 103 | OS Water Network Lines Watercourse Form: Lake Watercourse Length: 52.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 638 | 5 | 322575 183428 |
| 104 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 10.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A9NW (SE) | 649 | 5 | 322602 182167 |
| 105 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 4.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A9NW (SE) | 650 | 5 | 322608 182170 |

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| 106 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.5 Watercourse Level: Underground Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A14NE (E) | 672 | 5 | 322895 183035 |
| 107 | OS Water Network Lines Watercourse Form: Lake Watercourse Length: 72.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 672 | 5 | 322563 183474 |
| 108 | OS Water Network Lines Watercourse Form: Lake Watercourse Length: 25.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 672 | 5 | 322563 183474 |
| 109 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 49.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A14NE (E) | 674 | 5 | 322896 183038 |
| 110 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 50.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 681 | 5 | 322509 183511 |
| 111 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 110.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A17SE (NW) | 696 | 5 | 321635 183400 |
| 112 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 70.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A14NE (E) | 703 | 5 | 322912 183085 |
| 113 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 178.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12SW (W) | 707 | 5 | 321305 182490 |
| 114 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 47.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontpennau Catchment Name: Rhymney Primacy: 1 | A12SW (W) | 707 | 5 | 321305 182490 |

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| 115 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 73.6 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NW (W) | 708 | 5 | 321287 182888 |
| 116 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 8.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8SW (S) | 718 | 5 | 322027 181891 |
| 117 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 196.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A17SE (NW) | 720 | 5 | 321556 183374 |
| 118 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.2 Watercourse Level: Underground Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12SW (W) | 724 | 5 | 321305 182443 |
| 119 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 13.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12SW (W) | 725 | 5 | 321304 182441 |
| 120 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 726 | 5 | 322507 183561 |
| 121 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 534.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 726 | 5 | 322507 183561 |
| 122 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 3.6 Watercourse Level: Underground Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12SW (W) | 728 | 5 | 321306 182428 |
| 123 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 107.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 729 | 5 | 322508 183564 |

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| 124 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 7.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 729 | 5 | 322508 183564 |
| 125 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 89.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A12SW (W) | 730 | 5 | 321306 182425 |
| 126 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 32.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 731 | 5 | 322515 183563 |
| 127 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 350.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A8SE (S) | 734 | 5 | 322238 181900 |
| 128 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 191.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A8SE (S) | 734 | 5 | 322238 181900 |
| 129 | OS Water Network Lines Watercourse Form: Lake Watercourse Length: 77.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 734 | 5 | 322546 183552 |
| 130 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 141.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14NE (E) | 743 | 5 | 322956 183077 |
| 131 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 14.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A19SE (NE) | 749 | 5 | 322937 183150 |
| 132 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 32.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19SE (NE) | 749 | 5 | 322937 183150 |

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| 133 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 67.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A19SE (NE) | 757 | 5 | 322940 183165 |
| 134 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 121.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NW (W) | 760 | 5 | 321251 182952 |
| 135 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 461.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19SE (NE) | 780 | 5 | 322969 183154 |
| 136 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 396.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Mwlan Catchment Name: Rhymney Primacy: 1 | A19SE (NE) | 793 | 5 | 322949 183232 |
| 137 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 79.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 795 | 5 | 321259 182370 |
| 138 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 16.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A8SE (S) | 796 | 5 | 322439 181916 |
| 139 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 6.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8SE (S) | 796 | 5 | 322439 181916 |
| 140 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 166.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 797 | 5 | 321268 182349 |
| 141 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 84.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8SE (S) | 800 | 5 | 322427 181905 |

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| 142 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 19.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8SE (S) | 801 | 5 | 322444 181913 |
| 143 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 224.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A9SW (S) | 811 | 5 | 322463 181910 |
| 144 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 37.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18NW (N) | 813 | 5 | 322096 183694 |
| 145 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7NW (W) | 823 | 5 | 321217 182395 |
| 146 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 53.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7NW (W) | 825 | 5 | 321216 182395 |
| 147 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 123.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18NW (N) | 829 | 5 | 321926 183672 |
| 148 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 267.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 831 | 5 | 322575 183645 |
| 149 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 228.2 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NW (NE) | 831 | 5 | 322575 183645 |
| 150 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 23.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A12NW (W) | 832 | 5 | 321206 183061 |

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| 151 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 50.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18NW (N) | 835 | 5 | 322106 183717 |
| 152 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 149.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18NW (N) | 836 | 5 | 322014 183700 |
| 153 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 63.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18NW (N) | 836 | 5 | 322014 183700 |
| 154 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 43.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8SW (S) | 838 | 5 | 322067 181771 |
| 155 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 54.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14SE (E) | 842 | 5 | 323063 182545 |
| 156 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 52.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 2 | A14SE (E) | 843 | 5 | 323063 182542 |
| 157 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 176.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A18NW (N) | 844 | 5 | 322073 183721 |
| 158 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 21.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8SW (S) | 854 | 5 | 321923 181763 |
| 159 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 488.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Afon Rhymni Catchment Name: Rhymney Primacy: 1 | A8SW (S) | 854 | 5 | 321923 181763 |

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| 160 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 74.4 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NE (NE) | 861 | 5 | 322806 183531 |
| 161 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 54.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7SW (SW) | 862 | 5 | 321398 182038 |
| 162 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 17.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A8SW (S) | 870 | 5 | 322038 181739 |
| 163 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 159.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 872 | 5 | 321256 182222 |
| 164 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 1.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 873 | 5 | 321256 182220 |
| 165 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 6.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 874 | 5 | 321255 182219 |
| 166 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 41.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 874 | 5 | 321255 182219 |
| 167 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 100.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A17NE (NW) | 874 | 5 | 321553 183558 |
| 168 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 114.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A17NE (NW) | 874 | 5 | 321553 183558 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| 169 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 326.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A14SE (E) | 881 | 5 | 323109 182567 |
| 170 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 260.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A3NW (S) | 883 | 5 | 322026 181726 |
| 171 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 19.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 884 | 5 | 321267 182184 |
| 172 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 2.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 899 | 5 | 321260 182166 |
| 173 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 125.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 899 | 5 | 321260 182166 |
| 174 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 23.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7NW (SW) | 901 | 5 | 321258 182167 |
| 175 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 131.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A7SW (SW) | 903 | 5 | 321358 182023 |
| 176 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 340.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Nant Pontprennau Catchment Name: Rhymney Primacy: 1 | A7SW (SW) | 916 | 5 | 321360 182001 |
| 177 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 61.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NE (NE) | 930 | 5 | 322873 183563 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| 178 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 154.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A23SE (N) | 934 | 5 | 322310 183821 |
| 179 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 37.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A15NW (E) | 941 | 5 | 323163 183069 |
| 180 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 92.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A7SW (SW) | 950 | 5 | 321277 182050 |
| 181 | OS Water Network Lines Watercourse Form: Lake Watercourse Length: 28.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A23SE (N) | 959 | 5 | 322282 183847 |
| 182 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 88.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A23SE (N) | 982 | 5 | 322267 183871 |
| 183 | OS Water Network Lines Watercourse Form: Inland river Watercourse Length: 80.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Rhymney Primacy: 1 | A19NE (NE) | 991 | 5 | 322908 183614 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|---------------|
| 184 | Historical Landfill Sites Licence Holder: Not Supplied Location: Cardiff Name: St Julians Farm Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15239 First Input Date: Not Supplied Last Input Date: 31st December 1990 Specified Waste: Deposited Waste included Industrial and Household Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6815/0117 BGS Ref: Not Supplied Other Ref: Not Supplied | A13NE (NE) | 123 | 2 | 322341 182952 |
| 185 | Historical Landfill Sites Licence Holder: Basil James Location: Church Farm, Church Road, Llanedeyrn Name: BJ Skips Phase 2 Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD15197 First Input Date: 31st December 1981 Last Input Date: 1st April 1986 Specified Waste: Deposited Waste included Inert, Commercial and Household Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6815/0009 BGS Ref: Not Supplied Other Ref: 1/81 | A8NE (S) | 545 | 2 | 322221 182091 |
| 186 | Historical Landfill Sites Licence Holder: Basil James Location: Church Farm, Church Road, Llanedeyrn Name: BJ Skips Phase 1 Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD14134 First Input Date: 27th January 1978 Last Input Date: 1st August 1978 Specified Waste: Deposited Waste included Inert, Commercial and Household Waste Type: EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: 6815/0008 BGS Ref: Not Supplied Other Ref: 6/77 | A8SW (S) | 685 | 2 | 322003 181925 |
| | Local Authority Landfill Coverage Name: Cardiff Council - Has no landfill data to supply | | 0 | 6 | 322119 182757 |
| | Local Authority Landfill Coverage Name: Newport County Borough Council - Has no landfill data to supply | | 638 | 7 | 322575 183427 |
| | Local Authority Landfill Coverage Name: Caerphilly County Borough Council - Has supplied landfill data | | 727 | 8 | 322508 183561 |
| 187 | Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964 | A17SE (NW) | 526 | - | 321657 183207 |
| 188 | Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964 | A17SE (NW) | 527 | - | 321602 183153 |
| 189 | Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964 | A17SE (NW) | 535 | - | 321602 183166 |
| 190 | Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964 | A17SE (NW) | 535 | - | 321718 183261 |
| 191 | Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964 | A17SE (NW) | 561 | - | 321616 183216 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|---------------|
| 192 | Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1901 | A17SE (NW) | 608 | - | 321651 183305 |
| 193 | Potentially Infilled Land (Water) Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1964 | A19SE (NE) | 962 | - | 323105 183297 |
| 194 | Registered Landfill Sites Licence Holder: B James Licence Reference: 1/81 (6/77) Site Location: Church Farm, Church Road, Llanedeyrn, Cardiff, South Glamorgan Licence Easting: 322100 Licence Northing: 181950 Operator Location: As Site Address Authority: Environment Agency Wales, South East Area Site Category: Landfill Max Input Rate: Undefined Waste Source: No known restriction on source of waste Restrictions: Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st January 1978 Preceded By: Not Given Licence: Superseded By: Not Given Licence: Positional Accuracy: Manually positioned to the address or location Boundary Accuracy: Not Applicable Authorised Waste: Construction And Demolition Wastes Excavated Natural Materials \$ Prohibited Waste: Notifiable Wastes | A8SW (S) | 661 | 4 | 322100 181950 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
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| | BGS 1:625,000 Solid Geology Description: Pridoli Rocks (Undifferentiated) | A13NE (W) | 0 | 1 | 322119 182757 |
| | BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 60 - 90 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg | A13NE (W) | 0 | 1 | 322119 182757 |
| | BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: <15 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 15 - 30 mg/kg | A13NE (E) | 61 | 1 | 322313 182779 |
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 322240, 182750 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 11.40 mg/kg Cadmium Measured Concentration: 0.20 mg/kg Chromium Measured Concentration: 70.30 mg/kg Lead Measured Concentration: 44.80 mg/kg Nickel Measured Concentration: 22.80 mg/kg | A13NE (E) | 9 | 1 | 322240 182750 |
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 321740, 182760 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 13.20 mg/kg Cadmium Measured Concentration: 0.40 mg/kg Chromium Measured Concentration: 67.80 mg/kg Lead Measured Concentration: 52.40 mg/kg Nickel Measured Concentration: 21.00 mg/kg | A12NE (W) | 238 | 1 | 321740 182760 |
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 322250, 182240 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured Concentration: 10.70 mg/kg Cadmium Measured Concentration: 0.20 mg/kg Chromium Measured Concentration: 72.30 mg/kg Lead Measured Concentration: 54.80 mg/kg Nickel Measured Concentration: 25.20 mg/kg | A8NE (S) | 421 | 1 | 322250 182240 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|--|--|------------------------------|---------|---------------|
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 321790, 182240 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 12.00 mg/kg Concentration: Cadmium Measured 0.30 mg/kg Concentration: Chromium Measured 69.00 mg/kg Concentration: Lead Measured 56.00 mg/kg Concentration: Nickel Measured 19.20 mg/kg Concentration: | A8NW (SW) | 448 | 1 | 321790 182240 |
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 322770, 182730 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 10.40 mg/kg Concentration: Cadmium Measured 0.60 mg/kg Concentration: Chromium Measured 65.90 mg/kg Concentration: Lead Measured 179.10 mg/kg Concentration: Nickel Measured 25.40 mg/kg Concentration: | A14SW (E) | 521 | 1 | 322770 182730 |
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 322710, 182260 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 13.80 mg/kg Concentration: Cadmium Measured 0.60 mg/kg Concentration: Chromium Measured 73.30 mg/kg Concentration: Lead Measured 63.80 mg/kg Concentration: Nickel Measured 20.50 mg/kg Concentration: | A9NW (SE) | 657 | 1 | 322710 182260 |
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 321260, 182740 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 12.40 mg/kg Concentration: Cadmium Measured 0.30 mg/kg Concentration: Chromium Measured 73.10 mg/kg Concentration: Lead Measured 48.00 mg/kg Concentration: Nickel Measured 24.60 mg/kg Concentration: | A12SW (W) | 715 | 1 | 321260 182740 |
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 322260, 181820 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 12.30 mg/kg Concentration: Cadmium Measured 0.10 mg/kg Concentration: Chromium Measured 64.00 mg/kg Concentration: Lead Measured 63.40 mg/kg Concentration: Nickel Measured 24.70 mg/kg Concentration: | A8SE (S) | 817 | 1 | 322260 181820 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|------------------|
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 321250, 182250 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 15.30 mg/kg Concentration: Cadmium Measured 0.90 mg/kg Concentration: Chromium Measured 55.00 mg/kg Concentration: Lead Measured 73.00 mg/kg Concentration: Nickel Measured 19.30 mg/kg Concentration: | A7NW (SW) | 862 | 1 | 321250 182250 |
| | BGS Measured Urban Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Grid: 321700, 181800 Soil Sample Type: Topsoil Sample Area: Cardiff Arsenic Measured 12.90 mg/kg Concentration: Cadmium Measured 0.10 mg/kg Concentration: Chromium Measured 62.10 mg/kg Concentration: Lead Measured 59.90 mg/kg Concentration: Nickel Measured 21.30 mg/kg Concentration: | A7SE (SW) | 879 | 1 | 321700 181800 |
| | BGS Urban Soil Chemistry Averages Source: British Geological Survey, National Geoscience Information Service Sample Area: Cardiff Count Id: 506 Arsenic Minimum 6.00 mg/kg Concentration: Arsenic Average 18.00 mg/kg Concentration: Arsenic Maximum 149.00 mg/kg Concentration: Cadmium Minimum 0.10 mg/kg Concentration: Cadmium Average 0.90 mg/kg Concentration: Cadmium Maximum 100.60 mg/kg Concentration: Chromium Minimum 28.00 mg/kg Concentration: Chromium Average 86.00 mg/kg Concentration: Chromium Maximum 2933.00 mg/kg Concentration: Lead Minimum 20.00 mg/kg Concentration: Lead Average 190.00 mg/kg Concentration: Lead Maximum 8158.00 mg/kg Concentration: Nickel Minimum 8.00 mg/kg Concentration: Nickel Average 35.00 mg/kg Concentration: Nickel Maximum 482.00 mg/kg Concentration: | A13NE (W) | 0 | 1 | 322119 182757 |
| | Coal Mining Affected Areas In an area that might not be affected by coal mining | | | | |
| | Non Coal Mining Areas of Great Britain Risk: Highly Unlikely Source: British Geological Survey, National Geoscience Information Service | A13NE (W) | 0 | 1 | 322119 182757 |
| | Non Coal Mining Areas of Great Britain Risk: Rare Source: British Geological Survey, National Geoscience Information Service | A12NE (W) | 245 | 1 | 321763 182879 |
| | Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service | A13NE (W) | 0 | 1 | 322119 182757 |

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| | Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service | A13SE (E) | 190 | 1 | 322423 182685 |
| | Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service | A13NE (W) | 0 | 1 | 322119 182757 |
| | Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service | A13SE (E) | 190 | 1 | 322423 182685 |
| | Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service | A13NE (W) | 0 | 1 | 322119 182757 |
| | Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service | A13SE (SE) | 0 | 1 | 322215 182689 |
| | Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service | A13NE (W) | 0 | 1 | 322119 182757 |
| | Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service | A13NE (NE) | 176 | 1 | 322305 183050 |
| | Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service | A13SW (S) | 182 | 1 | 322050 182426 |
| | Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service | A13SE (E) | 190 | 1 | 322423 182685 |
| | Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service | A8NW (S) | 226 | 1 | 322007 182385 |
| | Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service | A13NE (W) | 0 | 1 | 322119 182757 |
| | Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service | A13SE (E) | 190 | 1 | 322423 182685 |
| | Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service | A13NE (W) | 0 | 1 | 322119 182757 |
| | Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service | A13NE (E) | 61 | 1 | 322313 182779 |
| | Radon Potential - Radon Affected Areas 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). Source: British Geological Survey, National Geoscience Information Service | A13NE (W) | 0 | 1 | 322119 182757 |
| | Radon Potential - Radon Affected Areas Affected Area: The property is an Intermediate probability radon area (3 to 5% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service | A13NE (NE) | 0 | 1 | 322224 182825 |
| | Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service | A13NE (W) | 0 | 1 | 322119 182757 |
| | Radon Potential - Radon Protection Measures Protection Measure: Basic radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service | A13NE (NE) | 0 | 1 | 322224 182825 |

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| 195 | Contemporary Trade Directory Entries Name: Welcome Break Ltd Location: Malthouse Avenue, Pontprennau, Cardiff, CF23 8RA Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address | A12NE (W) | 237 | - | 321764 182840 |
| 195 | Contemporary Trade Directory Entries Name: Shell Service Station Location: Malthouse Avenue, Pontprennau, Cardiff, CF23 8RA Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address | A12NE (W) | 248 | - | 321752 182842 |
| 196 | Contemporary Trade Directory Entries Name: Asda Petrol Location: 8, Dering Road, Cardiff Gate Retail Park, Pontprennau, Cardiff, CF23 8NL Classification: Petrol Filling Stations Status: Active Positional Accuracy: Automatically positioned to the address | A8NW (SW) | 302 | - | 321849 182379 |
| 197 | Contemporary Trade Directory Entries Name: S C S Location: 2, Dering Road, Cardiff Gate Retail Park, Pontprennau, Cardiff, CF23 8NL Classification: Furniture Manufacturers - Home & Office Status: Inactive Positional Accuracy: Automatically positioned to the address | A12SE (SW) | 342 | - | 321689 182528 |
| 198 | Contemporary Trade Directory Entries Name: Shell Service Station Location: M4 J30, Pontprennau, Cardiff, South Glamorgan, CF23 8RA Classification: Petrol Filling Stations Status: Inactive Positional Accuracy: Manually positioned to the address or location | A12NE (W) | 347 | - | 321656 182868 |
| 198 | Contemporary Trade Directory Entries Name: Shell Cardiff Gate Motorway Services Location: M4 J30, North Pentwyn, Pontprennau, Cardiff, South Glamorgan, CF23 8RA Classification: Petrol Filling Stations Status: Inactive Positional Accuracy: Manually positioned to the address or location | A12NE (W) | 348 | - | 321656 182869 |
| 199 | Contemporary Trade Directory Entries Name: Uk Cleaning Solutions Ltd Location: Malthouse Ave, Cardiff Gate Business Pk/Pontp, Cardiff, South Glamorgan, CF23 8RU Classification: Commercial Cleaning Services Status: Active Positional Accuracy: Manually positioned within the geographical locality | A12NE (W) | 454 | - | 321560 182928 |
| 199 | Contemporary Trade Directory Entries Name: Newport Chemicals Location: Regus House, Malthouse Avenue, Cardiff Gate Business Park, Pontprennau, Cardiff, South Glamorgan, CF23 8RU Classification: Chemicals - Distributors & Wholesalers Status: Inactive Positional Accuracy: Manually positioned to the address or location | A12NE (W) | 454 | - | 321560 182928 |
| 199 | Contemporary Trade Directory Entries Name: Canon Business Solutions Location: Regus House, Malthouse Avenue, Cardiff Gate Business Park, Pontprennau, Cardiff, South Glamorgan, CF23 8RU Classification: Office Furniture & Equipment Status: Inactive Positional Accuracy: Manually positioned to the address or location | A12NE (W) | 454 | - | 321560 182928 |
| 199 | Contemporary Trade Directory Entries Name: Clean Wales Ltd Location: Regus House Malthouse Avenue, Pontprennau, Cardiff, South Glamorgan, CF23 8RU Classification: Commercial Cleaning Services Status: Active Positional Accuracy: Automatically positioned to the address | A12NE (W) | 455 | - | 321559 182928 |
| 199 | Contemporary Trade Directory Entries Name: Athena Forensics Location: Regus House, Malthouse Avenue, Pontprennau, Cardiff, CF23 8RU Classification: Laboratories Status: Inactive Positional Accuracy: Automatically positioned to the address | A12NE (W) | 455 | - | 321560 182928 |

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| 199 | Contemporary Trade Directory Entries Name: Suppression Solutions Location: Regus House, Malthouse Avenue, Cardiff, CF23 8RU Classification: Firefighting Equipment Status: Active Positional Accuracy: Automatically positioned to the address | A12NE (W) | 455 | - | 321559 182928 |
| 199 | Contemporary Trade Directory Entries Name: Elite Motor Cars Location: Regus House, Malthouse Avenue, Pontprennau, Cardiff, South Glamorgan, CF23 8RU Classification: Car Dealers - Used Status: Active Positional Accuracy: Automatically positioned to the address | A12NE (W) | 455 | - | 321559 182928 |
| 199 | Contemporary Trade Directory Entries Name: Stairlifts Cardiff - Halton Stairlifts Ltd Location: Regus House, Falcon Drive, Cardiff, South Glamorgan, CF10 4RU Classification: Stairlifts - Manufacturers & Installers Status: Active Positional Accuracy: Automatically positioned to the address | A12NE (W) | 455 | - | 321559 182928 |
| 199 | Contemporary Trade Directory Entries Name: Antalis-Mcnaughton Print Wales Location: Regus House, Malthouse Avenue, Pontprennau, Cardiff, CF23 8RU Classification: Packaging Materials Manufacturers & Suppliers Status: Inactive Positional Accuracy: Automatically positioned to the address | A12NE (W) | 455 | - | 321560 182928 |
| 200 | Contemporary Trade Directory Entries Name: The End Of Tenancy Cleaning Co Location: 26, Burwell Close, Pontprennau, Cardiff, CF23 8NS Classification: Cleaning Services - Domestic Status: Active Positional Accuracy: Automatically positioned to the address | A12SE (SW) | 463 | - | 321620 182413 |
| 200 | Contemporary Trade Directory Entries Name: Cleaner Carpets Location: 26, Burwell Close, Pontprennau, Cardiff, CF23 8NS Classification: Carpet, Curtain & Upholstery Cleaners Status: Active Positional Accuracy: Automatically positioned to the address | A12SE (SW) | 464 | - | 321619 182412 |
| 201 | Contemporary Trade Directory Entries Name: Ibka (Uk) Ltd Location: Raglan House, Greenwood Close, Cardiff Gate Business Park, Pontprennau, Cardiff, CF23 8RD Classification: Commercial Cleaning Services Status: Inactive Positional Accuracy: Automatically positioned to the address | A12NE (W) | 467 | - | 321509 182756 |
| 201 | Contemporary Trade Directory Entries Name: Sinclair Mercedes Benz Of Cardiff Gate & Newport Location: Cardiff Gate Business Park, Pontprennau, Cardiff, South Glamorgan, CF23 8RD Classification: Car Dealers Status: Active Positional Accuracy: Automatically positioned to the address | A12NE (W) | 468 | - | 321508 182756 |
| 202 | Contemporary Trade Directory Entries Name: South Wales Filters Location: 82, Lascelles Drive, Pontprennau, Cardiff, CF23 8NQ Classification: Filter Manufacturers & Suppliers Status: Inactive Positional Accuracy: Automatically positioned to the address | A8NW (SW) | 484 | - | 321780 182203 |
| 203 | Contemporary Trade Directory Entries Name: Cowbridge Landscapes Location: Maes-y-Bryn Cottage, Maes-y-Bryn Road, Pontprennau, Cardiff, CF23 8LZ Classification: Sand, Gravel & Other Aggregates Status: Inactive Positional Accuracy: Automatically positioned to the address | A17SE (NW) | 504 | - | 321752 183246 |
| 203 | Contemporary Trade Directory Entries Name: Manor Brick Centres Location: Maes-Y-Bryn Road, Pontprennau, Cardiff, South Glamorgan, CF23 8LZ Classification: Builders' Merchants Status: Inactive Positional Accuracy: Manually positioned within the geographical locality | A17SE (NW) | 531 | - | 321742 183272 |

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| 203 | Contemporary Trade Directory Entries Name: Manor Brick Location: Maes-Y-Bryn Road, Pontprennau, Cardiff, South Glamorgan, CF23 8LZ Classification: Brick Manufacturers Status: Inactive Positional Accuracy: Manually positioned within the geographical locality | A17SE (NW) | 532 | - | 321741 183272 |
| 204 | Contemporary Trade Directory Entries Name: John Edwards Domestic Location: 36, Cork Drive, Pontprennau, Cardiff, CF23 8PU Classification: Domestic Appliances - Servicing, Repairs & Parts Status: Inactive Positional Accuracy: Automatically positioned to the address | A12SE (W) | 555 | - | 321441 182565 |
| 205 | Contemporary Trade Directory Entries Name: Coca-Cola Enterprises Ltd Location: Ty Coch, Copse Walk, Cardiff Gate Business Park, Cardiff, South Glamorgan, CF23 8GS Classification: Soft Drinks - Manufacturers Status: Inactive Positional Accuracy: Automatically positioned to the address | A12NE (W) | 570 | - | 321452 182970 |
| 206 | Contemporary Trade Directory Entries Name: Cardiff Audi Location: Wagtail Close, Pontprennau, Cardiff, CF23 8RT Classification: Car Dealers Status: Active Positional Accuracy: Automatically positioned to the address | A17SE (NW) | 586 | - | 321512 183134 |
| 207 | Contemporary Trade Directory Entries Name: Cardiff Mower Services Ltd Location: The Dutch Garden Centre, Maes-y-Bryn Road, Pontprennau, Cardiff, CF23 8LZ Classification: Lawnmowers & Garden Machinery - Sales & Service Status: Active Positional Accuracy: Automatically positioned to the address | A17SE (NW) | 603 | - | 321690 183324 |
| 208 | Contemporary Trade Directory Entries Name: C-Through Cleaning Location: 11, Idencroft Close, Pontprennau, Cardiff, CF23 8PH Classification: Cleaning Services - Domestic Status: Active Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 616 | - | 321498 182320 |
| 209 | Contemporary Trade Directory Entries Name: First Platinum Chauffeurs Location: 9, Baltimore Close, Pontprennau, Cardiff, CF23 8PX Classification: Car Engine Tuning & Diagnostic Services Status: Active Positional Accuracy: Automatically positioned to the address | A12SW (W) | 648 | - | 321362 182507 |
| 210 | Contemporary Trade Directory Entries Name: Kalamazoo Security Print Ltd Location: Prennau House, Copse Walk, Cardiff Gate Business Park, Cardiff, CF23 8XH Classification: Printers Status: Inactive Positional Accuracy: Automatically positioned to the address | A12NW (W) | 657 | - | 321336 182876 |
| 211 | Contemporary Trade Directory Entries Name: Sinclair Location: Cardiff, CF23 8RS Classification: Car Dealers Status: Inactive Positional Accuracy: Automatically positioned to the address | A12NW (NW) | 687 | - | 321366 183077 |
| 212 | Contemporary Trade Directory Entries Name: S G Mercedes Cardiff Location: Mulberry Drive, Pontprennau, Cardiff, South Glamorgan, CF23 8RX Classification: Car Dealers Status: Active Positional Accuracy: Manually positioned to the address or location | A17SW (NW) | 689 | - | 321397 183144 |
| 213 | Contemporary Trade Directory Entries Name: Keen To Kleen Location: 15, Barnfield Close, Pontprennau, Cardiff, CF23 8LN Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address | A7NE (SW) | 697 | - | 321502 182172 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|--|--|------------------------------|---------|------------------|
| 214 | Contemporary Trade Directory Entries Name: Mitie Cleaning Environmnetal Services Location: 3 Oak Tree Court, Mulberry Drive, Pontprennau, Cardiff, South Glamorgan, CF23 8RS Classification: Commercial Cleaning Services Status: Inactive Positional Accuracy: Automatically positioned to the address | A12NW (W) | 708 | - | 321326 183030 |
| 215 | Contemporary Trade Directory Entries Name: Molson Coors Location: Copse Walk, Pontprennau, Cardiff, CF23 8BB Classification: Brewers Status: Active Positional Accuracy: Automatically positioned to the address | A12NW (W) | 715 | - | 321287 182918 |
| 216 | Contemporary Trade Directory Entries Name: A V M Location: Woodlands Cottage, Began Road, Old St. Mellons, Cardiff, CF3 6XJ Classification: Garage Services Status: Inactive Positional Accuracy: Automatically positioned to the address | A14NE (E) | 725 | - | 322949 183035 |
| 217 | Contemporary Trade Directory Entries Name: Mercedes Benz Of Cardiff & Newport Location: Mulberry Drive, Pontprennau, Cardiff, South Glamorgan, CF23 8RS Classification: Car Dealers Status: Active Positional Accuracy: Manually positioned within the geographical locality | A12NW (W) | 730 | - | 321300 183020 |
| 217 | Contemporary Trade Directory Entries Name: Mitie Technical Facilities Management Ltd Location: Oak Tree Court, Mulberry Drive, Pontprennau, Cardiff, CF23 8RS Classification: Electrical Engineers Status: Active Positional Accuracy: Automatically positioned to the address | A12NW (W) | 739 | - | 321282 182989 |
| 218 | Contemporary Trade Directory Entries Name: J P R Contracting Ltd Location: 53, Bronte Crescent, Llanrumney, Cardiff, CF3 5PJ Classification: Domestic Appliances - Servicing, Repairs & Parts Status: Inactive Positional Accuracy: Automatically positioned to the address | A8SE (S) | 817 | - | 322194 181805 |
| 219 | Contemporary Trade Directory Entries Name: K C Cleaning Services Location: 41, Clonakilty Way, Pontprennau, Cardiff, CF23 8PR Classification: Cleaning Services - Domestic Status: Inactive Positional Accuracy: Automatically positioned to the address | A12SW (W) | 819 | - | 321163 182605 |
| 220 | Contemporary Trade Directory Entries Name: Icom Works Ltd Location: Unit 8 Ash Tree Court Woodsy Close, Cardiff Gate Business Gate, Pontprennau, Cardiff, South Glamorgan, CF23 8RW Classification: Printers Status: Active Positional Accuracy: Automatically positioned to the address | A17SW (W) | 918 | - | 321131 183108 |
| 221 | Contemporary Trade Directory Entries Name: Royal Pharmaceutical Society Of Great Britain Location: 2, Ash Tree Court, Woodsy Close, Cardiff Gate Business Park, Pontprennau, Cardiff, South Glamorgan, CF23 8RW Classification: Pharmaceutical Manufacturers & Distributors Status: Inactive Positional Accuracy: Automatically positioned to the address | A11NE (W) | 933 | - | 321095 183040 |
| 222 | Contemporary Trade Directory Entries Name: S S E Location: Pontprennau, Cardiff, South Glamorgan, CF23 8AU Classification: Gas Companies Status: Inactive Positional Accuracy: Manually positioned within the geographical locality | A11NE (W) | 987 | - | 320988 182757 |
| 223 | Contemporary Trade Directory Entries Name: Gardners Location: The Avenue Industrial Estate, Croescadarn Close, Cardiff, CF23 8HE Classification: Printers Status: Active Positional Accuracy: Automatically positioned to the address | A7SW (SW) | 999 | - | 321334 181907 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|--|--|------------------------------|---------|---------------|
| 224 | Fuel Station Entries Name: Asda Pentwyn Location: 8, Dering Road , Pentwyn , Cardiff, Cardiff, CF23 8NL Brand: ASDA Premises Type: Hypermarket Status: Open Positional Accuracy: Manually positioned to the address or location | A12SE (SW) | 344 | - | 321737 182450 |
| 225 | Fuel Station Entries Name: M4 Cardiff Gate Motorway Service Area Location: M4 J30 A4232, Cardiff Gate , Cardiff, Cardiff, CF23 8RA Brand: Shell Premises Type: Service Area Status: Open Positional Accuracy: Manually positioned to the address or location | A12NE (W) | 347 | - | 321656 182868 |
| 226 | Points of Interest - Commercial Services Name: M4 Cardiff Gate Motorway Service Area Location: M4 J30, A4232, Cardiff Gate, Cardiff, CF23 8RA Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location | A12NE (W) | 349 | 9 | 321658 182884 |
| 226 | Points of Interest - Commercial Services Name: Shell Car Wash Location: Shell Cardiff Gate, Malthouse Avenue, Cardiff, CF23 8RA Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location | A12NE (W) | 349 | 9 | 321655 182869 |
| 226 | Points of Interest - Commercial Services Name: Car Wash Location: M4 J30, A4232, Cardiff Gate, Cardiff, South Glamorgan, CF23 8RA Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location | A12NE (W) | 354 | 9 | 321650 182870 |
| 227 | Points of Interest - Manufacturing and Production Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location | A8NE (SE) | 386 | 9 | 322366 182329 |
| 227 | Points of Interest - Manufacturing and Production Name: Rhys Edwards Location: Bridge Farm, Old St. Mellons, Cardiff, CF3 6YJ Category: Farming Class Code: Arable Farming Positional Accuracy: Positioned to address or location | A8NE (SE) | 432 | 9 | 322376 182283 |
| 227 | Points of Interest - Manufacturing and Production Name: W R Jones & Sons Location: Bridge Farm, Michaelston-y-Fedw, Cardiff, CF3 6XT Category: Farming Class Code: Livestock Farming Positional Accuracy: Positioned to address or location | A8NE (SE) | 432 | 9 | 322377 182284 |
| 228 | Points of Interest - Manufacturing and Production Name: Regus Location: Malthouse Avenue, Cardiff Gate Business Park, Pontprennau, Cardiff, CF23 8RU Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to address or location | A12NE (W) | 454 | 9 | 321560 182928 |
| 228 | Points of Interest - Manufacturing and Production Name: Regus Location: Regus House, Malthouse Avenue, Cardiff Gate Business Park, Pontprennau, Cardiff, CF23 8RU Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to address or location | A12NE (W) | 455 | 9 | 321560 182928 |
| 228 | Points of Interest - Manufacturing and Production Name: Regus House Location: Regus House, Malthouse Avenue, Cardiff Gate Business Park, Pontprennau, Cardiff, CF23 8RU Category: Industrial Features Class Code: Business Parks and Industrial Estates Positional Accuracy: Positioned to address or location | A12NE (W) | 455 | 9 | 321560 182928 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|--|--|------------------------------|---------|------------------|
| 229 | Points of Interest - Manufacturing and Production Name: Tanks Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location | A18SW (NW) | 591 | 9 | 321782 183362 |
| 229 | Points of Interest - Manufacturing and Production Name: Tank Location: CF14 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location | A18SW (NW) | 623 | 9 | 321778 183396 |
| 229 | Points of Interest - Manufacturing and Production Name: Tank Location: CF14 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location | A17SE (NW) | 634 | 9 | 321734 183386 |
| 229 | Points of Interest - Manufacturing and Production Name: Tanks Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location | A17SE (NW) | 638 | 9 | 321736 183391 |
| 229 | Points of Interest - Manufacturing and Production Name: Tank Location: CF14 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location | A17SE (NW) | 639 | 9 | 321731 183390 |
| 230 | Points of Interest - Manufacturing and Production Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location | A19NW (NE) | 693 | 9 | 322579 183489 |
| 231 | Points of Interest - Manufacturing and Production Name: Tanks Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location | A19NW (NE) | 729 | 9 | 322687 183459 |
| 231 | Points of Interest - Manufacturing and Production Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location | A19NW (NE) | 745 | 9 | 322701 183468 |
| 231 | Points of Interest - Manufacturing and Production Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location | A19NW (NE) | 758 | 9 | 322710 183478 |
| 232 | Points of Interest - Manufacturing and Production Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location | A14NE (E) | 815 | 9 | 323065 182783 |
| 233 | Points of Interest - Manufacturing and Production Name: Tank Location: CF23 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location | A12NW (W) | 825 | 9 | 321219 183078 |
| 234 | Points of Interest - Manufacturing and Production Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location | A19NW (NE) | 846 | 9 | 322735 183570 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|---------------|
| 234 | Points of Interest - Manufacturing and Production Name: Tanks Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location | A19NW (NE) | 848 | 9 | 322731 183575 |
| 234 | Points of Interest - Manufacturing and Production Name: Tank Location: CF3 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location | A19NW (NE) | 856 | 9 | 322739 183579 |
| 235 | Points of Interest - Public Infrastructure Name: Asda Petrol Location: 8 Dering Road, Cardiff Gate Retail Park, Pontprennau, Cardiff, CF23 8NL Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location | A12SE (SW) | 344 | 9 | 321737 182450 |
| 235 | Points of Interest - Public Infrastructure Name: Asda Pentwyn Location: 8 Dering Road, Cardiff Gate Retail Park, Pontprennau, Cardiff, CF23 8NL Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location | A12SE (SW) | 344 | 9 | 321737 182450 |
| 235 | Points of Interest - Public Infrastructure Name: Pentwyn Location: 8 Dering Road, Cardiff Gate Retail Park, Pontprennau, Cardiff, CF23 8NL Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location | A12SE (SW) | 360 | 9 | 321731 182430 |
| 236 | Points of Interest - Public Infrastructure Name: Shell Service Station Location: M4 J30 Malthouse Avenue, Pontprennau, Cardiff, CF23 8RA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location | A12NE (W) | 347 | 9 | 321656 182868 |
| 236 | Points of Interest - Public Infrastructure Name: M4 Cardiff Gate Motorway Service Area Location: M4 J30, A4232, Cardiff Gate, Cardiff, CF23 8RA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location | A12NE (W) | 347 | 9 | 321656 182868 |
| 236 | Points of Interest - Public Infrastructure Name: Cardiff Gate Location: Junction 30 M4, Pontprennau, Cardiff, CF23 8RA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location | A12NE (W) | 348 | 9 | 321656 182869 |
| 236 | Points of Interest - Public Infrastructure Name: Tcs Cardiff Gate Location: Junction 30 M4, North Pentwyn, Cardiff, South Glamorgan, CF2 7RA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location | A12NE (W) | 348 | 9 | 321655 182868 |
| 236 | Points of Interest - Public Infrastructure Name: Shell Cardiff Gate Motorway Services Location: M4 J30, North Pentwyn, Pontprennau, Cardiff, CF23 8RA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location | A12NE (W) | 349 | 9 | 321655 182869 |
| 237 | Points of Interest - Public Infrastructure Name: Weir Location: CF3 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location | A8NE (SE) | 604 | 9 | 322422 182117 |
| 237 | Points of Interest - Public Infrastructure Name: Weir Location: CF3 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location | A8NE (SE) | 605 | 9 | 322427 182118 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|------------------|
| 238 | Points of Interest - Public Infrastructure Name: Sewage Pumping Station Location: CF3 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location | A9NW (SE) | 686 | 9 | 322625 182138 |
| 239 | Points of Interest - Public Infrastructure Name: Weir Location: CF3 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location | A14NE (E) | 687 | 9 | 322906 183049 |
| 239 | Points of Interest - Public Infrastructure Name: Weir Location: CF3 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location | A14NE (E) | 693 | 9 | 322912 183049 |
| 240 | Points of Interest - Public Infrastructure Name: Outfall Location: CF3 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location | A8SW (S) | 865 | 9 | 321942 181749 |
| 240 | Points of Interest - Public Infrastructure Name: Outfall Location: CF3 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location | A8SW (S) | 865 | 9 | 321948 181749 |
| 241 | Points of Interest - Recreational and Environmental Name: Playground Location: Lascelles Drive, CF23 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location | A7NE (SW) | 532 | 9 | 321654 182248 |
| 242 | Points of Interest - Recreational and Environmental Name: Playground Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location | A7NW (SW) | 849 | 9 | 321225 182318 |
| 242 | Points of Interest - Recreational and Environmental Name: Playground Location: Crawford Drive, CF23 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location | A7NW (SW) | 850 | 9 | 321223 182321 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|---|--|------------------------------|---------|---------------|
| 243 | Ancient Woodland Name: Not Supplied Reference: 11858 Area(m²): 2926.46 Type: Ancient and Semi-Natural Woodland | A13SW (SW) | 93 | 2 | 321979 182543 |
| 244 | Ancient Woodland Name: Not Supplied Reference: 15677 Area(m²): 7729.24 Type: Ancient and Semi-Natural Woodland | A18SW (N) | 336 | 2 | 322035 183191 |
| 245 | Ancient Woodland Name: Not Supplied Reference: 11860 Area(m²): 7463.26 Type: Ancient and Semi-Natural Woodland | A12NE (NW) | 454 | 2 | 321582 182988 |
| 246 | Ancient Woodland Name: Not Supplied Reference: 11859 Area(m²): 8251.14 Type: Ancient and Semi-Natural Woodland | A12NE (W) | 511 | 2 | 321469 182797 |
| 247 | Ancient Woodland Name: Not Supplied Reference: 15681 Area(m²): 5911.82 Type: Ancient and Semi-Natural Woodland | A19SW (NE) | 538 | 2 | 322457 183378 |
| 248 | Ancient Woodland Name: Not Supplied Reference: 15686 Area(m²): 17960.4 Type: Ancient and Semi-Natural Woodland | A19SW (NE) | 567 | 2 | 322451 183413 |
| 249 | Ancient Woodland Name: Not Supplied Reference: 15680 Area(m²): 7310.4 Type: Ancient and Semi-Natural Woodland | A18NE (N) | 575 | 2 | 322161 183462 |
| 250 | Ancient Woodland Name: Not Supplied Reference: 22114 Area(m²): 7768.58 Type: Restored Ancient Woodland Site | A18NE (N) | 666 | 2 | 322263 183555 |
| 251 | Ancient Woodland Name: Not Supplied Reference: 15670 Area(m²): 3091.03 Type: Ancient and Semi-Natural Woodland | A8SE (S) | 717 | 2 | 322242 181919 |
| 252 | Ancient Woodland Name: Not Supplied Reference: 11857 Area(m²): 2697.18 Type: Ancient and Semi-Natural Woodland | A7NW (SW) | 737 | 2 | 321306 182407 |
| 253 | Ancient Woodland Name: Not Supplied Reference: 15668 Area(m²): 2502.68 Type: Ancient and Semi-Natural Woodland | A8SE (S) | 737 | 2 | 322267 181903 |
| 254 | Ancient Woodland Name: Not Supplied Reference: 22112 Area(m²): 4245.42 Type: Restored Ancient Woodland Site | A14NE (E) | 742 | 2 | 322955 183075 |
| 255 | Ancient Woodland Name: Not Supplied Reference: 42746 Area(m²): 20892.63 Type: Plantation on Ancient Woodland | A17NE (NW) | 763 | 2 | 321624 183471 |
| 256 | Ancient Woodland Name: Not Supplied Reference: 8388 Area(m²): 36723.2 Type: Ancient and Semi-Natural Woodland | A7NW (SW) | 775 | 2 | 321279 182375 |

| Map ID | Details | Quadrant Reference (Compass Direction) | Estimated Distance From Site | Contact | NGR |
|--------|--|--|------------------------------|---------|------------------|
| 257 | Ancient Woodland Name: Not Supplied Reference: 15674 Area(m²): 5146.13 Type: Ancient and Semi-Natural Woodland | A14NE (E) | 814 | 2 | 323034 183064 |
| 258 | Ancient Woodland Name: Not Supplied Reference: 22115 Area(m²): 28668.27 Type: Restored Ancient Woodland Site | A18NW (N) | 819 | 2 | 321906 183659 |
| 259 | Ancient Woodland Name: Not Supplied Reference: 15669 Area(m²): 3239.2 Type: Ancient and Semi-Natural Woodland | A9SW (SE) | 830 | 2 | 322511 181909 |
| 260 | Ancient Woodland Name: Not Supplied Reference: 11856 Area(m²): 1103.26 Type: Ancient and Semi-Natural Woodland | A7NW (SW) | 882 | 2 | 321236 182234 |
| 261 | Ancient Woodland Name: Not Supplied Reference: 11853 Area(m²): 5228.74 Type: Ancient and Semi-Natural Woodland | A7SE (SW) | 922 | 2 | 321466 181891 |
| 262 | Ancient Woodland Name: Not Supplied Reference: 11855 Area(m²): 1218.45 Type: Ancient and Semi-Natural Woodland | A7SW (SW) | 926 | 2 | 321365 181981 |
| 263 | Ancient Woodland Name: Not Supplied Reference: 11854 Area(m²): 1030.58 Type: Ancient and Semi-Natural Woodland | A7SW (SW) | 938 | 2 | 321396 181931 |
| 264 | Ancient Woodland Name: Not Supplied Reference: 22116 Area(m²): 11020.38 Type: Restored Ancient Woodland Site | A23SE (N) | 948 | 2 | 322282 183836 |
| 265 | Ancient Woodland Name: Not Supplied Reference: 15666 Area(m²): 10393.15 Type: Ancient and Semi-Natural Woodland | A3NW (S) | 986 | 2 | 321925 181630 |

| Agency & Hydrological | Version | Update Cycle |
|--|---|---|
| Contaminated Land Register Entries and Notices Caerphilly County Borough Council - Environmental Health Department Newport City Council - Public Protection and Environmental Services Cardiff Council - Pollution Control Division | August 2013 January 2015 January 2020 | Annual Rolling Update Annual Rolling Update Annual Rolling Update |
| Discharge Consents Environment Agency - Welsh Region Natural Resources Wales | August 2014 January 2020 | Quarterly Quarterly |
| Enforcement and Prohibition Notices Environment Agency - Welsh Region | March 2013 | Annual Rolling Update |
| Integrated Pollution Controls Environment Agency - Welsh Region | October 2008 | Variable |
| Integrated Pollution Prevention And Control Environment Agency - Welsh Region Natural Resources Wales | January 2020 January 2020 | Quarterly Quarterly |
| Local Authority Integrated Pollution Prevention And Control Caerphilly County Borough Council - Environmental Health Department Newport City Council - Public Protection and Environmental Services Cardiff Council - Pollution Control Division | February 2013 June 2014 March 2016 | Variable Variable Variable |
| Local Authority Pollution Prevention and Controls Newport City Council - Public Protection and Environmental Services Cardiff Council - Pollution Control Division Caerphilly County Borough Council - Environmental Health Department | June 2014 March 2016 September 2014 | Annual Rolling Update Annual Rolling Update Not Applicable |
| Local Authority Pollution Prevention and Control Enforcements Newport City Council - Public Protection and Environmental Services Cardiff Council - Pollution Control Division Caerphilly County Borough Council - Environmental Health Department | June 2014 March 2016 September 2014 | Variable Variable Variable |
| Nearest Surface Water Feature Ordnance Survey | January 2020 | |
| Pollution Incidents to Controlled Waters Environment Agency - Welsh Region | December 1998 | Not Applicable |
| Prosecutions Relating to Authorised Processes Environment Agency - Welsh Region Natural Resources Wales | March 2013 March 2013 | Annual Rolling Update Annual Rolling Update |
| Prosecutions Relating to Controlled Waters Environment Agency - Welsh Region Natural Resources Wales | March 2013 March 2013 | Annual Rolling Update Annual Rolling Update |
| Registered Radioactive Substances Natural Resources Wales Environment Agency - Welsh Region | January 2015 June 2016 | Annually |
| River Quality Environment Agency - Head Office | November 2001 | Not Applicable |
| Substantiated Pollution Incident Register Environment Agency Wales - South East Area Natural Resources Wales | January 2020 January 2020 | Quarterly Quarterly |
| Water Abstractions Environment Agency - Welsh Region Natural Resources Wales | January 2020 January 2020 | Quarterly Quarterly |
| Water Industry Act Referrals Natural Resources Wales Environment Agency - Welsh Region | January 2020 October 2017 | Quarterly Quarterly |
| Groundwater Vulnerability Map Natural Resources Wales | June 2018 | As notified |

| Agency & Hydrological | Version | Update Cycle |
|---|----------------|-----------------------|
| Bedrock Aquifer Designations Natural Resources Wales | January 2018 | Annually |
| Superficial Aquifer Designations Natural Resources Wales | January 2018 | Annually |
| Source Protection Zones Natural Resources Wales | November 2016 | Annual Rolling Update |
| Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales | August 2019 | Quarterly |
| Flooding from Rivers or Sea without Defences Natural Resources Wales | November 2019 | Quarterly |
| Areas Benefiting from Flood Defences Natural Resources Wales | November 2019 | Quarterly |
| Flood Water Storage Areas Natural Resources Wales | August 2019 | Quarterly |
| Flood Defences Natural Resources Wales | November 2019 | Quarterly |
| OS Water Network Lines Ordnance Survey | January 2020 | Quarterly |
| Surface Water 1 in 30 year Flood Extent Natural Resources Wales | October 2013 | Annually |
| Surface Water 1 in 100 year Flood Extent Natural Resources Wales | October 2013 | Annually |
| Surface Water 1 in 1000 year Flood Extent Natural Resources Wales | October 2013 | Annually |
| Surface Water Suitability Natural Resources Wales | October 2013 | Annually |
| BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service | May 2013 | Annually |

| Waste | Version | Update Cycle |
|--|---|--|
| BGS Recorded Landfill Sites British Geological Survey - National Geoscience Information Service | June 1996 | Not Applicable |
| Historical Landfill Sites Natural Resources Wales | July 2017 | Quarterly |
| Integrated Pollution Control Registered Waste Sites Environment Agency - Welsh Region | October 2008 | Not Applicable |
| Licensed Waste Management Facilities (Landfill Boundaries) Environment Agency Wales - South East Area Natural Resources Wales | November 2019 November 2019 | Quarterly Quarterly |
| Licensed Waste Management Facilities (Locations) Environment Agency Wales - South East Area Natural Resources Wales | January 2020 January 2020 | Quarterly Quarterly |
| Local Authority Landfill Coverage Caerphilly County Borough Council - Environmental Health Department Cardiff Council Newport City Council | May 2000 May 2000 May 2000 | Not Applicable Not Applicable Not Applicable |
| Local Authority Recorded Landfill Sites Caerphilly County Borough Council - Environmental Health Department Cardiff Council Newport City Council | May 2000 May 2000 May 2000 | Not Applicable Not Applicable Not Applicable |
| Potentially Infilled Land (Non-Water) Landmark Information Group Limited | December 1999 | Not Applicable |
| Potentially Infilled Land (Water) Landmark Information Group Limited | December 1999 | Not Applicable |
| Registered Landfill Sites Environment Agency Wales - South East Area | March 2003 | Not Applicable |
| Registered Waste Transfer Sites Environment Agency Wales - South East Area | March 2003 | Not Applicable |
| Registered Waste Treatment or Disposal Sites Environment Agency Wales - South East Area | March 2003 | Not Applicable |
| Hazardous Substances | Version | Update Cycle |
| Control of Major Accident Hazards Sites (COMAH) Health and Safety Executive | April 2018 | Bi-Annually |
| Explosive Sites Health and Safety Executive | March 2017 | Annually |
| Notification of Installations Handling Hazardous Substances (NIHHS) Health and Safety Executive | November 2000 | Not Applicable |
| Planning Hazardous Substance Enforcements Caerphilly County Borough Council - Planning Department Cardiff Council - Regulatory Services Newport City Council - Planning Department | February 2016 October 2015 October 2015 | Variable Variable Variable |
| Planning Hazardous Substance Consents Caerphilly County Borough Council - Planning Department Cardiff Council - Regulatory Services Newport City Council - Planning Department | February 2016 October 2015 October 2015 | Variable Variable Variable |

| Geological | Version | Update Cycle |
|---|----------------|-----------------------|
| BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service | January 2009 | Not Applicable |
| BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service | October 2015 | Annually |
| BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service | October 2019 | Bi-Annually |
| BGS Urban Soil Chemistry British Geological Survey - National Geoscience Information Service | October 2015 | Annually |
| BGS Urban Soil Chemistry Averages British Geological Survey - National Geoscience Information Service | October 2015 | Annually |
| CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) | August 2011 | Not Applicable |
| Coal Mining Affected Areas The Coal Authority - Property Searches | March 2014 | Annual Rolling Update |
| Mining Instability Ove Arup & Partners | October 2000 | Not Applicable |
| Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service | May 2015 | Not Applicable |
| Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service | January 2019 | Annually |
| Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service | January 2019 | Annually |
| Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service | January 2019 | Annually |
| Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service | January 2019 | Annually |
| Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service | January 2019 | Annually |
| Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service | January 2019 | Annually |
| Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service | July 2011 | Annually |
| Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service | July 2011 | Annually |

| Industrial Land Use | Version | Update Cycle |
|--|---------------|--------------|
| Contemporary Trade Directory Entries Thomson Directories | January 2020 | Quarterly |
| Fuel Station Entries Catalist Ltd - Experian | December 2019 | Quarterly |
| Gas Pipelines National Grid | July 2014 | |
| Points of Interest - Commercial Services PointX | March 2020 | Quarterly |
| Points of Interest - Education and Health PointX | March 2020 | Quarterly |
| Points of Interest - Manufacturing and Production PointX | March 2020 | Quarterly |
| Points of Interest - Public Infrastructure PointX | March 2020 | Quarterly |
| Points of Interest - Recreational and Environmental PointX | March 2020 | Quarterly |
| Underground Electrical Cables National Grid | October 2019 | |

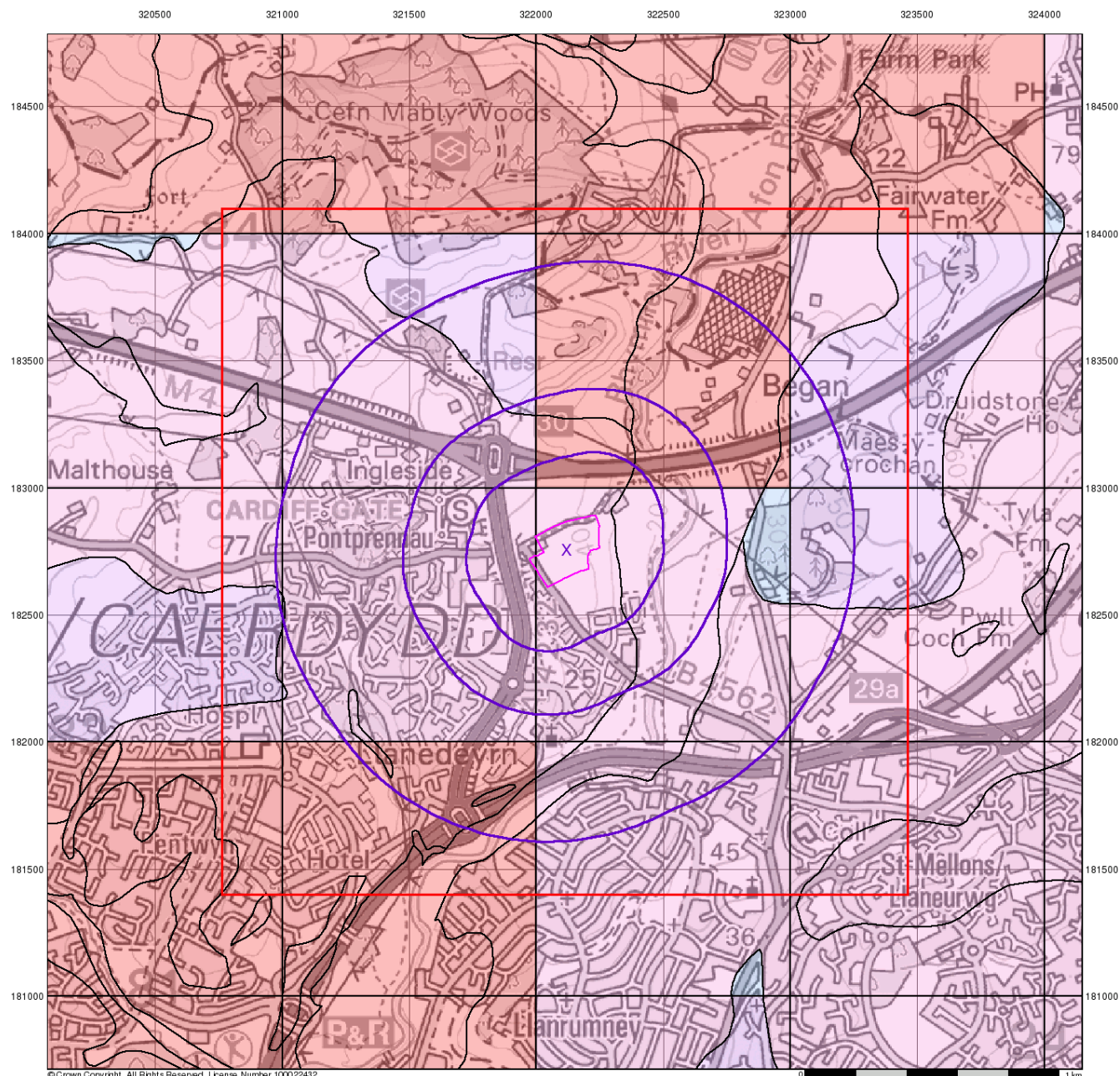
| Sensitive Land Use | Version | Update Cycle |
|--|---|---|
| Ancient Woodland Natural Resources Wales | August 2018 | Bi-Annually |
| Areas of Adopted Green Belt Caerphilly County Borough Council Cardiff Council Newport City Council | February 2020 February 2020 February 2020 | As notified As notified As notified |
| Areas of Unadopted Green Belt Caerphilly County Borough Council Cardiff Council Newport City Council | February 2020 February 2020 February 2020 | As notified As notified As notified |
| Areas of Outstanding Natural Beauty Natural Resources Wales | June 2019 | Bi-Annually |
| Environmentally Sensitive Areas The National Assembly for Wales - GI Services (Department of Planning & Countryside) | January 2017 | |
| Forest Parks Forestry Commission | April 1997 | Not Applicable |
| Local Nature Reserves Caerphilly County Borough Council Cardiff Council Newport City Council | August 2018 August 2018 August 2018 | Bi-Annually Bi-Annually Bi-Annually |
| Marine Nature Reserves Natural Resources Wales | August 2018 | Bi-Annually |
| National Nature Reserves Natural Resources Wales | June 2019 | Bi-Annually |
| National Parks Natural Resources Wales | August 2018 | Annually |
| Nitrate Vulnerable Zones Natural Resources Wales The National Assembly for Wales - GI Services (Department of Planning & Countryside) | July 2019 October 2005 | Bi-Annually |
| Ramsar Sites Natural Resources Wales | July 2019 | Bi-Annually |
| Sites of Special Scientific Interest Natural Resources Wales | March 2019 | Bi-Annually |
| Special Areas of Conservation Natural Resources Wales | August 2018 | Bi-Annually |
| Special Protection Areas Natural Resources Wales | August 2018 | 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 |  British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL |
| Centre for Ecology and Hydrology |  Centre for Ecology and Hydrology 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 |
|---------|---|---|
| 1 | British Geological Survey - Enquiry Service British Geological Survey, Environmental Science Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG | Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk |
| 2 | Natural Resources Wales Ty Cambria, 29 Newport Road, Cardiff, CF24 0TP | Telephone: 0300 065 3000 Email: enquiries@naturalresourceswales.gov.uk |
| 3 | Cardiff Council - Pollution Control Division Regulatory Services, City Hall, Cardiff, Mid Glamorgan, CF10 3ND | Telephone: 029 20872000 Fax: 01222 873212 Website: www.cardiff.gov.uk |
| 4 | Environment Agency - National Customer Contact Centre (NCCC) PO Box 544, Templeborough, Rotherham, S60 1BY | Telephone: 03708 506 506 Email: enquiries@environment-agency.gov.uk |
| 5 | Ordnance Survey Adanac Drive, Southampton, Hampshire, SO16 0AS | Telephone: 03456 05 05 05 Email: customerservices@ordnancesurvey.co.uk Website: www.ordnancesurvey.gov.uk |
| 6 | Cardiff Council County Hall, Atlantic Wharf, Cardiff, Mid Glamorgan, CF1 5UW | Telephone: 029 2087 2000 Fax: 029 2087 3212 Website: www.cardiff.gov.uk |
| 7 | Newport City Council Civic Centre, Newport, South Wales, NP9 4UR | Telephone: 01633 656656 Fax: 01633 244721 Website: www.newport.gov.uk |
| 8 | Caerphilly County Borough Council - Environmental Health Department Pontllanfraith, Blackwood, NP12 2YW | Telephone: 01443 815588 Fax: 01443 864307 Website: www.caerphilly.gov.uk |
| 9 | PointX 7 Abbey Court, Eagle Way, Sowton, Exeter, Devon, EX2 7HY | Website: www.pointx.co.uk |
| - | Public Health England - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards Chilton, Didcot, Oxfordshire, OX11 0RQ | Telephone: 01235 822622 Fax: 01235 833891 Email: radon@phe.gov.uk Website: www.ukradon.org |
| - | Landmark Information Group Limited Imperium, Imperial Way, Reading, Berkshire, RG2 0TD | Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk |

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



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Intégral

Géotechnique

Groundwater Vulnerability

General

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

Agency and Hydrological

Bedrock Aquifers

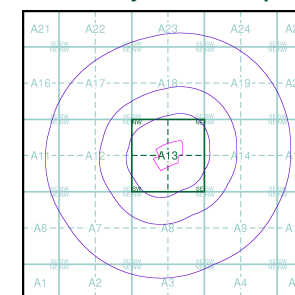
- High Vulnerability, Principal Aquifer
- High Vulnerability, Secondary Aquifer
- Medium Vulnerability, Principal Aquifer
- Medium Vulnerability, Secondary Aquifer
- Low Vulnerability, Principal Aquifer
- Low Vulnerability, Secondary Aquifer

Superficial Aquifers

- High Vulnerability, Principal Aquifer
- High Vulnerability, Secondary Aquifer
- Medium Vulnerability, Principal Aquifer
- Medium Vulnerability, Secondary Aquifer
- Low Vulnerability, Principal Aquifer
- Low Vulnerability, Secondary Aquifer

- Unproductive Aquifer
- Soluble Rock

Site Sensitivity Context Map - Slice A



Order Details

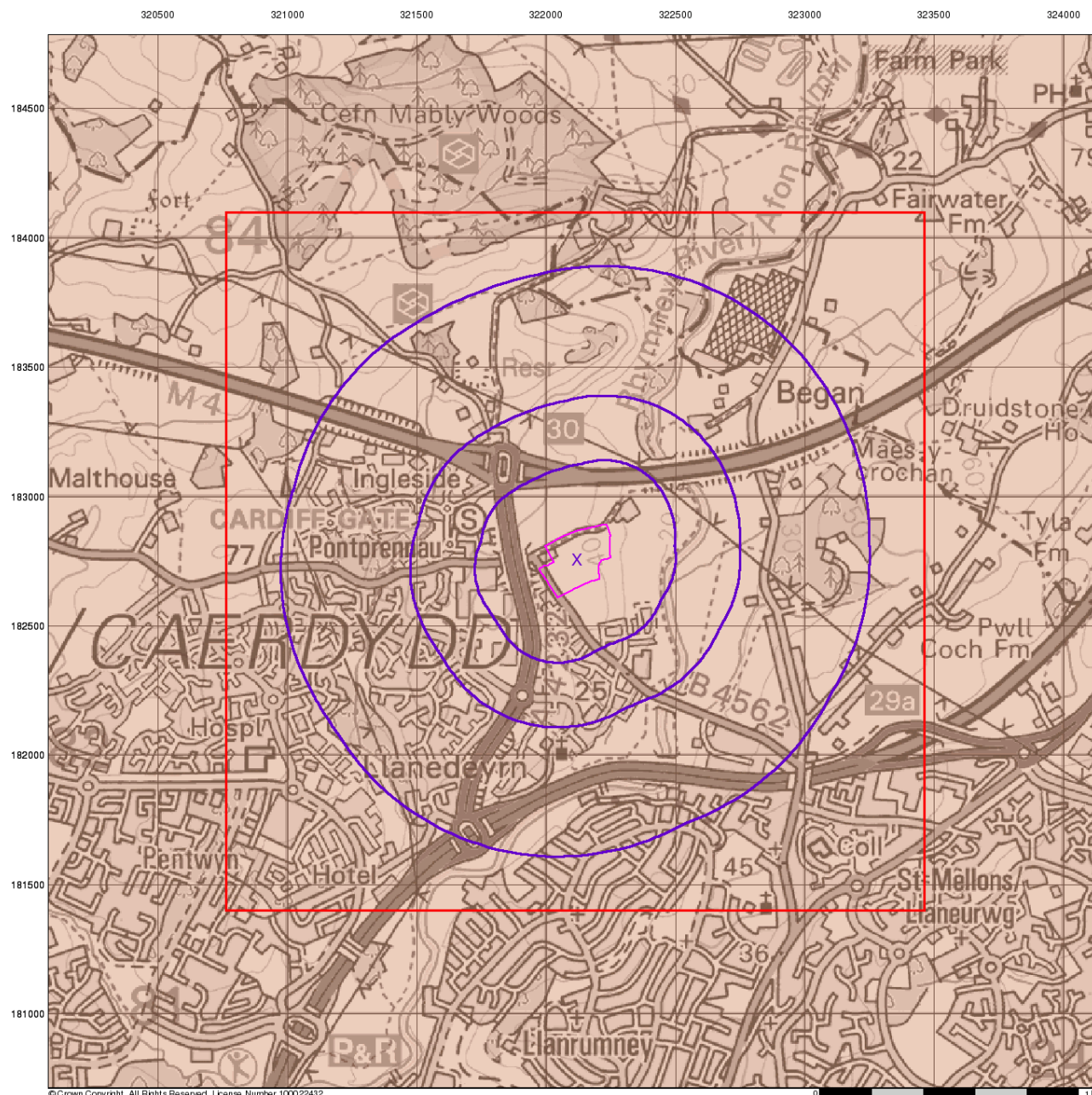
Order Number: 239204756_1_1
 Customer Ref: 12564/JJ
 National Grid Reference: 322120, 182760
 Slice: A
 Site Area (Ha): 4.81
 Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
 INFORMATION GROUP

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



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0 1 km

Intégral Géotechnique

Bedrock Aquifer Designation

General

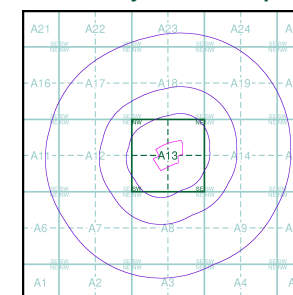
- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



Order Details

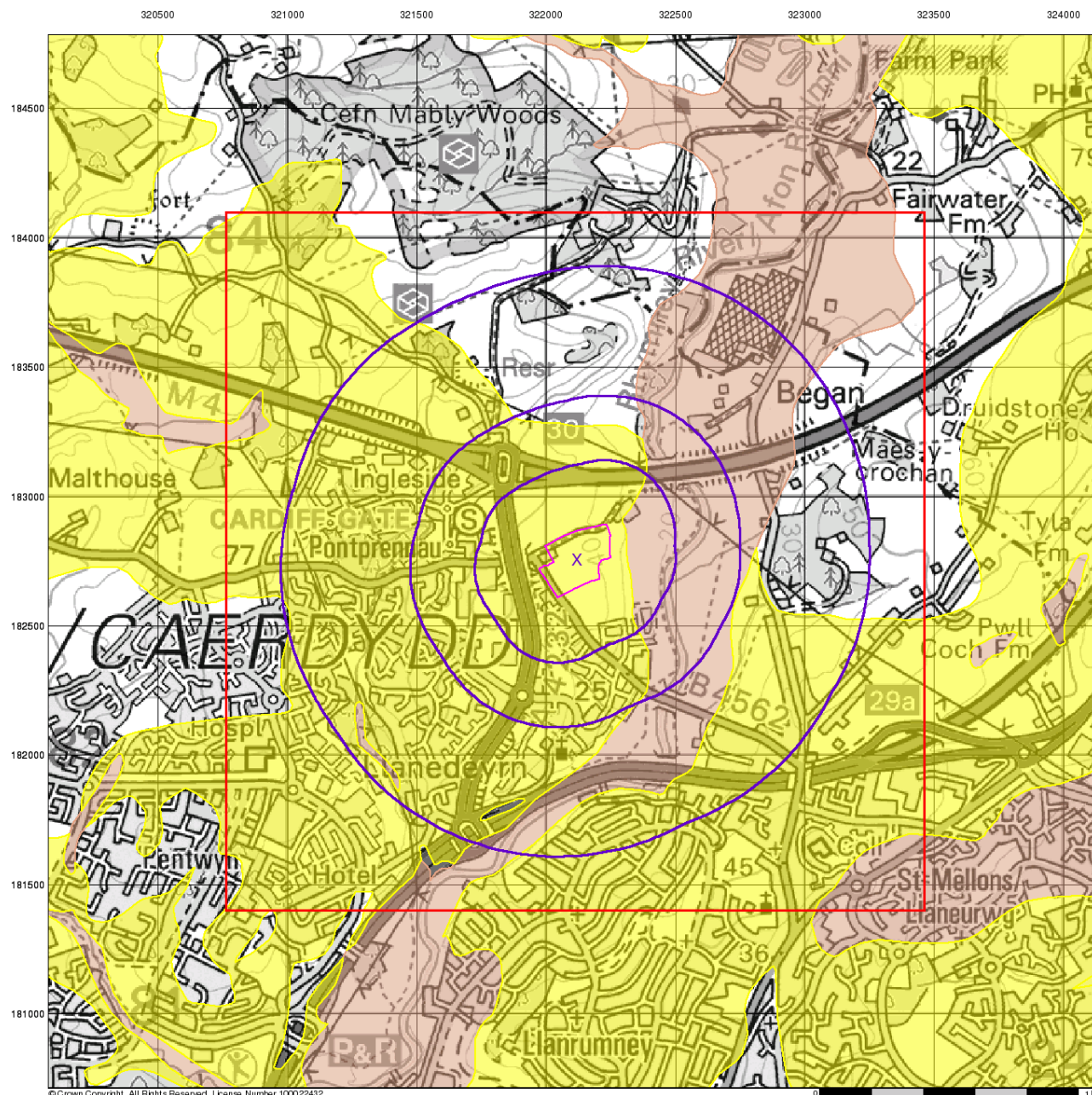
Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

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0 1 km

Intégral Géotechnique

Superficial Aquifer Designation

General

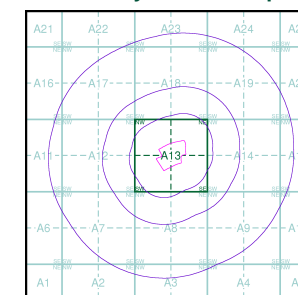
- Specified Site
- Specified Buffer(s)
- X Bearing Reference Point
- Slice
- B Map ID

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

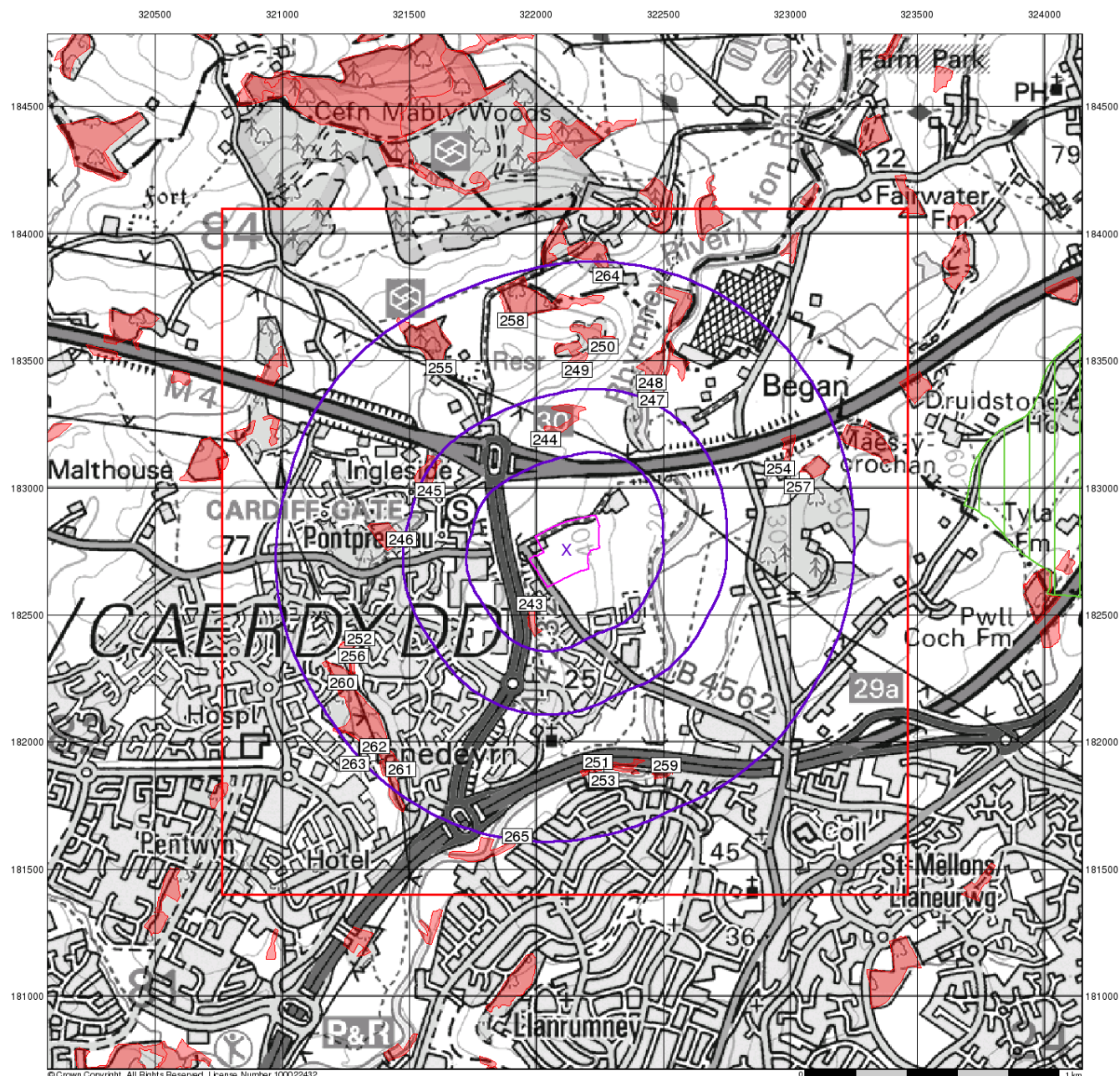
Order Number: 239204756_1_1
 Customer Ref: 12564/JJ
 National Grid Reference: 322120, 182760
 Slice: A
 Site Area (Ha): 4.81
 Search Buffer (m): 1000

Site Details

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Intégral Géotechnique

Sensitive Land Uses

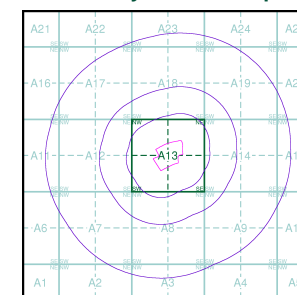
General

- 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

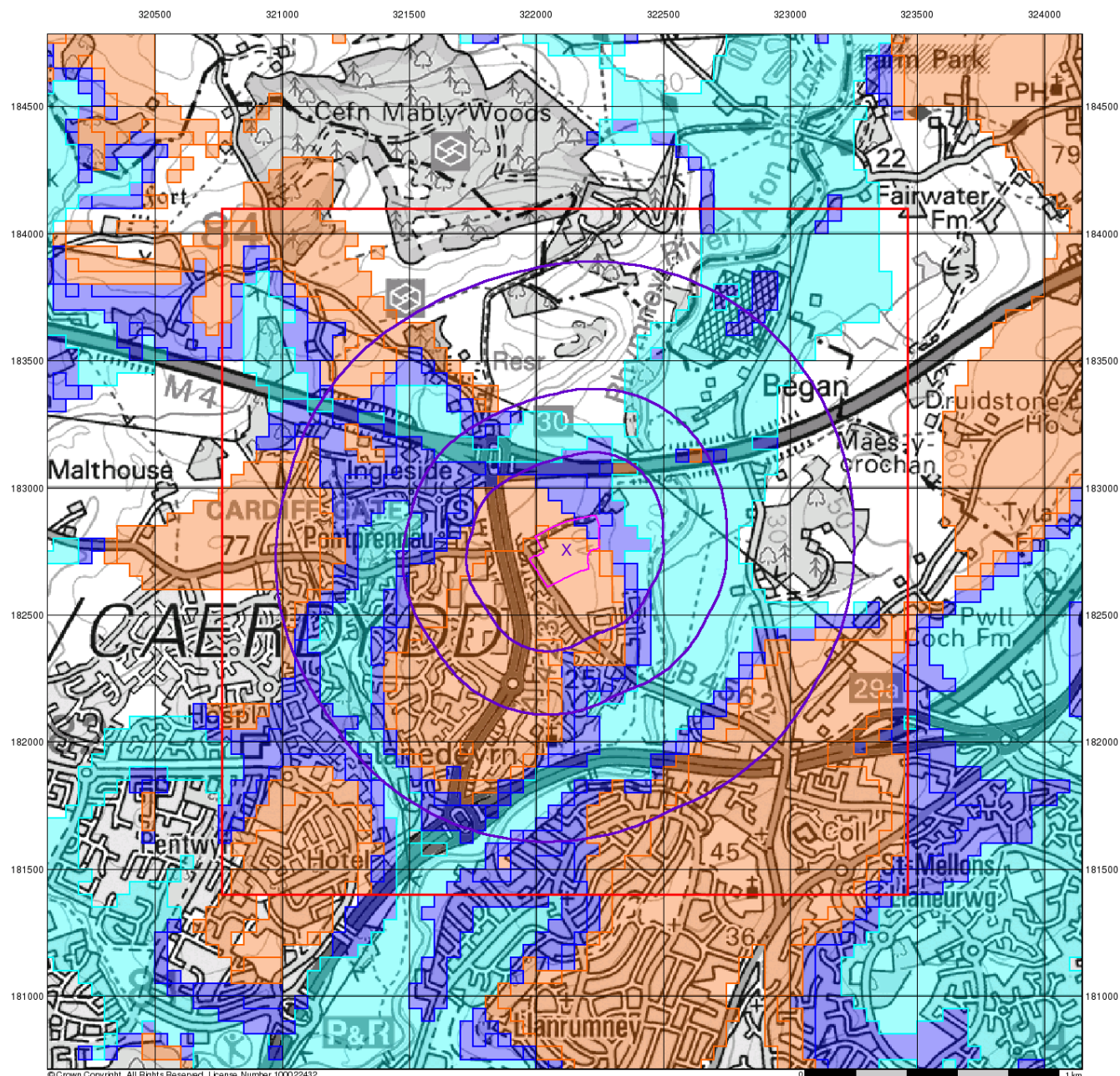
Order Number: 239204756_1_1
 Customer Ref: 12564/JJ
 National Grid Reference: 322120, 182760
 Slice: A
 Site Area (Ha): 4.81
 Search Buffer (m): 1000

Site Details

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Intégral Géotechnique

BGS Flood GFS Data

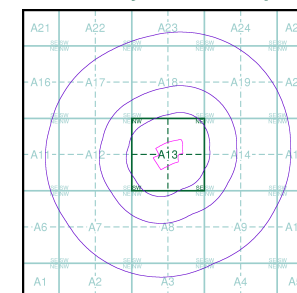
General

- 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: 239204756_1_1
 Customer Ref: 12564/JJ
 National Grid Reference: 322120, 182760
 Slice: A
 Site Area (Ha): 4.81
 Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

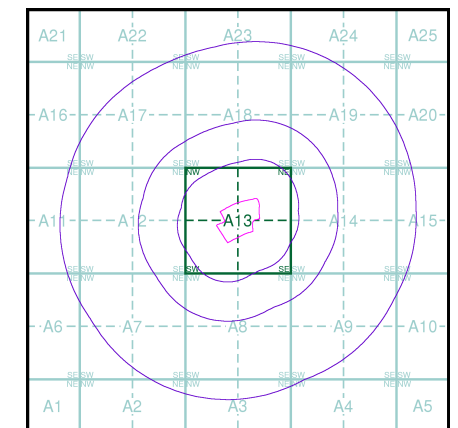
Landmark
 INFORMATION GROUP

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Intégral Géotechnique

- 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
- Hazardous Substances**
- COMAH Site
 - Explosive Site
 - NIHHS Site
 - Planning Hazardous Substance Consent
 - Planning Hazardous Substance Enforcement
 - BGS Recorded Mineral Site
- Waste**
- BGS Recorded Landfill Site (Location)
 - BGS Recorded Landfill Site
 - EA Historic Landfill (Buffered Point)
 - EA Historic Landfill (Polygon)
 - Integrated Pollution Control Registered Waste Site
 - Licensed Waste Management Facility (Landfill Boundary)
 - Licensed Waste Management Facility (Location)
 - Local Authority Recorded Landfill Site (Location)
 - Local Authority Recorded Landfill Site
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Non-water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Potentially Infilled Land (Water)
 - Registered Landfill Site (Location)
 - Registered Landfill Site (Point Buffered to 100m)
 - Registered Landfill Site (Point Buffered to 250m)
 - Registered Waste Transfer Site (Location)
 - Registered Waste Transfer Site
 - Registered Waste Treatment or Disposal Site (Location)
 - Registered Waste Treatment or Disposal Site

Site Sensitivity Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

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Intégral Géotechnique

Industrial Land Use Map

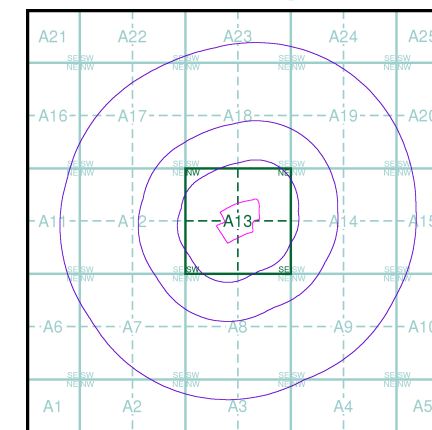
General

- 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: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

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

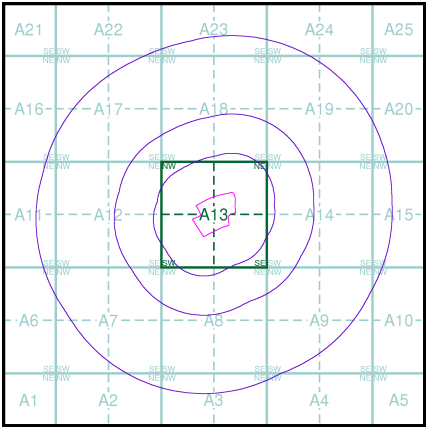
General

- 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: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

General

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

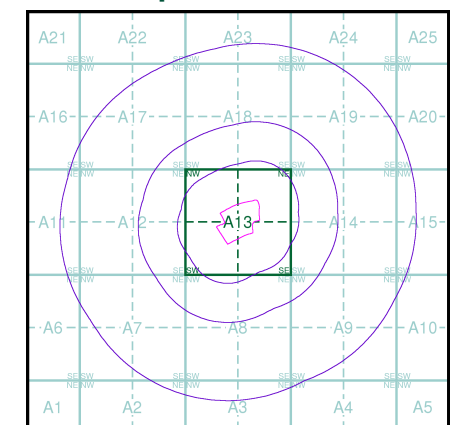
Agency and Hydrological (Boreholes)

- 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.

Borehole Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Intégral Géotechnique

General

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

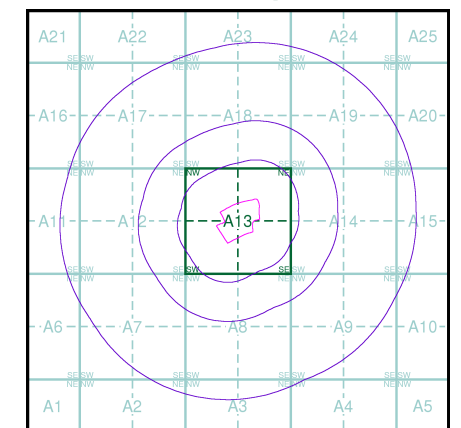
OS Water Network Data

- | | |
|--------------|-------------------------|
| Canal | Drain |
| Reservoir | Other |
| Foreshore | Lake |
| Marsh | Transfer |
| Tidal River | Lock Or Flight Of Locks |
| Inland River | Sea |

Contours (height in meters)

- Standard Contour 105 100 95
- Master Contour
- Spot Height 167.3
- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

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Intégral Géotechnique

General

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

Risk of Flooding from Surface Water

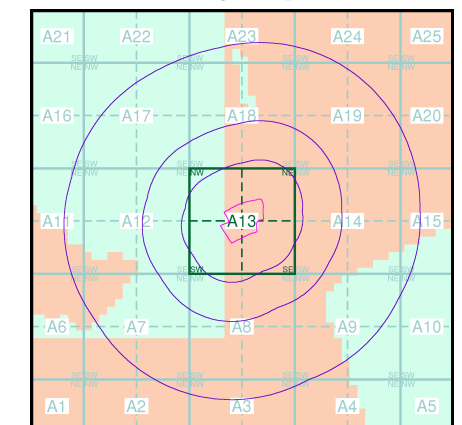
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

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

EANRW Suitability Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

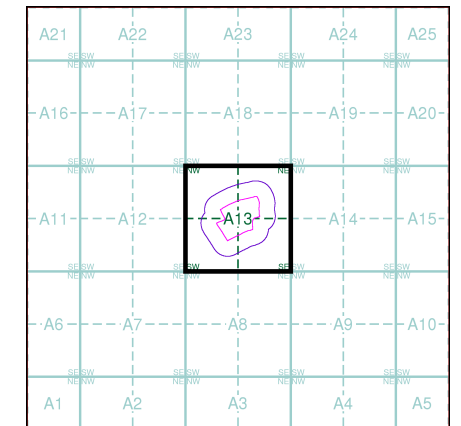
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Intégral Géotechnique

General

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

Site Sensitivity Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Plot Buffer (m): 100

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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

Intégral Géotechnique

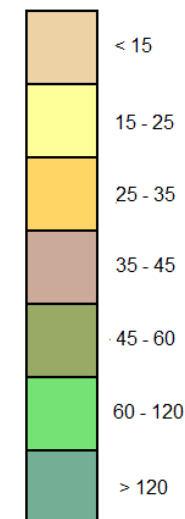
General

Specified Site Specified Buffer(s) Bearing Reference Point

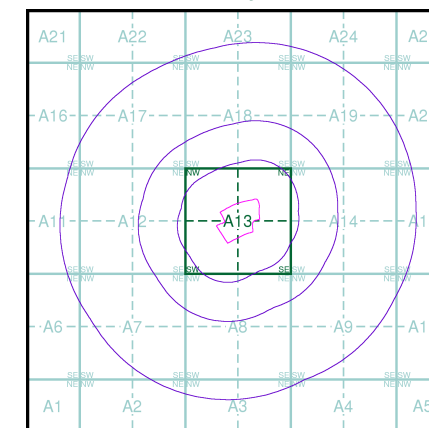
Urban Soil Chemistry Arsenic

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

Arsenic Concentrations mg/kg



Urban Soil Chemistry Arsenic - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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

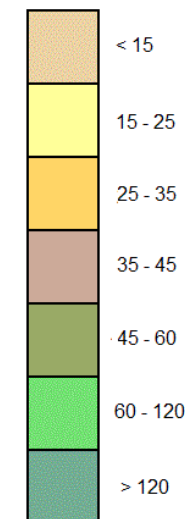
Intégral Géotechnique

General

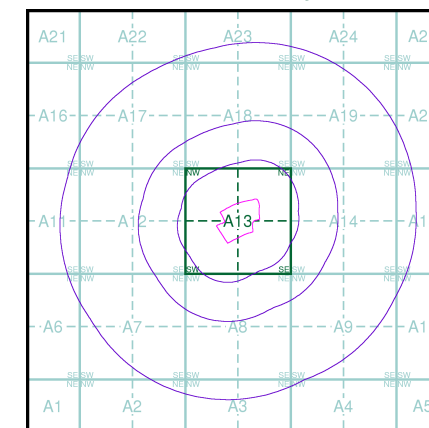
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg



Estimated Soil Chemistry Arsenic - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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

Intégral Géotechnique

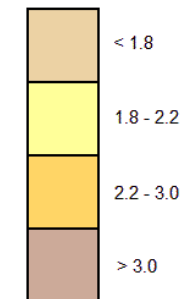
General

Specified Site Specified Buffer(s) Bearing Reference Point

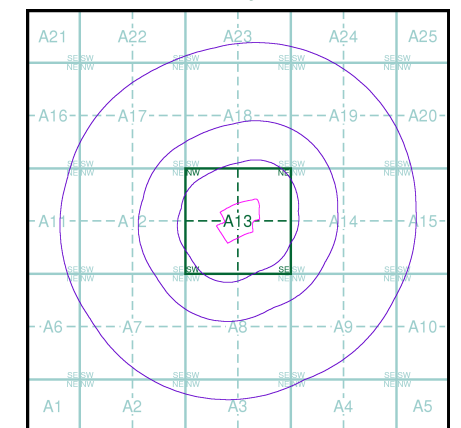
Urban Soil Chemistry Cadmium

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

Cadmium Concentrations mg/kg



Urban Soil Chemistry Cadmium - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details

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

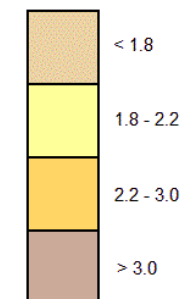
Intégral Géotechnique

General

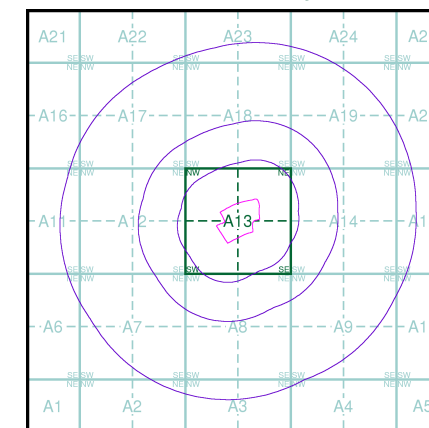
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg



Estimated Soil Chemistry Cadmium - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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

Intégral Géotechnique

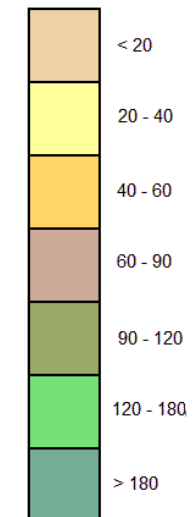
General

Specified Site Specified Buffer(s) Bearing Reference Point

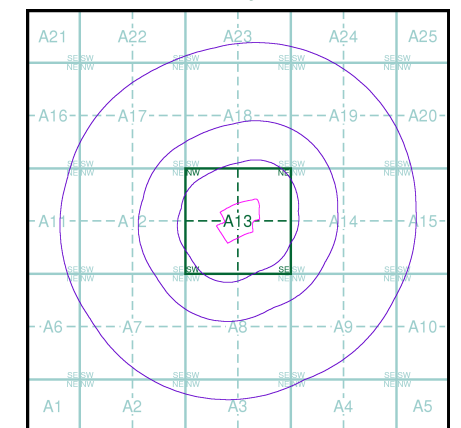
Urban Soil Chemistry Chromium

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

Chromium Concentrations mg/kg



Urban Soil Chemistry Chromium - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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

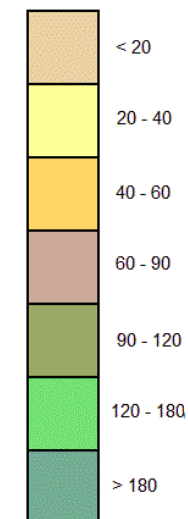
Intégral Géotechnique

General

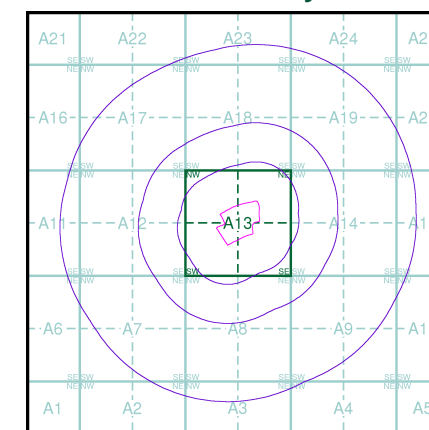
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg



Estimated Soil Chemistry Chromium - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details

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Intégral Géotechnique

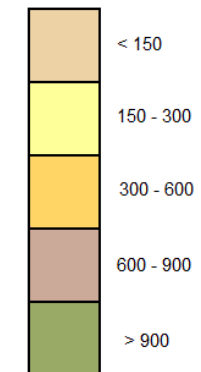
General

Specified Site Specified Buffer(s) Bearing Reference Point

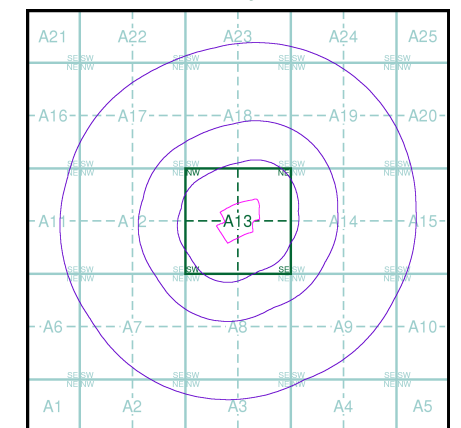
Urban Soil Chemistry Lead

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

Lead Concentrations mg/kg



Urban Soil Chemistry Lead - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details

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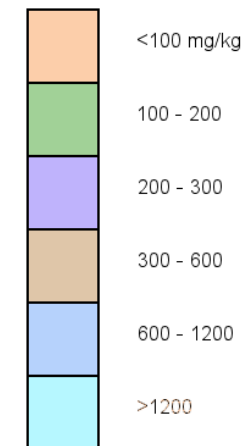
Intégral Géotechnique

General

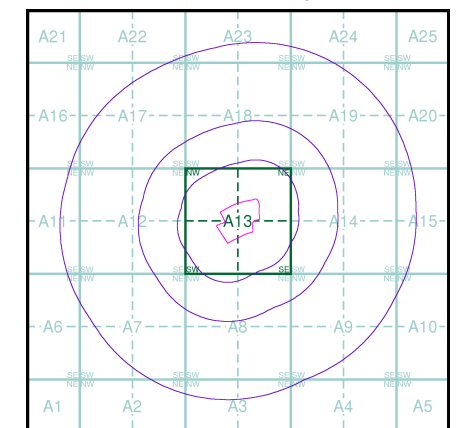
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg



Estimated Soil Chemistry Lead - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details

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Intégral Géotechnique

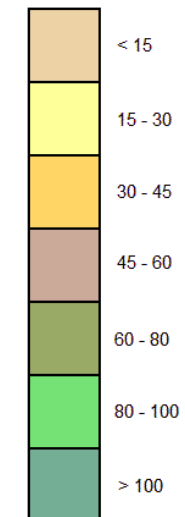
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Specified Site Specified Buffer(s) Bearing Reference Point

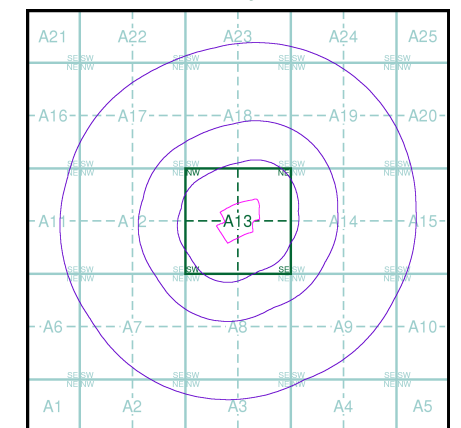
Urban Soil Chemistry Nickel

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

Nickel Concentrations mg/kg



Urban Soil Chemistry Nickel - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details

Tobin Land, CARDIFF

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Tel: 0844 844 9952
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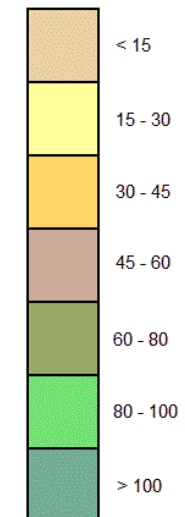
Intégral Géotechnique

General

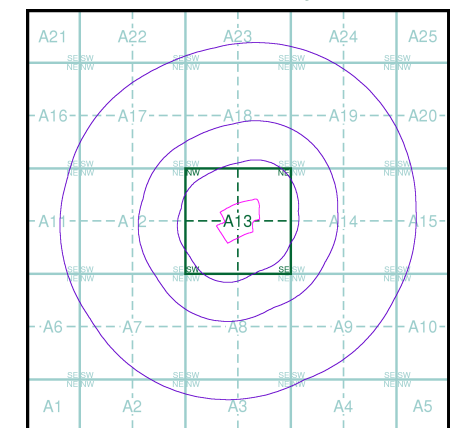
Specified Site Specified Buffer(s) Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg



Estimated Soil Chemistry Nickel - Slice A



Order Details

Order Details: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search buffer (m): 1000

Site Details


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Geology 1:50,000 Maps Legends

Artificial Ground and Landslip








| Map Colour | Lex Code | Rock Name | Rock Type | Min and Max Age |
|---|----------|-------------------------|--------------------|-------------------------|
|  | MGR | Made Ground (Undivided) | Artificial Deposit | Not Supplied - Holocene |

| Map Colour | Lex Code | Rock Name | Rock Type | Min and Max Age |
|---|----------|-----------|-----------|-----------------|
|  | | Faults | | |

Superficial Geology

| Map Colour | Lex Code | Rock Name | Rock Type | Min and Max Age |
|---|----------|---|-----------------------------|---------------------------|
|  | ALV | Alluvium | Clay, Silt, Sand and Gravel | Not Supplied - Holocene |
|  | TFD | Tidal Flat Deposits | Clay, Silt and Sand | Not Supplied - Holocene |
|  | TILLD | Till, Devensian | Diamicton | Not Supplied - Devensian |
|  | GFSDD | Glaciofluvial Sheet Deposits, Devensian | Sand and Gravel | Not Supplied - Devensian |
|  | GFDUD | Glaciofluvial Deposits, Devensian | Sand and Gravel | Not Supplied - Devensian |
|  | RTDU | River Terrace Deposits (Undifferentiated) | Sand and Gravel | Not Supplied - Quaternary |

Bedrock and Faults

| Map Colour | Lex Code | Rock Name | Rock Type | Min and Max Age |
|---|----------|---------------------------------|--|-------------------------------|
|  | SMG | St Maughans Formation | Argillaceous Rocks and [Subequal/Subordinate] Sandstone, Interbedded | Not Supplied - Early Devonian |
|  | SMG | St Maughans Formation | Sandstone | Not Supplied - Early Devonian |
|  | LLC | Llanishen Conglomerate | Conglomerate and [Subequal/Subordinate] Sandstone, Interbedded | Not Supplied - Early Devonian |
|  | RG | Raglan Mudstone Formation | Mudstone and Sandstone, Interbedded | Not Supplied - Pridoli |
|  | RG | Raglan Mudstone Formation | Mudstone, Siltstone and Sandstone | Not Supplied - Pridoli |
|  | RG | Raglan Mudstone Formation | Limestone | Not Supplied - Pridoli |
|  | BFLS | Bishop's Frome Limestone Member | Silicate-Conglomerate, Calcite-Cemented (Calcrete) | Not Supplied - Silurian |

Intégral Géotechnique

Geology 1:50,000 Maps

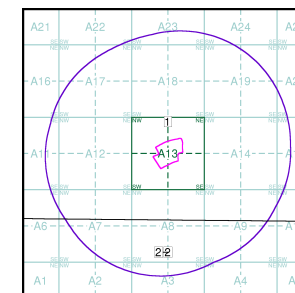
This report contains geological map extracts taken from the BGS Digital Geological map of Great Britain at 1:50,000 scale and is designed for users carrying out preliminary site assessments who require geological maps for the area around the site. This mapping may be more up to date than previously published paper maps.

The various geological layers - artificial and landslip deposits, superficial geology and solid (bedrock) geology are displayed in separate maps, but superimposed on the final 'Combined Surface Geology' map. All map legends feature on this page. Not all layers have complete nationwide coverage, so availability of data for relevant map sheets is indicated below.

Geology 1:50,000 Maps Coverage

| | | | |
|----------------------|--------------|----------------------|--------------|
| Map ID: | 2 | Map ID: | 1 |
| Map Sheet No: | 263 | Map Sheet No: | 249 |
| Map Name: | Cardiff | Map Name: | Newport |
| Map Date: | 1988 | Map Date: | 1969 |
| Bedrock Geology: | Available | Bedrock Geology: | Available |
| Superficial Geology: | Available | Superficial Geology: | Available |
| Artificial Geology: | Available | Artificial Geology: | Available |
| Faults: | Not Supplied | Faults: | Not Supplied |
| Landslip: | Available | Landslip: | Available |
| Rock Segments: | Not Supplied | Rock Segments: | Not Supplied |

Geology 1:50,000 Maps - Slice A



Order Details:

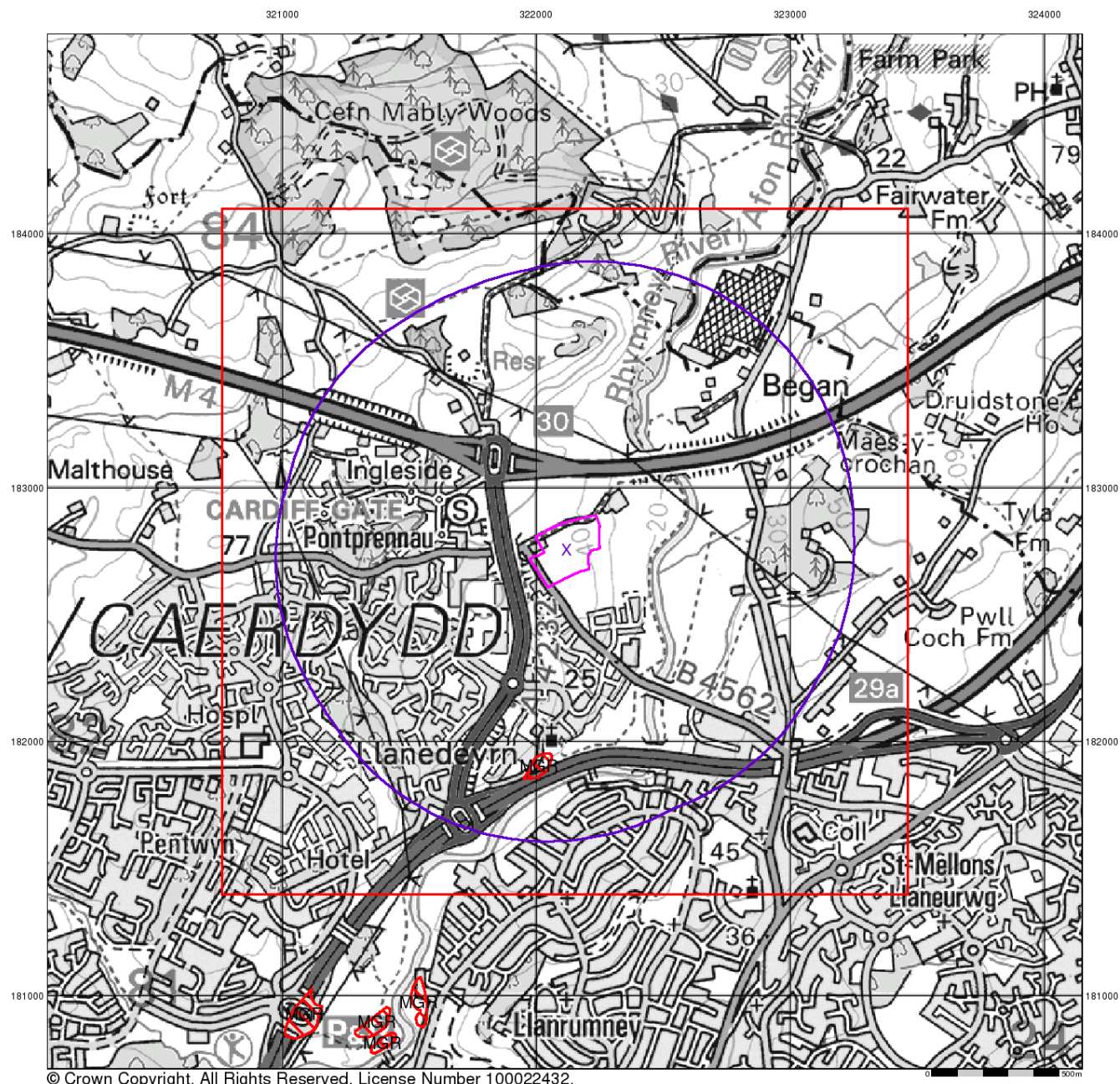
| | |
|--------------------------|----------------|
| Order Number: | 239204756_1_1 |
| Customer Reference: | 12564/JJ |
| National Grid Reference: | 322120, 182760 |
| Slice: | A |
| Site Area (Ha): | 4.81 |
| Search Buffer (m): | 1000 |

Site Details:

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Intégral Géotechnique

Artificial Ground and Landslip

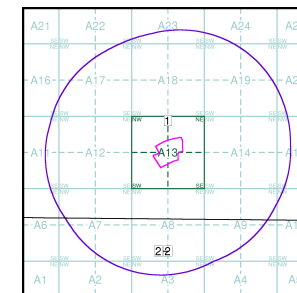
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions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

Artificial ground includes:

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

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

Artificial Ground and Landslip Map - Slice A



Order Details:

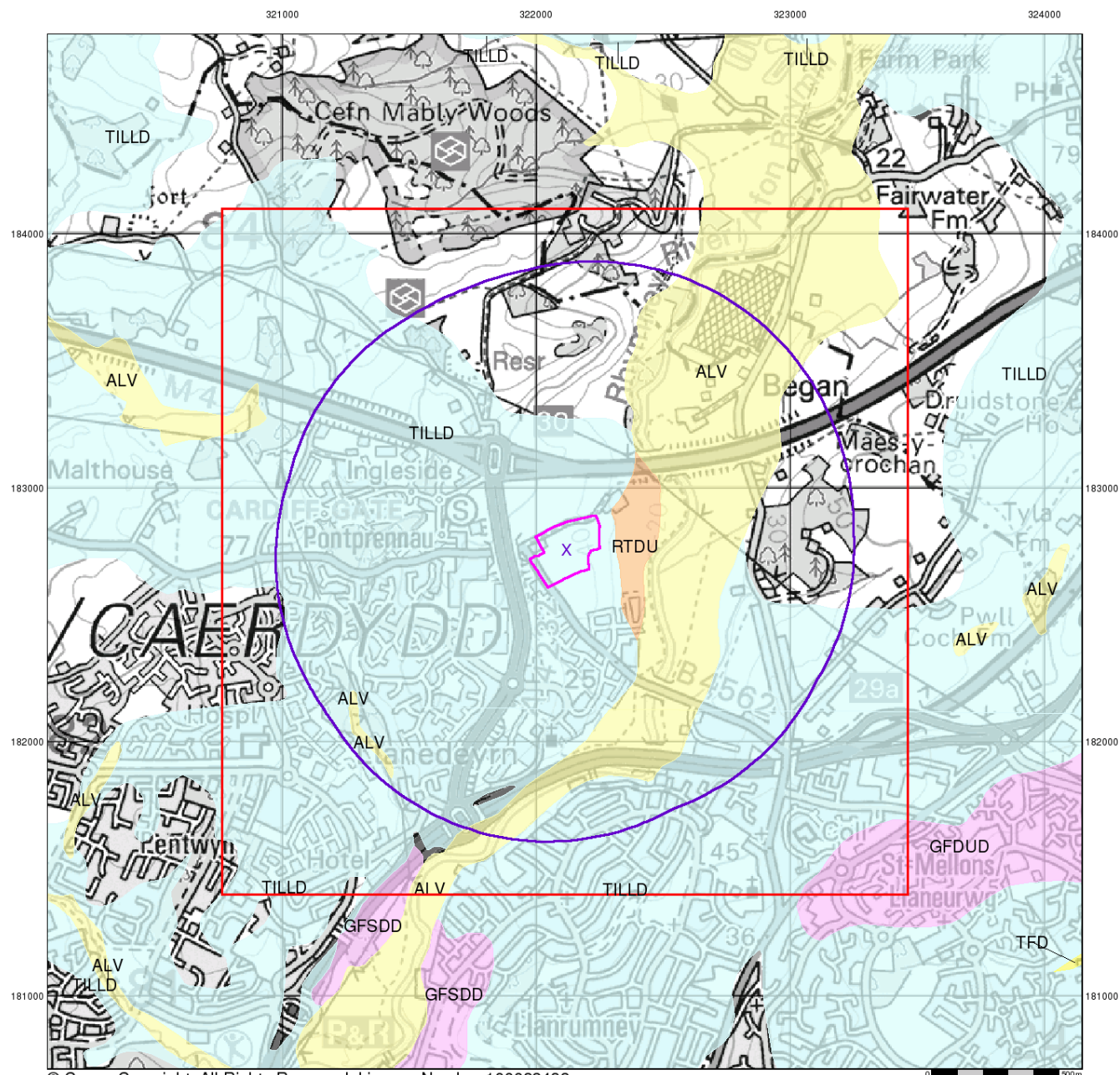
Order Number: 239204756_1_1
Customer Reference: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details:

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Intégral Géotechnique

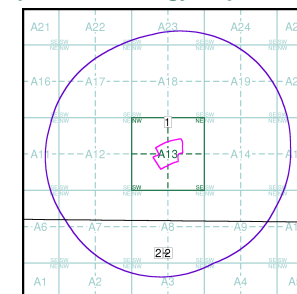
Superficial Geology

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

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

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

Superficial Geology Map - Slice A



Order Details:

Order Number: 239204756_1_1
Customer Reference: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details:

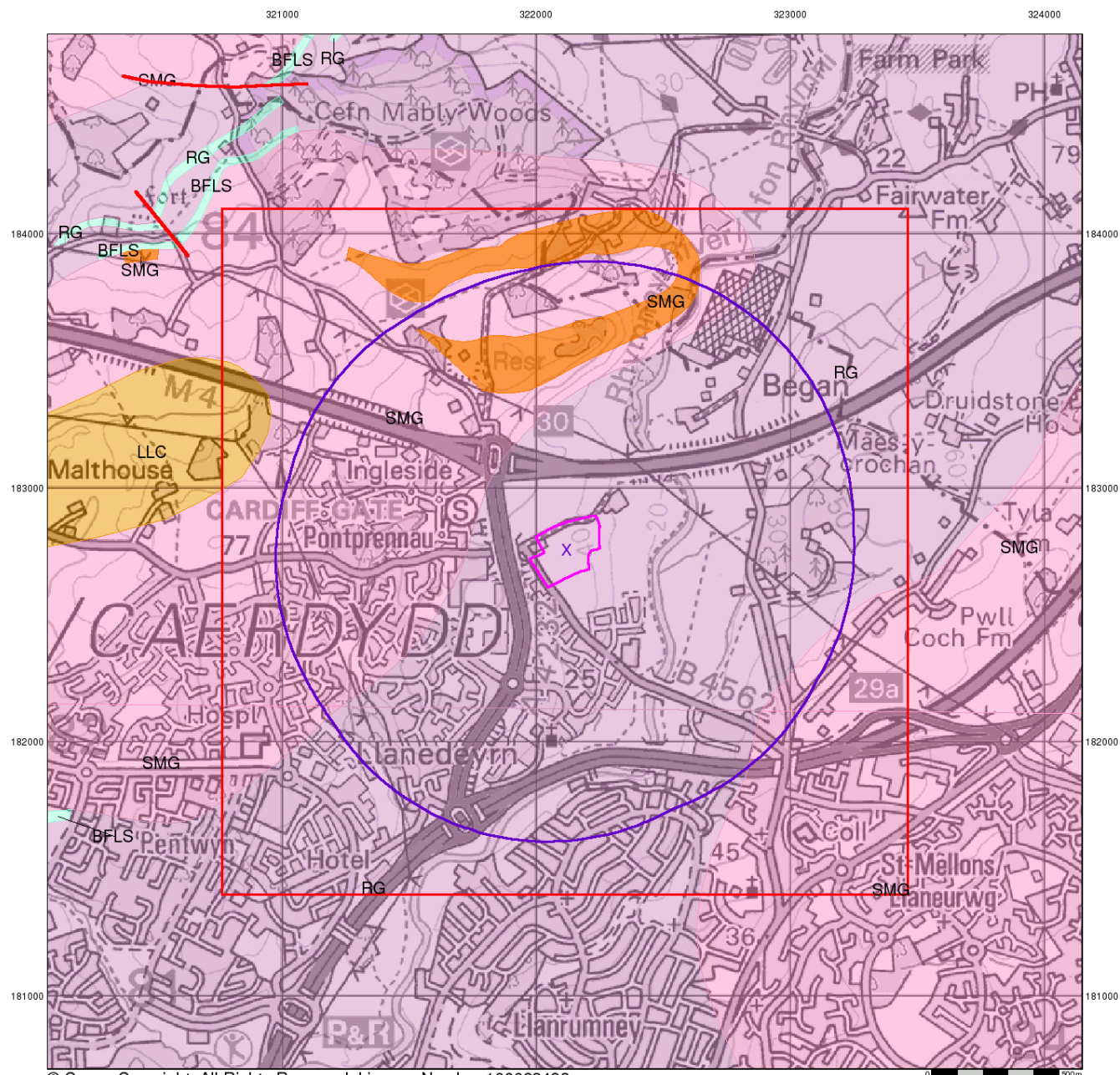
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v15.0 20-Mar-2020

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Intégral Géotechnique

Bedrock and Faults

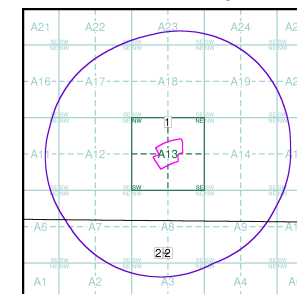
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

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

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

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

Bedrock and Faults Map - Slice A



Order Details:

Order Number: 239204756_1_1
Customer Reference: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details:

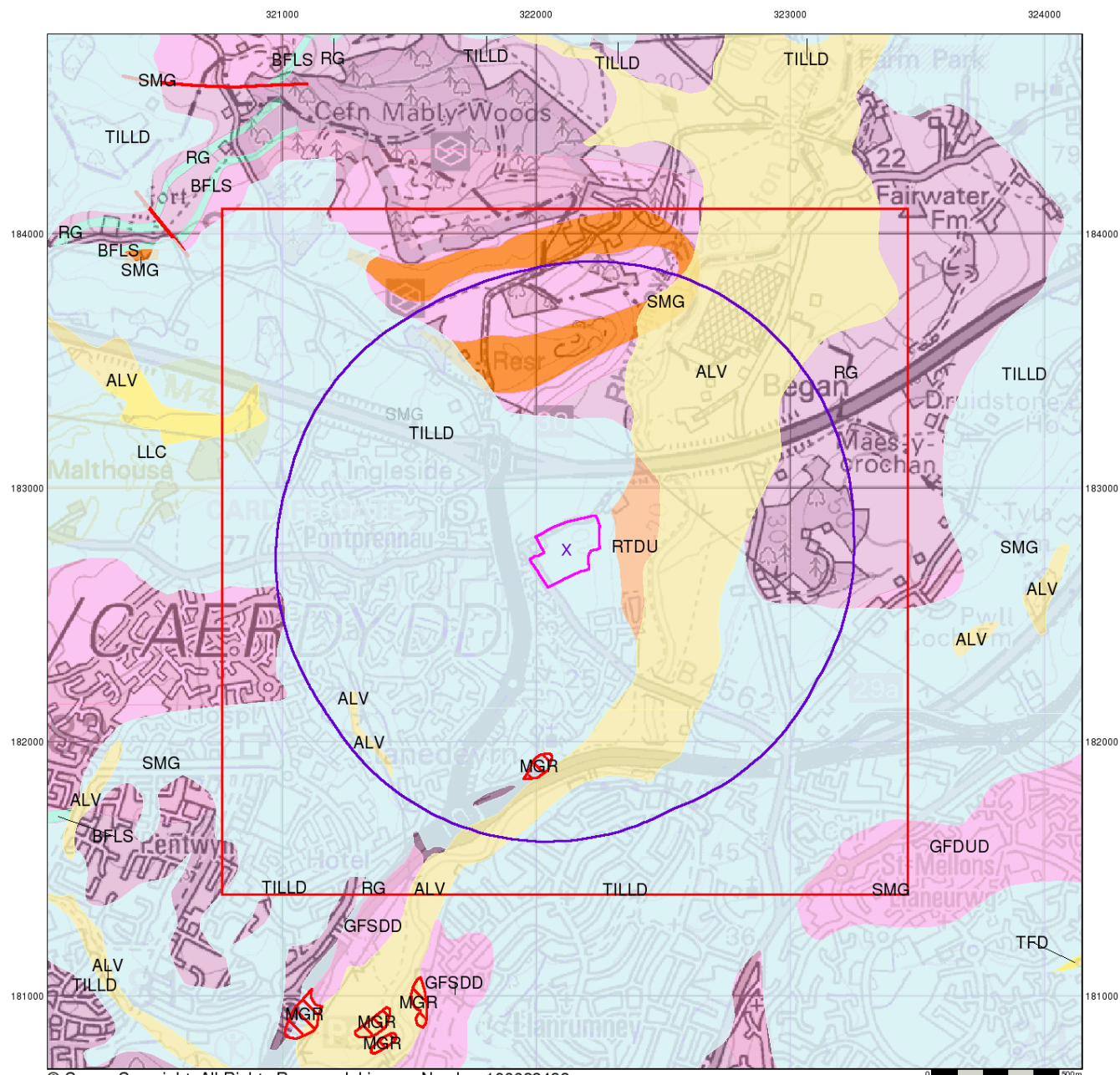
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Page 4 of 5



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Intégral Géotechnique

Combined Surface Geology

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

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

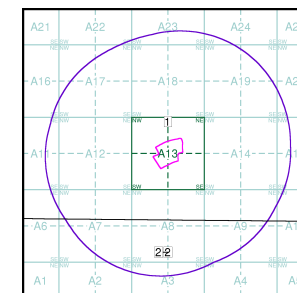
Additional Information

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

Contact

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

Combined Geology Map - Slice A



Order Details:

Order Number: 239204756_1_1
Customer Reference: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

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

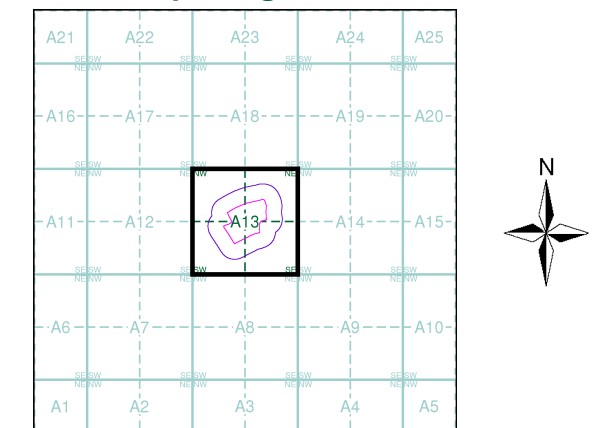


Intégral Géotechnique

Historical Mapping & Photography included:

| Mapping Type | Scale | Date | Pg |
|--------------------------------|---------|-------------|----|
| Glamorganshire | 1:2,500 | 1875 - 1882 | 2 |
| Monmouthshire | 1:2,500 | 1883 - 1891 | 3 |
| Glamorganshire | 1:2,500 | 1900 | 4 |
| Glamorganshire | 1:2,500 | 1919 - 1920 | 5 |
| Glamorganshire | 1:2,500 | 1940 | 6 |
| Ordnance Survey Plan | 1:2,500 | 1967 | 7 |
| Additional SIMs | 1:2,500 | 1984 - 1990 | 8 |
| Ordnance Survey Plan | 1:2,500 | 1986 - 1991 | 9 |
| Large-Scale National Grid Data | 1:2,500 | 1992 | 10 |
| Large-Scale National Grid Data | 1:1,250 | 1992 | 11 |
| Large-Scale National Grid Data | 1:1,250 | 1994 | 12 |
| Large-Scale National Grid Data | 1:2,500 | 1996 | 13 |
| Large-Scale National Grid Data | 1:1,250 | 1996 | 14 |
| Large-Scale National Grid Data | 1:1,250 | 1996 | 15 |
| Large-Scale National Grid Data | 1:1,250 | 1996 | 16 |
| Historical Aerial Photography | 1:2,500 | 2000 | 17 |

Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

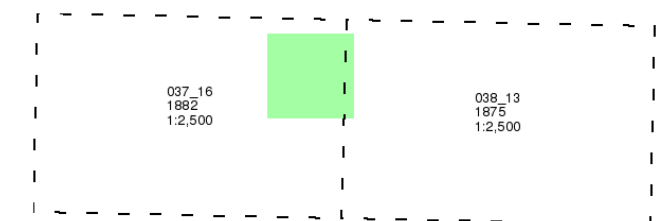
Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

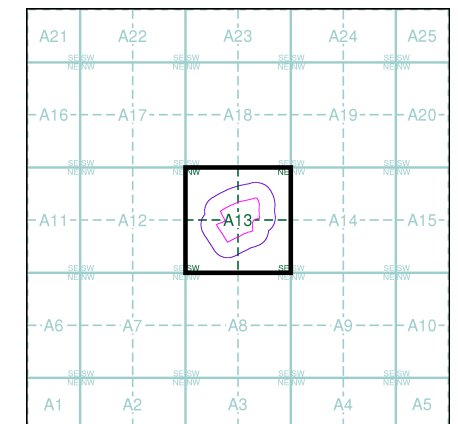
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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

Map Name(s) and Date(s)



Historical Map - Segment A13

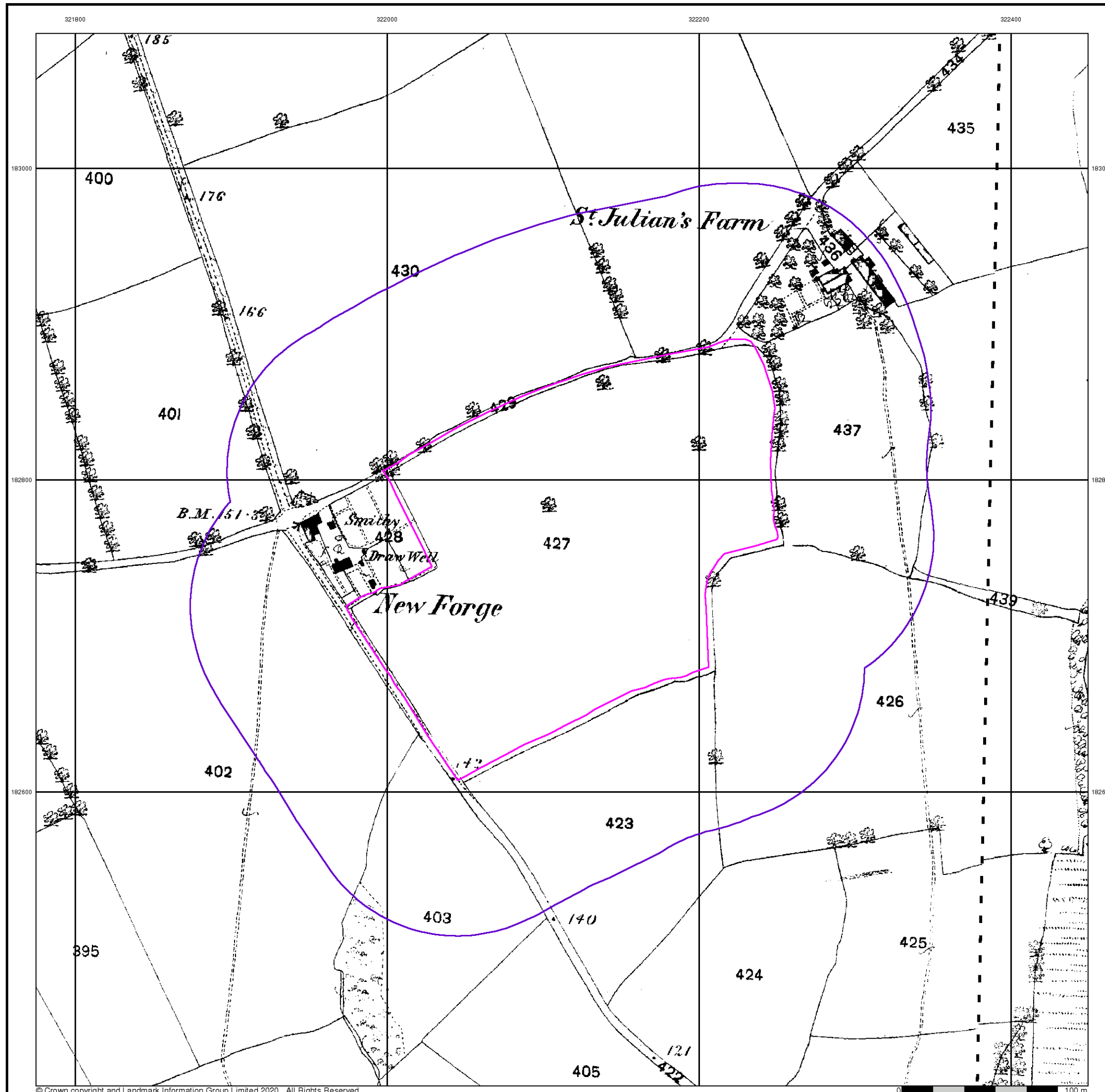


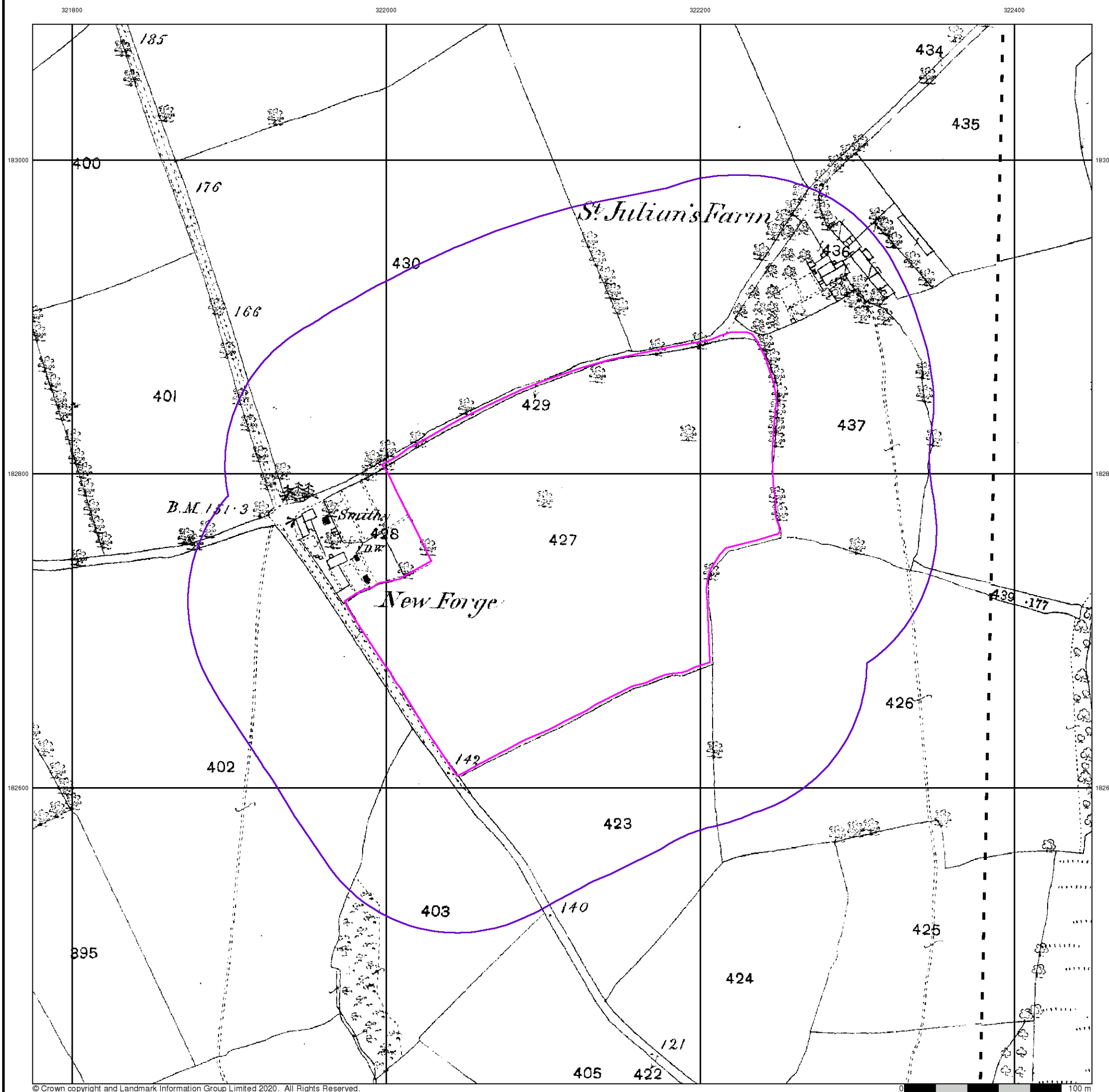
Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF





Intégral Géotechnique

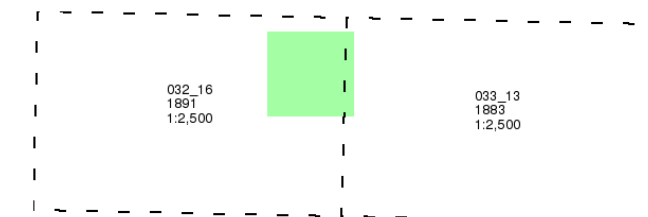
Monmouthshire

Published 1883 - 1891

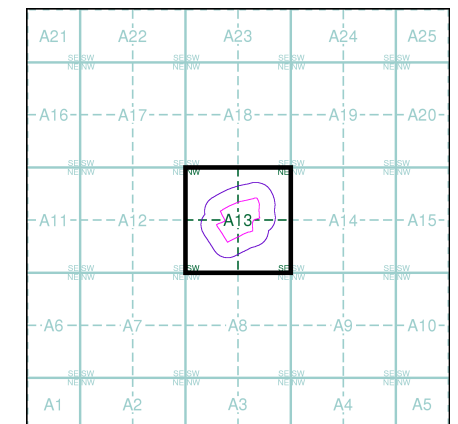
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

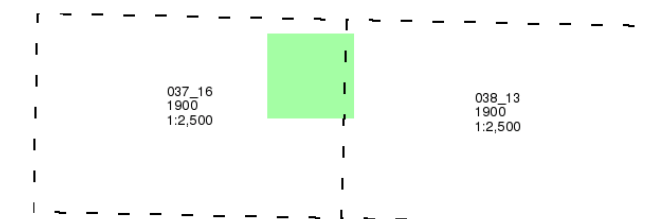
Tobin Land, CARDIFF

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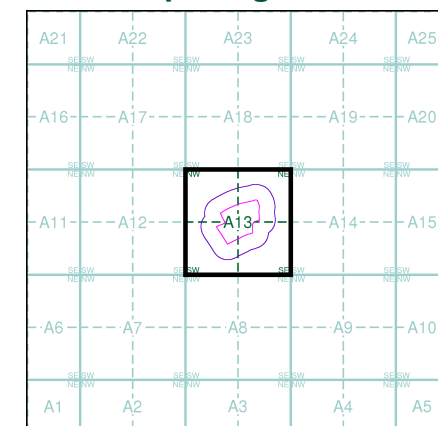
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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

Map Name(s) and Date(s)



Historical Map - Segment A13

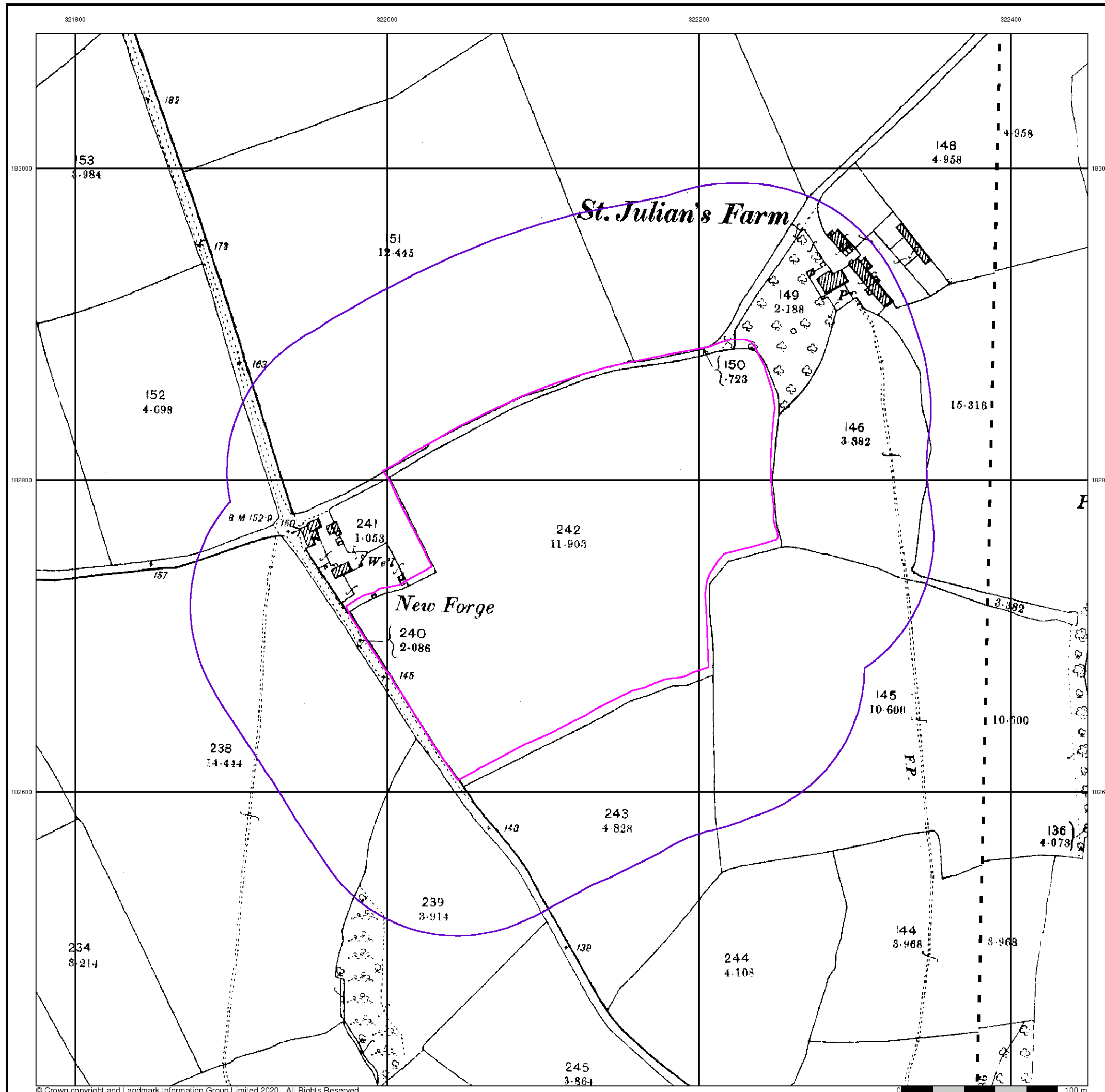


Order Details

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Slice: A
Site Area (Ha): 4.81
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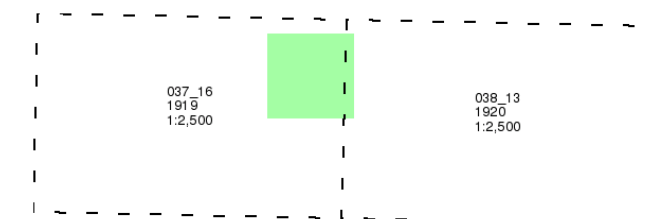
Site Details

Tobin Land, CARDIFF

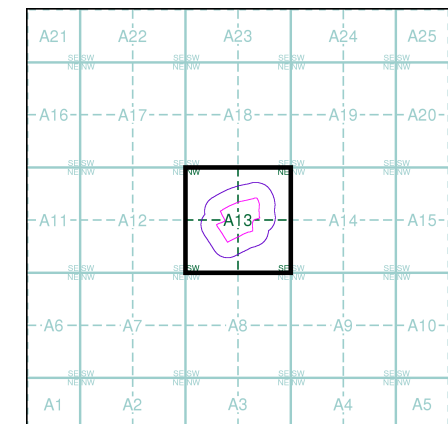


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain.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

Map Name(s) and Date(s)



Historical Map - Segment A13

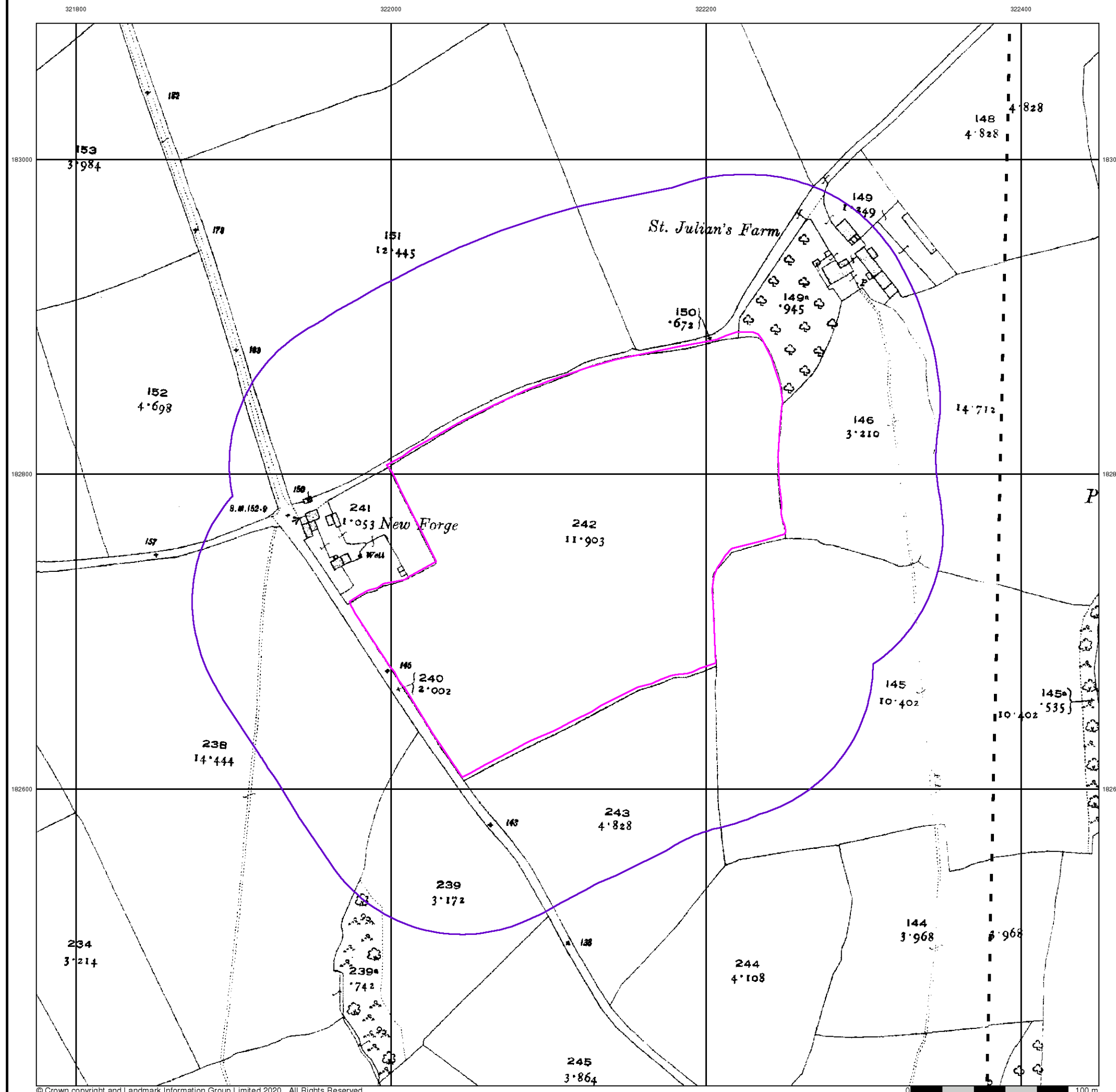


Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

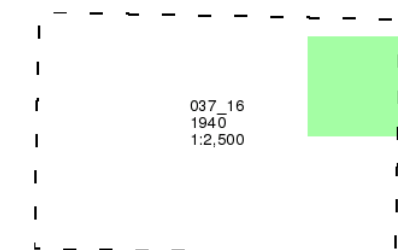
Site Details

Tobin Land, CARDIFF

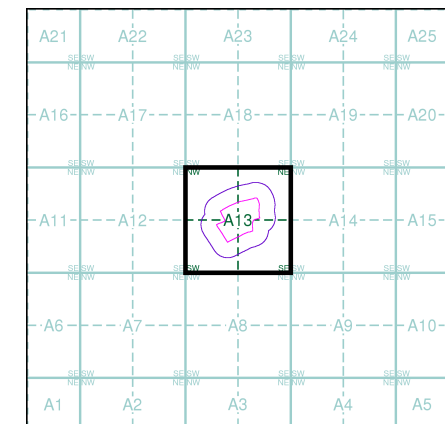


The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas and by 1896 it covered the whole of what were considered to be the cultivated parts of Great Britain.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

Map Name(s) and Date(s)



Historical Map - Segment A13

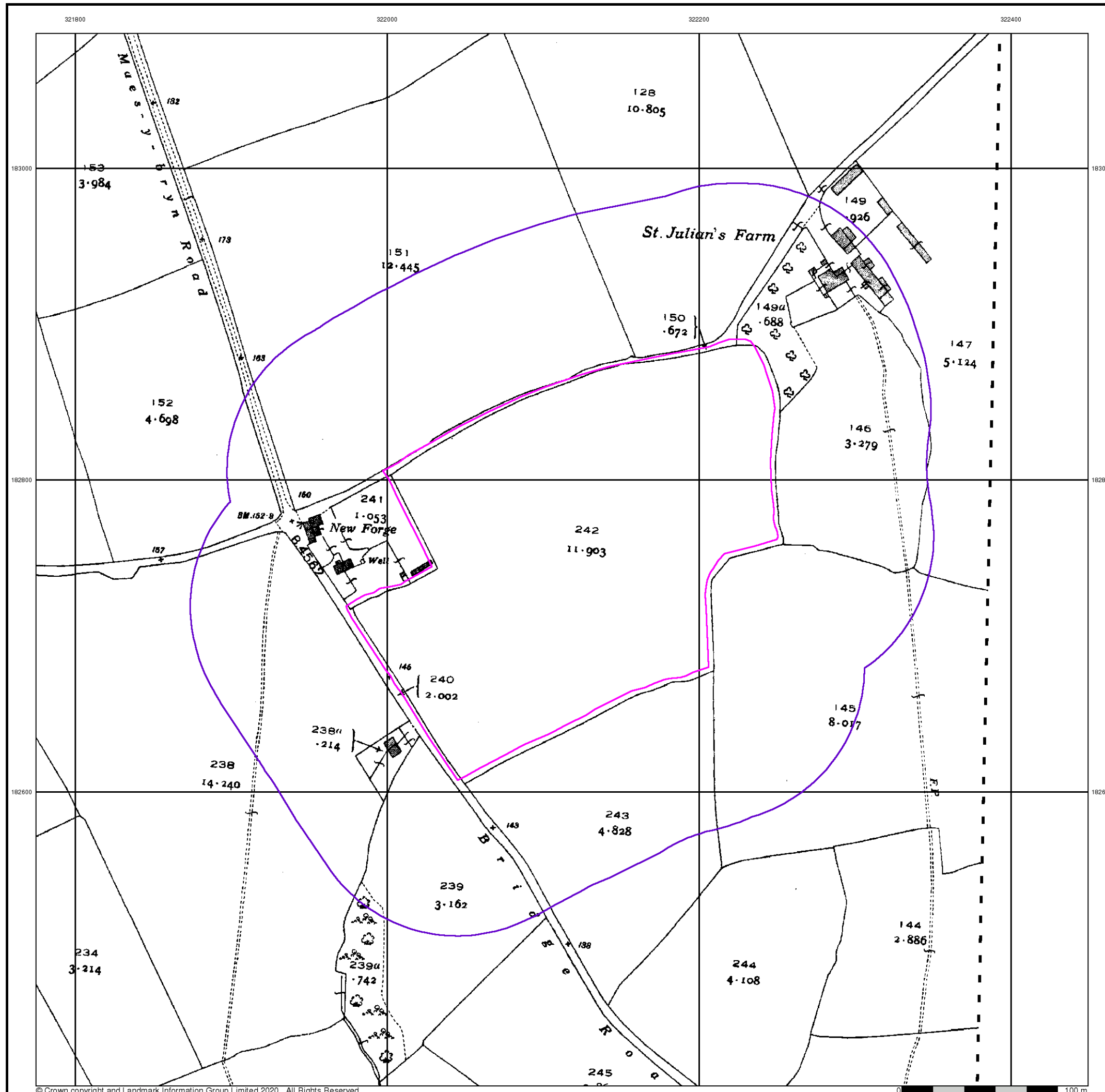


Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF



Ordnance Survey Plan

Published 1967

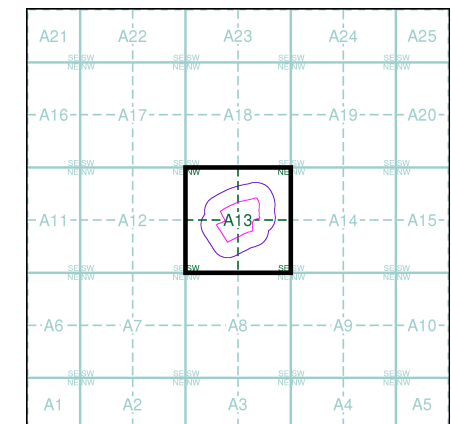
Source map scale - 1:2,500

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

Map Name(s) and Date(s)

| | |
|---------------------------|---------------------------|
| ST2183 1967 1:2,500 | ST2283 1967 1:2,500 |
| ST2182 1967 1:2,500 | ST2282 1967 1:2,500 |

Historical Map - Segment A13

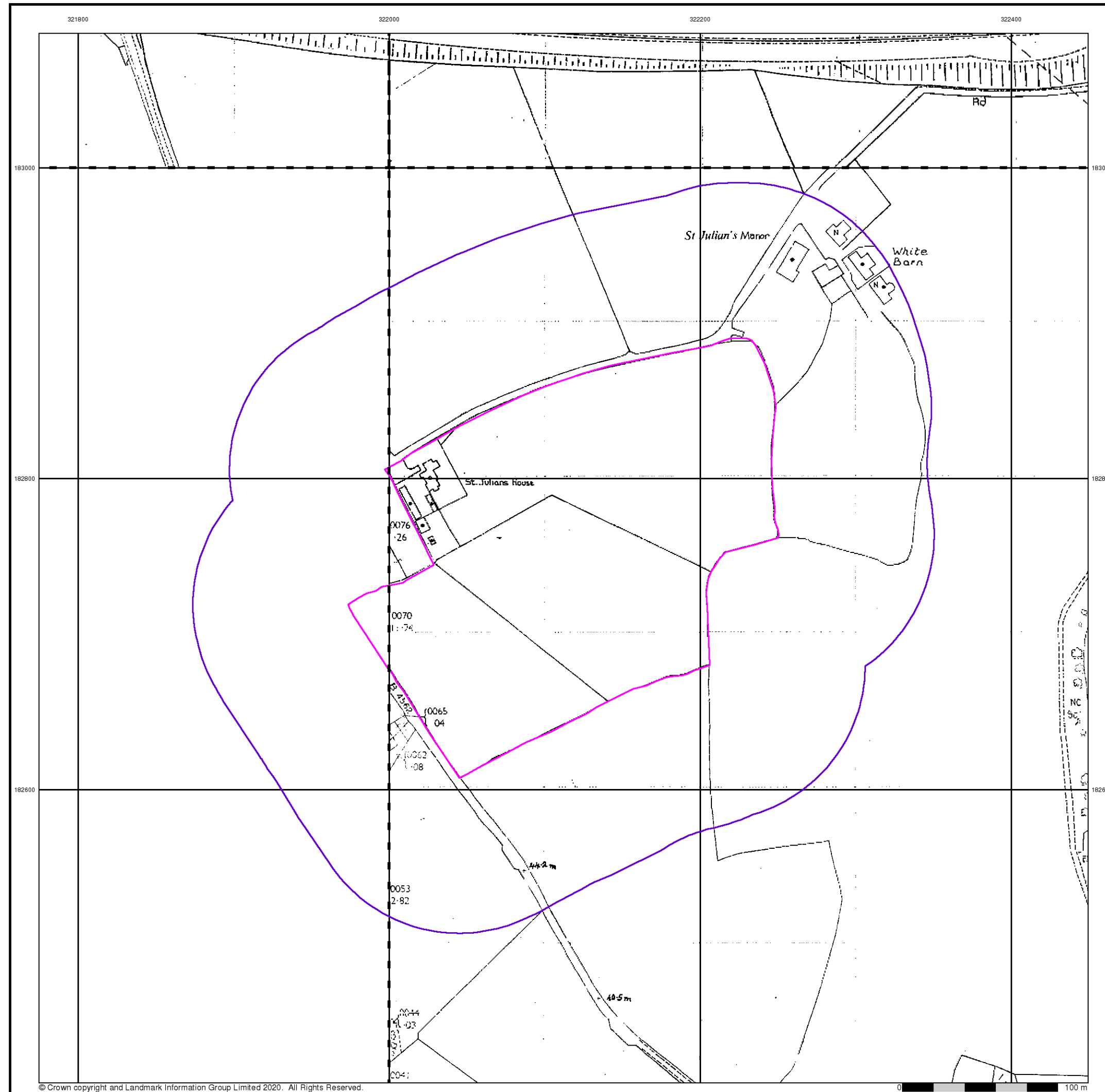


Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF



Intégral Géotechnique

Additional SIMs

Published 1984 - 1990

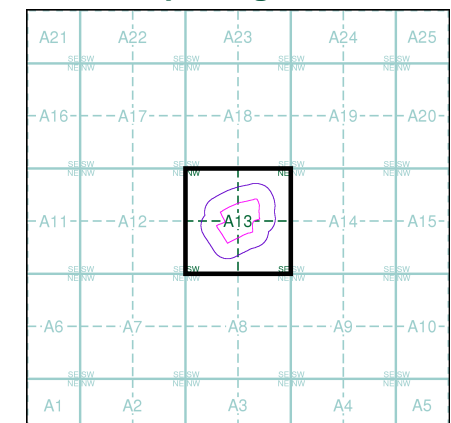
Source map scale - 1:2,500

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)

| | |
|---------------------------|---------------------------|
| ST2183 1984 1:2,500 | ST2283 1987 1:2,500 |
| | ST2282 1990 1:2,500 |

Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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



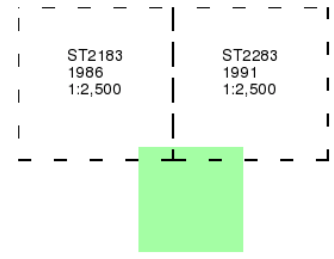
Ordnance Survey Plan

Published 1986 - 1991

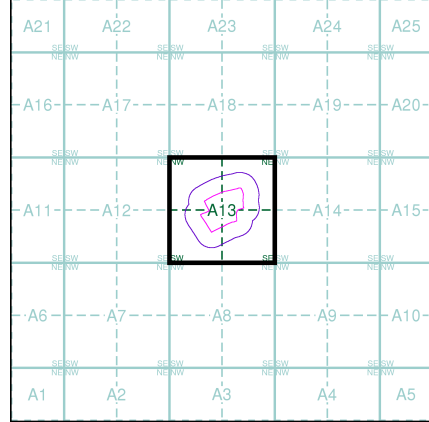
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF



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



Large-Scale National Grid Data

Published 1992

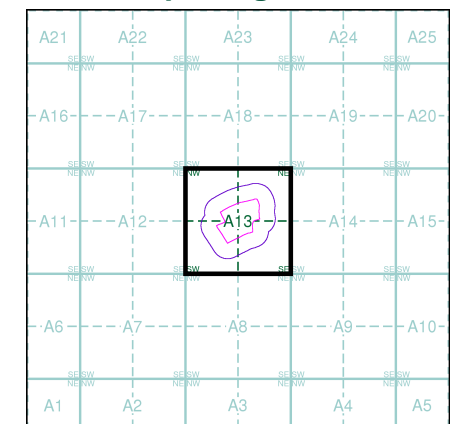
Source map scale - 1:2,500

'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)

| | |
|---------------------------|---------------------------|
| ST2183 1992 1:2,500 | ST2283 1992 1:2,500 |
| | ST2282 1992 1:2,500 |

Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF



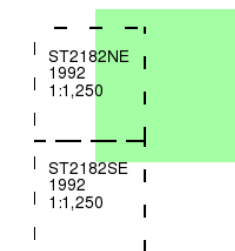
Large-Scale National Grid Data

Published 1992

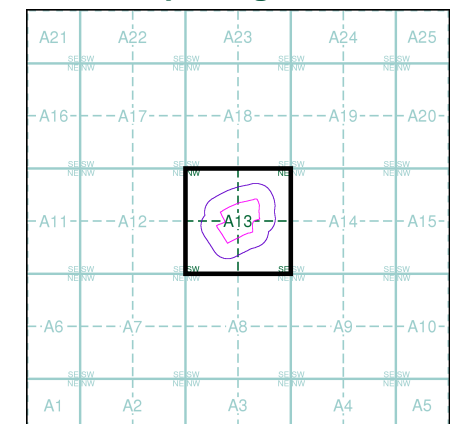
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF

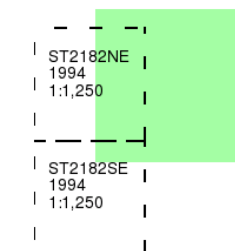
Large-Scale National Grid Data

Published 1994

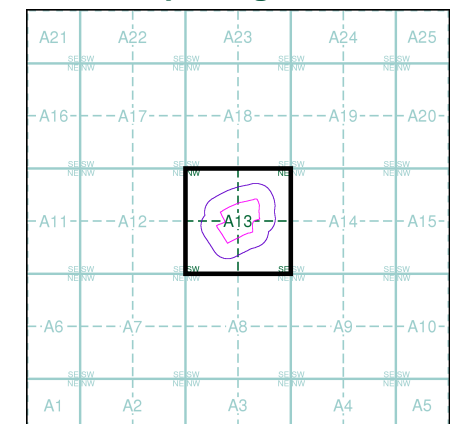
Source map scale - 1:1,250

'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 A13



Order Details

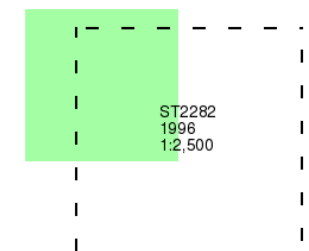
Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

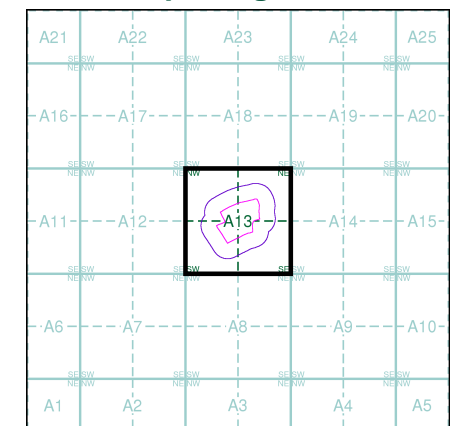
Tobin Land, CARDIFF

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF

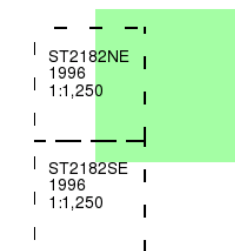
Large-Scale National Grid Data

Published 1996

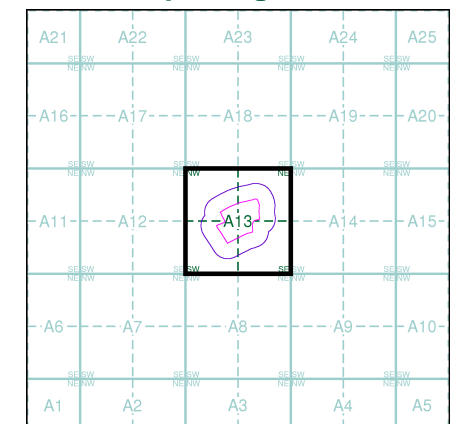
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF

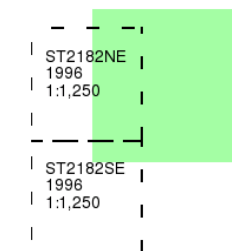
Large-Scale National Grid Data

Published 1996

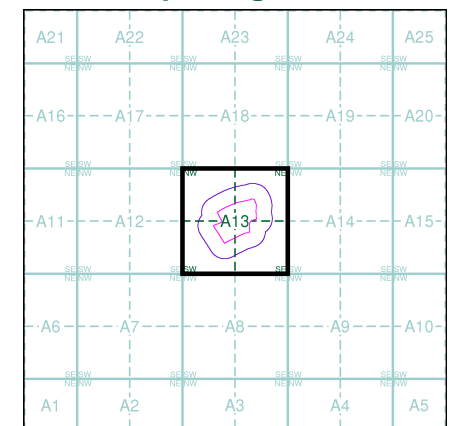
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF

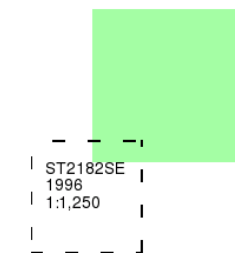
Large-Scale National Grid Data

Published 1996

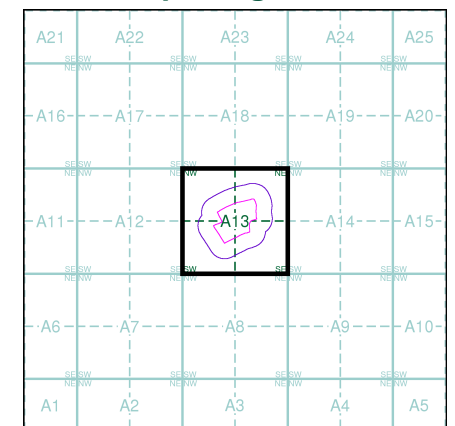
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF

321800

322000

322200

322400

183000

183000

182800

182800

182600

182600



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0 100 m

Intégral

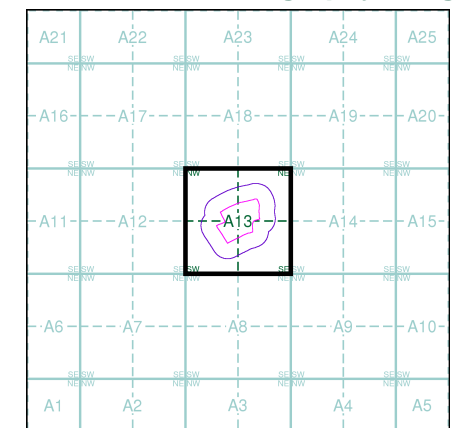
Géotechnique

Historical Aerial Photography

Published 2000

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

Historical Aerial Photography - Segment A13



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 100

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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

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

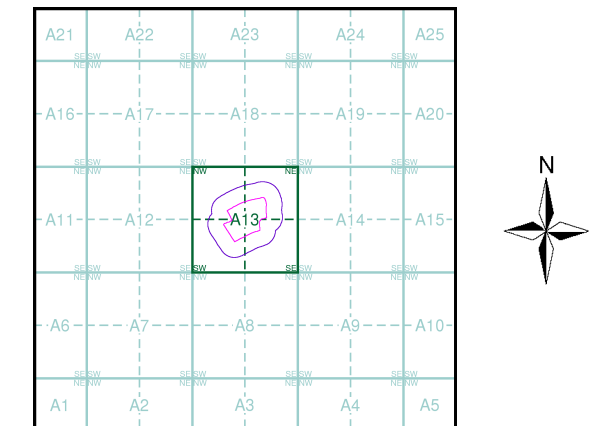
| | | | |
|--|--|--|--|
| | Gravel Pit | | Refuse tip or slag heap |
| | Rock | | Rock (scattered) |
| | Boulders | | Boulders (scattered) |
| | Shingle | | Mud |
| | Sand | | Sand Pit |
| | Slopes | | Top of cliff |
| | General detail | | Underground detail |
| | Overhead detail | | Narrow gauge railway |
| | 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 |

Intégral Géotechnique

Historical Mapping & Photography included:

| Mapping Type | Scale | Date | Pg |
|-------------------------------|----------|-------------|----|
| Monmouthshire | 1:10,560 | 1885 - 1887 | 3 |
| Glamorganshire | 1:10,560 | 1886 | 4 |
| Monmouthshire | 1:10,560 | 1887 | 5 |
| Glamorganshire | 1:10,560 | 1901 | 6 |
| Monmouthshire | 1:10,560 | 1902 | 7 |
| Glamorganshire | 1:10,560 | 1922 | 8 |
| Glamorganshire | 1:10,560 | 1938 - 1953 | 9 |
| Historical Aerial Photography | 1:10,560 | 1947 | 10 |
| Glamorganshire | 1:10,560 | 1952 - 1954 | 11 |
| Ordnance Survey Plan | 1:10,000 | 1964 | 12 |
| Ordnance Survey Plan | 1:10,000 | 1972 | 13 |
| Cardiff | 1:10,000 | 1982 | 14 |
| Ordnance Survey Plan | 1:10,000 | 1983 | 15 |
| Ordnance Survey Plan | 1:10,000 | 1993 | 16 |
| 10K Raster Mapping | 1:10,000 | 1999 | 17 |
| 10K Raster Mapping | 1:10,000 | 2006 | 18 |
| VectorMap Local | 1:10,000 | 2020 | 19 |

Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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

Russian Military Mapping Legends

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

a. Not drawn to scale b. Drawn to scale

Government and Administrative Buildings Military and Industrial Buildings

Military and Communication Areas Subway Entrance

Fireproof Building Prominent Fireproof Building

Non-fireproof Building Non-fireproof Building (non-dwelling)

Factory, mill, and flour mill, with chimneys Factory, mill, and flour mill, without chimneys

Power Station, drawn to scale Hydroelectric Power Station

Radio Station, drawn to scale Telephone Station, drawn to scale

Abandoned Open-pit Mine or Quarry Open-pit Salt Mine

Pit Oil Deposit or Well Oil Seepage

Tailings Pile Fuel Storage Tanks Natural Gas Tank

Bench Mark Drill Hole Burial Mound Triangulation Point on Burial Mound

Single-track Railroad Small Bridge Double-track Railroad and Station Building

Coniferous Forest Deciduous Forest Mixed Forest

Lawns Citrus Orchard Wet Ground Scattered Vegetation

243.8 Values for prominent elevations

186.0 Numbers for spot elevations, depth soundings, contour lines, etc.

0.2 Velocity of the current, width of river bed, depth of river

180 180 Fractional terms: length and capacity of bridges; depth of fords and condition of the river bottom; height of forest and the diameter of trees

Russian Alphabet (For reference and phonetic interpretation of map text)

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

1:25,000 mapping

a. Not drawn to scale b. Drawn to scale

Government and Administrative Buildings Military and Industrial Buildings

Military and Communication Areas Subway Entrance

Partly Demolished Buildings Demolished Buildings

Built-Up Area with Fireproof Buildings Predominant Built-Up Area with Non-Fireproof Buildings Predominant

Individual Fireproof Building Prominent Industrial Building

Individual Dwelling, Fireproof Ruins of an Individual Dwelling

Factory or Mill Chimney Factory or Mill with Chimney Factory or Mill without Chimney Mine or Open Pit Mine

Operating Shaft or Mine Non-Operating Shaft or Mine Salt Mine Tailings Pile

Pit Stone Quarry Gas Pump or Service Station Fuel Storage or Natural Gas Tank

Oil or Natural Gas Derrick Small Hydroelectric Power Station Power Station Transformer Station

Cemetery Burial Mound (height in metres) Triangulation Point on Burial Mound Triangulation Point

Bench Mark Bench Mark (monumented) Telegraph Office Telephone Station

Radio Station Radio Tower Airfield or Seaplane Base Landing Strip

Cut Fill Km Post Plantings Width of Road Steep Grade

Telegraph/Telephone Lines Main Highway Highway under Construction Improved Dirt Road (former truck road)

Small Bridge Pipe (Culvert) Tunnel Dismantled Railroad

Double-track Railroad with First Class Station Railroad Under Construction

Shore Embankment River or Ditch with Embankment Direction and velocity of current Water Gauge Water Level Mark

Well Water Reservoir or Rain Water Pit Spring Isobath with value

Heavy (Index) Contour Line Contour Line and Value Half Contour Line Spot Elevation Value

Coniferous Deciduous Mixed Scrub

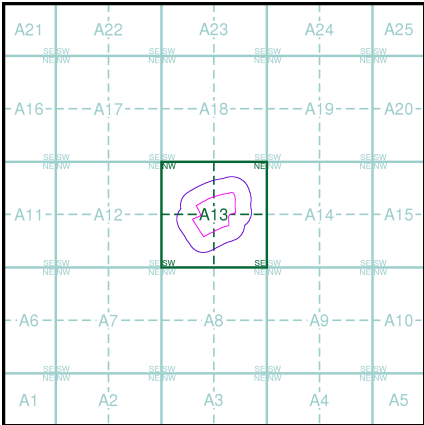
Key to Numbers on Mapping

Intégral Géotechnique

Historical Mapping & Photography included:

| Mapping Type | Scale | Date | Pg |
|-------------------------------|----------|-------------|----|
| Monmouthshire | 1:10,560 | 1885 - 1887 | 3 |
| Glamorganshire | 1:10,560 | 1886 | 4 |
| Monmouthshire | 1:10,560 | 1887 | 5 |
| Glamorganshire | 1:10,560 | 1901 | 6 |
| Monmouthshire | 1:10,560 | 1902 | 7 |
| Glamorganshire | 1:10,560 | 1922 | 8 |
| Glamorganshire | 1:10,560 | 1938 - 1953 | 9 |
| Historical Aerial Photography | 1:10,560 | 1947 | 10 |
| Glamorganshire | 1:10,560 | 1952 - 1954 | 11 |
| Ordnance Survey Plan | 1:10,000 | 1964 | 12 |
| Ordnance Survey Plan | 1:10,000 | 1972 | 13 |
| Cardiff | 1:10,000 | 1982 | 14 |
| Ordnance Survey Plan | 1:10,000 | 1983 | 15 |
| Ordnance Survey Plan | 1:10,000 | 1993 | 16 |
| 10K Raster Mapping | 1:10,000 | 1999 | 17 |
| 10K Raster Mapping | 1:10,000 | 2006 | 18 |
| VectorMap Local | 1:10,000 | 2020 | 19 |

Russian Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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

Intégral Géotechnique

Monmouthshire

Published 1885 - 1887

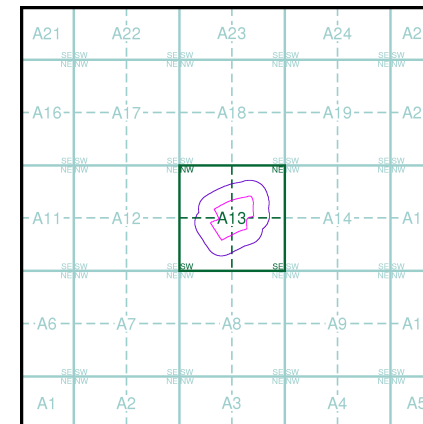
Source map scale - 1:10,560

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

Map Name(s) and Date(s)

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

Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

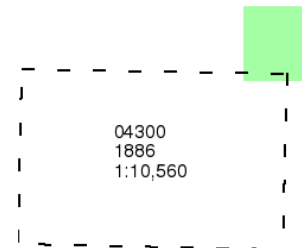
Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

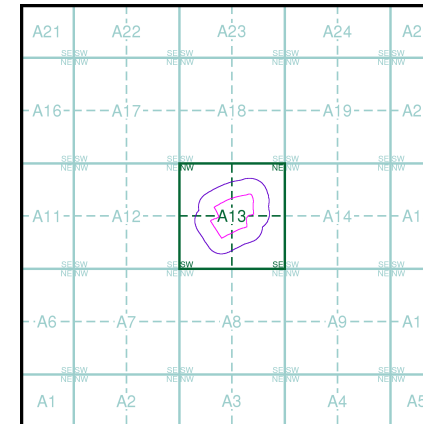
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840's. In 1854 the 1:2,500 scale was adopted for mapping urban areas; 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

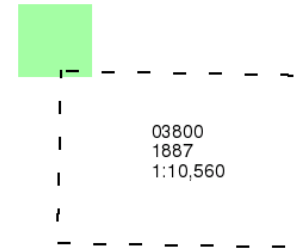
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Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

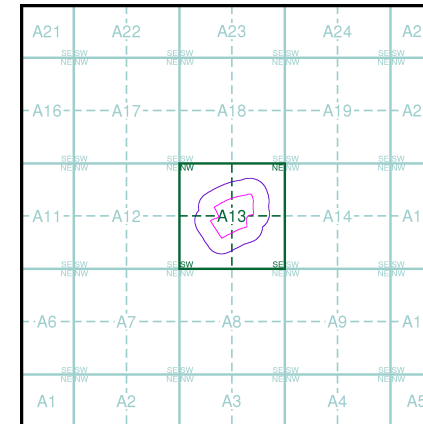
Tobin Land, CARDIFF

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: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

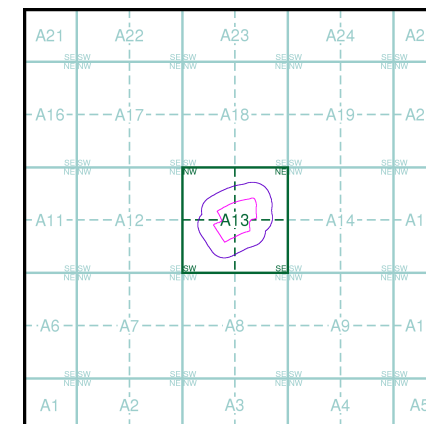
Tobin Land, CARDIFF

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

Map Name(s) and Date(s)

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

Historical Map - Slice A



Order Details

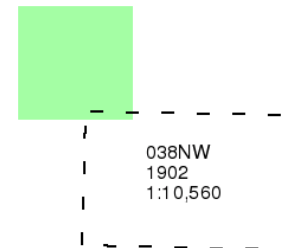
Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

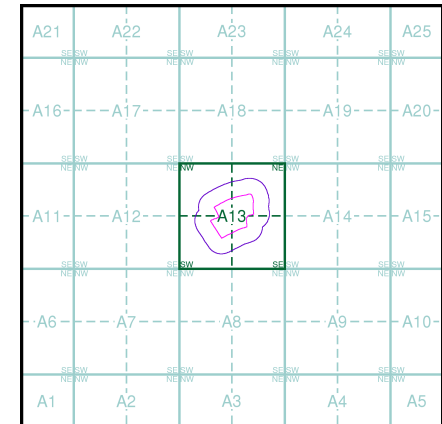
Tobin Land, CARDIFF

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: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Intégral Géotechnique

Glamorganshire

Published 1922

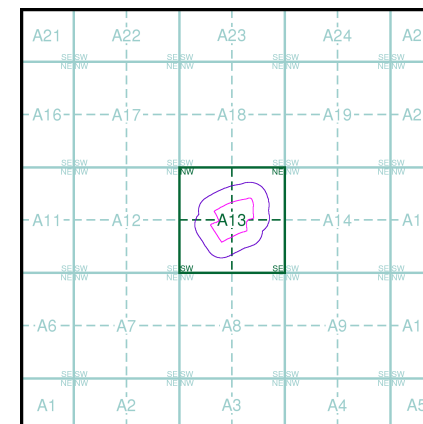
Source map scale - 1:10,560

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

Map Name(s) and Date(s)

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

Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

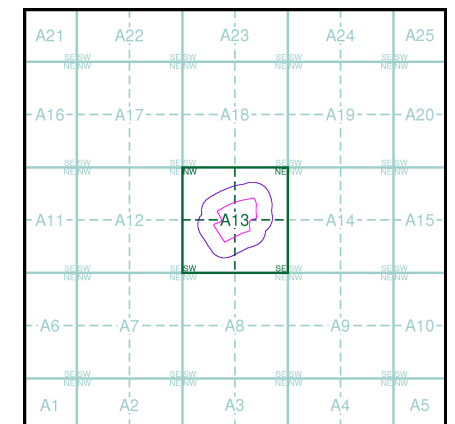
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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

Map Name(s) and Date(s)

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

Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Historical Aerial Photography

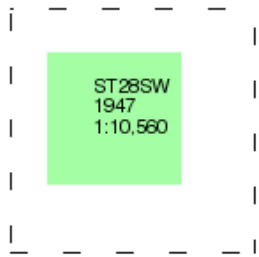
Published 1947

Source map scale - 1:10,560

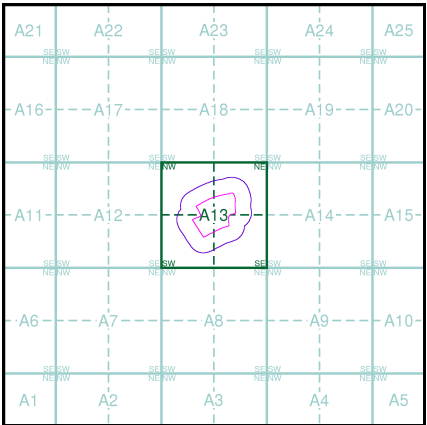
The Historical Aerial Photos were produced by the Ordnance Survey at a scale of 1:1,250 and 1:10,560 from Air Force photography. They were produced between 1944 and 1951 as an interim measure, pending preparation of conventional mapping, due to post war resource shortages. New security measures in the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

© Landmark Information Group and/or Data Suppliers 2010.

Map Name(s) and Date(s)



Historical Aerial Photography - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

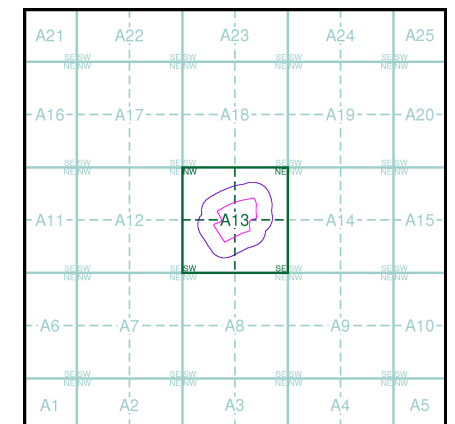
Tobin Land, CARDIFF

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

Map Name(s) and Date(s)

| | | |
|--------|------|----------|
| 037SE | 1953 | 1:10,560 |
| 043NE | 1952 | 1:10,560 |
| 043A00 | 1954 | 1:10,560 |

Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

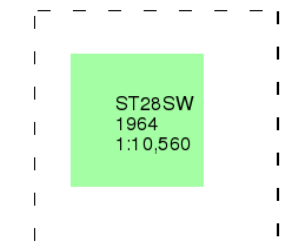
Ordnance Survey Plan

Published 1964

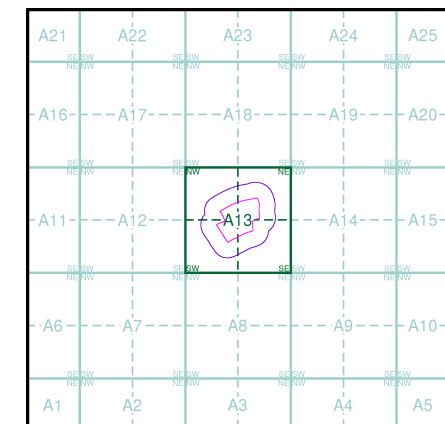
Source map scale - 1:10,000

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: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Ordnance Survey Plan

Published 1972

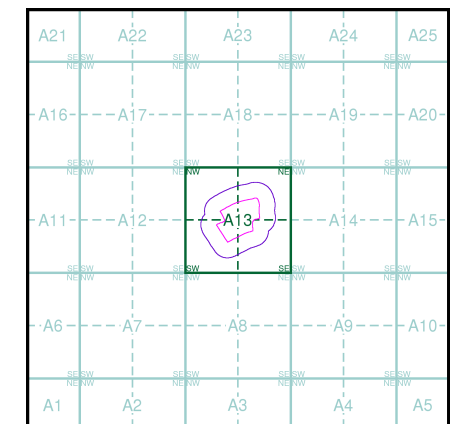
Source map scale - 1:10,000

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

Map Name(s) and Date(s)

ST28SW
1972
1:10,000

Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Cardiff

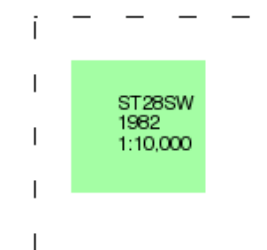
Published 1982

Source map scale - 1:10,000

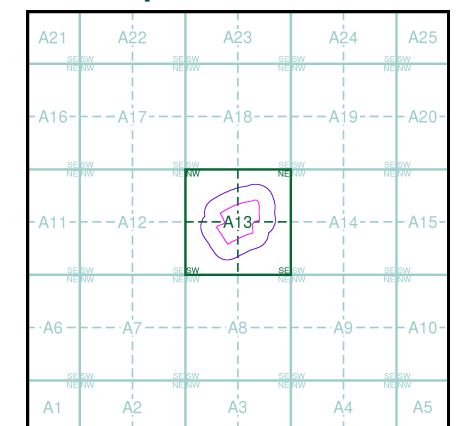
These maps were produced by the Russian military during the Cold War between 1950 and 1997, and cover 103 towns and cities throughout the U.K. The maps are produced at 1:25,000, 1:10,000 and 1:5,000 scale, and show detailed land use, with colour-coded areas for development, green areas, and non-developed areas. Buildings are coloured black and important building uses (such as hospitals, post offices, factories etc.) are numbered, with a numbered key describing their use.

They were produced by the Russians for the benefit of navigation, as well as strategic military sites and transport hubs, for use if they were to have invaded the U.K. The detailed information provided indicates that the areas were surveyed using land-based personnel, on the ground, in the cities that are mapped.

Map Name(s) and Date(s)



Russian Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Ordnance Survey Plan

Published 1983

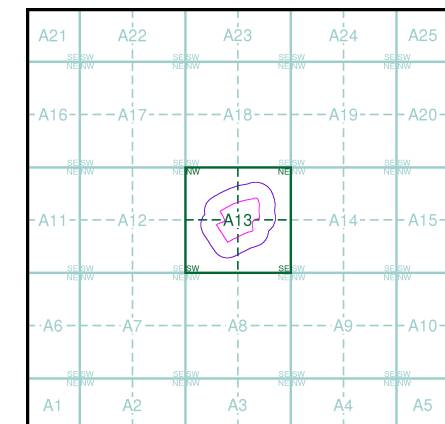
Source map scale - 1:10,000

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

Map Name(s) and Date(s)

ST28SW
1983
1:10,000

Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

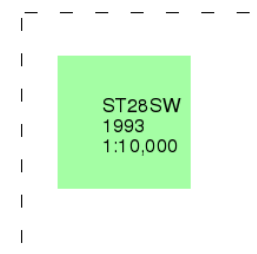
Ordnance Survey Plan

Published 1993

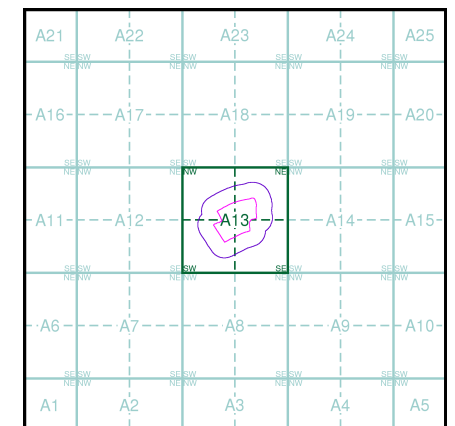
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Intégral Géotechnique

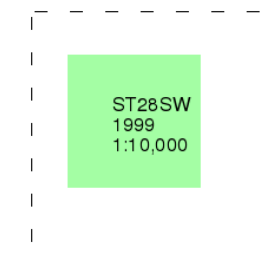
10k Raster Mapping

Published 1999

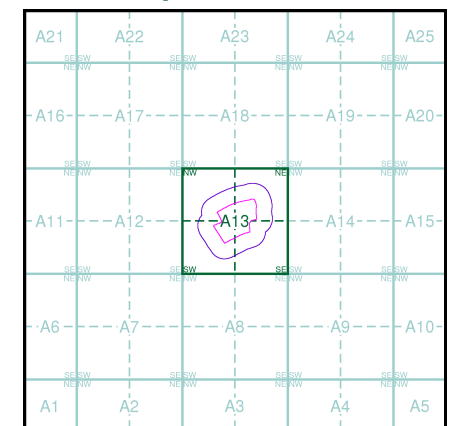
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

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

Intégral Géotechnique

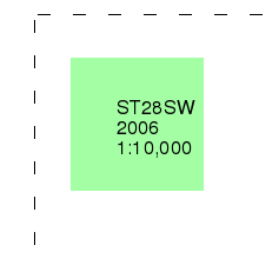
10k Raster Mapping

Published 2006

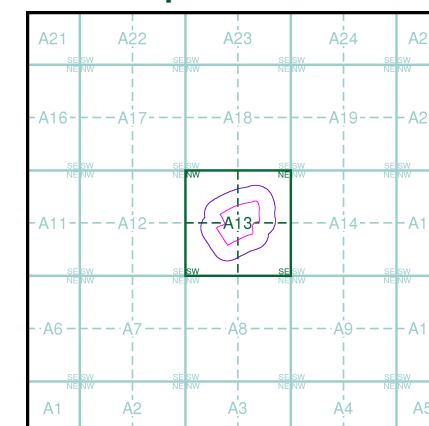
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

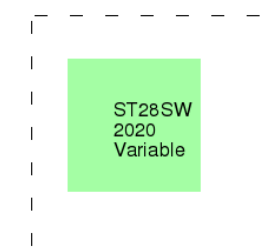
Tobin Land, CARDIFF

Landmark
INFORMATION GROUP

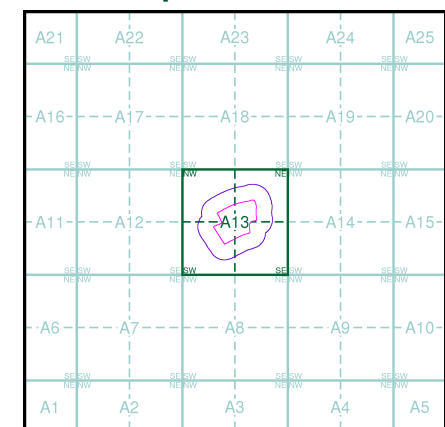
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

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)



Historical Map - Slice A



Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Slice: A
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

Intégral Géotechnique

Index Map

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

Slice

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

Segment

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

Quadrant

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

A selection of organisations who provide data within this report:



Envirocheck reports are compiled from 136 different sources of data.

Client Details

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

Order Details

Order Number: 239204756_1_1
Customer Ref: 12564/JJ
National Grid Reference: 322120, 182760
Site Area (Ha): 4.81
Search Buffer (m): 1000

Site Details

Tobin Land, CARDIFF

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



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

APPENDIX B

BGS RADON GEOREPORT



**British
Geological Survey**
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GeoReports

**Integral Geotechnique
Integral House
7 Beddau Way
Caerphilly
CF83 2AX**

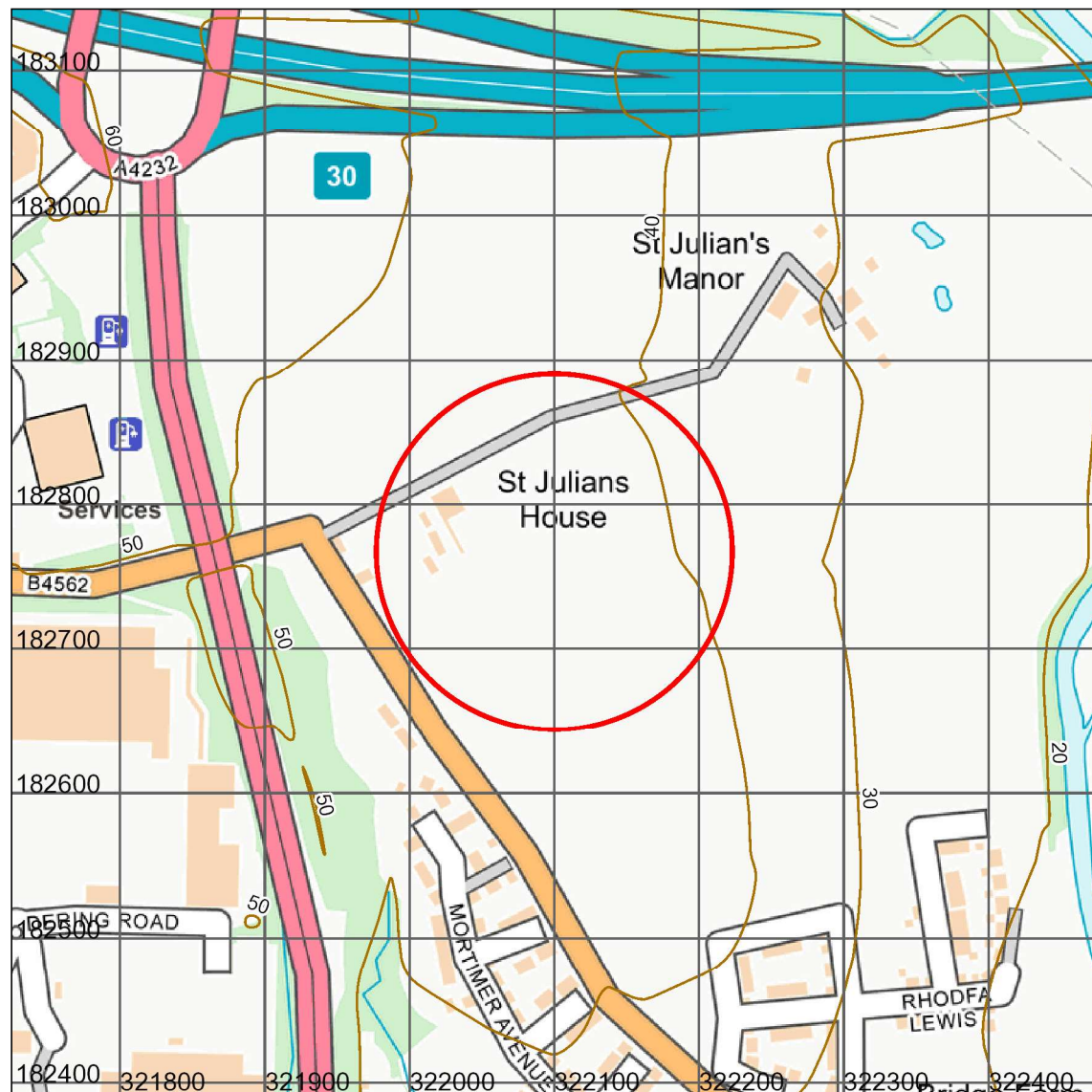
Radon Report

Advisory report on the requirement for radon protective measures in new buildings, conversions and extensions to existing buildings. The report also indicates whether a site is located within a radon Affected Area

Report Id: *BGS_308083/10844*

Client reference: 12564/JJ

Search location



Contains OS data © Crown Copyright and database right 2020. OS OpenMap Local: Scale: 1:5 000 (1cm = 50 m)

Search location indicated in red

Area centred at: 322100,182767

Radius of site area: 123 metres

Radon Report: UK

When extensions are made to existing buildings in high radon areas, or new buildings are constructed in these areas, the Building Regulations for England, Wales, Scotland and Northern Ireland require that protective measures are taken against radon entering the building.

This report provides information on whether radon protective measures are required. Depending on the probability of buildings having high radon levels, the Regulations may require either:

1. No protective measures
2. Basic protective measures
3. Full protective measures

This is an advisory report on the requirement for radon protective measures in new buildings, conversions and extensions. The report also indicates whether a site is located within a radon Affected Area

Requirement for radon protective measures

The determination below follows advice in *BR211 Radon: Guidance on protective measures for new buildings (2015 edition)*, which also provides guidance on what to do if the result indicates that protective measures are required.

Is the property in an area where radon protective measures are required for new buildings or extensions to existing ones as described in publication BR211 (2015 edition) Radon: Guidance on protective measures for new buildings?

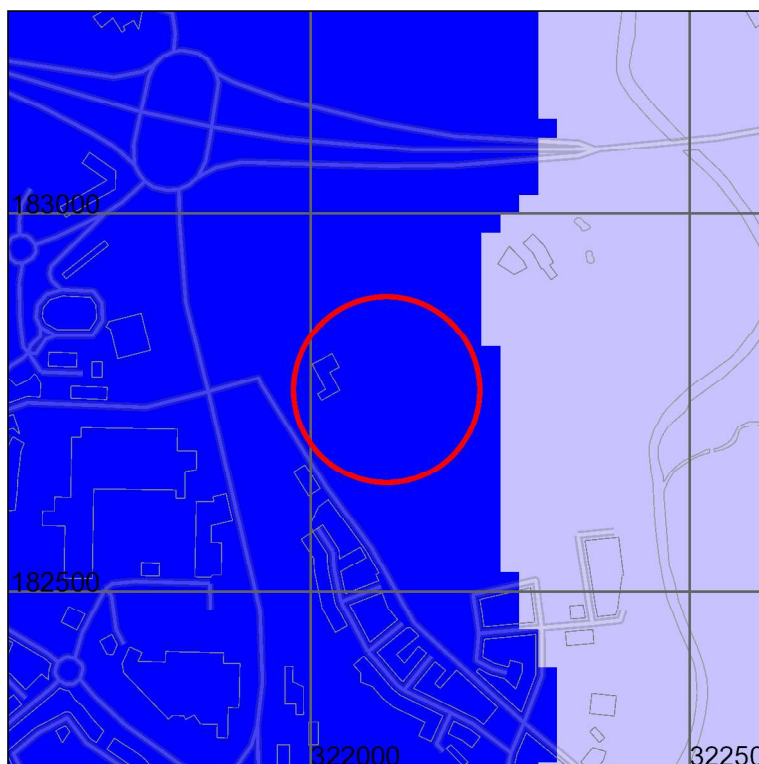
NO RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.

More details of the protective measures required are available in *BR211 Radon: Guidance on protective measures for new buildings (2015 Edition)*. Additional information and guidance is available from the Building Research Establishment website (<http://www.bre.co.uk/radon/>).

Whether or not the radon level in a building is above or below the radon Action Level can only be established by having the building tested. The PHE provides a radon testing service which can be accessed at www.ukradon.org or by telephone (01235 822622).

If you require further information or guidance, you should contact your local authority building control officer or approved inspector.

Radon Affected Area



| % Homes estimated to be at or above the action level |
|--|
| 0-1% |
| 1-3% |
| 3-5% |
| 5-10% |
| 10-30% |
| 30-100% |

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Scale: 1:10 000 (1cm = 100 m)

Search area indicated in red

Is the property in a radon Affected Area as defined by Public Health England (PHE) and if so what percentage of homes are estimated to be above the Action Level? **NO**

Additional Information

THE PROPERTY IS IN AN AREA WHERE LESS THAN 1% OF HOMES ARE ESTIMATED TO BE AT OR ABOVE THE ACTION LEVEL. THE PROPERTY IS NOT IN A RADON AFFECTED AREA.

PHE recommends a radon 'Action Level' of 200 Becquerels per cubic metre of air (Bq m^{-3}) for the annual average of the radon gas concentration in a home. Where 1% or more of homes are estimated to exceed the Action Level the area should be regarded as a radon Affected Area.

This report informs you whether the property is in a radon Affected Area and the percentage of homes that are estimated to be at or above the radon Action Level at this location. Being in an Affected Area does not necessarily mean there is a radon problem in the property; the only way to find out whether the radon level is above or below the Action Level is to carry out a radon measurement.



PHE advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels above the Action Level (200 Bq m⁻³) should be remediated. Householders with levels between the Target Level (100 Bq m⁻³) and Action Level should seriously consider reducing their radon level, especially if they are at greater risk, such as if they are current or ex smokers. Whether or not a home is in fact above or below the Action Level or Target Level can only be established by having the building tested. PHE provides a validated radon testing service which can be accessed at www.ukradon.org.

The information in this report provides an answer to one of the standard legal enquiries on house purchase in England and Wales, known as Law Society CON29 Enquiries of the Local Authority (2016); 3.14 Radon Gas: Do records indicate that the property is in a “Radon Affected Area” as identified by PHE. The data can also be used to advise house buyers and sellers in Scotland and Northern Ireland.

If you are buying a new build property in a Radon Affected Area, you should ask the builder whether radon protective measures were incorporated in the construction of the property.

If you are buying a currently occupied property in a radon Affected Area, you should ask the present owner whether radon levels have been measured in the property. If they have, ask whether the results were above the radon Action Level and if so, whether remedial measures were installed, radon levels were re-tested, and if the results of re-testing confirmed the effectiveness of the measures.

Further information on radon is available from PHE at www.ukradon.org.



What is radon?

Radon is a naturally occurring radioactive gas, which is produced by the radioactive decay of radium which, in turn, is derived from the radioactive decay of uranium. Uranium is found in small quantities in all soils and rocks, although the amount varies from place to place. Radon released from rocks and soils is quickly diluted in the atmosphere. Concentrations in the open air are normally very low and do not present a hazard. Radon that enters enclosed spaces such as some buildings (particularly basements), caves, mines, and tunnels may reach high concentrations in some circumstances. The construction method and degree of ventilation will influence radon levels in individual buildings. A person's exposure to radon will also vary according to how particular buildings and spaces are used. Inhalation of the radioactive decay products of radon gas increases the chance of developing lung cancer. If individuals are exposed to high concentrations for significant periods of time, there may be cause for concern. In order to limit the risk to individuals, the Government has adopted an Action Level for radon in homes of 200 becquerels per cubic metre (Bq m^{-3}). The Government advises householders that, where the radon level exceeds the Action Level, measures should be taken to reduce the concentration.

Radon in workplaces

The Ionising Radiation Regulations, 1999, require employers to take action when radon is present above a defined level in the workplace. Advice may be obtained from your local Health and Safety Executive Area Office or the Environmental Health Department of your local authority. The BRE publishes a guide (BR293): **Radon in the workplace**. BRE publications may be obtained from the BRE Bookshop, Tel: 01923 664262, email: bookshop@bre.co.uk website: www.brebookshop.com



Contact Details

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General Terms & Conditions

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- Geological observations and interpretations are made according to the prevailing understanding of the subject at the time. The quality of such observations and interpretations may be affected by the availability of new data, by subsequent advances in knowledge, improved methods of interpretation, and better access to sampling locations.
- Raw data may have been transcribed from analogue to digital format, or may have been acquired by means of automated measuring techniques. Although such processes are subjected to quality control to ensure reliability where possible, some raw data may have been processed without human intervention and may in consequence contain undetected errors.
- Detail, which is clearly defined and accurately depicted on large-scale maps, may be lost when small-scale maps are derived from them.
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- The topography shown on any map extracts is based on the latest OS mapping and is not necessarily the same as that used in the original compilation of the BGS geological map, and to which the geological linework available at that time was fitted.
- Note that for some sites, the latest available records may be historical in nature, and while every effort is made to place the analysis in a modern geological context, it is possible in some cases that the detailed geology at a site may differ from that described.

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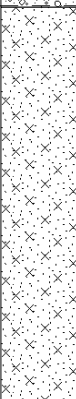

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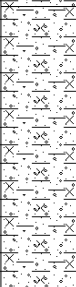


APPENDIX C






TRIAL PIT LOGS

|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP01 Sheet 1 of 1 | |
|---|------|---------|---|---------------|--|---|--|---|--|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | Depth : 3.00m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| 0.10 | ES | | 0.30 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| 1.20 | D | | | | | Firm becoming soft to firm brown very gravelly CLAY with medium cobble content. Gravel is fine to coarse rounded to angular of sandstone. Cobbles are sub-angular of sandstone. | | | |
| | | | | | | | | | |
| | | | 1.70 | |  | (Loose to medium dense) brown slightly clayey silty fine to medium SAND. | | | |
| | | | 3.00 | | | End of Trialpit at 3.00 m | | | |
| Remarks: 1. Trial pit terminated at 3.0m bgl. | | | Groundwater: Fast groundwater inflow below 1.7m bgl. | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | |  | |
| | | | Stability: Overbreak above 1.7m bgl. Running sand below 1.7m bgl. | | | | | | |





| | | | | | | | |
|---|------|--|--|---|--|--|--|
| <div>Intégral Géotechnique</div> <div>Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com</div> | | Project Name: Tobin Land, Old St Mellons | | Project No.: 12564 | | Trial Pit No.: TP02 Sheet 1 of 1 | |
| Location: Cardiff | | Client: PMG | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | Coordinates: | | Dimensions <div>2.60m</div> | | | |
| Date Excavated: 27/02/2020 | | Level: | | <div>Depth : 2.70m</div> <div>0.70m</div> | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | |
| Depth (m) | Type | Results | | | | | |
| | | | 0.20 | | | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | |
| | | | 0.80 | | | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | |
| | | | | | | (Loose to medium dense) brown slightly clayey gravelly fine to coarse SAND with medium cobble and boulder content. Gravel is fine to coarse rounded to sub-angular of sandstone. Cobbles and boulders are rounded to sub-angular of sandstone. | |
| | | | | | | | Stiff red brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular of mudstone [completely weathered bedrock]. |
| | | | 2.50 | | | | |
| | | | 2.70 | | | End of Trialpit at 2.70 m | |
| Remarks: 1. Trial pit terminated at 2.7m bgl. 2. Soil infiltration test undertaken. | | | Groundwater: Groundwater seepage at 2.5m bgl. | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | | |
| | | | Stability: Overbreak and spalling between 0.8m and 2.5m bgl. | | | | |

|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP03 Sheet 1 of 1 | |
|---|------|---------|--|---------------|--|--|--|---|---|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | Depth : 2.50m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| 0.40 | ES | | 0.20 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | | |  | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| | | | 0.60 | |  | Firm red brown gravelly CLAY. Gravel is fine to coarse rounded to angular of sandstone and mudstone. | | | |
| | | | 1.10 | |  | (Medium dense) brown sandy fine to coarse GRAVEL with medium cobble content. Gravel and cobbles are rounded of sandstone. | | | |
| | | | 2.50 | | End of Trialpit at 2.50 m | | | | |
| Remarks: 1. Trial pit terminated at 2.5m bgl. | | | Groundwater: No groundwater encountered. | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | | |  |
| | | | Stability: Slight overbreak. | | | | | | |



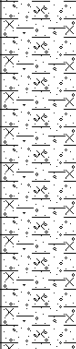
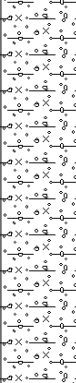

|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP04 Sheet 1 of 1 | |
|---|------|---------|--|---------------|---|--|--|---|---|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | Depth : 2.50m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| 1.20 | D | | 0.20 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | | |  | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| | | | 1.00 | |  | Firm red brown gravelly CLAY. Gravel is fine to coarse rounded to angular of sandstone and mudstone. | | | |
| | | | 2.00 | |  | Firm to stiff red brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular of mudstone [completely weathered bedrock]. | | | |
| | | | 2.50 | | | End of Trialpit at 2.50 m | | | |
| Remarks: 1. Trial pit terminated at 2.5m bgl. | | | Groundwater: No groundwater encountered. | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | | |  |
| | | | Stability: Sides stable. | | | | | | |

|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP05 Sheet 1 of 1 | |
|---|------|---------|--|---------------|---|---|--|---|--|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | Depth : 1.00m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| | | | 0.20 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | 0.50 | |  | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| | | | 1.00 | |  | Soft to firm, locally firm, red brown very gravelly CLAY with medium cobble content. Gravel is fine to coarse rounded to sub-angular of sandstone. Cobbles are rounded to sub-angular of sandstone. | | | |
| | | | | | | End of Trialpit at 1.00 m | | | |
| | | | | | | 1 | | | |
| | | | | | | 2 | | | |
| | | | | | | 3 | | | |
| | | | | | | 4 | | | |
| | | | | | | 5 | | | |
| Remarks: 1. Trial pit terminated at 1.0m bgl. 2. Soil infiltration test undertaken. | | | Groundwater: No groundwater encountered. | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | |  | |
| | | | Stability: Sides stable. | | | | | | |



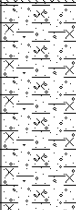
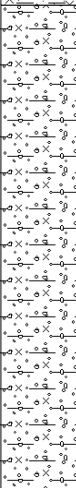

| | | | | | | | | | |
|---|------|---------|--|------------------|--------|--|--|---|--|
| <div><div>Intégral Géotechnique</div><div>Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com</div></div> | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP06 Sheet 1 of 1 | |
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | Depth : 2.50m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| | | | 0.30 | | | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | | | | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| | | | | | | (Loose to medium dense) brown slightly clayey gravelly fine to coarse SAND with medium cobble and boulder content. Gravel is fine to coarse rounded to sub-angular of sandstone. Cobbles and boulders are rounded to sub-angular of sandstone. | | | |
| | | | | | | Firm to stiff red brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular of mudstone [completely weathered bedrock]. | | | |
| | | | 2.50 | | | End of Trialpit at 2.50 m | | | |
| Remarks: | | | Groundwater: | | | Key: | | | |
| 1. Trial pit terminated at 2.5m bgl. 2. Soil infiltration test undertaken. | | | No groundwater encountered. | | | D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | | | |
| | | | Stability: | | | Overbreak and spalling. | | | |





| | | | | | | | |
|---|------|--|--|---|--|--|--|
|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | Project Name: Tobin Land, Old St Mellons | | Project No.: 12564 | | Trial Pit No.: TP07 Sheet 1 of 1 | |
| Location: Cardiff | | Client: PMG | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | Coordinates: | | Dimensions <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2.20m</div> <div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"> <div style="position: absolute; top: 0; right: 0; width: 50%; height: 50%; transform: rotate(45deg);"></div> </div> </div> | | | |
| Date Excavated: 27/02/2020 | | Level: | | Depth : 2.50m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | |
| Depth (m) | Type | Results | | | | | |
| | | | 0.20 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | |
| | | | | |  | Firm brown and red brown gravelly CLAY with medium cobble content. Gravel is fine to coarse rounded to sub-angular of sandstone. Cobbles are sub-rounded of sandstone. | |
| | | | 2.50 | | | End of Trialpit at 2.50 m | |
| Remarks: 1. Trial pit terminated at 2.5m bgl. | | | Groundwater: Groundwater seepage at 2.1m bgl. | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | |
| | | | Stability: Overbreak and spalling. | | |  | |



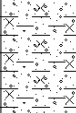
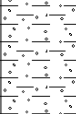


| | | | | | | | | | |
|---|------|---------|--|---------------|--------|--|--|---|--|
| <div>Intégral Géotechnique</div> <div>Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com</div> | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP08 Sheet 1 of 1 | |
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions <div>2.20m</div> | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | <div>Depth : 2.70m</div> <div>0.70m</div> | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| | | | 0.20 | | | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | | | | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| | | | 0.90 | | | (Loose to medium dense) brown very clayey sandy fine to coarse GRAVEL with medium cobble content. Gravel and cobbles are rounded of sandstone. | | | |
| | | | | | 2.00 | | Firm to stiff red brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular of mudstone [completely weathered bedrock]. | | |
| 2.70 | | | ----- End of Trialpit at 2.70 m ----- | | | | | | |
| Remarks: 1. Trial pit terminated at 2.7m bgl. | | | Groundwater: Groundwater seepage at 2.0m bgl. | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | | | |
| | | | Stability: Overbreak and spalling. | | | | | | |




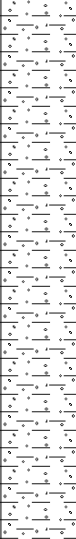

|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP09 Sheet 1 of 1 | |
|---|------|---------|--|---------------|--|--|--|---|--|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | Depth : 2.80m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| | | | 0.30 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | 1.50 | |  | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| | | | 2.80 | |  | (Loose to medium dense) brown very clayey sandy fine to coarse GRAVEL with medium cobble content. Gravel and cobbles are rounded of sandstone. | | | |
| | | | | | | End of Trialpit at 2.80 m | | | |
| Remarks: | | | | | | Groundwater: No groundwater encountered. | | | |
| 1. Trial pit terminated at 2.8m bgl. | | | | | | Stability: Overbreak and spalling. | | | |
| | | | | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | | | |
| | | | | | |  | | | |




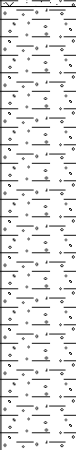

| | | | | | | | | | |
|---|------|---------|--|---------------|--------|--|--|---|--|
| <div>Intégral Géotechnique</div> <div>Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com</div> | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP10 Sheet 1 of 1 | |
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | <div>Dimensions</div> <div>2.20m</div> | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | <div>Depth : 2.50m</div> <div>0.70m</div> | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| | | | 0.20 | | | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | | | | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| | | | 1.60 | | | (Loose to medium dense) brown very clayey sandy fine to coarse GRAVEL with medium cobble content. Gravel and cobbles are rounded of sandstone. | | | |
| | | | | | | End of Trialpit at 2.50 m | | | |
| | | | 2.50 | | | | | | |
| | | | | | | | | | |
| Remarks: | | | Groundwater: | | | Key: | | | |
| 1. Trial pit terminated at 2.5m bgl. | | | No groundwater encountered. | | | D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | | | |
| | | | Stability: | | | | | | |
| | | | Overbreak and spalling. | | | | | | |

|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP11 Sheet 1 of 1 | |
|---|------|---------|--|------------------|--|---|---|---|--|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> Depth : 2.50m </div> <div style="border: 1px solid black; width: 150px; height: 40px; position: relative;"> <div style="position: absolute; right: -10px; top: 0; writing-mode: vertical-rl; transform: rotate(180deg);">0.70m</div> </div> </div> | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| 0.30 | ES | | 0.20 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | 0.90 | | |  | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | |
| 1.20 | D | | | |  | (Loose to medium dense) brown very clayey sandy fine to coarse GRAVEL with medium cobble content. Gravel and cobbles are rounded of sandstone. | | | |
| | | | | | | 2.50 | <div style="border-top: 1px dashed black; padding-top: 5px;">End of Trialpit at 2.50 m</div> | | |
| Remarks: 1. Trial pit terminated at 2.5m bgl. | | | Groundwater: No groundwater encountered. | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | |  | |
| | | | Stability: Slight overbreak. | | | | | | |

|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP12 Sheet 1 of 1 | |
|---|------|---------|--|---------------|---|--|---|---|--|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 27/02/2020 | | | Level: | | | Depth : 3.00m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| 0.10 | ES | | 0.20 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | | | |  | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | |
| | | | 3.00 | | | End of Trialpit at 3.00 m | | | |
| Remarks: 1. Trial pit terminated at 3.0m bgl. 2. Soil infiltration test undertaken at 1.0m bgl. | | | Groundwater: Groundwater seepage at 2.0m bgl. | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | |  | |
| | | | Stability: Overbreak and spalling. | | | | | | |

|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP13 Sheet 1 of 1 | |
|---|------|---------|--|---------------|---|--|--|---|---|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 28/02/2020 | | | Level: | | | Depth : 2.50m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| 0.40 | ES | | 0.20 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | 0.60 | |  | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| 1.20 | D | | | |  | Firm red brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular of mudstone [completely weathered bedrock]. | | | |
| | | | | | | | | | |
| | | | 2.50 | |  | End of Trialpit at 2.50 m | | | |
| Remarks: 1. Trial pit terminated at 2.5m bgl. | | | Groundwater: No groundwater encountered. | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | | |  |
| | | | Stability: Sides stable. | | | | | | |

|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP14 Sheet 1 of 1 | |
|---|------|---------|--|---------------|--|---|--|---|--|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 28/02/2020 | | | Level: | | | Depth : 2.60m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| | | | 0.20 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | 0.80 | |  | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| | | | 2.60 | |  | Firm red brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular of mudstone [completely weathered bedrock]. | | | |
| | | | | | | End of Trialpit at 2.60 m | | | |
| Remarks: 1. Trial pit terminated at 2.6m bgl. 2. Soil infiltration test undertaken at 1.0m bgl. | | | | | | Groundwater: No groundwater encountered. | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | |
| | | | | | | Stability: Sides stable. | |  | |

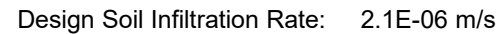
|  Intégral House, 7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX Tel. 029 20807991 Fax. 029 20862176 mail@integralgeotec.com | | | Project Name: Tobin Land, Old St Mellons | | | Project No.: 12564 | | Trial Pit No.: TP15 Sheet 1 of 1 | |
|---|------|---------|--|---------------|--|---|--|---|--|
| Location: Cardiff | | | Client: PMG | | | Logged By: JJ | | Scale 1:25 | |
| Equipment: 8 tonne tracked excavator. | | | Coordinates: | | | Dimensions 2.20m | | | |
| Date Excavated: 28/02/2020 | | | Level: | | | Depth : 2.50m 0.70m | | | |
| Samples & In-situ Testing | | | Depth (m) | Level (m AOD) | Legend | Stratum Description | | | |
| Depth (m) | Type | Results | | | | | | | |
| 0.10 | ES | | 0.20 | |  | TOPSOIL: Grass over soft brown silty CLAY with rootlets. | | | |
| | | | 1.00 | |  | Soft to firm brown sandy gravelly CLAY. Gravel is fine to coarse rounded to sub-angular of sandstone. | | | |
| | | | 2.50 | |  | Firm red brown slightly gravelly CLAY. Gravel is fine to coarse sub-angular of mudstone [completely weathered bedrock]. | | | |
| | | | | | | End of Trialpit at 2.50 m | | | |
| Remarks: | | | | | | Groundwater: No groundwater encountered. | | | |
| 1. Trial pit terminated at 2.5m bgl. 2. Soil infiltration test undertaken. | | | | | | Stability: Sides stable. | | | |
| | | | | | | Key: D - Small disturbed sample B - Bulk disturbed sample ES - Environmental soil sample W - Water sample | | | |
| | | | | | |  | | | |

APPENDIX D

SOIL INFILTRATION TEST RESULTS

12564 Tobin Land, Old St Mellons

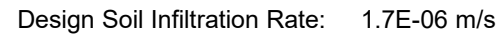
| Remarks |
|---------|
| |

[illegible]

12564 Tobin Land, Old St Mellons

| Remarks |
|---------|
| |

| | | | |
|--|----------------|----------------|----------------|
| Final Excavation Depth (m) | Cycle 1 | Cycle 2 | Cycle 3 |
| At end of testing cycle | 1.00 | 1.00 | |
| Water Depths (m) | | | |
| Water depth at start of test | 0.30 | 0.30 | |
| Water depth at end of test | 0.43 | 0.39 | |
| Effective depth (measured) | 0.13 | 0.09 | |
| % Effective storage depth | 0.19 | 0.13 | |
| Effective Storage Depths (m) | | | |
| Effective storage depth (100%) | 0.70 | 0.70 | |
| Effective storage depth (75%) | 0.53 | 0.53 | |
| Effective storage depth (50%) | 0.35 | 0.35 | |
| Effective storage depth (25%) | 0.18 | 0.18 | |
| Outflow Time (min) | | | |
| Time for measured outflow | 368 | 360 | |
| Time for 100% outflow | 2600 | 3000 | |
| Time for 75-25% outflow | 1350 | 1500 | |
| Volume of Outflow (m³) | | | |
| Over measured effective depth | 0.20 | 0.14 | |
| Over 100% effective depth | 1.08 | 1.08 | |
| From 75% - 25% effective depth | 0.54 | 0.54 | |
| Surface Area (m²) | | | |
| For 100% effective storage | 5.60 | 5.60 | |
| For 50% effective storage | 3.57 | 3.57 | |
| Over measured depth | 2.29 | 2.06 | |
| Soil Infiltration Rate (m/s) | Cycle 1 | Cycle 2 | Cycle 3 |
| Over 100% effective depth | 1.2E-06 | 1.1E-06 | |
| Over measured depth | 4.0E-06 | 3.1E-06 | |
| Over 75% - 25% effective depth | 1.9E-06 | 1.7E-06 | |

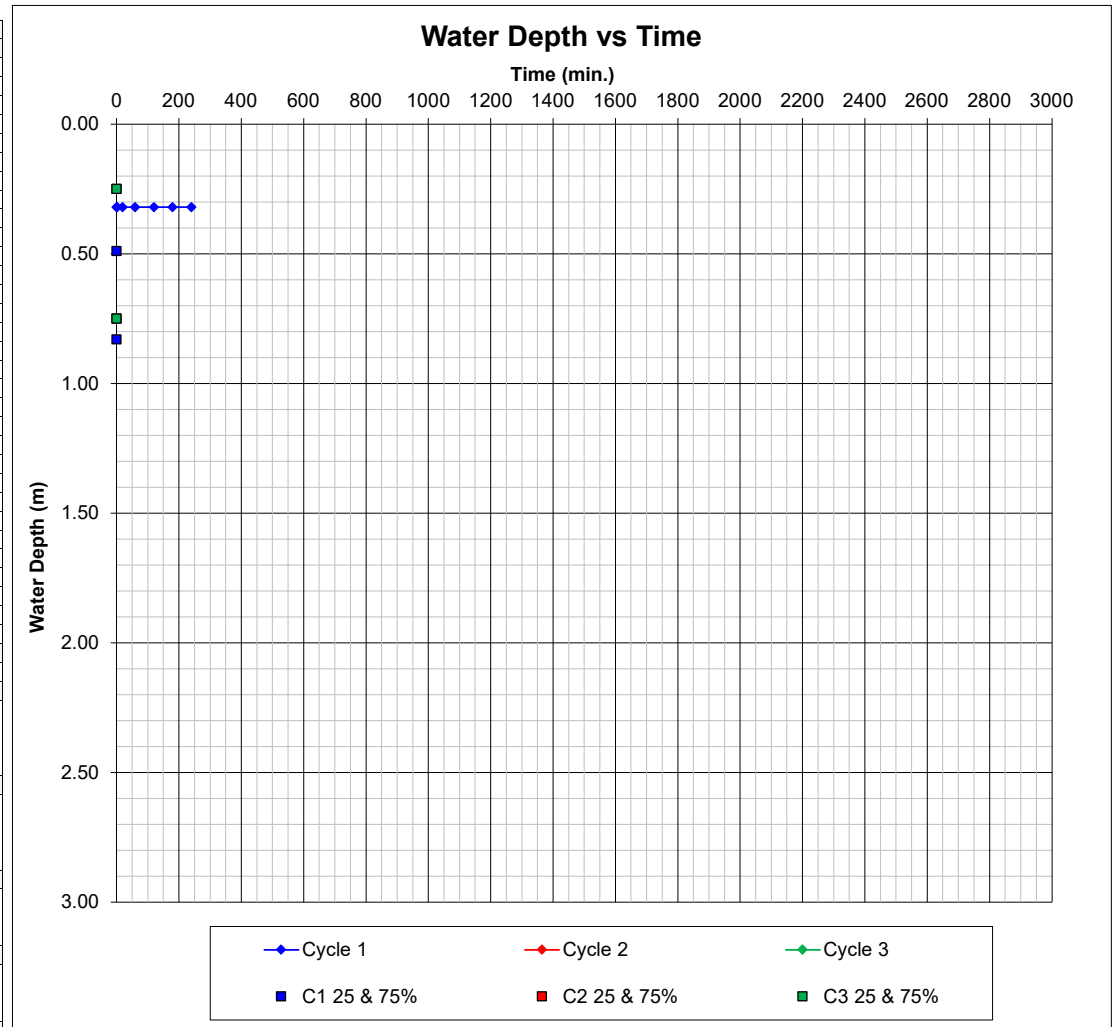


12564 Tobin Land, Old St Mellons

| Cycle 1 | | Cycle 2 | | Cycle 3 | |
|------------|-----------|---------|--|------------|-----------|
| Time (min) | Depth (m) | | | Time (min) | Depth (m) |
| 0 | 0.32 | | | | |
| 2 | 0.32 | | | | |
| 20 | 0.32 | | | | |
| 60 | 0.32 | | | | |
| 120 | 0.32 | | | | |
| 180 | 0.32 | | | | |
| 240 | 0.32 | | | | |

[illegible]

| Cycle 1 | Cycle 2 | Cycle 3 |
|---------|---------|---------|
| 1.00 | | |
| | | |
| 0.32 | | |
| 0.32 | | |
| 0.00 | | |
| 0.00 | | |
| | | |
| 0.68 | | |
| 0.51 | | |
| 0.34 | | |
| 0.17 | | |
| | | |
| n/a | | |
| n/a | | |
| n/a | | |
| | | |
| 0.00 | | |
| 1.05 | | |
| 0.52 | | |
| | | |
| 5.48 | | |
| 3.51 | | |
| 1.54 | | |
| Cycle 1 | Cycle 2 | Cycle 3 |
| n/a | | |
| n/a | | |
| n/a | | |

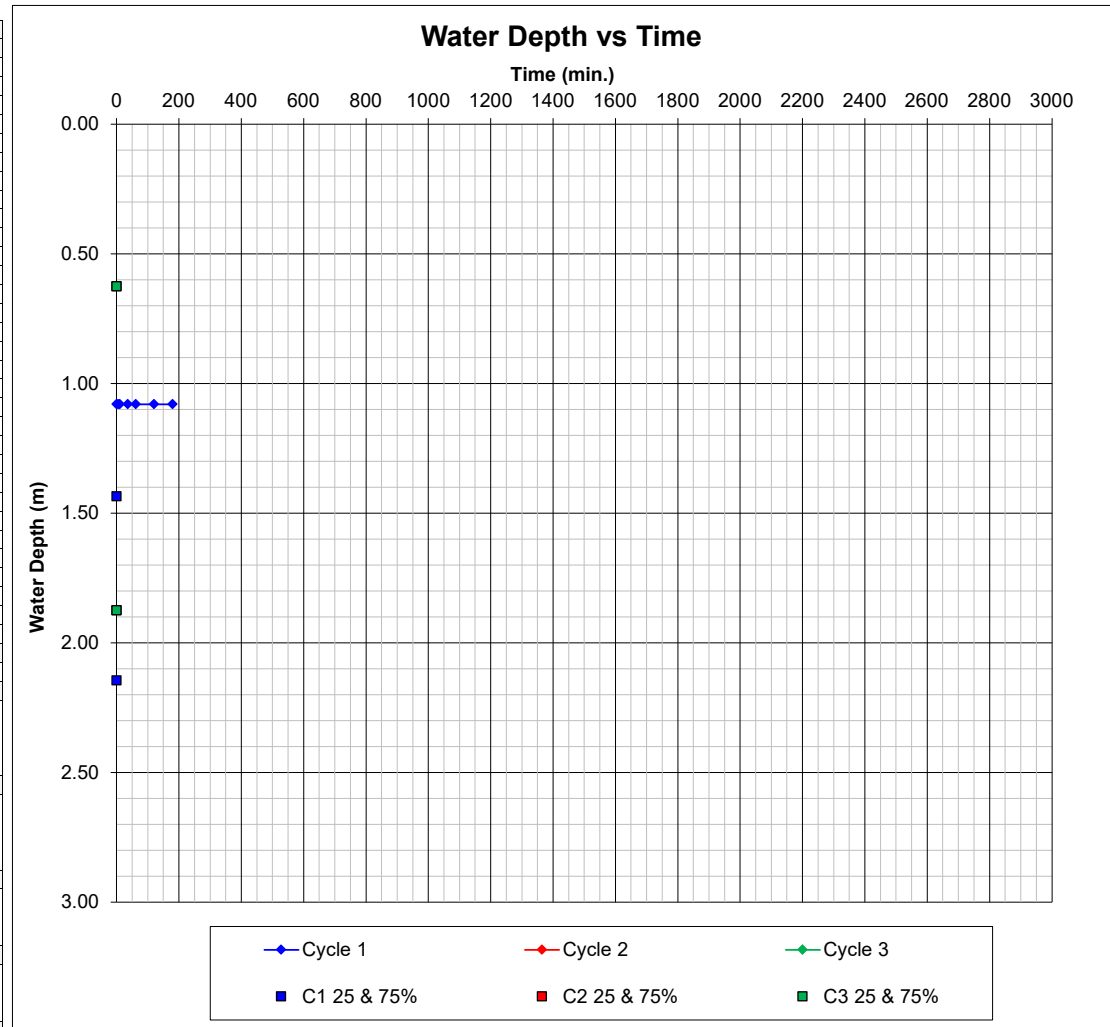


Design Soil Infiltration Rate: 0.0E+00 m/s

12564 Tobin Land, Old St Mellons

| Remarks |
|--|
| No infiltration. Unable to calculate an infiltration rate. |

| Final Excavation Depth (m) | Cycle 1 | Cycle 2 | Cycle 3 |
|--|----------------|----------------|----------------|
| At end of testing cycle | 2.50 | | |
| Water Depths (m) | | | |
| Water depth at start of test | 1.08 | | |
| Water depth at end of test | 1.08 | | |
| Effective depth (measured) | 0.00 | | |
| % Effective storage depth | 0.00 | | |
| Effective Storage Depths (m) | | | |
| Effective storage depth (100%) | 1.42 | | |
| Effective storage depth (75%) | 1.07 | | |
| Effective storage depth (50%) | 0.71 | | |
| Effective storage depth (25%) | 0.36 | | |
| Outflow Time (min) | | | |
| Time for measured outflow | n/a | | |
| Time for 100% outflow | n/a | | |
| Time for 75-25% outflow | n/a | | |
| Volume of Outflow (m³) | | | |
| Over measured effective depth | 0.00 | | |
| Over 100% effective depth | 2.19 | | |
| From 75% - 25% effective depth | 1.09 | | |
| Surface Area (m²) | | | |
| For 100% effective storage | 9.78 | | |
| For 50% effective storage | 5.66 | | |
| Over measured depth | 1.54 | | |
| Soil Infiltration Rate (m/s) | Cycle 1 | Cycle 2 | Cycle 3 |
| Over 100% effective depth | n/a | | |
| Over measured depth | n/a | | |
| Over 75% - 25% effective depth | n/a | | |



Design Soil Infiltration Rate: 0.0E+00 m/s

APPENDIX E

LABORATORY CHEMICAL TEST RESULTS

**Jack Jones**

Integral Geotechnique
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WD18 8YS

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 20-90523

Project / Site name: Tobin Land

Samples received on: 04/03/2020

Your job number: 12564

Samples instructed on: 04/03/2020

Your order number:

Analysis completed by: 17/03/2020

Report Issue Number: 1

Report issued on: 17/03/2020

Samples Analysed: 3 soil samples

Signed: 

Zina Abdul Razzak
Senior Quality Specialist

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils - 4 weeks from reporting
leachates - 2 weeks from reporting
waters - 2 weeks from reporting
asbestos - 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-90523

Project / Site name: Tobin Land

| | | | | | | | | |
|---|-------|-----------------------|-------------------------|---------------|---------------|---------------|--|--|
| Lab Sample Number | | | | 1461362 | 1461363 | 1461364 | | |
| Sample Reference | | | | TP4 | TP11 | TP13 | | |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | | |
| Depth (m) | | | | 1.20 | 1.20 | 1.20 | | |
| Date Sampled | | | | 28/02/2020 | 28/02/2020 | 28/02/2020 | | |
| Time Taken | | | | None Supplied | None Supplied | None Supplied | | |
| Analytical Parameter (Soil Analysis) | | | | | | | | |
| | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | | |
| Moisture Content | % | N/A | NONE | 9.7 | 10 | 9.9 | | |
| Total mass of sample received | kg | 0.001 | NONE | 1.5 | 1.9 | 1.6 | | |

General Inorganics

| | | | | | | | | |
|---|----------|---------|--------|--------|--------|--------|--|--|
| pH - Automated | pH Units | N/A | MCERTS | 7.7 | 7.3 | 7.0 | | |
| Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.0049 | 0.0072 | 0.0097 | | |



Analytical Report Number : 20-90523

Project / Site name: Tobin Land

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description * |
|-------------------|------------------|---------------|-----------|----------------------------------|
| 1461362 | TP4 | None Supplied | 1.20 | Brown loam and clay with gravel. |
| 1461363 | TP11 | None Supplied | 1.20 | Brown loam and clay with gravel. |
| 1461364 | TP13 | None Supplied | 1.20 | Brown loam and clay with gravel. |

Analytical Report Number : 20-90523

Project / Site name: Tobin Land

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|--|---|--|---------------|--------------------|----------------------|
| Moisture Content | Moisture content, determined gravimetrically. (30 oC) | In house method. | L019-UK/PL | W | NONE |
| pH in soil (automated) | Determination of pH in soil by addition of water followed by automated electrometric measurement. | In house method. | L099-PL | D | MCERTS |
| Stones content of soil | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. | In-house method based on British Standard Methods and MCERTS requirements. | L019-UK/PL | D | NONE |
| Sulphate, water soluble, in soil (16hr extraction) | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). | In house method. | L038-PL | D | MCERTS |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

**Jack Jones**

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e: reception@i2analytical.com

Analytical Report Number : 20-90384

| | | | |
|-----------------------------|----------------|-------------------------------|------------|
| Project / Site name: | Tobin Land | Samples received on: | 04/03/2020 |
| Your job number: | 12564 | Samples instructed on: | 04/03/2020 |
| Your order number: | | Analysis completed by: | 12/03/2020 |
| Report Issue Number: | 1 | Report issued on: | 12/03/2020 |
| Samples Analysed: | 6 soil samples | | |

Signed: *A. Czerwińska*

Agnieszka Czerwińska

Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

| | | |
|--|-----------|---------------------------|
| Standard sample disposal times, unless otherwise agreed with the laboratory, are : | soils | - 4 weeks from reporting |
| | leachates | - 2 weeks from reporting |
| | waters | - 2 weeks from reporting |
| | asbestos | - 6 months from reporting |

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 20-90384

Project / Site name: Tobin Land

| Lab Sample Number | | | | 1460726 | 1460727 | 1460728 | 1460729 | 1460730 |
|--------------------------------------|-------|--------------------|----------------------|---------------|---------------|---------------|---------------|---------------|
| Sample Reference | | | | TP1 | TP3 | TP11 | TP12 | TP13 |
| Sample Number | | | | None Supplied | None Supplied | None Supplied | None Supplied | None Supplied |
| Depth (m) | | | | 0.10 | 0.40 | 0.30 | 0.10 | 0.40 |
| Date Sampled | | | | 28/02/2020 | 28/02/2020 | 28/02/2020 | 28/02/2020 | 28/02/2020 |
| Time Taken | | | | 0930 | 1030 | 1400 | 1430 | 1500 |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | < 0.1 | < 0.1 | < 0.1 | < 0.1 |
| Moisture Content | % | N/A | NONE | 13 | 13 | 13 | 14 | 13 |
| Total mass of sample received | kg | 0.001 | NONE | 0.56 | 0.61 | 0.64 | 0.58 | 0.63 |

| | | | | | | | | |
|------------------|------|-----|-----------|--------------|--------------|--------------|--------------|--------------|
| Asbestos in Soil | Type | N/A | ISO 17025 | Not-detected | Not-detected | Not-detected | Not-detected | Not-detected |
|------------------|------|-----|-----------|--------------|--------------|--------------|--------------|--------------|

General Inorganics

| | | | | | | | | |
|---|----------|---------|--------|--------|--------|--------|--------|-------|
| pH - Automated | pH Units | N/A | MCERTS | 6.1 | 6.8 | 6.9 | 6.1 | 6.9 |
| Total Cyanide | mg/kg | 1 | MCERTS | < 1 | < 1 | < 1 | < 1 | < 1 |
| Total Sulphate as SO ₄ | mg/kg | 50 | MCERTS | 460 | 220 | 160 | 490 | 230 |
| Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.0077 | 0.0073 | 0.0063 | 0.0067 | 0.012 |
| Sulphide | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
| Total Sulphur | mg/kg | 50 | MCERTS | 190 | 96 | 61 | 200 | 77 |
| Total Organic Carbon (TOC) | % | 0.1 | MCERTS | 1.2 | 0.5 | 0.2 | 1.5 | 0.4 |
| Loss on Ignition @ 450°C | % | 0.2 | MCERTS | 3.8 | 2.6 | 1.6 | 4.5 | 2.1 |

Total Phenols

| | | | | | | | | |
|----------------------------|-------|---|--------|-------|-------|-------|-------|-------|
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | < 1.0 | < 1.0 | < 1.0 | < 1.0 | < 1.0 |
|----------------------------|-------|---|--------|-------|-------|-------|-------|-------|

Speciated PAHs

| | | | | | | | | |
|------------------------|-------|------|--------|--------|--------|--------|--------|--------|
| Naphthalene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthylene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Acenaphthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluorene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Phenanthrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(a)anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Chrysene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(b)fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(k)fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(a)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Dibenz(a,h)anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |

Total PAH

| | | | | | | | | |
|-----------------------------|-------|-----|--------|--------|--------|--------|--------|--------|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | < 0.80 | < 0.80 | < 0.80 | < 0.80 | < 0.80 |
|-----------------------------|-------|-----|--------|--------|--------|--------|--------|--------|

Heavy Metals / Metalloids

| | | | | | | | | |
|------------------------------------|-------|------|--------|-------|-------|-------|-------|-------|
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | 8.1 | 9.3 | 6.2 | 9.6 | 5.9 |
| Beryllium (aqua regia extractable) | mg/kg | 0.06 | MCERTS | 0.47 | 0.96 | 0.84 | 0.57 | 0.85 |
| Boron (water soluble) | mg/kg | 0.2 | MCERTS | 0.3 | 0.3 | 0.2 | 0.4 | 0.3 |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | 0.4 | 0.4 | 0.2 | 0.4 | 0.3 |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | < 4.0 | < 4.0 | < 4.0 | < 4.0 | < 4.0 |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | 20 | 26 | 23 | 21 | 24 |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | 23 | 14 | 13 | 17 | 13 |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | 42 | 55 | 25 | 47 | 28 |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | < 0.3 | < 0.3 | < 0.3 | < 0.3 | < 0.3 |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | 18 | 29 | 26 | 20 | 28 |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | 3.6 | < 1.0 | 3.1 | 2.3 | 3.8 |
| Vanadium (aqua regia extractable) | mg/kg | 1 | MCERTS | 29 | 32 | 27 | 29 | 30 |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | 85 | 130 | 80 | 92 | 92 |

Analytical Report Number: 20-90384

Project / Site name: Tobin Land

| Lab Sample Number | | | | 1460731 | | | | |
|---|-------|-----------------------|-------------------------|---------------|--|--|--|--|
| Sample Reference | | | | TP15 | | | | |
| Sample Number | | | | None Supplied | | | | |
| Depth (m) | | | | 0.10 | | | | |
| Date Sampled | | | | 28/02/2020 | | | | |
| Time Taken | | | | 1600 | | | | |
| Analytical Parameter (Soil Analysis) | Units | Limit of detection | Accreditation Status | | | | | |
| Stone Content | % | 0.1 | NONE | < 0.1 | | | | |
| Moisture Content | % | N/A | NONE | 17 | | | | |
| Total mass of sample received | kg | 0.001 | NONE | 0.62 | | | | |

| | | | | | | | | |
|------------------|------|-----|-----------|--------------|--|--|--|--|
| Asbestos in Soil | Type | N/A | ISO 17025 | Not-detected | | | | |
|------------------|------|-----|-----------|--------------|--|--|--|--|

General Inorganics

| | | | | | | | | |
|---|----------|---------|--------|-------|--|--|--|--|
| pH - Automated | pH Units | N/A | MCERTS | 7.2 | | | | |
| Total Cyanide | mg/kg | 1 | MCERTS | < 1 | | | | |
| Total Sulphate as SO ₄ | mg/kg | 50 | MCERTS | 270 | | | | |
| Water Soluble SO ₄ 16hr extraction (2:1 Leachate Equivalent) | g/l | 0.00125 | MCERTS | 0.013 | | | | |
| Sulphide | mg/kg | 1 | MCERTS | < 1.0 | | | | |
| Total Sulphur | mg/kg | 50 | MCERTS | 130 | | | | |
| Total Organic Carbon (TOC) | % | 0.1 | MCERTS | 0.9 | | | | |
| Loss on Ignition @ 450°C | % | 0.2 | MCERTS | 2.7 | | | | |

Total Phenols

| | | | | | | | | |
|----------------------------|-------|---|--------|-------|--|--|--|--|
| Total Phenols (monohydric) | mg/kg | 1 | MCERTS | < 1.0 | | | | |
|----------------------------|-------|---|--------|-------|--|--|--|--|

Speciated PAHs

| | | | | | | | | |
|------------------------|-------|------|--------|--------|--|--|--|--|
| Naphthalene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Acenaphthylene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Acenaphthene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Fluorene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Phenanthrene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Benzo(a)anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Chrysene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Benzo(b)fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Benzo(k)fluoranthene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Benzo(a)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Dibenz(a,h)anthracene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |
| Benzo(ghi)perylene | mg/kg | 0.05 | MCERTS | < 0.05 | | | | |

Total PAH

| | | | | | | | | |
|-----------------------------|-------|-----|--------|--------|--|--|--|--|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | MCERTS | < 0.80 | | | | |
|-----------------------------|-------|-----|--------|--------|--|--|--|--|

Heavy Metals / Metalloids

| | | | | | | | | |
|------------------------------------|-------|------|--------|-------|--|--|--|--|
| Arsenic (aqua regia extractable) | mg/kg | 1 | MCERTS | 6.8 | | | | |
| Beryllium (aqua regia extractable) | mg/kg | 0.06 | MCERTS | 0.54 | | | | |
| Boron (water soluble) | mg/kg | 0.2 | MCERTS | 0.2 | | | | |
| Cadmium (aqua regia extractable) | mg/kg | 0.2 | MCERTS | < 0.2 | | | | |
| Chromium (hexavalent) | mg/kg | 4 | MCERTS | < 4.0 | | | | |
| Chromium (aqua regia extractable) | mg/kg | 1 | MCERTS | 18 | | | | |
| Copper (aqua regia extractable) | mg/kg | 1 | MCERTS | 12 | | | | |
| Lead (aqua regia extractable) | mg/kg | 1 | MCERTS | 30 | | | | |
| Mercury (aqua regia extractable) | mg/kg | 0.3 | MCERTS | < 0.3 | | | | |
| Nickel (aqua regia extractable) | mg/kg | 1 | MCERTS | 20 | | | | |
| Selenium (aqua regia extractable) | mg/kg | 1 | MCERTS | < 1.0 | | | | |
| Vanadium (aqua regia extractable) | mg/kg | 1 | MCERTS | 25 | | | | |
| Zinc (aqua regia extractable) | mg/kg | 1 | MCERTS | 74 | | | | |

Analytical Report Number : 20-90384

Project / Site name: Tobin Land

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

| Lab Sample Number | Sample Reference | Sample Number | Depth (m) | Sample Description * |
|-------------------|------------------|---------------|-----------|---|
| 1460726 | TP1 | None Supplied | 0.10 | Brown loam and sand with gravel and vegetation. |
| 1460727 | TP3 | None Supplied | 0.40 | Brown loam and clay with gravel and vegetation. |
| 1460728 | TP11 | None Supplied | 0.30 | Brown loam and clay with gravel and vegetation. |
| 1460729 | TP12 | None Supplied | 0.10 | Brown loam and clay with gravel and vegetation. |
| 1460730 | TP13 | None Supplied | 0.40 | Red clay and loam with gravel. |
| 1460731 | TP15 | None Supplied | 0.10 | Brown loam and clay with gravel and vegetation. |

Analytical Report Number : 20-90384

Project / Site name: Tobin Land

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

| Analytical Test Name | Analytical Method Description | Analytical Method Reference | Method number | Wet / Dry Analysis | Accreditation Status |
|--|--|---|---------------|--------------------|----------------------|
| Asbestos identification in soil | Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques. | In house method based on HSG 248 | A001-PL | D | ISO 17025 |
| Boron, water soluble, in soil | Determination of water soluble boron in soil by hot water extract followed by ICP-OES. | In-house method based on Second Site Properties version 3 | L038-PL | D | MCERTS |
| Hexavalent chromium in soil | Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry. | In-house method | L080-PL | W | MCERTS |
| Loss on ignition of soil @ 450oC | Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace. | In house method. | L047-PL | D | MCERTS |
| Metals in soil by ICP-OES | Determination of metals in soil by aqua-regia digestion followed by ICP-OES. | In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil. | L038-PL | D | MCERTS |
| Moisture Content | Moisture content, determined gravimetrically. (30 oC) | In house method. | L019-UK/PL | W | NONE |
| Monohydric phenols in soil | Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar) | L080-PL | W | MCERTS |
| pH in soil (automated) | Determination of pH in soil by addition of water followed by automated electrometric measurement. | In house method. | L099-PL | D | MCERTS |
| Speciated EPA-16 PAHs in soil | Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards. | In-house method based on USEPA 8270 | L064-PL | D | MCERTS |
| Stones content of soil | Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight. | In-house method based on British Standard Methods and MCERTS requirements. | L019-UK/PL | D | NONE |
| Sulphate, water soluble, in soil (16hr extraction) | Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent). | In house method. | L038-PL | D | MCERTS |
| Sulphide in soil | Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode. | In-house method | L010-PL | D | MCERTS |
| Total cyanide in soil | Determination of total cyanide by distillation followed by colorimetry. | In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar) | L080-PL | W | MCERTS |
| Total organic carbon (Automated) in soil | Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate. | In house method. | L009-PL | D | MCERTS |
| Total sulphate (as SO4 in soil) | Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES. | In house method. | L038-PL | D | MCERTS |
| Total Sulphur in soil | Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES. | In house method. | L038-PL | D | MCERTS |

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.

For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.

Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

APPENDIX F

LABORATORY GEOTECHNICAL TEST RESULTS



TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Integral Geotechnique
Client Address: Integral House, 7 Beddau Way,
Castlegate Business Park, CF83 2AX

Client Reference: 12564
Job Number: 20-90521
Date Sampled: 28/02/2020
Date Received: 04/03/2020
Date Tested: 09/03/2020
Sampled By: JJ

Contact: Jack Jones
Site Address: Tobin Land

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

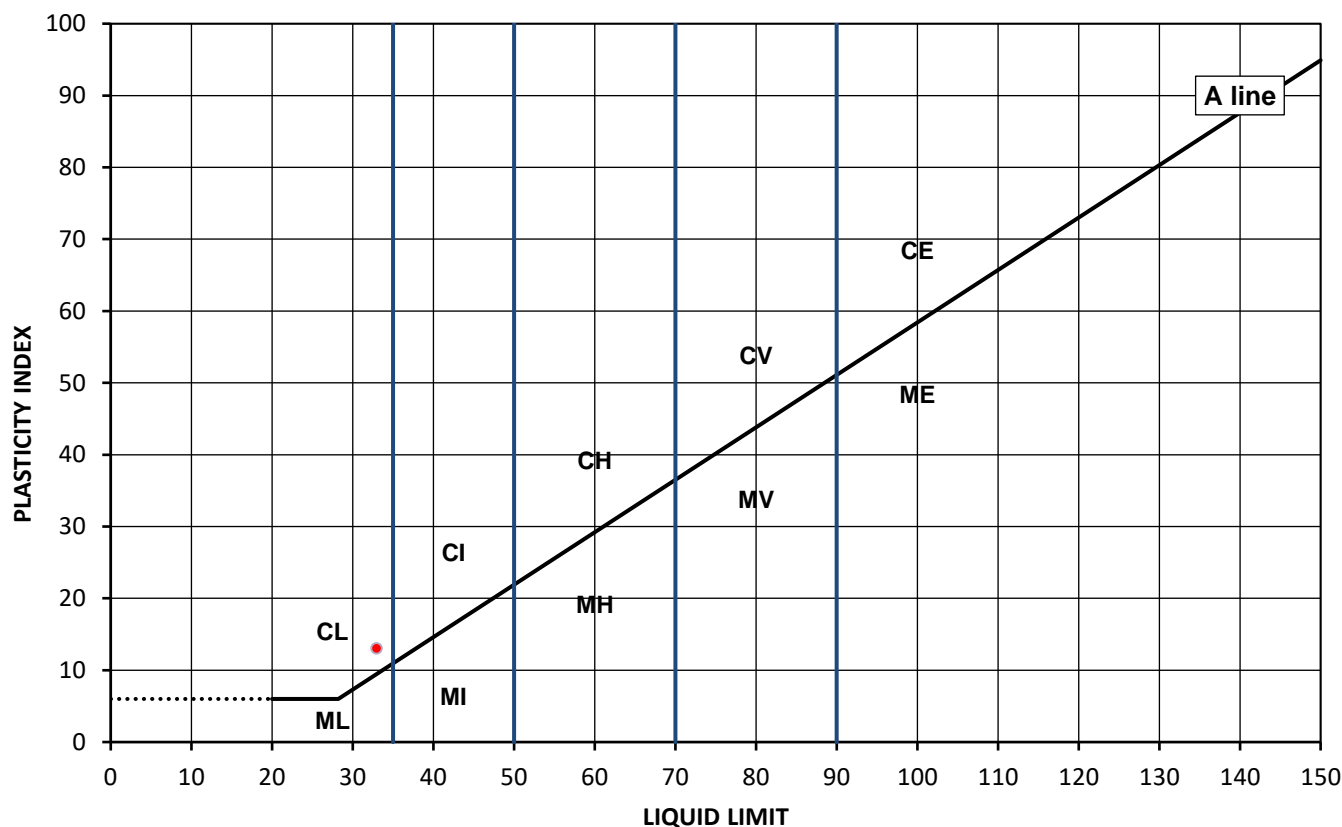
Test Results:

Laboratory Reference: 1461358
Hole No.: TP4
Sample Reference: Not Given
Soil Description: Brown slightly gravelly very sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

| As Received Moisture Content [%] | Liquid Limit [%] | Plastic Limit [%] | Plasticity Index [%] | % Passing 425µm BS Test Sieve |
|----------------------------------|------------------|-------------------|----------------------|-------------------------------|
| 17 | 33 | 20 | 13 | 76 |



Legend, based on BS 5930:2015 Code of practice for site investigations

| | | | |
|---|---------|------------|--|
| C | Clay | Plasticity | Liquid Limit |
| M | Silt | L | Low |
| | | I | Medium |
| | | H | High |
| | | V | Very high |
| | | E | Extremely high |
| | | | below 35 |
| | | | 35 to 50 |
| | | | 50 to 70 |
| | | | 70 to 90 |
| | | | exceeding 90 |
| | Organic | O | append to classification for organic material (eg CHO) |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Integral Geotechnique
Client Address: Integral House, 7 Beddau Way,
Castlegate Business Park, CF83 2AX

Client Reference: 12564
Job Number: 20-90521
Date Sampled: 28/02/2020
Date Received: 04/03/2020
Date Tested: 09/03/2020
Sampled By: JJ

Contact: Jack Jones
Site Address: Tobin Land

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

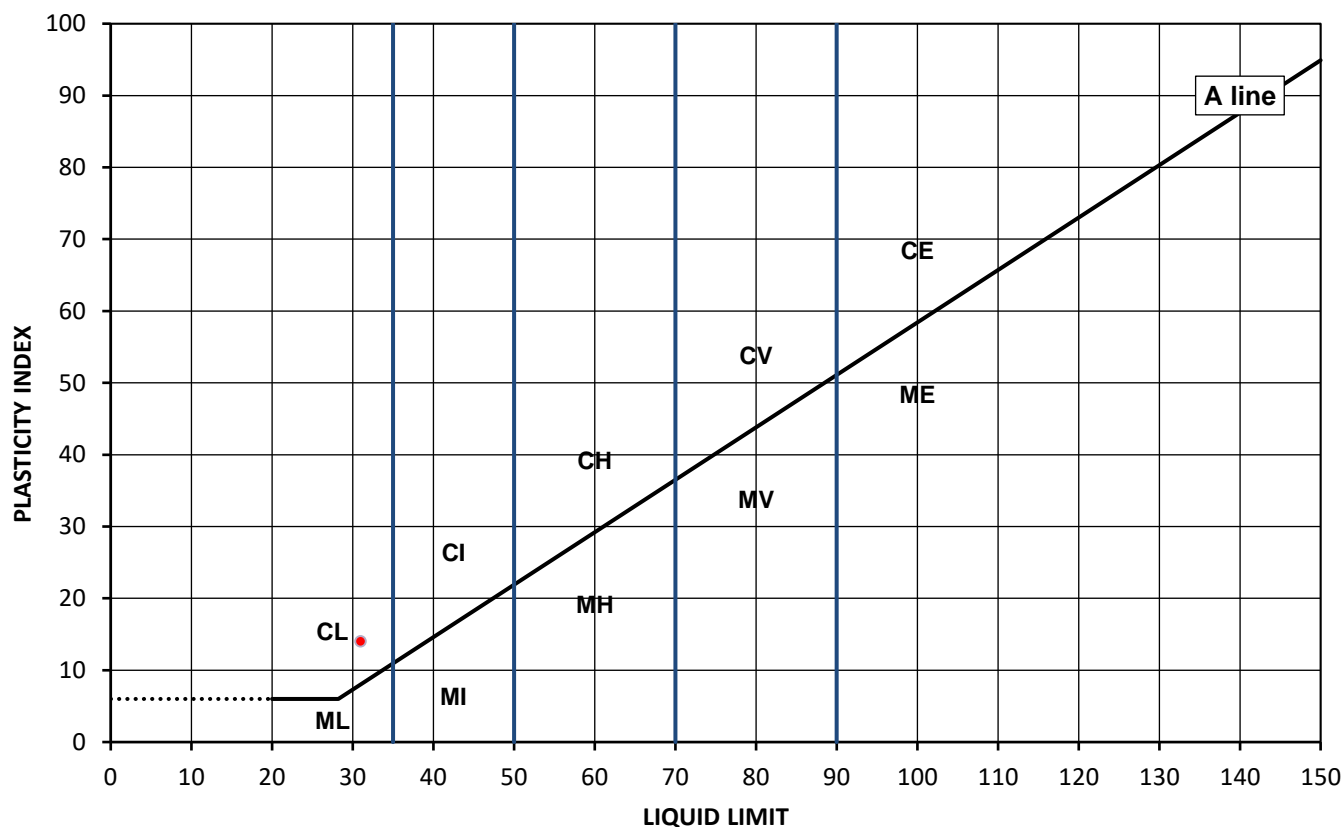
Test Results:

Laboratory Reference: 1461359
Hole No.: TP11
Sample Reference: Not Given
Soil Description: Brown slightly gravelly very sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

| As Received Moisture Content [%] | Liquid Limit [%] | Plastic Limit [%] | Plasticity Index [%] | % Passing 425µm BS Test Sieve |
|----------------------------------|------------------|-------------------|----------------------|-------------------------------|
| 18 | 31 | 17 | 14 | 79 |



Legend, based on BS 5930:2015 Code of practice for site investigations

| | | | |
|---|---------|------------|--|
| C | Clay | Plasticity | Liquid Limit |
| M | Silt | L | Low |
| | | I | Medium |
| | | H | High |
| | | V | Very high |
| | | E | Extremely high |
| | | | below 35 |
| | | | 35 to 50 |
| | | | 50 to 70 |
| | | | 70 to 90 |
| | | | exceeding 90 |
| | Organic | O | append to classification for organic material (eg CHO) |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd

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TEST CERTIFICATE

Liquid and Plastic Limits

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB



Environmental Science

4041

Tested in Accordance with: BS 1377-2: 1990: Clause 4.3 and 5

Client: Integral Geotechnique
Client Address: Integral House, 7 Beddau Way,
Castlegate Business Park, CF83 2AX

Client Reference: 12564
Job Number: 20-90521
Date Sampled: 28/02/2020
Date Received: 04/03/2020
Date Tested: 09/03/2020
Sampled By: JJ

Contact: Jack Jones
Site Address: Tobin Land

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

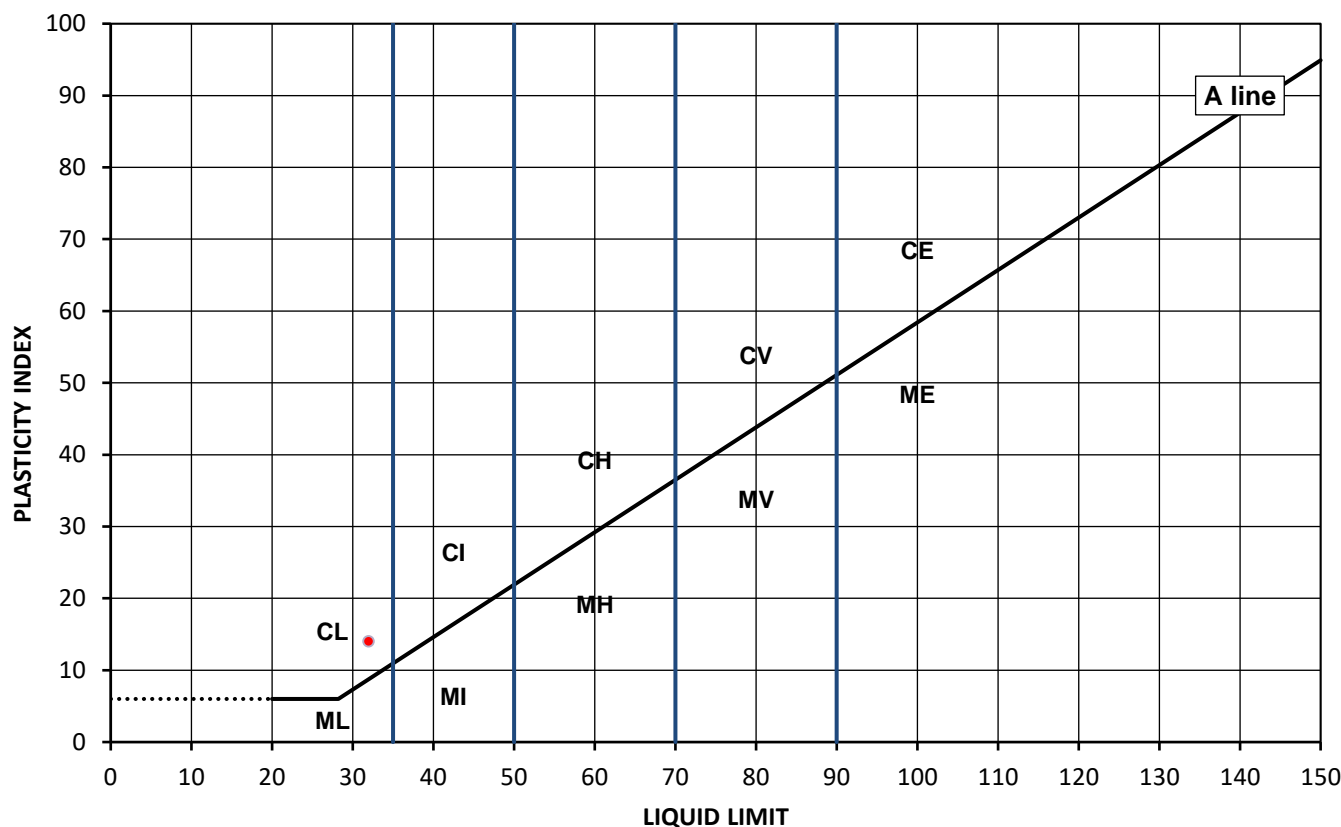
Test Results:

Laboratory Reference: 1461360
Hole No.: TP13
Sample Reference: Not Given
Soil Description: Brown slightly gravelly very sandy CLAY

Depth Top [m]: 1.20
Depth Base [m]: Not Given
Sample Type: D

Sample Preparation: Tested after washing to remove >425um

| As Received Moisture Content [%] | Liquid Limit [%] | Plastic Limit [%] | Plasticity Index [%] | % Passing 425µm BS Test Sieve |
|----------------------------------|------------------|-------------------|----------------------|-------------------------------|
| 20 | 32 | 18 | 14 | 90 |



Legend, based on BS 5930:2015 Code of practice for site investigations

| | | | |
|---|---------|------------|--|
| C | Clay | Plasticity | Liquid Limit |
| M | Silt | L | Low |
| | | I | Medium |
| | | H | High |
| | | V | Very high |
| | | E | Extremely high |
| | | | below 35 |
| | | | 35 to 50 |
| | | | 50 to 70 |
| | | | 70 to 90 |
| | | | exceeding 90 |
| | Organic | O | append to classification for organic material (eg CHO) |

Note: Moisture Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report are representative of the samples submitted for analysis.

Signed:

Monika Janoszek

Monika Janoszek
PL Deputy Head of Geotechnical Section
for and on behalf of i2 Analytical Ltd



4041

Client: Integral Geotechnique
 Client Address: Integral House, 7 Beddau Way,
 Castlegate Business Park, CF83 2AX

Contact: Jack Jones
 Site Address: Tobin Land

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

SUMMARY REPORT

Summary of Classification Test Results

Tested in Accordance with:

MC by BS 1377-2: 1990: Clause 3.2; WC by BS EN 17892-1: 2014; Atterberg
 by BS 1377-2: 1990: Clause 4.3, Clause 4.4 and 5; PD by BS 1377-2: 1990:
 Clause 8.2

i2 Analytical Ltd
 Unit 8 Harrowden Road
 Brackmills Industrial Estate
 Northampton NN4 7EB



Environmental Science

Client Reference: 12564

Job Number: 20-90521

Date Sampled: 28/02/2020

Date Received: 04/03/2020

Date Tested: 09/03/2020

Sampled By: JJ

Test results

| Laboratory Reference | Hole No. | Sample | | | | Description | Remarks | MC | WC | Atterberg | | | | Density | | | Total Porosity# | | |
|----------------------|----------|-----------|----------------|-----------------|------|---|-------------------|----|----|-----------------|----|----|----|---------------|--------------|-------------|-----------------|--|--|
| | | Reference | Depth Top m | Depth Base m | Type | | | | | % Passing 425um | LL | PL | PI | bulk Mg/m3 | dry Mg/m3 | PD Mg/m3 | | | |
| 1461359 | TP11 | Not Given | 1.20 | Not Given | D | Brown slightly gravelly very sandy CLAY | Atterberg 4 Point | 18 | | 79 | 31 | 17 | 14 | | | | | | |
| 1461360 | TP13 | Not Given | 1.20 | Not Given | D | Brown slightly gravelly very sandy CLAY | Atterberg 4 Point | 20 | | 90 | 32 | 18 | 14 | | | | | | |
| 1461358 | TP4 | Not Given | 1.20 | Not Given | D | Brown slightly gravelly very sandy CLAY | Atterberg 4 Point | 17 | | 76 | 33 | 20 | 13 | | | | | | |
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Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Monika Janoszek
 PL Deputy Head of Geotechnical Section
 for and on behalf of i2 Analytical Ltd

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report are representative of the samples submitted for analysis.

APPENDIX G

SUMMARY OF CHEMICAL RESULTS

SUMMARY OF LABORATORY SOIL TEST RESULTS

METALS AND SEMI-METALS

Job No.: 12564
 Site: Tobin Land
 Soil Type: Topsoil and Subsoil
 Soil Organic Matter: 1%

| No. | Location | Depth (m) | Arsenic (mg/kg) | Boron (mg/kg) | Beryllium (mg/kg) | Cadmium (mg/kg) | Chromium (mg/kg) | Chromium (VI) (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Mercury (Elemental) (mg/kg) | Nickel (mg/kg) | Selenium (mg/kg) | Vanadium (mg/kg) | Zinc (mg/kg) |
|------------------------------------|----------|-----------|--------------------|------------------|----------------------|--------------------|---------------------|--------------------------|-------------------|-----------------|-----------------------------------|-------------------|---------------------|---------------------|-----------------|
| 1 | TP1 | 0.10 | 8.1 | 0.3 | 0.47 | 0.4 | 20 | < 4.0 | 23 | 42 | < 0.3 | 18 | 3.6 | 29 | 85 |
| 2 | TP3 | 0.40 | 9.3 | 0.3 | 0.96 | 0.4 | 26 | < 4.0 | 14 | 55 | < 0.3 | 29 | < 1.0 | 32 | 130 |
| 3 | TP11 | 0.30 | 6.2 | 0.2 | 0.84 | 0.2 | 23 | < 4.0 | 13 | 25 | < 0.3 | 26 | 3.1 | 27 | 80 |
| 4 | TP12 | 0.10 | 9.6 | 0.4 | 0.57 | 0.4 | 21 | < 4.0 | 17 | 47 | < 0.3 | 20 | 2.3 | 29 | 92 |
| 5 | TP13 | 0.40 | 5.9 | 0.3 | 0.85 | 0.3 | 24 | < 4.0 | 13 | 28 | < 0.3 | 28 | 3.8 | 30 | 92 |
| 6 | TP15 | 0.10 | 6.8 | 0.2 | 0.54 | < 0.2 | 18 | < 4.0 | 12 | 30 | < 0.3 | 20 | < 1.0 | 25 | 74 |
| Screening Criteria Value | | | 37.0 | 290.0 | 1.7 | 11.0 | - | 6.0 | 2400.0 | 200.0 | 1.2 | 130.0 | 250.0 | 410.0 | 3700.0 |
| Source of Screening Criteria Value | | | S4UL | S4UL | S4UL | S4UL | - | S4UL | S4UL | C4SL | S4UL | S4UL | S4UL | S4UL | S4UL |

SUMMARY OF LABORATORY SOIL TEST RESULTS

INORGANIC CHEMICALS & OTHERS

Job No.: 12564
 Site: Tobin Land
 Soil Type: Topsoil and Subsoil
 Soil Organic Matter: 1%

| No. | Location | Depth (m) | Cyanide (mg/kg) | Loss on ignition, dried solids (%) | Moisture content at 30 C (%) | Phenol (mg/kg) | pH (pH units) | Water Soluble Sulphate (g/l) | Sulphate Total as SO4 (mg/kg) | Sulphide (mg/kg) | Total Sulphur (mg/kg) | TOC by Ignition in O2 (%) | Equivalent SOM (%) | Asbestos in Soil | Asbestos Quantification (%) |
|------------------------------------|----------|-----------|--------------------|--|------------------------------------|-------------------|------------------|------------------------------------|-------------------------------------|---------------------|--------------------------|---------------------------------|-----------------------|---------------------|-----------------------------------|
| 1 | TP1 | 0.10 | < 1 | 3.8 | 13 | < 1.0 | 6.1 | 0.0077 | 460 | < 1.0 | 190 | 1.2 | 2.06 | Not-detected | #N/A |
| 2 | TP3 | 0.40 | < 1 | 2.6 | 13 | < 1.0 | 6.8 | 0.0073 | 220 | < 1.0 | 96 | 0.5 | 0.86 | Not-detected | #N/A |
| 3 | TP11 | 0.30 | < 1 | 1.6 | 13 | < 1.0 | 6.9 | 0.0063 | 160 | < 1.0 | 61 | 0.2 | 0.34 | Not-detected | #N/A |
| 4 | TP12 | 0.10 | < 1 | 4.5 | 14 | < 1.0 | 6.1 | 0.0067 | 490 | < 1.0 | 200 | 1.5 | 2.58 | Not-detected | #N/A |
| 5 | TP13 | 0.40 | < 1 | 2.1 | 13 | < 1.0 | 6.9 | 0.012 | 230 | < 1.0 | 77 | 0.4 | 0.69 | Not-detected | #N/A |
| 6 | TP15 | 0.10 | < 1 | 2.7 | 17 | < 1.0 | 7.2 | 0.013 | 270 | < 1.0 | 130 | 0.9 | 1.55 | Not-detected | #N/A |
| Screening Criteria Value | | | 34.0 | - | - | 280.0 | - | - | - | - | - | - | - | - | 0.001 |
| Source of Screening Criteria Value | | | ATRISK | - | - | S4UL | - | - | - | - | - | - | - | - | IOM |

SUMMARY OF LABORATORY SOIL TEST RESULTS

POLYAROMATIC HYDROCARBONS (PAH)

Job No.: 12564
Site: Tobin Land
Soil Type: Topsoil and Subsoil
Soil Organic Matter: 1%

| No. | Location | Depth (m) | Acenaphthene (mg/kg) | Acenaphthylene (mg/kg) | Anthracene (mg/kg) | Benzo(a)anthracene (mg/kg) | Benzo(a)pyrene (mg/kg) | Benzo(b)fluoranthene (mg/kg) | Benzo(ghi)perylene (mg/kg) | Benzo(k)fluoranthene (mg/kg) | Chrysene (mg/kg) | Dibenzo(ah)anthracene (mg/kg) | Fluoranthene (mg/kg) | Fluorene (mg/kg) | Indeno(123cd)pyrene (mg/kg) | Naphthalene (mg/kg) | Phenanthrene (mg/kg) | Pyrene (mg/kg) |
|------------------------------------|----------|-----------|-------------------------|---------------------------|-----------------------|-------------------------------|---------------------------|---------------------------------|-------------------------------|---------------------------------|---------------------|----------------------------------|-------------------------|---------------------|--------------------------------|------------------------|-------------------------|-------------------|
| 1 | TP1 | 0.10 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| 2 | TP3 | 0.40 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| 3 | TP11 | 0.30 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| 4 | TP12 | 0.10 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| 5 | TP13 | 0.40 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| 6 | TP15 | 0.10 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 | < 0.05 |
| Screening Criteria Value | | | 210.0 | 170.0 | 2400.0 | 7.2 | 2.2 | 2.6 | 320.0 | 77.0 | 15.0 | 0.2 | 280.0 | 170.0 | 27.0 | 2.3 | 95.0 | 620.0 |
| Source of Screening Criteria Value | | | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL | S4UL |



FIGURES

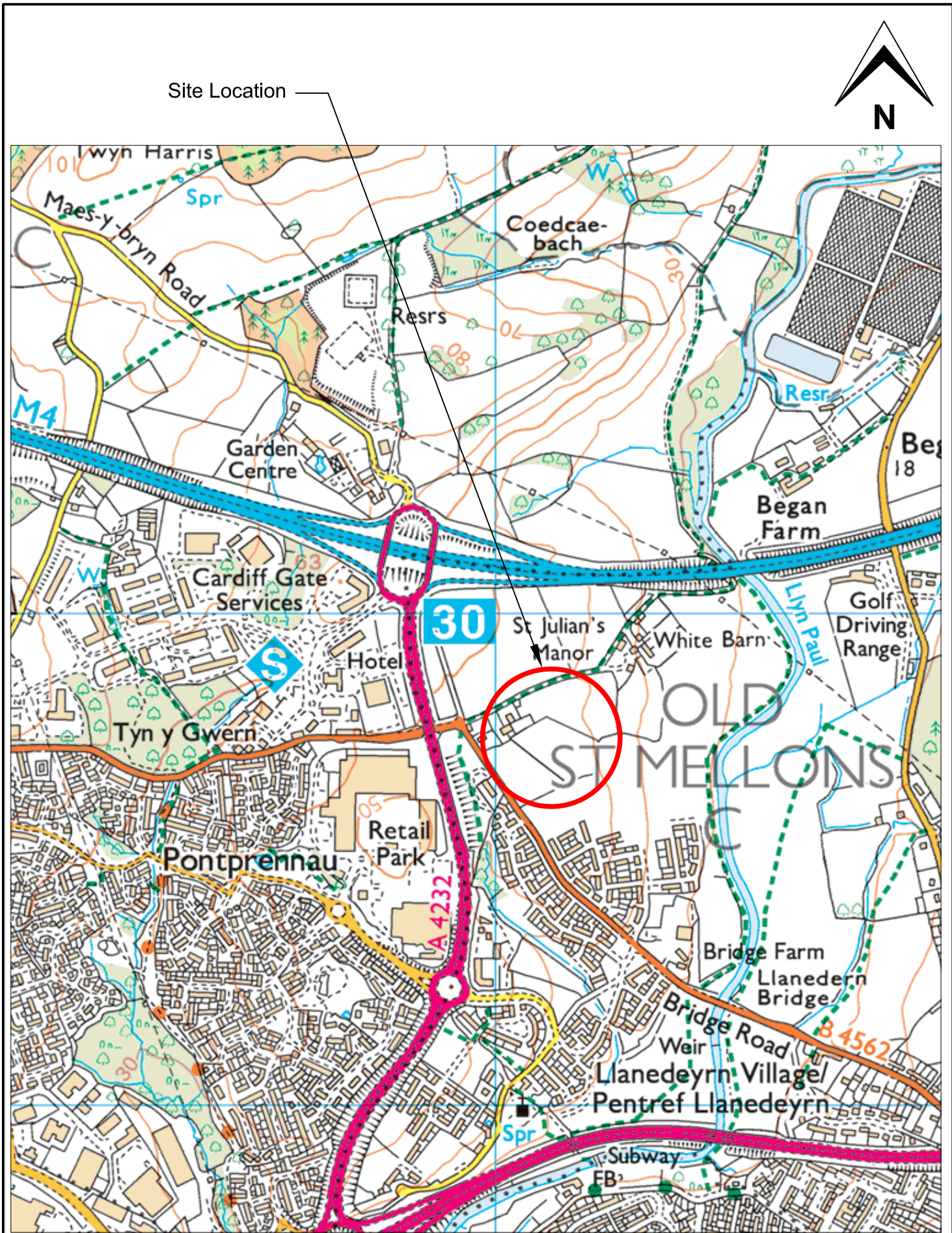


Figure 1: Site Location

| | | | |
|--|-----------------------|--|---|
| Project: Tobin Land, Old St Mellons, Cardiff | Job no.: 12564 | Intégral Géotechnique | Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991 |
| Client: PMG | Scale: 1:10,000 at A4 | | |

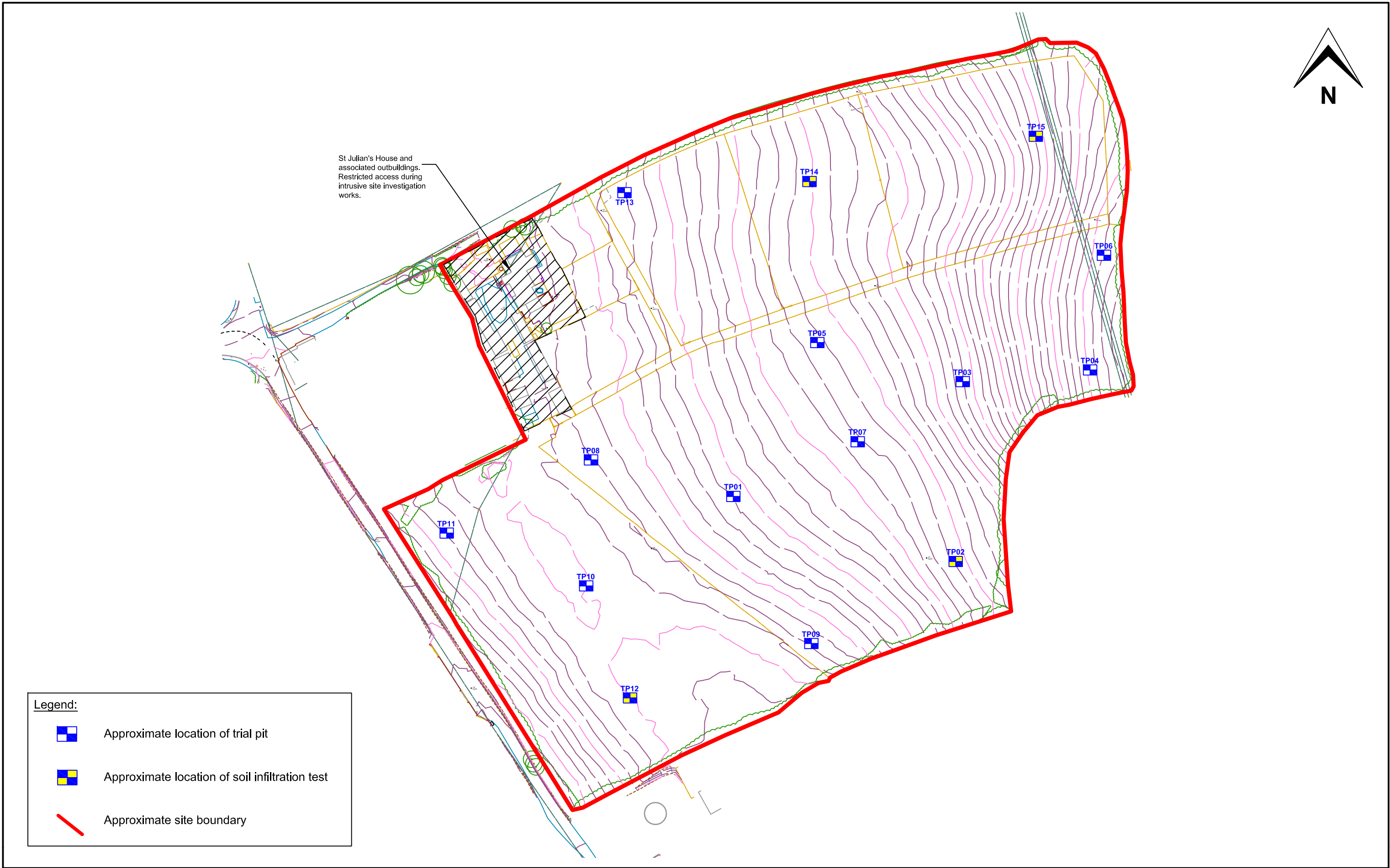
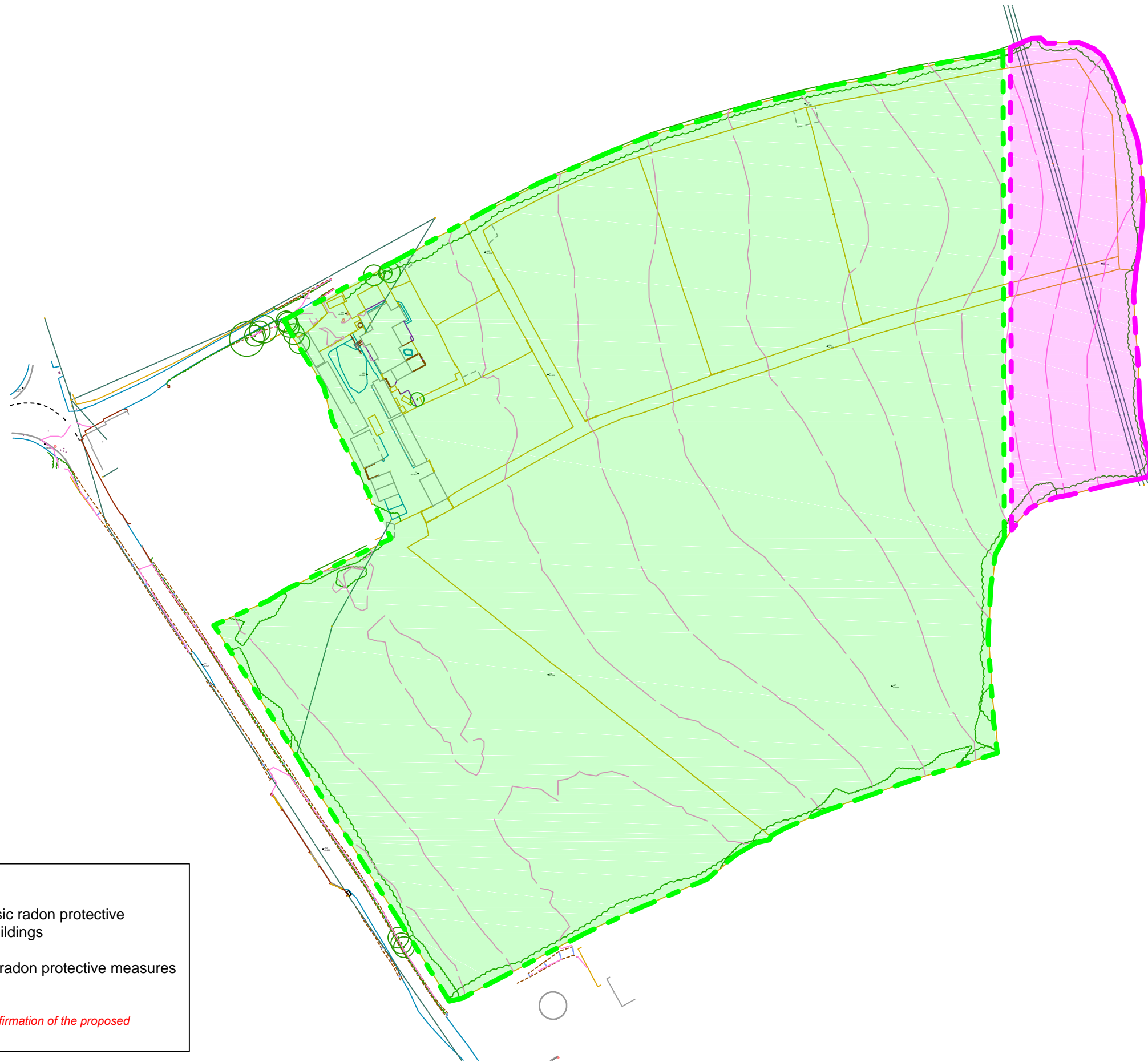




Figure 2: Site Plan



Legend:

 Area requiring basic radon protective measures in all buildings

 Area requiring no radon protective measures

NOTE: Zones to be reviewed upon confirmation of the proposed development layout.

Figure 3: Radon Zones

Project: Tobin Land, Old St Mellons, Cardiff

Client: PMG

Job No.: 12564

Scale: 1:1,250 at A3

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Géotechnique

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Tel: 029 2080 7991

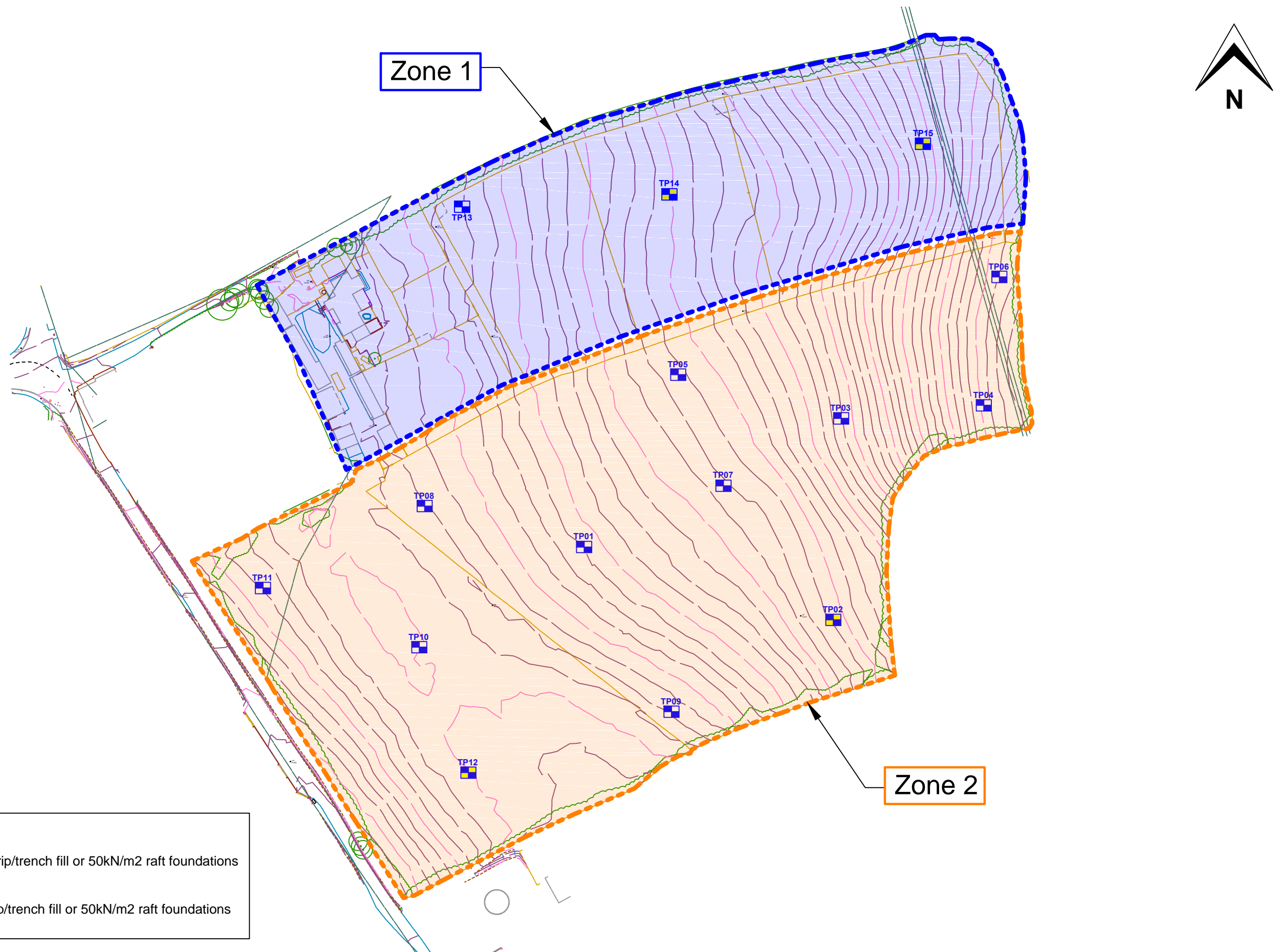


Figure 4: Foundation Zones

Project: Tobin Land, Old St Mellons, Cardiff

Client: PMG

Job No.: 12564

Scale: 1:1,250 at A3

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