Willis Construction

OPEN HEARTH, RINGLAND, NEWPORT

Site Investigation Report

14144/LS/23/SI

Intégral
Géotechnique

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CONTENTS

1.0 INTRODUCTION

1.1 General
1.2 Proposed Development
1.3 Scope of Works
1.4 Limitations

2.0 THE SITE

2.1 Site Location and Description
2.2 Site Operations
2.3 Surrounding Land Use
2.4 Available Site Investigation Data
2.5 Consultations with Regulators

3.0 SITE HISTORY

4.0 SITE ENVIRONMENTAL SETTING

4.1 Physical Setting
4.2 Geology
4.3 Radon
4.4 Mining
4.5 Hydrology, Hydrogeology & Flood Risk
4.6 Landfill Sites
4.7 Potential Contamination
4.8 Other Environmental Issues

5.0 PRELIMINARY CONCEPTUAL SITE MODEL

5.1 Risk Assessment Framework
5.2 Conceptual Model Framework
5.3 Critical Sensitive Receptor – Human Health
5.4 Critical Sensitive Receptor – Controlled Waters
5.5 Potential Contaminant Sources
5.6 Potential Exposure Pathways
5.7 Summary of Conceptual Exposure Model

6.0 THE SITE INVESTIGATION

6.1 Fieldworks
6.2 Field Observations
6.3 Laboratory Chemical Testing
6.4 Laboratory Geotechnical Testing

CONTENTS (CONTINUED)

7.0 GROUND CONDITIONS

7.1 Surface Hardstanding
7.2 Disturbed Topsoil
7.3 Made Ground
7.4 Weathered Bedrock
7.5 Groundwater
7.6 Falling Head Permeability Testing

8.0 CONTAMINATION

8.1 Averaging Areas
8.2 Soil Contamination

9.0 REVISED CONCEPTUAL EXPOSURE MODEL

10.0 RISK ASSESSMENT

10.1 Methodology
10.2 Source-Pathway-Receptor-Model
10.3 Human Health Risk Assessment
10.4 Risks to Vegetation
10.5 Controlled Waters Risk Assessment
10.6 Ground Gas Risk Assessment
10.7 Risks to Buildings and Materials Durability
10.8 Waste Disposal
10.9 Uncertainties

11.0 ENGINEERING CONSIDERATIONS & RECOMMENDATIONS

11.1 Details of Proposed Development
11.2 Site Preparation
11.3 Foundations and Floor Slabs
11.4 Excavations and Formations
11.5 Access Roads and Car Parking Areas
11.6 Retaining Wall
11.7 Drainage
11.8 Recommended Further Works

CONTENTS (CONTINUED)

APPENDICES

Appendix A	Newport City Council Regulatory Searches
Appendix B	Envirocheck Report
Appendix C	BGS Radon GeoReport
Appendix D	Windowless Sample Borehole Logs
Appendix E	Hand Excavated Trial Pit Log
Appendix F	Falling Head Permeability Test Results
Appendix G	Laboratory Chemical Test Results
Appendix H	Laboratory Geotechnical Test Results
Appendix I	Summary of Chemical Results – Disturbed Topsoil
Appendix J	Summary of Chemical Results – Made Ground

FIGURES

Figure 1	Site Location
Figure 2	Site Plan
Figure 3	Proposed Development Plan

1.0 INTRODUCTION

1.1 GENERAL

Willis Construction are proposing to redevelop a site at Open Hearth, Ringland for residential end-use. A site location and site plan are presented in Figures 1 and 2.

Intégral Géotechnique (Wales) Limited have been appointed as the Geotechnical Engineers to undertake a 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 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

A sketch layout for the scheme indicates that the proposed development will likely comprise of 32 units comprising a combination of low rise properties and 2 to 3 storey apartment buildings. The development will also include associated access roads, car parking areas, private gardens and areas of soft landscaping. The sketch layout is shown on Le Truco Design Drawing No. LTS296.03.01, Revision B, dated July 2021. An extract of this layout plan is presented in Figure 3.

1.3 SCOPE OF WORKS

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

The desk study comprised a review of:

- An Envirocheck Report obtained for the site,

1.3 SCOPE OF WORKS (CONTINUED)

- Old Ordnance Survey maps covering the site, included within the Envirocheck Report,
- A Radon Report obtained from the British Geological Survey,
- Geological maps of the area provided by the British Geological Survey,
- The Environment Agency groundwater vulnerability map and aquifer database for the area,
- Existing site investigation data, if available.

The desk study information was used to make an initial assessment of the site and to design an investigation to be carried out by Intégral Géotechnique. The site investigation was designed in accordance with BS 5930:2015+A1:2020, the Code of Practice for Site Investigations, BS10175:2011+A2:2017, 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 site investigation included:

- An intrusive investigation carried out on the 4th January 2023 comprising of five windowless sample boreholes and one hand excavated trial pit,
- Sampling of made ground for laboratory chemical testing,
- Sampling of in-situ soils for geotechnical testing,
- Falling head permeability/soakaway testing was undertaken in selected boreholes.

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, and the NHBC as appropriate.

"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. Naturally elevated concentrations of potentially harmful substances may also be of concern and the significance of any that have been found is also evaluated in this report.

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.

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

Access for the intrusive site investigation was limited at the time due to stockpiles of materials located across the site, the presence of demolition rubble within the footprint of the former pub building, uneven sloping ground within the northern area of the site and the presence of buried services. A foul sewer main runs through the southern area of the site. Two water mains run north to south within the eastern area of the site. A water course/ drain runs through the southern area of the site.

It should also be noted that due to the presence of buried serves, the area of the former filling station was inaccessible at the time of the site investigation.

2.0 THE SITE

2.1 SITE LOCATION AND DESCRIPTION

The site is located in Ringland, Newport, at a National Grid Reference of 335480, 188120, see Figure 1.

The site is irregular in shape and occupies an area of approximately 0.82 hectares. The boundaries of the site are defined by Hendre Farm Drive to the north and northeast, residential properties to the east, the A48 Southern Distributor Road to the south and mature trees to the west with residential properties beyond. A site plan is presented in Figure 2.

The site is situated on sloping ground that slopes down from an approximate elevation of 18m AOD in the north, dropping some 5m in elevation to approximately 13m AOD in the south.

The Open Hearth Inn which was formerly situated in the southwest and west of the site had been demolished, with the demolition rubble located within the footprint of the former building. Areas of asphalt hardstanding surrounded the former building.

The south-eastern area of the site had been fenced off. The fenced off area comprised of a tarmacked area with large amounts of fly-tipped material.

The northern area of the site was steeply sloping and had a covering of grass.

Several buried services were identified on site. BT and high voltage (HV) cables are present along the northern site boundary. A low voltage (LV) cable was identified entering site from the north-western corner and extending into the footprint of the former building. A foul sewer main runs through the southern area of the site. Two water mains run north to south within the eastern area of the site.

An unnamed surface water feature/drain flows in an approximate east to west orientation through the southern area of the site. The watercourse is partially culverted within the central/eastern area and an open water course in the western area and in the eastern most part of the site. At the time of the site investigation, the watercourse was noted to be dry.

Demolition rubble was present across the site, mainly concentrated in the area of the former Open Hearth Pub.

2.2 SITE OPERATIONS

There are no current site operations, with the site remaining vacant following demolition of the former Open Hearth Pub.

2.3 SURROUNDING LAND USE

The surrounding areas are mainly developed for residential use. The A48 is present to the south of the site's boundary.

2.4 AVAILABLE SITE INVESTIGATION DATA

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

2.5 CONSULTATIONS WITH REGULATORS

Newport City Council were consulted with regards to any contaminated land records for the site. Additionally, Newport City Council consulted their petroleum licensing department with regards to the former fuel filling station use and the potential for any former fuel storage tanks within the site.

Newport City Council have confirmed that the site is not the subject of any contaminated land investigations and has not been determined as contaminated land.

The petroleum licensing department do not have any records for the site.

A copy of the regulator's correspondence is presented in Appendix A.

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 B. The Envirocheck Report includes the following scaled historical maps:

Map Scale	Dates
1:2,500	1883, 1901, 1920, 1937, 1965-1968, 1971, 2000 (Aerial Photo)
1:1,250	1964, 1973-1976, 1974, 1975, 1987, 1992, 1994
1:10,560	1886-1887, 1902, 1922, 1938, 1947, 1954
1:10,000	1965, 1973, 1983, 1987, 1981-1989, 1999, 2006, 2022

The earliest edition of the map dated 1883 indicated the site to be largely undeveloped green fields, likely for agricultural use with trees sporadically located across the fields. Hendre farm buildings were located in the eastern area of the site and continued to extend off the site to the east. A possible pond was located just off the eastern site boundary. A well was also located within the eastern area of the site. A pathway was indicated to run through the centre of the site from east to west. A river was located along the southern site boundary. The area surrounding the site consisted of undeveloped green fields. Ringland Wood was located approximately 75m north of the site boundary.

The map dated 1901 indicated two further footpaths or tracks were located onsite, entering the site from the north and northwest and connecting to the pre-existing footpath in the centre of the site. A further small building had been constructed in the eastern area of the site and a further building had been constructed just off site to the east., The area surrounding the site remained relatively unchanged.

The 1920 edition of the map indicated a further building had been constructed within the eastern area of the site. The footpath/track that entered the site from the northwest was no longer shown. The well located within the eastern area of the site was also indicated to be no longer present. Ringland Woodland, now known as Ringland Brake was indicated to have been deforested and consisted of rough pasture. A building, labelled as The Hendre, had been constructed approximately 275m northwest of the site boundary.

The site and surrounding area remained relatively unchanged until the 1937 edition of the map. A map dated 1937 indicated a tank, along with another building had been constructed within the centre of the site. The area surrounding the site remained relatively unchanged. A pond was located in the southwest of the site, to the south of the watercourse.

3.0 SITE HISTORY (CONTINUED)

By the 1964 edition of the map, Hendre farm had been demolished, with no buildings or tank remaining on the site. The river which extended across the southern area of the site had been straightened. The pond located in the southwest of the site had been infilled.

Significant development had occurred in the wider area. Large residential developments had been constructed to the north, east and west of the site. The land immediately to the west and south of the site remained undeveloped. Hendre Farm Drive had been constructed along the site's northern boundary. A bus shelter was located to the north of the site. The B4004 road was located to the south of the site, with Hartridge High School beyond approximately 65m south of the site boundary, which comprised of numerous buildings and playing fields. An area of open green space was located approximately 80m north of the site boundary.

By 1971 the Open Hearth pub had been constructed in the western area of the site, with associated parking areas and pathways covering the majority of the remaining area of the site. A small building had also been constructed on the eastern site boundary. The watercourse located near the southern site boundary was indicated to have been partially culverted. The B4004 road was now noted as the A455. Two access roads entered the site from the A455, crossing the culverted watercourse. Further residential development had occurred immediately to the west of the site. A filling station had been construction approximately 62m southwest of the site's boundary.

The 1973 edition of the map indicated a small building had been constructed in the central part of the site. 1974 edition of the map indicated a filling station had been constructed in the south-eastern area of the site.

The site and surrounding area remained relatively unchanged over the subsequent years with the Open Hearth pub remaining in the same configuration on site.

The 1992 edition of the site map indicated that three buildings were located in the central to eastern areas of the site. An 'L' shaped building was located on the location of the filling station noted on the 1974 and 1975 maps. Small electrical substations were located approximately 35m northeast and 68m west of the site boundary.

The aerial photo published in 2000 indicated the building in the central to eastern area of the site, including the filling station were no longer shown, however, areas of hardstanding and suspected floor slabs remained. No other changes were recorded on site and the surrounding area remained unchanged.

3.0 SITE HISTORY (CONTINUED)

By 2006, the south eastern area of the site had been fenced off.

By this time the A455 had now been extended to the sites southern boundary and was noted as the A48. The two junctions that previously entered the southern area of the site off the A455 had been removed and there was no access into the site from the A48. The 2006 Aerial image of the site also indicated materials had been stockpiled on site. No further changes occurred to the site or surrounding area.

The 2016 aerial image of the site indicated trees/vegetation were located along the boundary of the fenced off area in the south eastern area of the site. The trees/'vegetation had been removed by 2018.

By 2021, the Open Hearth Pub had been demolished and no further changes occurred onsite or within the surrounding area to the present day.

4.0 SITE ENVIRONMENTAL SETTING

4.1 PHYSICAL SETTING

The site is located within a mainly residential setting within the well-established district of Ringland to the northeast of Newport.

The site is situated on ground which generally slopes down to the south from an approximate maximum elevation of 18m AOD in the north to an approximate minimum elevation of 13m AOD in the south.

An unnamed surface water feature/drain flows in an east to west orientation through the southern area of the site. The watercourse is partially culverted within the central area of the site and an open watercourse in the western part and eastern most areas. At the time of the site investigation, the watercourse was noted to be dry.

4.2 GEOLOGY

The 1:50,000 scale geological map of the area indicates the site to be underlain by strata of the St Maughans Formation of the Early Devonian Period. These rocks typically comprise of interbedded purple, brown and green sandstones and red mudstones.

Along the northern and south western boundary of the site the 1:50,000 scale geological map indicates the site to be underlain by the Blue Anchor Formation of the Triassic period. These rocks typically comprise of pale green-grey, dolomitic silty mudstones and siltstones.

No superficial deposits are indicated to overlie the site. However, the geological boundary of the Tidal Flat Deposits of the Holocene period is indicated to the west and southwest of the site boundary. Thin pockets/areas of these deposits, which typically comprise of soft clays with varying sand and silt, could overlie the solid strata, particular within the southwestern area of the site.

A variable thickness of made ground is anticipated above the in-situ deposits across the site associated within the construction of the pub and historical site uses. Deeper made ground would be anticipated within the footprint of the recently demolished pub, particularly if a cellar was present.

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

4.2 GEOLOGY (CONTINUED)

Table 1 : Summary of Anticipated Site Geology		
Geological unit	**Horizon**	**Description**
Recent	Made ground	Various materials
Quaternary	Tidal Flat Deposits	Clays with varying sand and silt content
Early Devonian	St Maughan's Formation	Interbedded purple, brown and green sandstones and red mudstones
Triassic	Blue Anchor Formation	Pale green-grey, dolomitic silty mudstones and siltstones with thin argillaceous or arenaceous laminae

4.3 RADON

Information with regard to Radon Protective Measures is provided within the Envirocheck Report and the BGS Radon GeoReport as presented in Appendix C. The reports state that the site is within an intermediate probability area, as 5% to 10% of properties are above action level, meaning basic radon protective measures would be required.

However, the BGS Report shows that the majority of the site lies within a low probability area, meaning 0-1% of properties are above action level and that no radon protective measures would be required. Only a small section within the southwestern corner of the site would require basic radon protective measures.

The indicative site development plans which have been provided show that no houses are planned to be constructed within the southwestern corner of the site area where basic radon protective measures would be needed. Therefore, based on the indicative proposed development layout, no radon protective measures would be necessary in the construction of new buildings within the site.

4.4 MINING

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

4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK

The Envirocheck Report indicates the nearest surface water feature to be located onsite.

The OS Water Network Lines map indicates this to be an unnamed surface water feature that flows east to west through the southern part of the site. The watercourse is partially culverted within the central area of the site, with the western part and the very eastern most area an open watercourse. The flow direction of the watercourse is unknown, but likely to be towards the west.

The Natural Resources Wales groundwater vulnerability map and aquifer database classifies the bedrock, both the St Maughans Formation and the Blue Anchor Formation beneath the site as a Secondary 'B' Aquifer. Secondary B Aquifers are predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering.

A perched water body could be anticipated in the made ground.

It is considered possible that the existing site drainage can act as a pathway for potential surface contaminants.

There are no recorded discharge consents recorded within 500m of the site boundary. The nearest discharge consent is located 560m southwest of the site boundary, where two discharge consents are present for a sewerage network.

The Envirocheck Report states that there are no groundwater abstractions within 1000m of the site.

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

4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK (CONTINUED)

Table 2: Summary of Site Hydrology

Feature	Distance from site	Flow	Classification	Abstraction	Discharge
Unnamed Inland River	Onsite	Unknown	Drain	No	Unknown
Unnamed Inland River	90m East	Not known	Drain	No	Unknown
River Usk	>1000m	North	River	No	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
Made ground	Not classified	Highly variable permeability and porosity. Perched water may be present with variable flow directions.	No	None
St Maughans Formation	Secondary 'B' Aquifer	Variable permeability interbedded sandstones, mudstones and conglomerates	No	None
Blue Anchor Formation	Secondary 'B' Aquifer	Variable permeability interbedded dolomitic silty mudstones and siltstones.	No	None

The Groundwater Vulnerability map of the area indicates the Secondary bedrock aquifer to have a high vulnerability. The pollutant speed is intermediate with well-connected fractures.

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

The Natural Resources Wales Surface Water Flood Risk map as presented within the Envirocheck Report indicates that the majority of the site is not at risk of surface water flooding. However, the map indicates that the southern and eastern area of the site varies from a high risk to low risk of surface water flooding.

4.5 HYDROLOGY, HYDROGEOLOGY AND FLOOD RISK (CONTINUED)

The BGS Groundwater Flooding Susceptibility Map indicates the site to have no potential for groundwater flooding to occur at surface or below to property below ground level.

4.6 LANDFILL SITES

The Envirocheck Report states there are no recorded, current or historical landfill sites within 1000m of the site boundary.

The Envirocheck Report indicates that there is one area of potentially infilled land (water) recorded on site. The area is located within the southern area of the site at the location of a former inland river prior to it being straightened. There are no other areas of potentially infilled land (water) within 250m of the site boundary.

The Envirocheck Report indicates that there are no areas of potentially infilled land (non-water) located within 250m of the site boundary.

4.7 POTENTIAL CONTAMINATION

Previous 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. Reference to Department of the Environment Industry Profiles has been made and a summary of the potential contaminants can be found in the tables.

4.7 POTENTIAL CONTAMINATION (CONTINUED)

Table 4: Potential Contaminants		
Land Use: Green Fields and Hendre Farm until 1930s		
Material/Process	**Contamination/Hazard**	**Evidence**
Possible agricultural land	No potential contaminants	Historical maps
Construction of the building would have disturbed the ground and may have utilised imported materials of unknown origin	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Land Use: Expansion of Hendre Farm buildings in the 1930s		
Material/Process	**Contamination/Hazard**	**Evidence**
Construction of the buildings would have disturbed the ground and may have utilised imported materials of unknown origin	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Above ground storage tank of unknown use	Petroleum hydrocarbon	Historical maps
Demolition of the farm buildings in the 1960s would have further disturbed the ground and may utilised imported materials of unknown origin if any excavations required infilling following demolition	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Land Use: Construction of the Open Hearth Pub, filling station and associated car parking area in the 1970s		
Material/Process	**Contamination/Hazard**	**Evidence**
Construction of the building and filling station would have disturbed the ground and may have utilised imported materials of unknown origin	Metals, semi metals, non-metals, PAH, asbestos	Historical maps
Above ground and below ground storage tanks and underground pipelines associated with the filling station	Hydrocarbons – Fuels/oils	Historical maps
Demolition of the filling station and pub buildings which can caused further ground disturbance with possible contamination within any building fabric	Metals, semi metals, non-metals, PAH, asbestos and ACM within any residual building fabric if any remaining on site	Vacant Site Use

4.7 POTENTIAL CONTAMINATION (CONTINUED)

Existing Uses

The site has no current site uses with the former Open Hearth pub recently demolished. The current site uses would not add any additional contamination concerns.

Adjacent Site Uses

Table 5 : Potential Contaminants : Adjacent Site Uses

Potential Contamination Source	Boundary	Associated Contaminants and Hazards
Residential development with associated grounds	Eastern, Northern and Western	No Potential Contaminants
A48	Southern	No Potential Contaminants
Hendre Farm Drive	Northern and north western	No Potential Contaminants

4.8 OTHER ENVIRONMENTAL ISSUES

The Envirocheck Report indicates that environmentally sensitive land is located within 500m of the site boundary and consists of several areas of ancient woodland. The nearest is located 80m east of the site and is noted as ancient and semi-natural woodland.

The Envirocheck Report indicates that there have been no pollution incidents to controlled waters within 1000m of the site and no substantiated pollution incidents to controlled waters within 500m of the site.

The Envirocheck Report states that there are been no prosecutions relating to controlled waters or authorised processes within 1000m of the site.

There are no active trade directories onsite or within 250m of the site boundary.

It is not known if any invasive plant species are present, but the site is vegetated. It would be prudent to undertake a full vegetation survey 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, assess, estimate, evaluate, and take appropriate action to deal with land contamination, in accordance with the procedures specified in the Environment Agency guidance Land Contamination Risk Management (LCRM) published in October 2020. This replaces the now withdrawn '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 LCRM, the term 'land contamination' is defined as:

- All land affected by contamination – land that might have contamination present which may, or may or may not, meet the statutory definition of contaminated land,
- Land determined as contaminated land under Part 2A of the Environmental Protection Act 1990.

LCRM provides a tiered approach to risk assessment, comprising a preliminary risk assessment (including the development of an initial conceptual site model), a generic quantitative risk assessment and a detailed quantitative risk assessment. For each tier of risk assessment, the following steps must be followed:

1. Identify the hazard - establish contaminant sources,
2. Assess the hazard – use a source-pathway-receptor linkage approach to determine if there is potential for unacceptable risk,
3. Estimate the risk – predict what degree of harm or pollution may result and how likely it is to occur, and
4. Evaluate the risk – decide whether a risk is unacceptable.

LCRM also provides definitions of the following terms:

- Hazard – a property or situation that in particular circumstances could lead to harm or pollution,

5.1 RISK ASSESSMENT FRAMEWORK (CONTINUED)

- Risk – a combination of the probability, or frequency of occurrence of a defined hazard and the magnitude of the consequences of the occurrence,
- Risk assessment – the formal process of identifying, assessing and evaluating the health and environmental risks that may be associated with a hazard,
- Risk management – the formal process to identify, assess and determine the risks, and to select and take action to mitigate them.

The three essential elements to any risk are defined by LCRM as follows:

- A contaminant, or pollutant, that is in, on, or under the land and that has the potential to cause harm, or pollution (Source)
- A route by which a receptor is, or could be affected by a contaminant (Pathway)
- A receptor, i.e. something that could be adversely affected by a contaminant, for example a person, controlled waters, an organism, an ecosystem, or Part 2A receptors such as buildings, crops or animals (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.

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.

5.1 RISK ASSESSMENT FRAMEWORK (CONTINUED)

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.

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.

5.2 CONCEPTUAL MODEL FRAMEWORK (CONTINUED)

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 onsite residential receptor.

In accordance with S4UL/C4SL and CLEA guidance for a standard residential 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 home grown produce end use conceptual model defined by S4UL/C4SL and CLEA is assumed 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 B Aquifer of the St Maughans Formation and the Secondary B Aquifer of the Blue Anchor Formation.

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, of which one is located within the southern area of the site.

5.5 POTENTIAL CONTAMINANT SOURCES

As identified in the desk study, the extensive historical land uses at the site since the 1930's has resulted in a list of potentially contaminative uses that include the construction of the farm buildings, the Open Hearth Pub and operation of the filling station.

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.

5.5 POTENTIAL CONTAMINANT SOURCES (CONTINUED)

In addition to the above, there could be the potential for petroleum hydrocarbons (VPH/EPH), and BTEX compounds within the made ground, particularly in the vicinity of former fuel tanks and/or pipelines associated with the filling station.

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, historical review and site walk over 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 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.

5.7 SUMMARY OF CONCEPTUAL EXPOSURE MODEL (CONTINUED)

Table 6: Preliminary Conceptual Exposure Model

Source		Receptor	Pathway	Potentially Active Pathway?
Origin	Contaminant			
Made Ground of unknown origin and historical land uses	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	✓
	Metals, semi-metals, inorganics, PAH,	Surface water quality	Transportation within groundwater	✓
Underground and above ground storage/fuel tanks and within the vicinity of any associated pipework	Petroleum hydrocarbons, BTEX compounds	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	✓
	Petroleum hydrocarbons, BTEX compounds	Groundwater quality	Localised spillage	✓
	Petroleum hydrocarbons, BTEX compounds	Surface water quality	Transportation within groundwater	✓
Made Ground of unknown origin and natural ground	Metals, semi-metals, non-metals, PAH,	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

A site investigation was designed in accordance with BS 5930:2015+A1:2020, the Code of Practice for Site Investigations, BS10175:2011+A2:2017, 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 site investigation was also designed to provide information to support and refine the preliminary conceptual site model/conceptual exposure model.

An intrusive investigation comprising the drilling of five windowless sample boreholes and one hand excavated trial pit was carried out on the 4th of January 2023. The windowless sample boreholes were located across the site and drilled to refusal at a maximum depth of 3.7m below existing ground level. The purpose of the boreholes was to prove the shallow ground conditions and allow an assessment of the most appropriate foundation type for the proposed development. In situ strength testing (SPT/CPTs) was carried out at regular depth intervals in the boreholes.

A hang dug pit was undertaken in the northern area of the site to obtain a near surface sample as the sloping nature of the site prohibited the windowless sample rig entering the area.

Falling head permeability/soakaway tests were carried out in two boreholes in order to assess/monitor the likely permeability of the natural ground.

Representative soil samples were taken from the boreholes 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 windowless sample boreholes and prepared their detailed engineering logs in accordance with the requirements of BS5930:2015+A1:2020. 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.

6.1 FIELDWORKS (CONTINUED)

The approximate locations of the windowless sample boreholes and the hand excavated trial pit are shown on Figure 2, while their logs are presented in Appendices D and E, respectively. The results of the falling head permeability/soakaway tests are presented in Appendix F.

6.2 FIELD OBSERVATIONS

No visual or olfactory evidence of any contamination was observed during the drilling of the windowless sample boreholes.

However, made ground was encountered at each exploratory location.

It should be noted that the site investigation works were limited to accessible areas of the site only. A large stockpile of demolition rubble was present within the footprint of the former Open Hearth pub building.

6.3 LABORATORY CHEMICAL TESTING

Representative soil samples were taken from the windowless sample boreholes 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
Polyaromatic Hydrocarbons (PAH)	Asbestos

The results of the laboratory testing are presented in Appendix G.

6.4 LABORATORY GEOTECHNICAL TESTING

Representative soil samples taken from the trial pits were dispatched to the MCERTS and UKAS accredited laboratories of Apex and tested for moisture content, Atterberg Limits, pH, water-soluble sulphate.

The results of the geotechnical testing are presented in Appendix H.

7.0 GROUND CONDITIONS

The trial pit logs should be referred to for detailed information on the encountered shallow ground conditions.

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

Table 7 : Summary of Ground Conditions

Depth (m) From	To	Stratum
0.0	0.10	*SURFACE HARDSTANDING: Excluding WS01 and HD1* Bituminous Material.
0.0	0.2	*DISTURBED TOPSOIL: WS01 and HD1* Loose to medium dense dark brown very clayey gravelly sand. The gravel consisted of fine to coarse sub angular and angular mudstone with occasional plastic and brick fragments.
0.10/0.2	0.3/2.2	*MADE GROUND* Variable cohesive and granular soils containing man-made constituents such as slag, and clinker
0.3/2.2	>1.5/>3.7	*WEATHERED BEDROCK* Firm to stiff becoming stiff to hard red and orange brown clay with variable sand and gravel. Localised light green reduction spots were encountered with depth.

Windowless sample borehole sides were stable in the short term.

7.1 SURFACE HARDSTANDING

A surface covering of bituminous material was observed within windowless sample boreholes (WS02, WS03, WS04 and WS05) which was approximately 0.10m in thickness.

7.2 DISTURBED TOPSOIL

Disturbed topsoil was encountered from ground level to a depth of 0.2m below existing ground level within WS01 and HP1 within the northern area of the site.

The disturbed topsoil comprised of loose to medium dense dark brown very clayey gravelly sand. The gravel consisted of fine to coarse sub angular and angular mudstone with occasional plastic and brick fragments.

7.3 MADE GROUND

Made ground was encountered underlying the tarmac or disturbed topsoil at each windowless sample location to depths of between 0.3m and 2.2m below existing ground level.

The made ground was generally encountered to depths of between 0.3m and 1.0m below existing ground level with the exception of WS01 and WS04 with made ground encountered to depths of 1.65m and 2.2m below existing ground level, respectively.

Made ground was encountered to between 0.3m/1.0m depth within windowless sample boreholes WS02, WS03 and WS05 and typically comprised gravels and cobbles of angular and sub angular limestone and sandstone with some anthropogenic materials including brick, ash, clinker and slag.

Windowless sample borehole WS1 recorded made ground to a depth of 1.65m below existing ground level and comprised firm, becoming firm to stiff sandy gravelly clay with occasional brick, slag and clinker.

The greatest thickness of made ground was recorded within the vicinity of WS04, where made ground was encountered to a depth of 2.2m below existing ground level. The made ground was variable layers of typically loose to medium dense clayey gravel or soft silty gravelly clay with angular and sub angular limestone and mudstone with anthropogenic materials including brick, ash, clinker and slag.

7.4 WEATHERED BEDROCK

The made ground was underlain by weathered bedrock.

7.3 WEATHERED BEDROCK (CONTINUED)

The weathered strata was recorded in all windowless sample locations from depths ranging from 0.3m/2.2m below ground level and recorded to depths of >3.7m below existing ground level.

The completely weathered mudstone strata typically comprised of firm to stiff becoming stiff to hard red and orange brown friable silty clay with gravels of fine mudstone lithorelicts. Localised light green reduction spots were commonly encountered with depth. Locally the weathered strata was also slightly sandy.

The in-situ SPT tests undertaken within the windowless sample boreholes indicated an increase in stiffness with depth, with values ranging from 12 to 59, the average being 41.

The results of the Atterberg Limits testing indicates that the natural strata has plasticity indices ranging between 15% and 20%. The modified plasticity indices range between 9% and 15%, indicating that the natural strata vary from non-plastic to soils of low volume change potential.

The windowless sample logs and the hand excavated trial pit log are presented in Appendices D and E respectively.

7.5 GROUNDWATER

Groundwater was only encountered within one windowless sample borehole, WS05. Groundwater was encountered at 0.4mbgl and consisted of perched groundwater at the interface between the granular made ground and the cohesive low permeability underlying natural strata.

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 FALLING HEAD PERMEABILITY TESTING

Two falling head tests were undertaken at the site, within WS02 and WS05 respectively.

Both windowless sample boreholes were rapidly filled with water.

No infiltration was recorded in either test. This is likely due to the low permeability of the underlying weathered mudstone/stiff clay deposits.

7.6 FALLING HEAD PERMEABILITY TESTING (CONTINUED)

It should be noted that this initial testing should only be regarded as indicative.

The results of the falling head permeability tests are presented in Appendix F.

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, the averaging area has been determined according to the proposed residential end use.

8.2 SOIL CONTAMINATION

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

Since the results of the testing indicate total organic carbon content (TOC) in the range of 0.2% to 5.5%, the results have been compared to the respective guidelines, where applicable, for 1% soil organic matter content.

The soil test results for disturbed topsoil and made ground have been summarised and are shown in Appendices I and J, respectively.

8.2.1 Disturbed Topsoil

The results of the laboratory testing carried out on six representative samples of topsoil and subsoil indicate that the analysed chemical elements or compounds are present at concentrations below the appropriate thresholds.

Asbestos was not detected within any of the samples of disturbed topsoil.

8.2.2 Made Ground

The results of the laboratory testing indicate that most of the analysed chemical elements or compounds are present at concentrations below the appropriate thresholds. However, the initial screening indicates two exceedances of beryllium.

8.2 SOIL CONTAMINATION (CONTINUED)

Two elevated concentrations of beryllium were detected above the adopted screening values of 1.7mg/kg (LQM 1%SOM) within samples of made ground at WS03 (0.2mbgl) and WS04 (0.4mbgl), at concentrations of 5.6mg/kg and 7.7mg/kg respectively.

Asbestos was not detected within any of the samples of made ground.

No further exceedances were detected within the samples of made ground.

It should be noted that large areas of the site were inaccessible due to the presence of stockpiled demolition materials. Additionally, the presence and location of any former fuel storage tanks associated with the former filling station have not yet been confirmed and/or investigated.

8.2.3 In-situ Natural Ground

No visual or olfactory evidence of contamination of the in-situ natural ground was identified during the drilling of the boreholes. At the time of writing this report no samples of natural ground had been tested. It is considered likely that concentrations of determinands within the natural ground are likely to be naturally occurring and as such, the natural ground poses no significant threat to human health or the environment.

9.0 REVISED CONCEPTUAL EXPOSURE MODEL

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

Table 8: Revised Conceptual Exposure Model

Source		Receptor	Pathway	Preliminary Active Pathway? (see Sect. 5.7)	Relevant Pollutant Linkage	Justification/ Mitigation
Origin	Contaminant					
Made Ground of unknown origin and historical land uses	Metals, semi-metals, non-metals, PAH, petroleum Asbestos	Resident – human health	Dermal Contact with made ground/dust	✓	✓	Elevated concentrations of beryllium identified within the made ground – risk assess. Note: footprint of the former pub was not investigated. It would be advised to do further analysis when demolition rubble has been cleared.
			Ingestion of soil and/or soil attached to home-grown produce	✓	✓	
			Ingestion of home-grown produce	✓	✓	
			Inhalation of dust	✓	✓	
			Inhalation of vapours – indoor/outdoor	✓	X	No sufficiently volatile contaminants identified.
	Metals, semi-metals, inorganics, PAH,	Groundwater quality	Leaching from made ground	✓	✓	Elevated concentrations of beryllium identified within the made ground – risk assess.
	Metals, semi-metals, inorganics, PAH, petroleum	Surface water quality	Transportation within groundwater	✓	✓	

9.0 REVISED CONCEPTUAL EXPOSURE MODEL (CONTINUED)

Source		Receptor	Pathway	Preliminary Active Pathway?	Relevant Pollutant Linkage	Justification/ Mitigation
Origin	Contaminant					
Underground and above ground storage/fuel tanks and within the vicinity of any associated pipework	Petroleum hydrocarbons, BTEX compounds	Resident – human health	Dermal Contact with made ground/dust	✓	✓	Access was not available at the time of the site investigation due to the presence of buried services. Following site clearance further sampling is recommended.
			Ingestion of soil and/or soil attached to home-grown produce	✓	✓	
			Ingestion of home-grown produce	✓	✓	
			Inhalation of dust	✓	✓	
			Inhalation of vapours – indoor/outdoor	✓	✓	
	Petroleum hydrocarbons, , BTEX compounds	Groundwater quality	Localised spillage	✓	✓	
	Petroleum hydrocarbons, , BTEX compounds	Surface water quality	Transportation within groundwater	✓	✓	
Made Ground of unknown origin and natural ground	Metals, semi-metals, non-metals, PAH,	Building Materials Durability	Direct contact	✓	✓	Building materials will be in contact with made ground – risk assess
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	✓	✓	Made Ground on 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 and investigation observations show elevated concentration levels in the made ground (at shallow depth) of beryllium. None of the tested made ground samples were found to contain asbestos.

Given the elevated Beryllium concentrations within the general made ground encountered across the site, it is considered that a potential risk to human health may exist via the following relevant pollutant linkages:

- Dermal contact,
- Ingestion of soil or soil derived dust,
- Ingestion of soil attached to homegrown produce,
- Ingestion of homegrown produce,
- Inhalation of soil bourn dust.

The inhalation of vapours pathways (indoor and outdoor air) are not considered to be active since the contaminants of concern identified are not sufficiently volatile. Note that this should be reviewed following the recommended further contamination testing including an assessment of potential for petroleum hydrocarbons in the vicinity of the former fuel filling station and possible fuel storage tank area.

It is therefore considered necessary to protect end users from the elevated concentrations of beryllium in the shallow made ground. It is considered necessary to break the above listed relevant pollutant linkages in order to remove the potential risk.

It is recommended that a capping layer, of a minimum thickness of 600mm, of clean imported subsoil and topsoil is placed above a geotextile separation membrane in all private gardens and areas of soft landscaping. This would break all the above listed relevant pollutant linkages and removing the potential risk to future end users.

Following site clearance and breaking out of floor slabs and areas of hardstanding, it is recommended that additional sampling and testing is undertaken beneath the footprint of the former buildings with representative samples tested for further contamination including asbestos. Within the footprint of the former filling station the exposed formations should be inspected, sampled and tested for further contamination including petroleum hydrocarbons and asbestos.

10.3 HUMAN HEALTH RISK ASSESSMENT(CONTINUED)

Subject to the findings of the further investigation works in the vicinity of the former fuel filling station, it may be necessary to allow for appropriate validation sampling following removal of any below ground storage tanks and/or petroleum hydrocarbon hotspots.

It should be noted that this assessment should be reviewed to include the findings of the post site clearance supplementary testing following breaking out of floor slabs and areas of hardstanding, with specific testing in the areas of the former buildings and filling station. This assessment may therefore be subject to change.

10.3.3 Construction Workers

With future site development works involving the excavation and removal of the made ground, there would be a risk to workers from contaminants in the soils. Appropriate measures are therefore recommended for works involving the made ground materials which are known to be present beneath the site.

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.

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.

All excavations should be regularly checked for safe atmospheres.

Additionally, a system should be established by which any ‘unusual’ 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.

10.4 RISKS TO VEGETATION

The concentrations of phytotoxic contaminants in the shallow made ground materials indicate the potential for adverse effects to vegetation. Similarly, the physical nature of the existing made ground does not provide a suitable growing medium for vegetation.

To ensure viable landscape areas by preventing upward migration of contaminants into the overlying soils, and in order to promote plant growth, any landscaped areas will require the provision of a minimum 600mm thick capping layer of clean, inert subsoil and topsoil materials above a geotextile membrane.

10.5 CONTROLLED WATERS RISK ASSESSMENT

Locally elevated concentrations of beryllium were encountered within the made ground.

The underlying natural ground comprised variable cohesive deposits with groundwater not encountered, with the exception of perched water encountered within WS05 at a depth of 0.4m at the interface between the granular made ground and low permeability natural soils.

In the developed state, the site will be covered by either the building footprint or areas of hardstanding and any gardens or areas of soft landscaping will be covered by a minimum 600mm thick capping layer of clean inert imported soils placed above a geotextile separation.

It is therefore considered that the potential for rainfall infiltration into the made ground, subsequent leachate generation from the made ground and the potential for vertical migration of unacceptable leachate concentrations to impact the underlying groundwater is considered to be low.

Based on the site conditions and development proposals, the risks to controlled waters is considered to be low at this stage.

However, the above assessment should be reviewed following the completion of the post site clearance supplementary site investigation works recommended in Section 10.3, with specific testing in the area of the former buildings and former filling station.

10.6 GROUND GAS RISK ASSESSMENT

The ground conditions encountered beneath the site comprise a variable thickness of made ground over weathered mudstone bedrock, comprising firm to stiff and stiff clay with mudstone lithorelicts.

10.6 GROUND GAS RISK ASSESSMENT (CONTINUED)

The made ground was found to comprise typically granular subbase materials and/or sandy gravelly clay with occasional brick, ash, slag and clinker. No evidence of potential gas producing materials such as wood, peat or other organic rich materials were observed.

However, the variable thickness of made ground encountered beneath the site and the potential extent of further made ground beneath the footprint of the former Open Hearth Public House building, including any potential infilled cellar may present a potential risk of ground gas.

Similarly, the historical maps have identified a former fuel filling station was previously located in the southeast part of the site. It is unknown if the former fuel storage tanks were above or below ground and if they have been appropriate decommissioned and removed, along with any associated pipework.

It is therefore recommended that allowances are made for further site investigation works in the area of the former public house and former filling station once these areas have been cleared and are accessible.

Allowances should be made for the installation of ground gas monitoring standpipes and undertaking a period of gas monitoring where thick made ground and/or evidence of any residual hydrocarbons or fuel storage tanks are confirmed.

No viable off-site sources have been identified within the vicinity of the site, with no recorded, historical or Local Authority landfill sites located within 500m of the site boundary.

As discussed above in Section 4.3, although the BGS Radon GeoReport indicates Basic Radon protective measures are required, the majority of the site is in an area where no radon protective measures are required. The requirement for basic radon protective measures affects a very small area within the southwestern corner of the site.

Based on the proposed indicated development layout plan provided, there are no buildings proposed in the southwest corner of the site and therefore, based on this, no radon protective measures are required within the buildings.

10.7 RISKS TO BUILDINGS AND MATERIALS DURABILITY

10.7.1 Concrete Classification

The results of the chemical testing of made ground and natural ground for water soluble sulphate and pH, which may adversely affect the durability of building materials is presented in Appendices G and H respectively.

Made Ground

Evidence to date does not indicate any specifically aggressive conditions, but it would be reasonable to expect a degree of sulphate and acidic aggressiveness from the made ground.

In accordance with BRE Digest SD1:2005 and adopting the assessment procedure specified therein for brownfield sites, the laboratory chemical test results indicate a characteristic value (taking the highest of the test results) for water soluble sulphate within the made ground of 480mg/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 made ground of 8.2 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 made ground.

Natural Ground

In accordance with BRE Digest SD1:2005 and adopting the assessment procedure specified therein for brownfield sites, the laboratory chemical test results indicate a characteristic value (taking the highest of test results) for water soluble sulphate within the natural ground of 43mg/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 8.29 has been determined (adopting the lowest test results). 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. Measures to protect the pipes will include clean backfill to trenches and possibly alternative material selection.

Reference should be made to UKWIR Guidance for the Selection of Water Supply Pipes to be used in Brownfield Sites, document No. 10/WM/03/21. The final design and selection of the pipe and associated backfill should be agreed with the appropriate Regulator prior to installation.

In order to comply with the UKWIR guidance, specific sampling and testing along the actual line of the proposed water supply route may need to be carried out once this has been established.

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 the existing made ground are likely to be classified as non-hazardous/hazardous waste. The existing natural ground are likely to be classified as non-hazardous waste.

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

10.8 WASTE DISPOSAL (CONTINUED)

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.

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 ground beneath the former Open Hearth pub building has not been examined due to a large stockpile of demolition rubble positioned over the former building footprint. Due to the former use of the building as a former pub, a cellar or basement could be present but has not been proven at this stage.

The ground conditions and the presence or otherwise of any former above/below ground fuel storage tank and associated pipework, and any residual hydrocarbon contamination beneath the former filling station has not been investigated at this stage.

10.9 UNCERTAINTIES (CONTINUED)

The full thickness of the made ground beneath the former pub or within the area of the former filling station has not been proven at this stage.

11.0 ENGINEERING CONSIDERATIONS AND RECOMMENDATIONS

11.1 DETAILS OF PROPOSED DEVELOPMENT

A sketch layout for the scheme indicates that the proposed development will likely comprise of 32 units comprising a combination of low-rise properties and 2 to 3 storey apartment buildings. The development will also include associated access roads, car parking areas, private gardens and areas of soft landscaping. The sketch layout is shown on Le Truco Design Drawing No. LTS296.03.01, Revision B, dated July 2021. An extract of this layout plan is presented in Figure 3.

11.2 SITE PREPARATION

Prior to works commencing on site, any existing services within the site should be identified and either relocated or protected.

Any diversion works should be carried out under the supervision of, and to the specification of, the appropriate statutory authorities. The resulting excavations should be backfilled with suitable granular material laid and compacted to Department of Transport (DTp) Specification for Earthworks.

Any vegetation within the development area should be stripped off and stockpiled on site for off-site disposal. A full vegetation survey should be carried out prior to stripping works to assess the potential for any invasive plant species.

All fly tipped material should be appropriately disposed offsite.

The existing stockpile of demolition materials should be sorted and processed. Any unsuitable materials should be removed and disposed of offsite. Any oversized materials should be crushed to an appropriate grade, typically 125mm maximum particle size and stockpiled on site for reuse as granular fill.

Any existing hardstanding should be broken out and crushed to acceptable size for re-use. or alternatively disposed of offsite at a suitable facility. Any existing hardcore materials can similarly be recovered for re-use or alternatively disposed offsite.

Areas of tarmac/bituminous hardstanding should be planed off and set aside for re-use if the material is deemed appropriate or alternatively disposed offsite at a suitable facility.

11.2 SITE PREPARATION (CONTINUED)

Allowances should be made for removing any buried structures associated with the past usage of the site, if encountered. Any relict foundations, slabs, manholes, drainage runs, and all other buried structures should be demolished, removed and crushed to acceptable size for re-use or disposed off-site at a suitable facility.

The basement/cellar if present within the footprint of the Open Hearth Pub will need to be excavated out, the sides benched and the excavation backfilled in a controlled manner.

If there is insufficient space to bench or batter excavations, temporary and/or permanent support in the form of retaining walls/structures may be required, particularly where excavations are close to existing highways, footpaths and underground services.

All redundant footings, services and remaining surface hardstanding associated with the former buildings and site usage will need to be broken out with the resulting debris crushed and screened to a structural specification, typically 125mm maximum particle size.

The resultant voids from the demolition works should be brought back up to the required level with well compacted suitable granular materials, laid and compacted in layers and benched into the surrounding soils. Department of Transport (DTp) Type 1 sub-base or similar approved, could be used and should be compacted in layers, in accordance with DTp Specification for Highway Works.

In addition, the surface drains that cross the site, including the watercourse/drain that crosses the southern area of the site, should be protected from any detrimental effects (including pollution and ground settlements) during construction works.

The exposed formations should be checked, and any soft spots/areas should be removed and replaced with well compacted site won or imported granular fill material where practical.

A system should be established for identification and dealing with any unforeseen contamination encountered during the site works (including identification of any potential asbestos containing materials and/or any residual hydrocarbons in the former fuel filling station part of the site). Any contamination, or suspected contamination, should be reported to the site manager, so that appropriate action may be taken, following specialist advice if necessary.

Subject to the findings of the recommended post clearance supplementary site works, allowances should also be made for removal of any identified underground fuel storage tanks and associated fuel lines, followed by appropriate validation testing.

11.2 SITE PREPARATION (CONTINUED)

During site clearance and subsequent operations airborne nuisance caused by dust from site must be controlled on account of the health and safety of site operatives and existing neighbouring residents.

Due to the sloping nature of the site, some degree of cut and fill earthworks is required.

If any fill is to be placed onto an existing sloping area, then original ground should be adequately 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 Department of Transport (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 slope should be topsoiled and seeded with grass, in order to minimise any future maintenance problems caused by surface water run-offs.

Any exposed formations should be proof rolled, soft spots removed and replaced with structural fill placed in accordance with the Department of Transport Specification for Highways Works

During the earthworks operations to achieve a reduced development plateau, allowances should be made for potentially encountering boulders, cobbles and any residual obstructions at shallow depth.

Allowances should also be made for encountering perched groundwater and shallow groundwater.

The boundaries of the site to the south and west contain mature trees. Allowances should therefore 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.

11.3 FOUNDATIONS AND FLOOR SLABS

It is recommended that further investigation is undertaken to confirm the ground conditions beneath the area of the former filling station and the former pub building, including confirmation or otherwise if a cellar/basement is/was present beneath the former pub.

It should be noted that the following foundation recommendations should be reviewed following completion of the recommended further intrusive works and once the final development layout and site engineering levels have been confirmed.

The ground conditions generally comprised of made ground to variable depths of between 0.3m/2.2m over stiff silty clays.

Based on the ground conditions encountered to date, it is considered that conventional strip/trench fill foundations could be used for the proposed buildings, founding within the in situ natural strata. All strip/trench fill foundations should completely bypass any made ground and be constructed within competent natural insitu strata comprising the firm becoming stiff clay deposits detailed above.

At this stage, an allowable bearing pressure of 100kN/m^2 could 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 that 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.

Foundations should be deepened to fully penetrate any encountered soft/loose natural deposits, and any encountered made ground.

All strip/trench fill foundations for individual buildings should be constructed within uniform strata in order to minimise the potential for differential settlement. There should be no spanning of foundations between soils of different strengths. If there are significant changes in the bearing strata beneath foundations, then footings should include suitably designed mesh reinforcement, both top and bottom, to mitigate the risks of relative deflection.

Laboratory Atterberg Limits have been determined for the natural strata underlying the site. The results indicate a low volume change potential. Footings should be appropriately deepened in accordance with NHBC guidance for foundations constructed in low volume change potential soils within influencing distance of trees and hedges.

11.3 FOUNDATIONS AND FLOOR SLABS (CONTINUED)

Deeper foundation depths may be required where founding horizons may need to be taken down below any root system or in areas of placed fill.

If the thickness of the made ground precludes the use of strip/trench fill foundations then consideration will need to be given to alternative foundations such as the use of raft foundations on engineered fill or piled foundations This should be reviewed following completion of the recommended further site investigation works.

Floor slabs should be designed and constructed as suspended.

The findings of the BGS Radon GeoReport indicate that no radon measures are required. The requirements for any ground gas protective membranes to be included in the ground floor slab construction would be determined following completion of the recommended supplementary site investigation works.

11.4 EXCAVATIONS AND FORMATIONS

Most excavations should be possible with normal soil excavating machinery. However, allowances should be made for the use of pneumatic breaker attachments, or similar tools, to deal with any residual buried obstructions.

The stability of excavations will likely be variable and significant instability should be expected in the existing made ground.

The sides of excavations should be supported by trench boxes, or battered at gradients of typically 30˚, subject to appropriate risk assessments.

On the basis of the site investigation findings, excavations down to depths of the windowless sample boreholes are generally unlikely to encounter significant groundwater inflows other than the localised perched water inflows associated with seasonal rainfall. Any perched groundwater inflows will require controlling.

Perched groundwater should be anticipated in the vicinity of any buried structure i.e. foundations, drainage trenches etc.

It is considered that any groundwater inflows/seepages if encountered are likely to be slight and these together with any rainfall infiltrations should be dealt with by conventional pumping techniques. It should be noted that groundwater levels can vary depending on seasonal variations and other factors.

11.4 EXCAVATIONS AND FORMATIONS (CONTINUED)

Any soft spots/areas should be removed and replaced with compacted imported granular material.

11.5 ACCESS ROADS AND CAR PARKING AREAS

Any existing foundations, slabs and other hard surfacing should be broken out beneath all highway, drive and car parking areas.

The existing made ground is variable and comprises both granular and cohesive materials. There are therefore likely to be variations in the strength of the materials at the formation levels and therefore for the access road and car parking formations, a California Bearing Ratio (CBR) value of between 1% and 2% could be used for design purposes.

Materials should be considered frost susceptible.

After proof rolling the formations, any 'soft spots/areas' 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 DTp Specification for Highways Works.

It should be noted that the Local Highway Authority may insist that field CBR tests should be carried out to confirm the above recommendations. Allowances should therefore be made for carrying out such tests and any further works which the Local Authority may require as a result of these tests.

Allowances should be made for undertaking field CBR tests in order to confirm the above assumptions. Depending on the outcome of such field tests, the above recommendations may be revised, if necessary, amended.

11.6 RETAINING WALLS

During the recent intrusive investigation access along the proposed route of the retaining walls were limited due to the gradient of the existing slope in the northern area and presence of buried services.

It is therefore recommended that following site clearance, further investigation is undertaken along the route of the proposed retaining structures, to confirm the underlying ground conditions.

11.6 RETAINING WALLS (CONTINUED)

However, based on the intrusive site investigation to date, where it is proposed to retain existing ground or any imported granular fill by means of retaining walls, then for preliminary design purposes the following shear strength parameters may be used for the design of the retaining walls.

C' =	0,	Ø'	=	20^o for in-situ cohesive superficial materials
C' =	0,	Ø'	=	25^o for in-situ granular superficial materials
C' =	0,	Ø'	=	32^o for well compacted acceptable structural fill

Drainage measures should be incorporated into the design and construction of the retaining walls, in order to ensure that there is no build-up of any hydrostatic water pressure behind the walls.

Temporary support may be required during the construction of any retaining walls. All retaining walls should be founded on competent in-situ natural soils.

11.7 DRAINAGE

Two falling head permeability tests were undertaken within windowless sample boreholes WS02 and WS05.

No infiltration was recorded in either test. This is likely due to the low permeability of the underlying weathered mudstone/stiff clay deposits.

It should be noted that this initial testing should only be regarded as indicative.

If it should be proposed to use soakaways for this site, then more extensive location and depth specific follow-up tests will be required and should fully comply with BRE 365, in order to confirm the suitability of the site and to satisfy the local authority.

11.8 RECOMMENDED FURTHER WORKS

Once access is available the ground conditions beneath the former buildings and filling station should be confirmed.

Following site clearance and breaking out of floor slabs and areas of hardstanding, it is recommended that additional sampling and testing is undertaken beneath the footprint of the former buildings with representative samples tested for further contamination including asbestos.

11.8 RECOMMENDED FURTHER WORKS (CONTINUED)

Within the footprint of the former filling station the exposed formations should be inspected, sampled and tested for further contamination including petroleum hydrocarbons and asbestos.

Subject to the findings of the recommended post clearance supplementary site investigation works, if any underground fuel storage tanks are identified within the site, allowances should be made for their removal and appropriate validation testing.

Given the thickness of made ground identified in the southwest area of the site, and the potential for made ground beneath the former pub building, a programme of ground gas monitoring should be carried out in order to satisfy the regulators.

APPENDIX A

NEWPORT CITY COUNCIL REGULATORY SEARCHES

Lowri Williams

From: Manning, Steve (Senior Scientific Officer) <Steve.Manning@newport.gov.uk>
Sent: 22 February 2023 17:13
To: Lauren Smith
Subject: RE: The Open Hearth, Hendre Farm Drive, Newport

Hi Lauren

My colleagues in petroleum licensing have come back to me and cannot find any records for this site.

Kind Regards
Steve

Steve Manning MSc CEnvH MCIEH
Senior Scientific Officer (Community & Environment)
Amgylchedd a Diogelu'r Cyhoedd / Environment & Public Protection
Cyngor Dinas Casnewydd / Newport City Council
Civic Centre
Godfrey Road
Newport NP20 4UR
steve.manning@newport.gov.uk

From: Manning, Steve (Senior Scientific Officer)
Sent: 22 February 2023 10:45
To: 'lauren@integralgeotec.com' <lauren@integralgeotec.com>
Subject: The Open Hearth, Hendre Farm Drive, Newport

Dear Lauren

Thank you for your request and payment for a search in relation to the above site.

I have looked at the information we hold and can confirm that land at The Open Hearth, Hendre Farm Drive, Newport (outlined in green on mapping below) is not the subject of any contaminated land investigations and has not been determined as contaminated land.

Answers to the specific questions selected are provided below:

Question 1
Details of any petroleum storage including details of tank decommissioning (refer to Petroleum Licensing Officer)

With petroleum officer for comment. To be confirmed.

Question 2
Has any area of the site been determined as Contaminated Land under Part IIA of the Environmental Protection Act 1990?

No

Question 3
Do you have any information on historical or current contamination at or within 250m of the subject site arising from former site use or surrounding area activities?

Former land uses within 250 metres are limited to the site of Hartridge School where fuel storage tanks were present and some historic hydrocarbon observations reported. No further details of this are held on our system.

Question 4
Details of any Pollution Prevention and Control Act records / other permits or licenses held for the property.

None

Question 5
Do you have any particular concerns regarding pollution (former pollution incidents etc) or statutory nuisance relating to the property?

None currently.

Further information or comments regarding this request:
We are currently doing a desk study for a site in Ringland, Newport and have just noticed a filling station was formally present on site on one of the site history maps in the 1970s. Would it be possible to be provided with any further information?

Petroleum officer comments in 1. Above should cover any wider information we may hold.

Informative.
This information is provided after appropriate enquiries and represents a summary of the information available to this department at the time of the enquiry. It is provided on the understanding that the council does not guarantee its accuracy. Neither the council, any officer or agent is legally responsible for any discrepancy, error or omission; whether arising from inaccuracy, negligence or any other cause whatsoever.

Kind Regards
Steve

Steve Manning MSc CEnvH MCIEH
Senior Scientific Officer (Community & Environment)
Amgylchedd a Diogelu'r Cyhoedd / Environment & Public Protection
Cyngor Dinas Casnewydd / Newport City Council
Civic Centre
Godfrey Road
Newport NP20 4UR
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Mae'r Cyngor yn croesawu gohebiaeth yn Gymraeg, Saesneg neu yn y ddwy iaith. Byddwn yn cyfathrebu â chi yn ôl eich dewis. Ni fydd gohebu yn Gymraeg yn arwain at oedi.

The Council welcomes correspondence in English or Welsh or both, and will respond to you according to your preference. Corresponding in Welsh will not lead to delay.

APPENDIX B

ENVIROCHECK REPORT

Intégral
Géotechnique

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
305828042_1_1

Customer Reference:
14144/LS

National Grid Reference:
335480, 188120

Slice:
A

Site Area (Ha):
0.82

Search Buffer (m):
1000

Site Details:

Open Hearth
Hendre Farm Drive
NEWPORT
NP19 9LH

Client Details:

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

Intégral Géotechnique

Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
Waste	21
Hazardous Substances	-
Geological	22
Industrial Land Use	26
Sensitive Land Use	31
Data Currency	33
Data Suppliers	39
Useful Contacts	40

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.

Report Version v53.0

Intégral Géotechnique

Summary

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	n/a
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1				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 3				1
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature		Yes			
Pollution Incidents to Controlled Waters					
Prosecutions Relating to Authorised Processes					
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register	pg 3				1
Water Abstractions	pg 3				(*9)
Water Industry Act Referrals					
Groundwater Vulnerability Map	pg 6	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 6	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
OS Water Network Lines	pg 6	4	3	10	114

Intégral Géotechnique

Summary

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					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Landfill Coverage	pg 21	1	n/a	n/a	n/a
Local Authority Recorded Landfill Sites					
Potentially Infilled Land (Non-Water)	pg 21				4
Potentially Infilled Land (Water)	pg 21	1		2	9
Registered Landfill Sites					
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					

Intégral Géotechnique

Summary

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 22	Yes	n/a	n/a	n/a
BGS Estimated Soil Chemistry	pg 22	Yes	Yes		Yes
BGS Recorded Mineral Sites	pg 23				1
BGS Urban Soil Chemistry					
BGS Urban Soil Chemistry Averages					
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				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 24	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 24		Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 24		Yes	n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 24	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 25		Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 25	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas	pg 25	Yes	n/a	n/a	n/a
Radon Potential - Radon Protection Measures	pg 25	Yes	n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 26		1	2	17
Fuel Station Entries	pg 27				2
Points of Interest - Commercial Services	pg 27				3
Points of Interest - Education and Health					
Points of Interest - Manufacturing and Production	pg 28				5
Points of Interest - Public Infrastructure	pg 28				13
Points of Interest - Recreational and Environmental	pg 29			2	8
Gas Pipelines					
Underground Electrical Cables					

Intégral Géotechnique

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Ancient Woodland	pg 31		5	8	6
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	A13SW (S)	64	1	335480 188000
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (W)	123	1	335300 188150
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A13NW (N)	170	1	335480 188350
	BGS Groundwater Flooding Susceptibility Flooding Type: Limited Potential for Groundwater Flooding to Occur	A12NE (W)	428	1	335000 188200
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Staions Location: Hartridge Sps Ringland Way Newport, Ringland Way, Newport Cbc Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: An0276301 Permit Version: 2 Effective Date: 8th September 2013 Issued Date: 8th September 2013 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Liswerry Pill Reen **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	560	2	334970 187770
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Staions Location: Hartridge Sps Ringland Way Newport, Ringland Way, Newport Cbc Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: An0276301 Permit Version: 2 Effective Date: 8th September 2013 Issued Date: 8th September 2013 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Liswerry Pill Reen **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	560	2	334970 187770
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Station - Water Company Location: Hartridge Sps Ringland Way Newport, Ringland Way, Newport Cbc Authority: Natural Resources Wales Catchment Area: River Usk (Afon Wysg) Reference: AN0276301 Permit Version: 1 Effective Date: 15th December 1997 Issued Date: 15th December 1997 Revocation Date: 8th August 2013 Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Liswerry Pill Reen **Status: New Consent (Water Resources Act 1991, Section 88 & Schedule 10 as amended by Environment Act 1995)** Positional Accuracy: Located by supplier to within 100m	A7NE (SW)	560	2	334970 187770

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Staions Location: Hartridge Farm Sps, Lane On Roundabout, Next To Hartridge Farm Rd, Newport, Np18 2ln Authority: Natural Resources Wales Catchment Area: MONKS DITCH - SOURCE TO WAINBRIDGE Reference: An0276301 Permit Version: 3 Effective Date: 17th December 2019 Issued Date: 17th December 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Lliswerry Pill Reen **Status:** **Effective** Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	563	2	334968 187767
1	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Pumping Staions Location: Hartridge Farm Sps, Lane On Roundabout, Next To Hartridge Farm Rd, Newport, Np18 2ln Authority: Natural Resources Wales Catchment Area: MONKS DITCH - SOURCE TO WAINBRIDGE Reference: An0276301 Permit Version: 3 Effective Date: 17th December 2019 Issued Date: 17th December 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Pumping Station - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Lliswerry Pill Reen **Status:** **Effective** Positional Accuracy: Located by supplier to within 10m	A7NE (SW)	563	2	334968 187767
2	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Treberth Estate Cso, Opp 22 Treberth Cresent, Newport, Np19 9np Authority: Natural Resources Wales Catchment Area: MONKS DITCH - SOURCE TO WAINBRIDGE Reference: An0157801 Permit Version: 3 Effective Date: 24th September 2019 Issued Date: 24th September 2019 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unnamed Watercourse **Status:** **Effective** Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	669	2	335061 188699
2	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: A Combined Sewer Overflow Treberth, Treberth Estate Cso, Newport, Wales Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: An0157801 Permit Version: 2 Effective Date: 31st March 2005 Issued Date: 24th February 2005 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unnamed Watercourse **Status:** **Effective** Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	669	2	335061 188699

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: A Combined Sewer Overflow Treberth, Treberth Estate Cso, Newport, Wales Authority: Natural Resources Wales Catchment Area: Not Supplied Reference: An0157801 Permit Version: 2 Effective Date: 31st March 2005 Issued Date: 24th February 2005 Revocation Date: Not Supplied Discharge Type: Sewage Discharges - Stw Storm Overflow/Storm Tank - Water Company Discharge Environment: Freshwater Stream/River Receiving Water: Unnamed Watercourse **Status: Effective** Positional Accuracy: Located by supplier to within 10m	A17SE (NW)	669	2	335061 188699
2	**Discharge Consents** Operator: Dwr Cymru Cyfyngedig Property Type: Sewerage Network - Sewers - Water Company Location: Treberth Estate Newport Newport Cbc, Newport, Wales Authority: Natural Resources Wales Catchment Area: River Usk (Afon Wysg) Reference: AN0157801 Permit Version: 1 Effective Date: 13th December 1991 Issued Date: 13th December 1991 Revocation Date: 30th March 2005 Discharge Type: Unspecified Discharge Environment: Not Supplied Receiving Water: Unnamed Watercourse **Status: New Consent, by Application (Water Resources Act 1991, Section 88)** Positional Accuracy: Located by supplier to within 100m	A17SE (NW)	714	2	335040 188740
3	**Local Authority Pollution Prevention and Controls** Name: Tesco Stores Ltd Location: Chepstow Road, NEWPORT, Gwent, NP19 9EZ Authority: Newport City Council, Public Protection and Environmental Services Permit Reference: P011/05v2 Dated: 31st December 1998 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	946	3	335003 188995
	Nearest Surface Water Feature	A13SW (S)	0	-	335481 188085
4	**Substantiated Pollution Incident Register** Authority: Natural Resources Wales Incident Date: 20th March 2019 Incident Reference: 1901785 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: Sewage Materials: Grey Water	A18NE (N)	907	2	335617 189077
	Water Abstractions Operator: Mr A N Dartnell Licence Number: 20/56/72/0051 Permit Version: 1 Location: Borehole At Llanwern Farm Authority: Environment Agency, Welsh Region Abstraction: General Farming And Domestic Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Llanwern Farm Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 28th October 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A24SE (NE)	1502	4	336400 189370

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: Celtic Manor Resort Licence Number: 20/56/72/0046 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 10m	A23NW (N)	1603	2	335160 189750
	Water Abstractions Operator: Celtic Inns Limited Licence Number: 20/56/72/0033 Permit Version: 101 Location: Pond At Caerleon (Point C) Authority: Environment Agency, Welsh Region Abstraction: Hotels; Public Houses And Conference Centres: 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: Licenced from 01-Nov to 31-Mar Authorised Start: 01 April Authorised End: 31 October Permit Start Date: 19th August 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(N)	1649	4	335700 189815
	Water Abstractions Operator: The Celtic Manor Hotel Limited Licence Number: 20/56/72/0033 Permit Version: Not Supplied Location: Pond At, Caerleon (point C) Authority: Environment Agency, Welsh Region Abstraction: Hotels; Public Houses And Conference Centres: Spray Irrigation - Direct Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 600 Yearly Rate (m3): 35000 Details: Licenced from 01-Nov to 31-Mar Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(N)	1650	4	335705 189815
	Water Abstractions Operator: Celtic Inns Limited Licence Number: 20/56/72/0033 Permit Version: 101 Location: Pond At Caerleon (Point C) Authority: Environment Agency, Welsh Region Abstraction: Hotels; Public Houses And Conference Centres: 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: Licenced from 01-Apr to 31-Oct Authorised Start: 01 November Authorised End: 31 March Permit Start Date: 19th August 2003 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(N)	1654	4	335700 189820

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Water Abstractions Operator: The Celtic Manor Hotel Limited Licence Number: 20/56/72/0033 Permit Version: Not Supplied Location: Pond At, Caerleon (point C) Authority: Environment Agency, Welsh Region Abstraction: Hotels; Public Houses And Conference Centres: Spray Irrigation - Direct Abstraction Type: Not Supplied Source: Surface Daily Rate (m3): 600 Yearly Rate (m3): 5000 Details: Licenced from 01-Apr to 31-Oct Authorised Start: Not Supplied Authorised End: Not Supplied Permit Start Date: Not Supplied Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 100m	(N)	1655	4	335705 189820
	Water Abstractions Operator: Celtic Manor Resort Licence Number: 20/56/72/0035 Permit Version: 102 Location: Pond Near Catsash Road 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: Area Of Land At Celtic Manor Golf Club Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	(N)	1673	2	335150 189820
	Water Abstractions Operator: The Celtic Manor Hotel Limited Licence Number: 20/56/72/0035 Permit Version: 101 Location: Pond Near Catsash Road Authority: Environment Agency, Welsh Region 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: Existing Pond 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	(N)	1673	4	335150 189820
	Water Abstractions Operator: Celtic Manor Resort Licence Number: 20/56/72/0035 Permit Version: Not Supplied Location: Transfer From Pond Near Catsash Road 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	(N)	1673	2	335150 189820

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Groundwater Vulnerability Map Combined Classification: Secondary Bedrock Aquifer - High Vulnerability Combined Vulnerability: High Combined Aquifer: Productive Bedrock Aquifer, No Superficial Aquifer Pollutant Speed: Intermediate Bedrock Flow: Well Connected Fractures Dilution: >550 mm/year Baseflow Index: 40-70% Superficial Patchiness: <90% Superficial Thickness: <3m Superficial Recharge: No Data	A13SW (SE)	0	2	335480 188117
	Bedrock Aquifer Designations Aquifer Designation: Secondary Aquifer - B	A13SW (SE)	0	2	335480 188117
	Superficial Aquifer Designations No Data Available				
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				
5	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 286.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A13SW (S)	0	5	335480 188086
6	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 52.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A13SE (S)	0	5	335488 188088
7	**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: Usk and Llwyd Primacy: 1	A13SE (E)	0	5	335531 188100
8	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 92.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A13SE (E)	0	5	335533 188101
9	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A13NE (E)	90	5	335623 188123

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
10	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 246.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A13NE (E)	90	5	335623 188123
11	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 275.5 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A13SW (W)	239	5	335212 188008
12	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 163.5 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A14NW (E)	329	5	335831 188249
13	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 86.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NE (SE)	441	5	335743 187697
14	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	472	5	335333 187606
15	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 124.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	475	5	335327 187604
16	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 34.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12SE (W)	485	5	334945 188043
17	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 142.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12SE (W)	485	5	334945 188044
18	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A14NW (E)	491	5	335990 188290

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
19	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 89.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12SE (W)	494	5	334944 188010
20	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 31.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A14NW (E)	496	5	335998 188281
21	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 67.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12SE (SW)	500	5	335010 187821
22	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 82.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	501	5	335072 187733
23	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 142.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A14NW (E)	502	5	336014 188254
24	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 62.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	503	5	335349 187571
25	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 48.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12NE (NW)	506	5	334969 188358
26	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 98.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NE (S)	511	5	335593 187575
27	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 146.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12SE (W)	512	5	334956 187914

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
28	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.5 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12SE (W)	512	5	334953 187925
29	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.0 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NE (SE)	516	5	335755 187620
30	**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: Usk and Llwyd Primacy: 2	A8NE (SE)	517	5	335754 187618
31	**OS Water Network Lines** Watercourse Form: Lake Watercourse Length: 6.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12NE (W)	538	5	334925 188339
32	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 95.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12NE (W)	539	5	334885 188171
33	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 132.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A7NE (SW)	564	5	334966 187769
34	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 308.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	571	5	335426 187493
35	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	585	5	335272 187507
36	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 40.8 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	585	5	335272 187507

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
37	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12NE (W)	591	5	334834 188181
38	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 43.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12NE (W)	595	5	334840 188256
39	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 291.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	595	5	335231 187510
40	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 395.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NE (S)	602	5	335581 187478
41	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 141.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	604	5	335429 187460
42	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NE (S)	611	5	335517 187457
43	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 20.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	613	5	335291 187471
44	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 73.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	614	5	335257 187480
45	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NE (S)	616	5	335524 187454

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
46	**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: Usk and Llwyd Primacy: 2	A8NE (S)	616	5	335519 187453
47	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 125.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NE (S)	616	5	335524 187454
48	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 371.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A18SW (N)	617	5	335313 188773
49	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12NE (W)	618	5	334827 188300
50	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 133.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12NE (W)	619	5	334825 188297
51	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 150.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8NW (S)	624	5	335233 187478
52	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 462.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17SE (NW)	652	5	335051 188670
53	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 206.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	653	5	335648 187442
54	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	653	5	335648 187442

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
55	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 1.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A18SW (NW)	654	5	335148 188742
56	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 97.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A18SW (NW)	655	5	335149 188743
57	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 14.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	656	5	335649 187439
58	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 71.4 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	664	5	335531 187406
59	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 152.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	664	5	335531 187406
60	**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: Usk and Llwyd Primacy: 2	A7NE (SW)	669	5	334920 187652
61	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 112.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A7NE (SW)	671	5	334918 187651
62	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	677	5	335656 187419
63	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 149.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	680	5	335083 187490

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
64	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 61.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	680	5	335083 187490
65	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 23.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A18NW (N)	683	5	335461 188862
66	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 3.2 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A18NW (N)	690	5	335208 188813
67	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 22.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A18NW (N)	691	5	335211 188815
68	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 45.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17SE (NW)	694	5	334828 188493
69	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 132.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17SE (NW)	696	5	334831 188500
70	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 9.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12NW (NW)	697	5	334786 188419
71	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 275.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A18NW (N)	699	5	335478 188879
72	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 34.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A12NW (NW)	699	5	334789 188428

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
73	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17SW (NW)	706	5	334797 188462
74	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17SW (NW)	707	5	334798 188466
75	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 354.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17SW (NW)	708	5	334799 188471
76	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 177.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	708	5	335689 187396
77	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 6.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	730	5	334937 187541
78	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	733	5	334941 187534
79	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 41.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	733	5	335854 187426
80	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 207.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	733	5	335854 187426
81	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 190.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	735	5	335526 187334

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
82	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 73.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	736	5	334937 187534
83	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	736	5	334937 187534
84	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 27.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	739	5	334936 187530
85	**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: Usk and Llwyd Primacy: 2	A7NE (SW)	761	5	334935 187502
86	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 59.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	762	5	334932 187502
87	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 86.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	762	5	334932 187502
88	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 22.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A7NE (SW)	768	5	334867 187560
89	**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: Usk and Llwyd Primacy: 2	A7NE (SW)	768	5	334867 187561
90	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 2.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	774	5	335866 187387

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
91	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	775	5	335868 187386
92	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 184.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	775	5	335868 187386
93	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 11.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	776	5	335975 187445
94	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	784	5	334863 187541
95	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 10.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Liswerry Pill Reen Catchment Name: Usk and Llwyd Primacy: 1	A7NE (SW)	791	5	334853 187542
96	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 23.6 Watercourse Level: Underground Permanent: True Watercourse Name: Liswerry Pill Reen Catchment Name: Usk and Llwyd Primacy: 1	A7NE (SW)	800	5	334847 187534
97	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 78.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17SW (NW)	802	5	334789 188626
98	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 68.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7NE (SW)	804	5	334839 187539
99	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 93.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Liswerry Pill Reen Catchment Name: Usk and Llwyd Primacy: 1	A7NE (SW)	824	5	334830 187518

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
100	**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: Usk and Llwyd Primacy: 2	A9NE (SE)	827	5	336208 187600
101	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 122.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SW (S)	835	5	335241 187255
102	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 893.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7SE (SW)	855	5	334914 187395
103	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 369.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	856	5	336061 187409
104	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 15.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	856	5	336061 187409
105	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 166.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	859	5	335873 187297
106	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 76.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9NE (SE)	866	5	336215 187547
107	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 92.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7SE (SW)	866	5	334991 187327
108	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 129.7 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	869	5	336064 187395

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
109	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 4.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	869	5	336064 187395
110	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 41.9 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17SW (NW)	877	5	334741 188685
111	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 228.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A18NE (N)	914	5	335618 189085
112	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Liswerry Pill Reen Catchment Name: Usk and Llwyd Primacy: 1	A7NW (SW)	917	5	334755 187463
113	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 74.5 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17SW (NW)	917	5	334714 188717
114	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 19.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	921	5	335506 187145
115	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 5.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	921	5	335506 187145
116	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 13.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9NE (SE)	925	5	336231 187472
117	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 320.0 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17NE (NW)	928	5	334947 188937

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
118	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 63.2 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17NE (NW)	928	5	334947 188937
119	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 204.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Liswerry Pill Reen Catchment Name: Usk and Llwyd Primacy: 1	A7NW (SW)	929	5	334744 187457
120	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 26.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SE (S)	939	5	335511 187127
121	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 80.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7SE (SW)	941	5	334981 187247
122	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 36.0 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7SE (SW)	941	5	334981 187247
123	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 74.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SW (SE)	952	5	336139 187348
124	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 44.3 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A8SW (S)	956	5	335232 187133
125	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 8.7 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SE (SE)	964	5	336192 187379
126	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 58.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A3NE (S)	966	5	335510 187101

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
127	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 12.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SE (SE)	971	5	336201 187378
128	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 28.6 Watercourse Level: Underground Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7SE (SW)	973	5	334979 187211
129	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 43.8 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SE (SE)	973	5	336195 187369
130	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 18.9 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SE (SE)	973	5	336195 187369
131	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 140.3 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A9SE (SE)	981	5	336213 187375
132	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 172.8 Watercourse Level: Not Supplied Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 1	A17NE (NW)	985	5	334933 188997
133	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 282.1 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7SW (SW)	988	5	334709 187407
134	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 66.4 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A3NW (S)	999	5	335234 187089
135	**OS Water Network Lines** Watercourse Form: Inland river Watercourse Length: 261.6 Watercourse Level: On ground surface Permanent: True Watercourse Name: Not Supplied Catchment Name: Usk and Llwyd Primacy: 2	A7SE (SW)	1000	5	334976 187182

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: Newport County Borough Council - Has no landfill data to supply		0	6	335480 188117
136	**Potentially Infilled Land (Non-Water)** Bearing Ref: SE Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1989	A9NE (SE)	804	-	336241 187696
137	**Potentially Infilled Land (Non-Water)** Bearing Ref: W Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1994	A12NW (W)	909	-	334514 188159
138	**Potentially Infilled Land (Non-Water)** Bearing Ref: E Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1902	A14NE (E)	952	-	336442 188391
139	**Potentially Infilled Land (Non-Water)** Bearing Ref: W Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1994	A11SE (W)	964	-	334461 188064
140	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A13SE (S)	0	-	335485 188085
141	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A14NW (E)	333	-	335831 188262
142	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A7NE (SW)	431	-	335137 187764
143	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1954	A17SE (NW)	667	-	334913 188564
144	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A18SW (NW)	670	-	335168 188772
145	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A18SW (NW)	683	-	335161 188782
146	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A17SE (NW)	762	-	335024 188787
147	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1954	A12NW (W)	829	-	334623 188354
148	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A18NE (N)	930	-	335625 189099
149	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A17NE (NW)	932	-	334948 188943
150	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A18NW (N)	937	-	335336 189105
151	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A18NE (N)	949	-	335608 189121

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: Triassic Rocks (Undifferentiated)	A13SW (SE)	0	1	335480 188117
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 15 - 25 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	A13SW (SE)	0	1	335480 188117
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A13SE (S)	20	1	335485 188049
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A13NW (NW)	24	1	335432 188169
	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	A13SW (SW)	33	1	335407 188075
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A13NW (N)	146	1	335451 188323
	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: 30 - 45 mg/kg	A8NE (S)	522	1	335483 187544

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 35 - 45 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 90 - 120 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12SE (W)	609	1	334852 187919
	BGS Estimated Soil Chemistry Source: British Geological Survey, National Geoscience Information Service Soil Sample Type: Sediment Arsenic Concentration: 25 - 35 mg/kg Cadmium Concentration: <1.8 mg/kg Chromium Concentration: 120 - 180 mg/kg Lead Concentration: <100 mg/kg Nickel Concentration: 30 - 45 mg/kg	A12SE (SW)	624	1	334859 187854
	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	A8SW (S)	727	1	335414 187337
	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: 30 - 45 mg/kg	A7NW (SW)	759	1	334781 187699
	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	A17NE (NW)	973	1	334881 188946
152	**BGS Recorded Mineral Sites** Site Name: Alway Location: Newport, Gwent Source: British Geological Survey, National Geoscience Information Service Reference: 176401 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Blue Lias Formation Commodity: Limestone Positional Accuracy: Located by supplier to within 10m	A12NW (W)	906	1	334517 188173
	BGS Measured Urban Soil Chemistry No data available				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS Urban Soil Chemistry Averages No data available				
	Coal Mining Affected Areas In an area that might not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	33	1	335407 188075
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
	Potential for Compressible Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	33	1	335407 188075
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	51	1	335492 188019
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	84	1	335366 188196
	Potential for Ground Dissolution Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	185	1	335432 188358
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	229	1	335697 187921
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	1	335451 188151
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	27	1	335498 188050
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	84	1	335366 188196
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	86	1	335481 188266
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	126	1	335666 188086
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	126	1	335297 188148
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	185	1	335432 188358
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	229	1	335697 187921

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	33	1	335407 188075
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	20	1	335485 188049
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	24	1	335432 188169
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	33	1	335407 188075
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	51	1	335492 188019
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	84	1	335366 188196
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	146	1	335451 188323
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	185	1	335432 188358
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	229	1	335697 187921
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (5 to 10% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	1	335450 188150
	Radon Potential - Radon Affected Areas Affected Area: The property is in an Intermediate probability radon area (5 to 10% of homes are estimated to be at or above the Action Level). Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	0	1	335480 188075
	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	A13SW (SE)	0	1	335480 188117
	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	A13NW (NW)	0	1	335450 188150
	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	A13SW (S)	0	1	335480 188075
	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	A13SW (SE)	0	1	335480 188117

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
153	**Contemporary Trade Directory Entries** Name: City Markings Location: 46, Edward German Crescent, Newport, Gwent, NP19 9ND Classification: Road Marking & Surfacing Equipment & Material Manufacturers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (N)	228	-	335517 188405
154	**Contemporary Trade Directory Entries** Name: Poyner Fuels Location: 17, Butterworth Close, Newport, Gwent, NP19 9LY Classification: Coal & Smokeless Fuel Merchants & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	290	-	335301 188406
155	**Contemporary Trade Directory Entries** Name: Andersons Domestic Services Location: 48, Sullivan Circle, Newport, Gwent, NP19 9PB Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	497	-	334974 187908
156	**Contemporary Trade Directory Entries** Name: Ringland Community Dental Clinic Location: Ringland Health Centre,Ringland Circle, Newport, Gwent, NP19 9PS Classification: Hospitals **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NE (N)	651	-	335495 188831
157	**Contemporary Trade Directory Entries** Name: A T Willett Location: Ringwood Avenue, Newport, Gwent, NP19 9DW Classification: Dairies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	679	-	334836 188477
158	**Contemporary Trade Directory Entries** Name: Newport Appliance Services Ltd Location: Hillside, Treberth Crescent, Newport, Gwent, NP19 9TF Classification: Domestic Appliances - Servicing, Repairs & Parts **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SE (NW)	784	-	334975 188778
159	**Contemporary Trade Directory Entries** Name: Sparklin Clean Location: 14, Alway Crescent, Newport, Gwent, NP19 9SX Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (W)	786	-	334637 188099
160	**Contemporary Trade Directory Entries** Name: Jr Electrical Services Location: 38, Hawkins Crescent, Newport, Gwent, NP19 9FQ Classification: Electrical Engineers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A18NW (N)	871	-	335365 189043
161	**Contemporary Trade Directory Entries** Name: Pressed 4 Time Location: Newport, Gwent, Np19 9dw Classification: Ironing & Home Laundry Services **Status: Inactive** Positional Accuracy: Manually positioned within the geographical locality	A17SW (NW)	886	-	334636 188541
162	**Contemporary Trade Directory Entries** Name: T M Cleaning Services Location: 18, Llanwern Road, Newport, Gwent, NP19 9GF Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	912	-	335328 189079
163	**Contemporary Trade Directory Entries** Name: Low Cost Motor Company Location: Royal Oak, Newport, NP19 9FL Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	933	-	335163 189056
163	**Contemporary Trade Directory Entries** Name: Car Shop Wales Location: Augustus Place,Chepstow Road, Newport, Gwent, NP19 9FN Classification: Car Dealers - Used **Status: Active** Positional Accuracy: Automatically positioned to the address	A18NW (N)	936	-	335179 189065

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
163	**Contemporary Trade Directory Entries** Name: Germania Location: Royal Oak Garage,Augustus Pl,Chepstow Rd, Newport, Gwent, NP19 9FN Classification: Car Dealers - Used **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	936	-	335163 189060
164	**Contemporary Trade Directory Entries** Name: Treberth Service Station Location: Chepstow Road, Newport, Gwent, NP19 9EZ Classification: Petrol Filling Stations - 24 Hour **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	946	-	335003 188995
164	**Contemporary Trade Directory Entries** Name: Tesco Petrol Station Location: Chepstow Road, Newport, Gwent, NP19 9EZ Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	946	-	335006 188997
164	**Contemporary Trade Directory Entries** Name: Esso Location: Chepstow Road, Newport, Gwent, NP19 9EZ Classification: Petrol Filling Stations **Status: Active** Positional Accuracy: Manually positioned to the address or location	A17NE (NW)	949	-	335003 188999
164	**Contemporary Trade Directory Entries** Name: Esso Location: Chepstow Road, Newport, Gwent, NP19 9EZ Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	957	-	334997 189004
165	**Contemporary Trade Directory Entries** Name: Chepstow Road Filling Station Location: Chepstow Road, Newport, Gwent, NP19 9EY Classification: Petrol Filling Stations **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A17NW (NW)	976	-	334713 188804
165	**Contemporary Trade Directory Entries** Name: Autoplus Location: Chepstow Rd, Newport, Gwent, NP19 9EZ Classification: Car Dealers **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A17NW (NW)	977	-	334712 188804
166	**Contemporary Trade Directory Entries** Name: Talbotbay Location: 668, Chepstow Road, Newport, Gwent, NP19 9EY Classification: Road Haulage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SW (NW)	986	-	334663 188763
167	**Fuel Station Entries** Name: Newport Express Location: Chepstow Road , , Newport, Newport, NP19 8EA Brand: ESSO Premises Type: Petrol Station **Status: Open** Positional Accuracy: Automatically positioned to the address	A17NE (NW)	946	-	335003 188995
168	**Fuel Station Entries** Name: Arc Clean Car Centre Location: Chepstow Road , , Newport, Newport, NP19 9EY Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Manually positioned to the road within the address or location	A17NW (NW)	976	-	334713 188804
169	**Points of Interest - Commercial Services** Name: City Motor Salvage Location: 6 Goossens Close, Newport, NP19 9JN Category: Recycling Services Class Code: Scrap Metal Merchants Positional Accuracy: Positioned to address or location	A19NW (NE)	770	7	335912 188820

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
170	**Points of Interest - Commercial Services** Name: Talbotbay Location: 668 Chepstow Road, Newport, NP19 9EY Category: Transport, Storage and Delivery Class Code: Distribution and Haulage Positional Accuracy: Positioned to address or location	A17SW (NW)	986	7	334663 188763
170	**Points of Interest - Commercial Services** Name: IMO - arc Clean Car Centres Location: Chepstow Road, Newport, NP19 9EZ Category: Personal, Consumer and other Services Class Code: Vehicle Cleaning Services Positional Accuracy: Positioned to address or location	A17NW (NW)	989	7	334708 188817
171	**Points of Interest - Manufacturing and Production** Name: Tank Location: NP19 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A8SW (S)	730	7	335215 187372
171	**Points of Interest - Manufacturing and Production** Name: Tanks Location: NP19 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A8SW (S)	730	7	335216 187372
171	**Points of Interest - Manufacturing and Production** Name: Tank Location: NP19 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to address or location	A8SW (S)	731	7	335211 187372
172	**Points of Interest - Manufacturing and Production** Name: Tank Location: NP19 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A7SE (SW)	848	7	335011 187337
173	**Points of Interest - Manufacturing and Production** Name: Tank Location: NP19 Category: Industrial Features Class Code: Tanks (Generic) Positional Accuracy: Positioned to an adjacent address or location	A8SW (S)	897	7	335196 187203
174	**Points of Interest - Public Infrastructure** Name: Sewage Works (Disused) Location: NP18 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	529	7	335024 187746
174	**Points of Interest - Public Infrastructure** Name: Sewage Pumping Station Location: NP18 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	531	7	335007 187766
174	**Points of Interest - Public Infrastructure** Name: Sewage Works (Disused) Location: NP18 Category: Infrastructure and Facilities Class Code: Waste Storage, Processing and Disposal Positional Accuracy: Positioned to address or location	A7NE (SW)	534	7	335043 187714
175	**Points of Interest - Public Infrastructure** Name: Sluice Location: NP18 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	667	7	334910 187669
176	**Points of Interest - Public Infrastructure** Name: Sluice Location: NP18 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	682	7	334911 187642

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
176	**Points of Interest - Public Infrastructure** Name: Sluice Location: NP18 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	761	7	334880 187557
176	**Points of Interest - Public Infrastructure** Name: Sluice Location: NP18 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	766	7	334875 187555
176	**Points of Interest - Public Infrastructure** Name: Sluice Location: NP18 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	777	7	334859 187556
176	**Points of Interest - Public Infrastructure** Name: Sluice Location: NP18 Category: Water Class Code: Weirs, Sluices and Dams Positional Accuracy: Positioned to an adjacent address or location	A7NE (SW)	778	7	334858 187555
177	**Points of Interest - Public Infrastructure** Name: Alway Police Station Location: Alway Police Station 15, Alway Parade, Newport, NP19 9NU Category: Central and Local Government Class Code: Police Stations Positional Accuracy: Positioned to address or location	A12SW (W)	791	7	334661 187918
178	**Points of Interest - Public Infrastructure** Name: Newport Chepstow Rd Express Location: Chepstow Road, Newport, NP19 9EZ Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17NE (NW)	946	7	335003 188995
178	**Points of Interest - Public Infrastructure** Name: Newport Express Location: 26-36 Chepstow Road, Newport, NP19 8EA Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17NE (NW)	946	7	335002 188995
178	**Points of Interest - Public Infrastructure** Name: Tesco Petrol Station Location: Chepstow Road, Newport, NP19 9EZ Category: Road And Rail Class Code: Petrol and Fuel Stations Positional Accuracy: Positioned to address or location	A17NE (NW)	951	7	335004 189001
179	**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	A18SW (N)	314	7	335411 188486
179	**Points of Interest - Recreational and Environmental** Name: Playground Location: Edward German Crescent, NP19 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A18SW (N)	314	7	335425 188489
180	**Points of Interest - Recreational and Environmental** Name: Playground Location: NP19 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A19SW (NE)	578	7	335922 188557
181	**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	A12SW (W)	651	7	334784 188008

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
181	**Points of Interest - Recreational and Environmental** Name: Playground Location: John Ireland Close, NP19 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A12SW (W)	651	7	334784 188005
182	**Points of Interest - Recreational and Environmental** Name: Play Area Location: Not Supplied Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A18NE (N)	665	7	335551 188842
182	**Points of Interest - Recreational and Environmental** Name: Play Area Location: Nr Ringland Circle, NP19 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to address or location	A18NE (N)	669	7	335554 188845
183	**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	A12SW (W)	762	7	334694 187910
184	**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	A18NW (N)	809	7	335224 188946
185	**Points of Interest - Recreational and Environmental** Name: Play Area Location: NP19 Category: Recreational Class Code: Playgrounds Positional Accuracy: Positioned to an adjacent address or location	A7SE (S)	983	7	335080 187152

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
186	**Ancient Woodland** Name: Not Supplied Reference: 16063 Area(m²): 2118.44 Type: Ancient and Semi-Natural Woodland	A13SE (E)	80	2	335617 188069
187	**Ancient Woodland** Name: Not Supplied Reference: 16067 Area(m²): 12046.78 Type: Ancient and Semi-Natural Woodland	A13NW (N)	92	2	335470 188272
188	**Ancient Woodland** Name: Not Supplied Reference: 8493 Area(m²): 69773.65 Type: Ancient and Semi-Natural Woodland	A13SE (E)	146	2	335686 188087
189	**Ancient Woodland** Name: Not Supplied Reference: 48371 Area(m²): 6102.07 Type: Ancient Woodland Site of Unknown Category	A13NE (NE)	185	2	335617 188307
190	**Ancient Woodland** Name: Not Supplied Reference: 16072 Area(m²): 7921.38 Type: Ancient and Semi-Natural Woodland	A13NW (NW)	249	2	335309 188359
191	**Ancient Woodland** Name: Not Supplied Reference: 16071 Area(m²): 1106.36 Type: Ancient and Semi-Natural Woodland	A13NE (NE)	294	2	335665 188411
192	**Ancient Woodland** Name: Not Supplied Reference: 8495 Area(m²): 63699.68 Type: Ancient and Semi-Natural Woodland	A13NE (NE)	324	2	335690 188430
193	**Ancient Woodland** Name: Not Supplied Reference: 16069 Area(m²): 2771.37 Type: Ancient and Semi-Natural Woodland	A12NE (NW)	366	2	335116 188335
194	**Ancient Woodland** Name: Not Supplied Reference: 15604 Area(m²): 8307.38 Type: Ancient and Semi-Natural Woodland	A8NW (S)	381	2	335407 187685
195	**Ancient Woodland** Name: Not Supplied Reference: 8382 Area(m²): 94558.08 Type: Ancient and Semi-Natural Woodland	A8NE (SE)	388	2	335729 187750
196	**Ancient Woodland** Name: Not Supplied Reference: 15603 Area(m²): 4427.8 Type: Ancient and Semi-Natural Woodland	A8NW (S)	446	2	335291 187646
197	**Ancient Woodland** Name: Not Supplied Reference: 16075 Area(m²): 5122.71 Type: Ancient and Semi-Natural Woodland	A18SW (NW)	453	2	335247 188567
198	**Ancient Woodland** Name: Not Supplied Reference: 16065 Area(m²): 1941.81 Type: Ancient and Semi-Natural Woodland	A14SW (E)	487	2	336026 188111
199	**Ancient Woodland** Name: Not Supplied Reference: 16066 Area(m²): 1272.23 Type: Ancient and Semi-Natural Woodland	A14NW (E)	521	2	336034 188254

Sensitive Land Use

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
200	**Ancient Woodland** Name: Not Supplied Reference: 16076 Area(m²): 8731.64 Type: Ancient and Semi-Natural Woodland	A18SW (NW)	576	2	335173 188665
201	**Ancient Woodland** Name: Not Supplied Reference: 16068 Area(m²): 7334.52 Type: Ancient and Semi-Natural Woodland	A12NW (W)	668	2	334770 188278
202	**Ancient Woodland** Name: Not Supplied Reference: 8494 Area(m²): 29021.47 Type: Ancient and Semi-Natural Woodland	A12NW (W)	683	2	334768 188328
203	**Ancient Woodland** Name: Not Supplied Reference: 8501 Area(m²): 121908.44 Type: Ancient and Semi-Natural Woodland	A19NW (NE)	933	2	336069 188906
204	**Ancient Woodland** Name: Not Supplied Reference: 16082 Area(m²): 1875.09 Type: Ancient and Semi-Natural Woodland	A19NW (NE)	943	2	336035 188945

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
Newport City Council - Public Protection and Environmental Services	January 2015	Annual Rolling Update
Natural Resources Wales	June 2020	Annually
Monmouthshire Council - Environment Department	September 2017	Annual Rolling Update
Discharge Consents		
Environment Agency - Welsh Region	August 2014	Quarterly
Natural Resources Wales	October 2022	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Welsh Region	March 2013	
Integrated Pollution Controls		
Environment Agency - Welsh Region	January 2009	
Integrated Pollution Prevention And Control		
Environment Agency - Welsh Region	January 2021	Quarterly
Natural Resources Wales	October 2022	Quarterly
Local Authority Integrated Pollution Prevention And Control		
Monmouthshire Council - Environmental Health Department	June 2014	Variable
Newport City Council - Public Protection and Environmental Services	June 2014	Variable
Local Authority Pollution Prevention and Controls		
Monmouthshire Council - Environmental Health Department	June 2014	Annual Rolling Update
Newport City Council - Public Protection and Environmental Services	June 2014	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
Monmouthshire Council - Environmental Health Department	June 2014	Variable
Newport City Council - Public Protection and Environmental Services	June 2014	Variable
Nearest Surface Water Feature		
Ordnance Survey	October 2022	
Pollution Incidents to Controlled Waters		
Environment Agency - Welsh Region	December 1998	
Prosecutions Relating to Authorised Processes		
Environment Agency - Welsh Region	July 2015	
Natural Resources Wales	July 2015	
Prosecutions Relating to Controlled Waters		
Environment Agency - Welsh Region	March 2013	
Natural Resources Wales	March 2013	
Registered Radioactive Substances		
Natural Resources Wales	January 2015	
Environment Agency - Welsh Region	June 2016	As notified
Substantiated Pollution Incident Register		
Environment Agency Wales - South East Area	January 2021	Quarterly
Natural Resources Wales	October 2022	Quarterly
Water Abstractions		
Environment Agency - Welsh Region	October 2022	Quarterly
Natural Resources Wales	October 2022	Quarterly
Water Industry Act Referrals		
Environment Agency - Welsh Region	October 2017	
Natural Resources Wales	October 2022	Quarterly
Groundwater Vulnerability Map		
Natural Resources Wales	June 2018	As notified
Bedrock Aquifer Designations		
Natural Resources Wales	January 2018	Annually
Superficial Aquifer Designations		
Natural Resources Wales	January 2018	Annually

Data Currency

Agency & Hydrological	Version	Update Cycle
Source Protection Zones Natural Resources Wales	July 2022	Annual Rolling Update
Extreme Flooding from Rivers or Sea without Defences Natural Resources Wales	September 2020	
Flooding from Rivers or Sea without Defences Natural Resources Wales	September 2020	
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	October 2022	Quarterly
Surface Water 1 in 30 year Flood Extent Natural Resources Wales	May 2018	Annually
Surface Water 1 in 100 year Flood Extent Natural Resources Wales	May 2018	Annually
Surface Water 1 in 1000 year Flood Extent Natural Resources Wales	May 2018	Annually
Surface Water Suitability Natural Resources Wales	February 2016	Annually
BGS Groundwater Flooding Susceptibility British Geological Survey - National Geoscience Information Service	May 2013	As notified

Data Currency

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	November 2002	As notified
Historical Landfill Sites		
Natural Resources Wales	July 2019	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Welsh Region	January 2009	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Natural Resources Wales	October 2021	Quarterly
Environment Agency Wales - South East Area	October 2022	Quarterly
Licensed Waste Management Facilities (Locations)		
Natural Resources Wales	December 2022	Quarterly
Environment Agency Wales - South East Area	July 2021	Quarterly
Local Authority Landfill Coverage		
Monmouthshire Council - Environment	February 2003	Not Applicable
Newport City Council	February 2003	Not Applicable
Local Authority Recorded Landfill Sites		
Monmouthshire Council - Environment	October 2018	
Newport City Council	October 2018	
Potentially Infilled Land (Non-Water)		
Landmark Information Group Limited	December 1999	
Potentially Infilled Land (Water)		
Landmark Information Group Limited	December 1999	
Registered Landfill Sites		
Environment Agency Wales - South East Area	March 2006	Not Applicable
Registered Waste Transfer Sites		
Environment Agency Wales - South East Area	April 2018	
Registered Waste Treatment or Disposal Sites		
Environment Agency Wales - South East Area	June 2015	
Hazardous Substances	**Version**	**Update Cycle**
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	January 2022	Bi-Annually
Explosive Sites		
Health and Safety Executive	March 2017	Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	August 2001	
Planning Hazardous Substance Enforcements		
Monmouthshire Council - Environment	February 2016	Variable
Newport City Council - Planning Department	October 2015	Variable
Planning Hazardous Substance Consents		
Monmouthshire Council - Environment	February 2016	Variable
Newport City Council - Planning Department	October 2015	Variable

Data Currency

Geological	Version	Update Cycle
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	January 2009	As notified
BGS Estimated Soil Chemistry British Geological Survey - National Geoscience Information Service	December 2015	As notified
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	November 2022	Bi-Annually
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Mining Instability Ove Arup & Partners	June 1998	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	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	September 2022	Annually
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	September 2022	Annually

Data Currency

Industrial Land Use	Version	Update Cycle
Contemporary Trade Directory Entries Thomson Directories	October 2022	Quarterly
Fuel Station Entries Catalist Ltd - Experian	January 2023	Quarterly
Gas Pipelines National Grid	October 2021	Bi-Annually
Points of Interest - Commercial Services PointX	December 2022	Quarterly
Points of Interest - Education and Health PointX	December 2022	Quarterly
Points of Interest - Manufacturing and Production PointX	December 2022	Quarterly
Points of Interest - Public Infrastructure PointX	December 2022	Quarterly
Points of Interest - Recreational and Environmental PointX	December 2022	Quarterly
Underground Electrical Cables National Grid	May 2021	Bi-Annually

Data Currency

Sensitive Land Use	Version	Update Cycle
Ancient Woodland		
Natural Resources Wales	September 2018	Bi-Annually
Areas of Adopted Green Belt		
Monmouthshire Council	July 2022	Quarterly
Newport City Council	July 2022	Quarterly
Areas of Unadopted Green Belt		
Monmouthshire Council	July 2022	Quarterly
Newport City Council	July 2022	Quarterly
Areas of Outstanding Natural Beauty		
Natural Resources Wales	August 2022	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		
Monmouthshire Council	August 2018	Bi-Annually
Newport City Council	August 2018	Bi-Annually
Marine Nature Reserves		
Natural Resources Wales	August 2018	Bi-Annually
National Nature Reserves		
Natural Resources Wales	February 2022	Bi-Annually
National Parks		
Natural Resources Wales	February 2018	Annually
Nitrate Vulnerable Zones		
The National Assembly for Wales - GI Services (Department of Planning & Countryside)	April 2016	
Natural Resources Wales	July 2019	Bi-Annually
Ramsar Sites		
Natural Resources Wales	July 2019	Bi-Annually
Sites of Special Scientific Interest		
Natural Resources Wales	March 2020	Bi-Annually
Special Areas of Conservation		
Natural Resources Wales	August 2020	Bi-Annually
Special Protection Areas		
Natural Resources Wales	August 2018	Bi-Annually

Data Suppliers

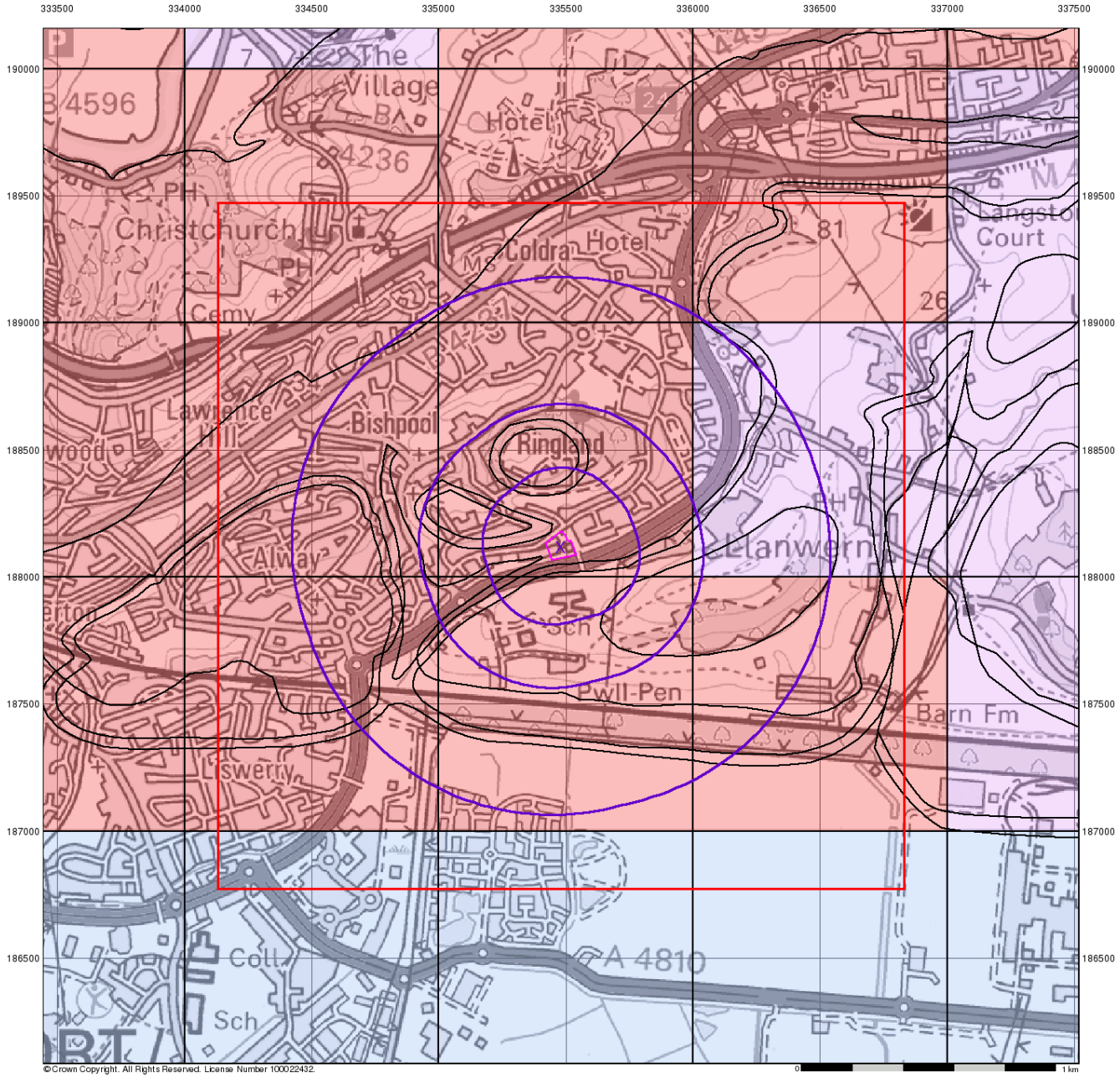
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Map data
Environment Agency	Environment Agency
Scottish Environment Protection Agency	SEPA Scottish Environment Protection Agency
The Coal Authority	The Coal Authority
British Geological Survey	British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Natural Resources Wales	Cyfoeth Naturiol Cymru Natural Resources Wales
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Public Health England	Public Health England
Ove Arup	ARUP
Stantec UK Ltd	Stantec

Useful Contacts

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	**Newport City Council - Public Protection and Environmental Services** Civic Centre, Newport, Gwent, NP20 4UR	Telephone: 01633 656656 Fax: 01633 232429 Website: www.newport.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	**Newport City Council** Civic Centre, Newport, South Wales, NP9 4UR	Telephone: 01633 656656 Fax: 01633 244721 Website: www.newport.gov.uk
7	**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.



Intégral Géotechnique

Groundwater Vulnerability

General

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

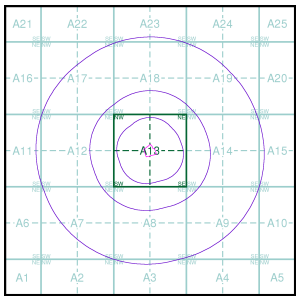
Agency and Hydrological

Bedrock Aquifers	Superficial Aquifers
High Vulnerability, Principal Aquifer	High Vulnerability, Principal Aquifer
High Vulnerability, Secondary Aquifer	High Vulnerability, Secondary Aquifer
Medium Vulnerability, Principal Aquifer	Medium Vulnerability, Principal Aquifer
Medium Vulnerability, Secondary Aquifer	Medium Vulnerability, Secondary Aquifer
Low Vulnerability, Principal Aquifer	Low Vulnerability, Principal Aquifer
Low Vulnerability, Secondary Aquifer	Low Vulnerability, Secondary Aquifer

Unproductive Aquifer

Soluble Rock

Site Sensitivity Context Map - Slice A



Order Details

Order Number:	305828042_1_1
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National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

Landmark INFORMATION GROUP
Tel: 0844 844 9952
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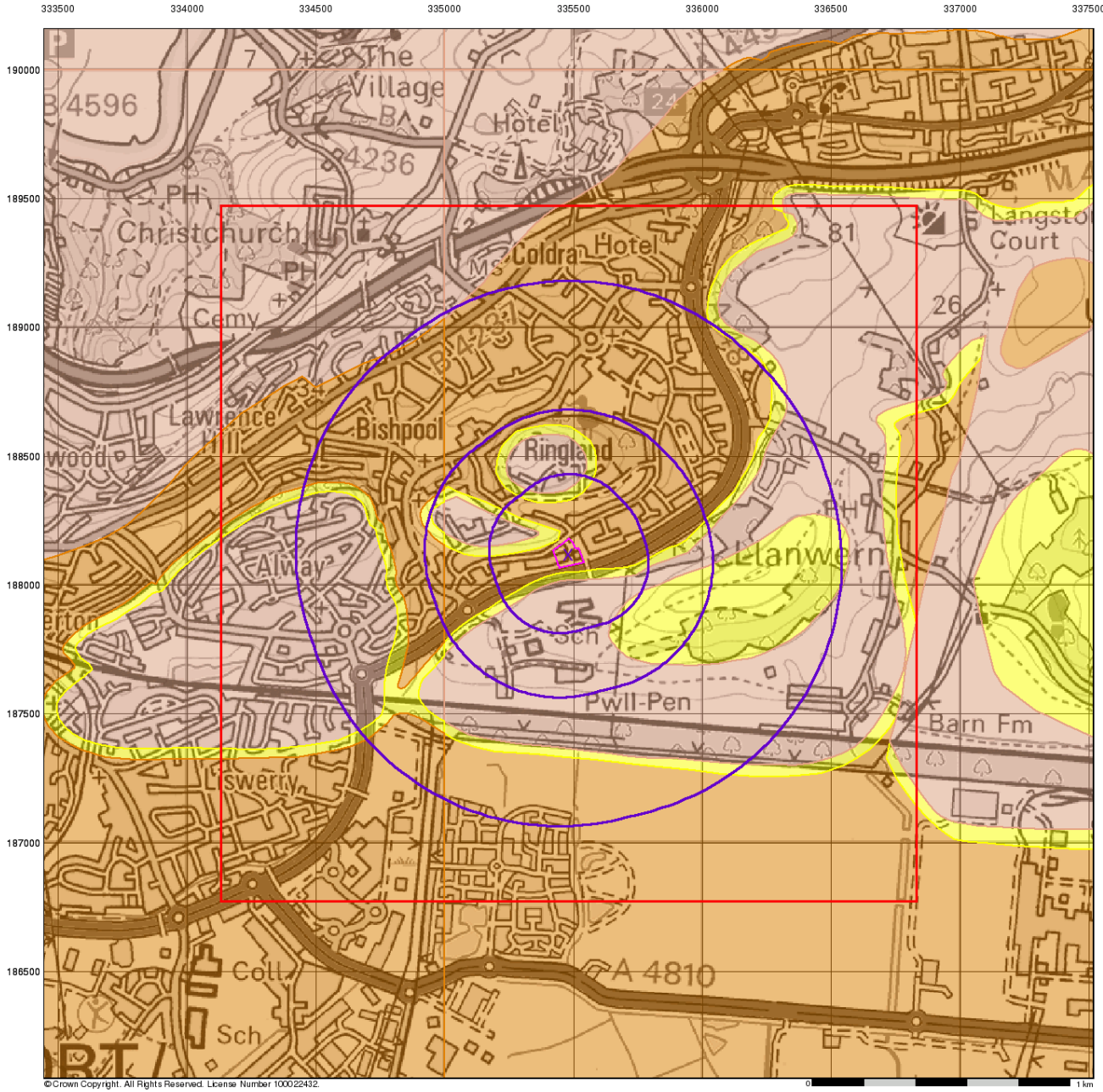


Intégral Géotechnique

Bedrock Aquifer Designation

General

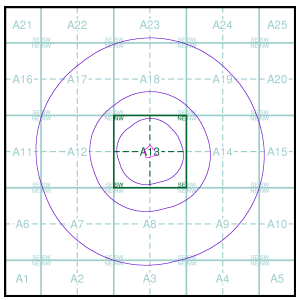
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

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



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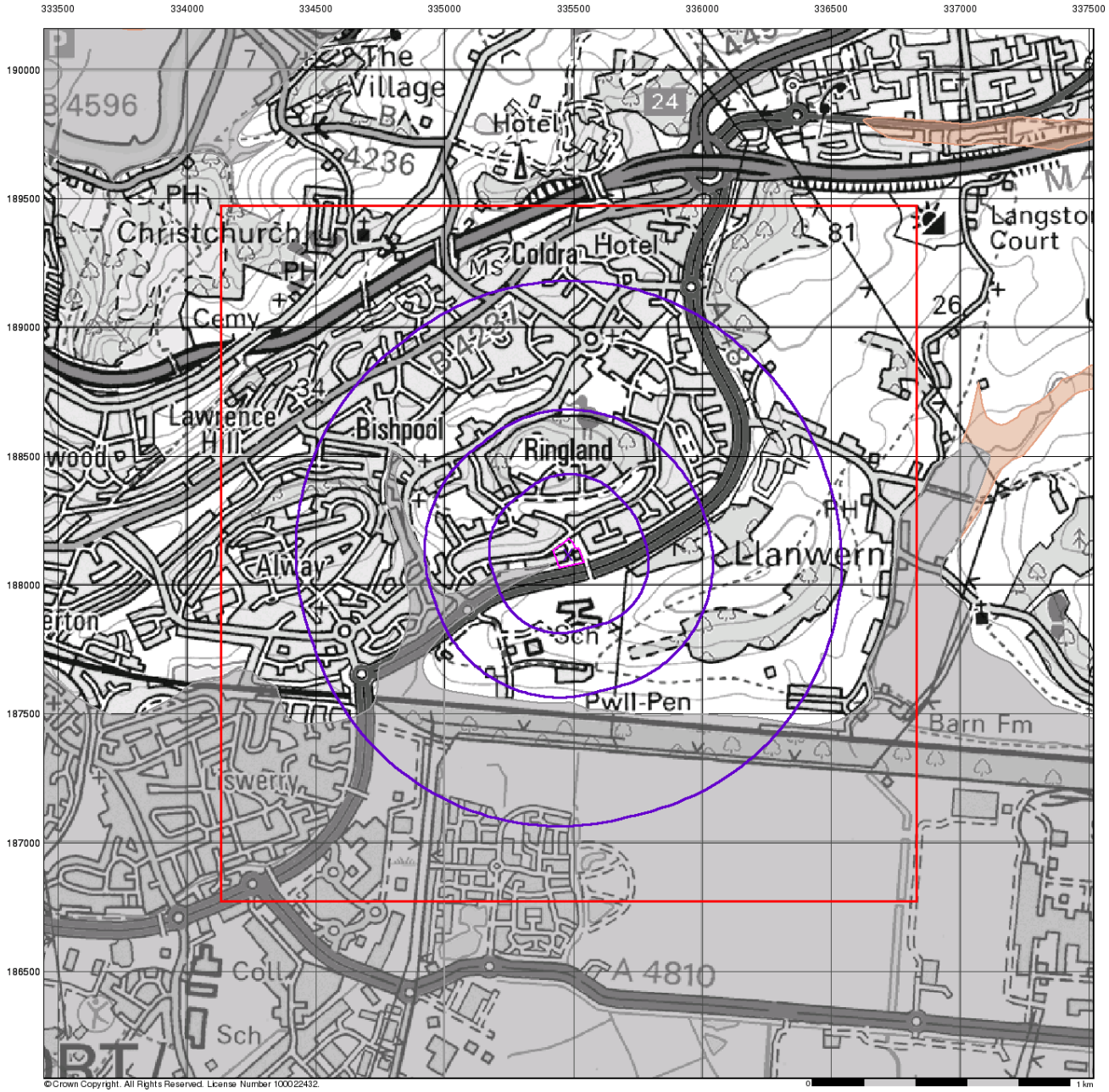


Intégral Géotechnique

Superficial Aquifer Designation

General

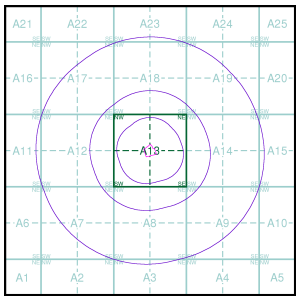
Specified Site | Specified Buffer(s) | Bearing Reference Point | Slice | Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



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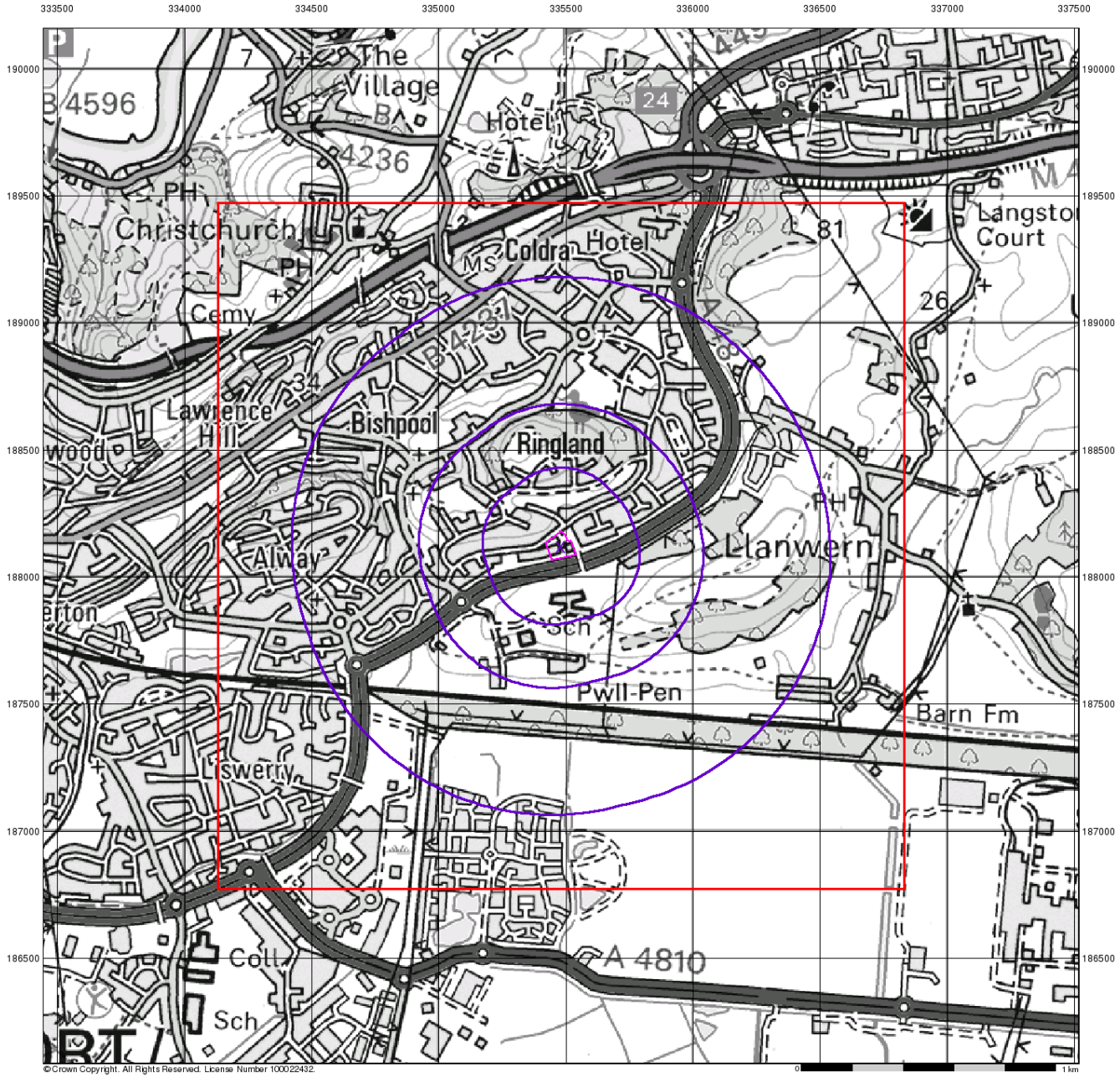


Intégral Géotechnique

Source Protection Zones

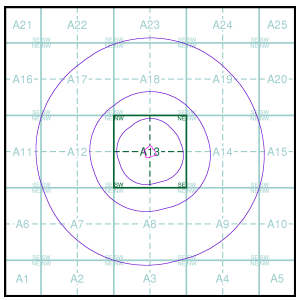
General

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

Agency and Hydrological

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

Site Sensitivity Context Map - Slice A



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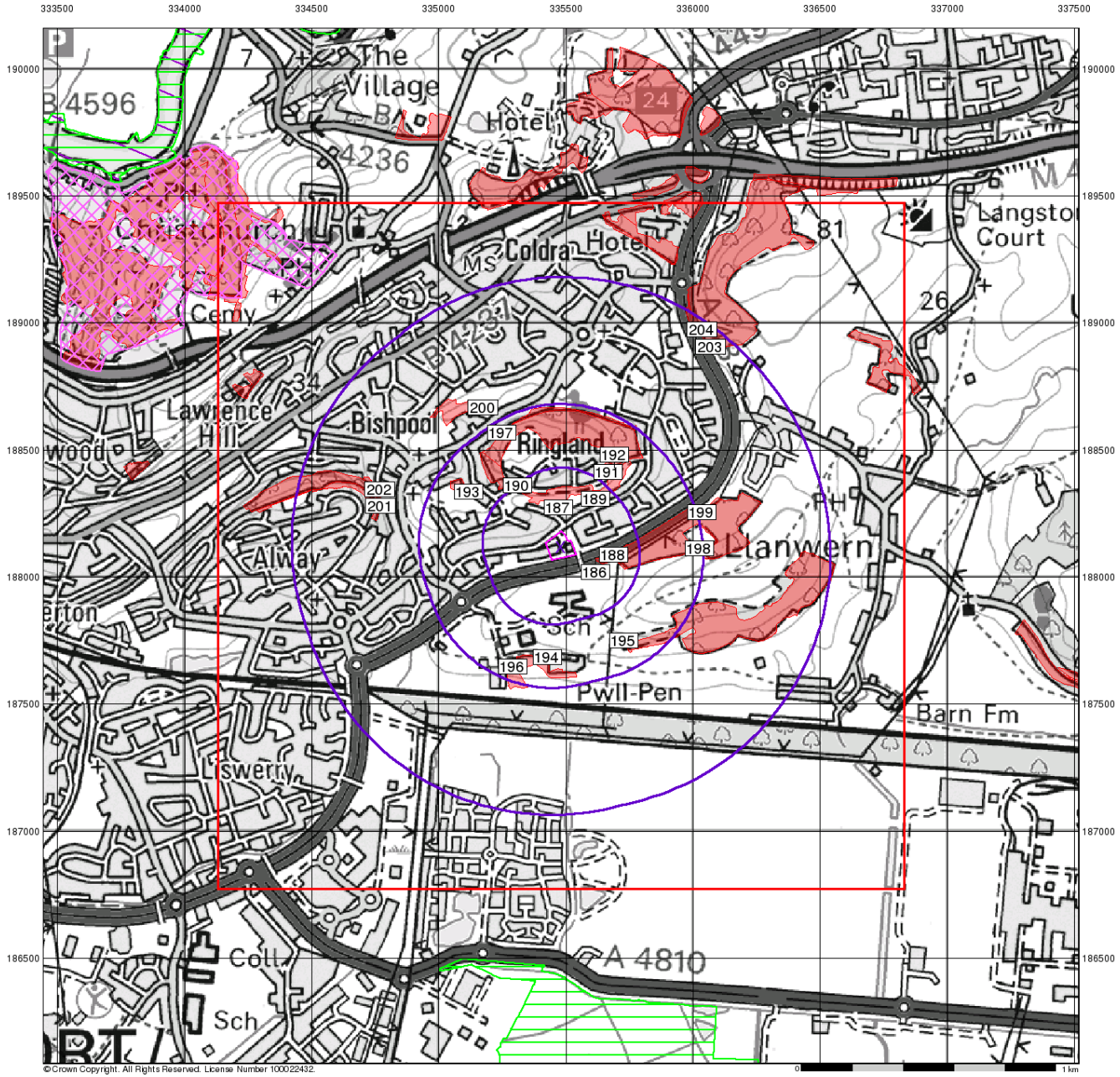


Intégral Géotechnique

Sensitive Land Uses

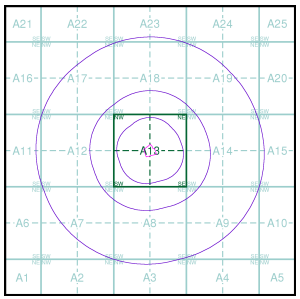
General

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



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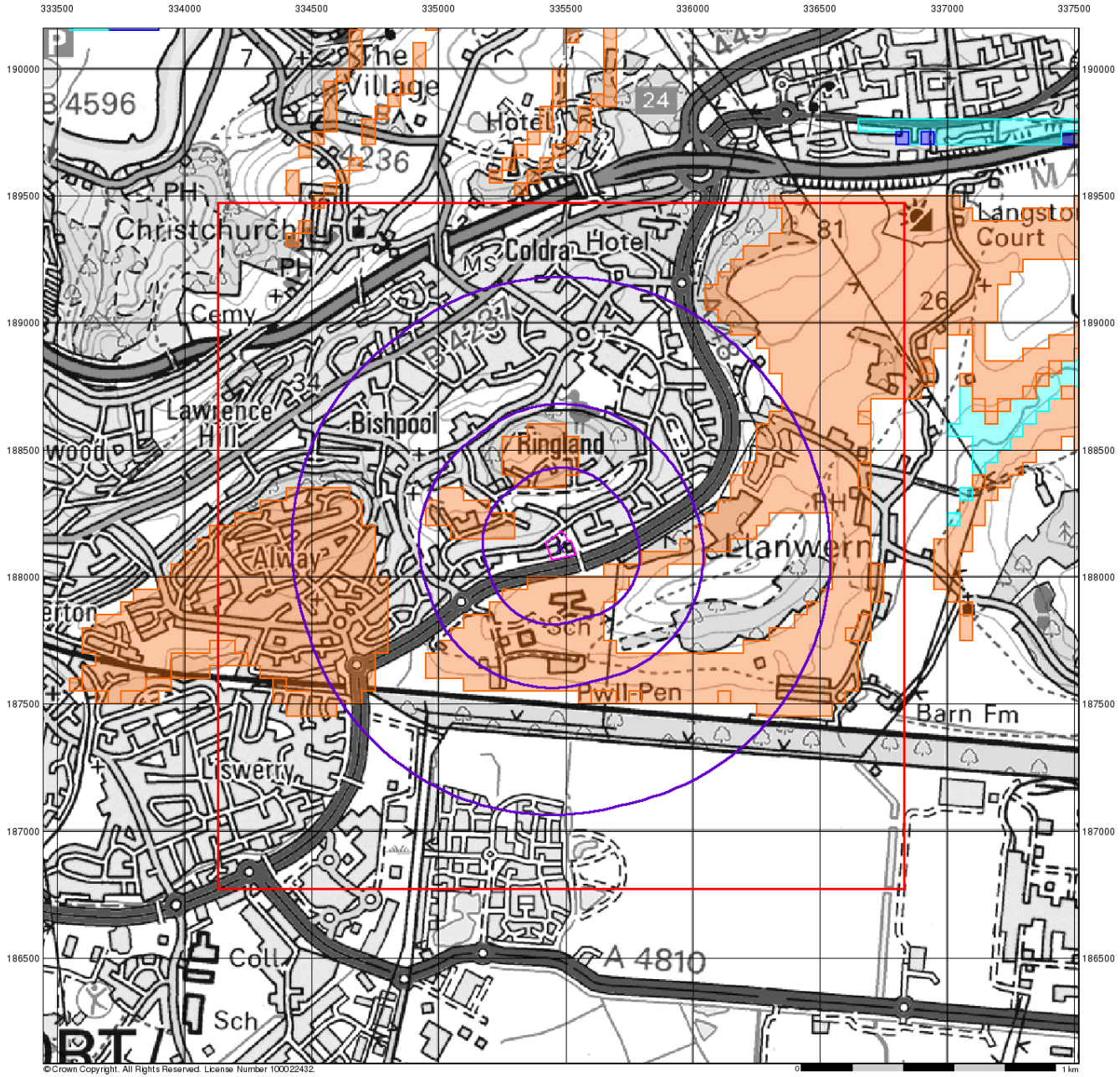


Intégral Géotechnique

BGS Flood GFS Data

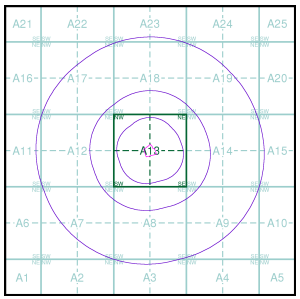
General

- 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



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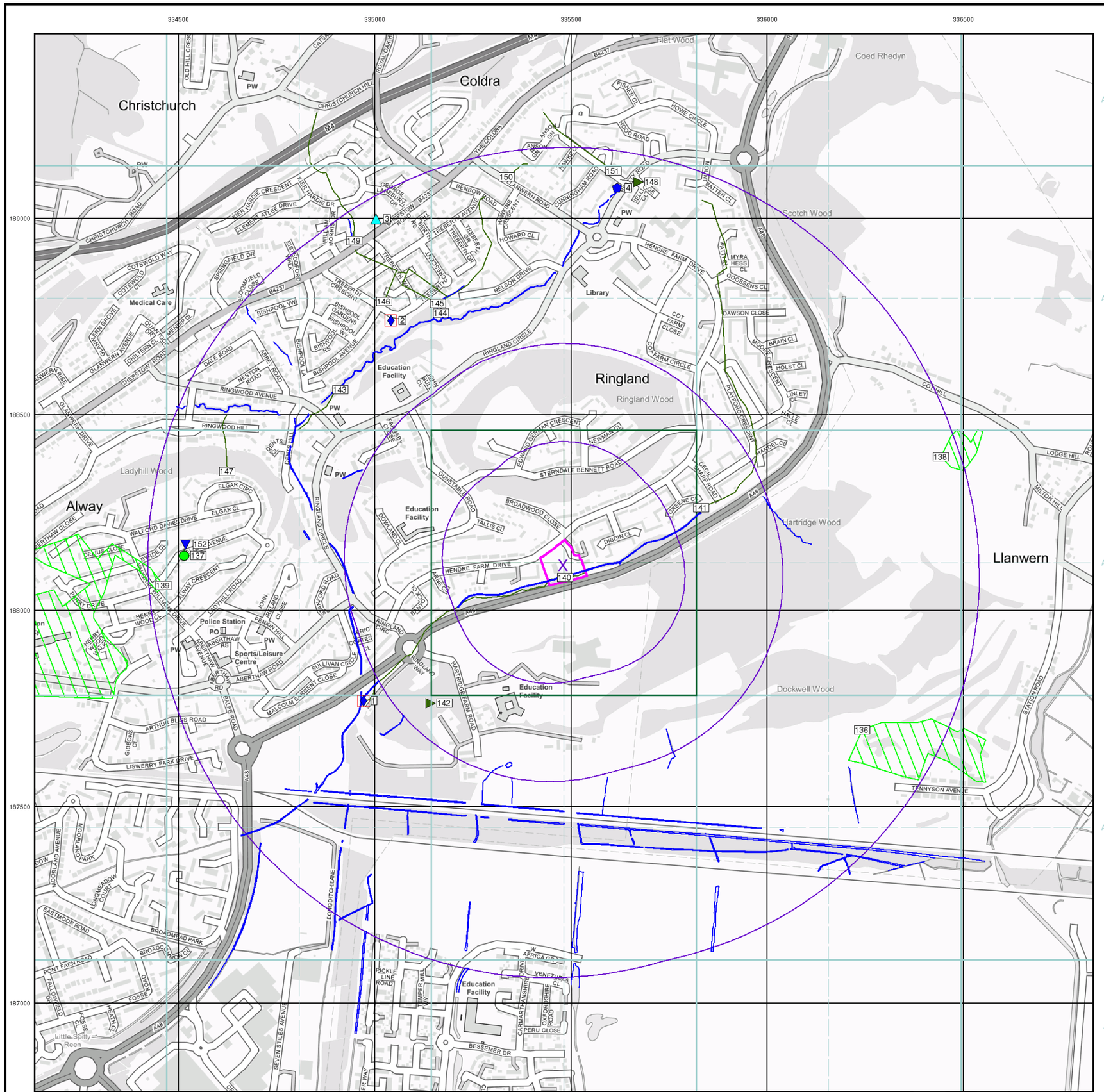


Intégral Géotechnique

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

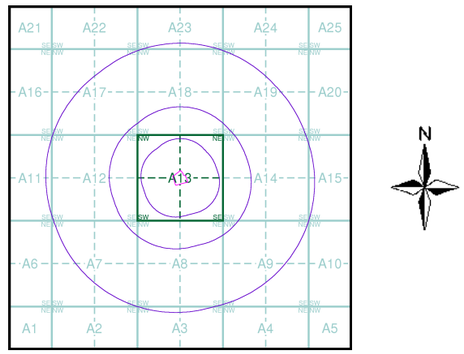
Geological

- BGS Recorded Mineral Site

Waste

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

Site Sensitivity Map - Slice A



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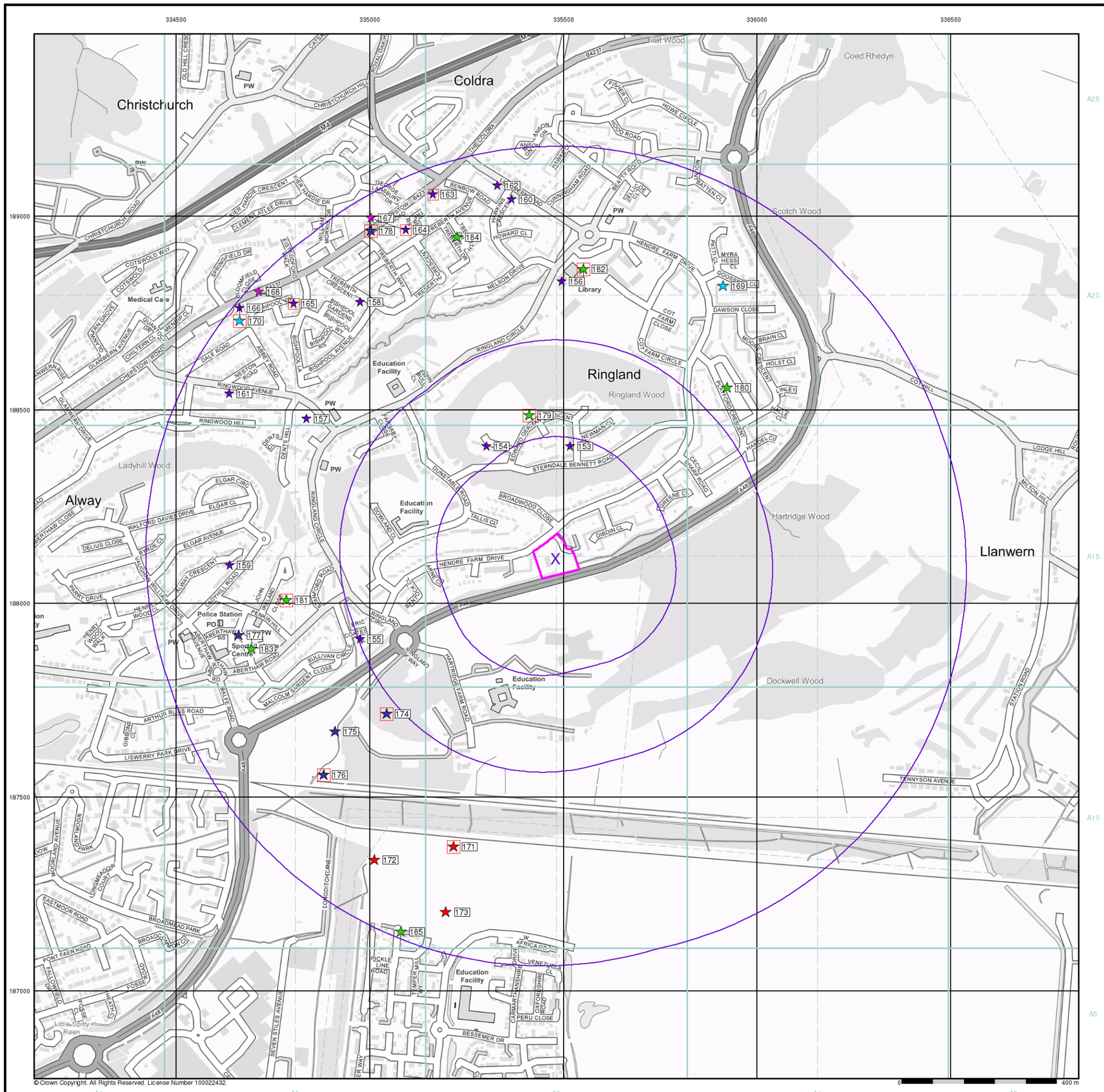


Intégral Géotechnique

Industrial Land Use Map

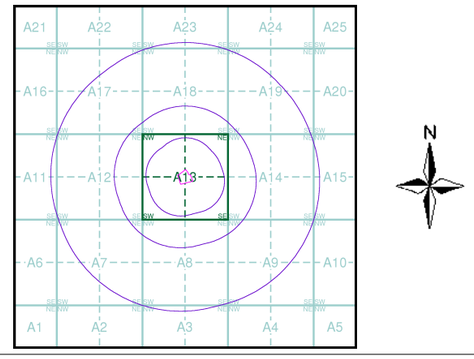
General

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



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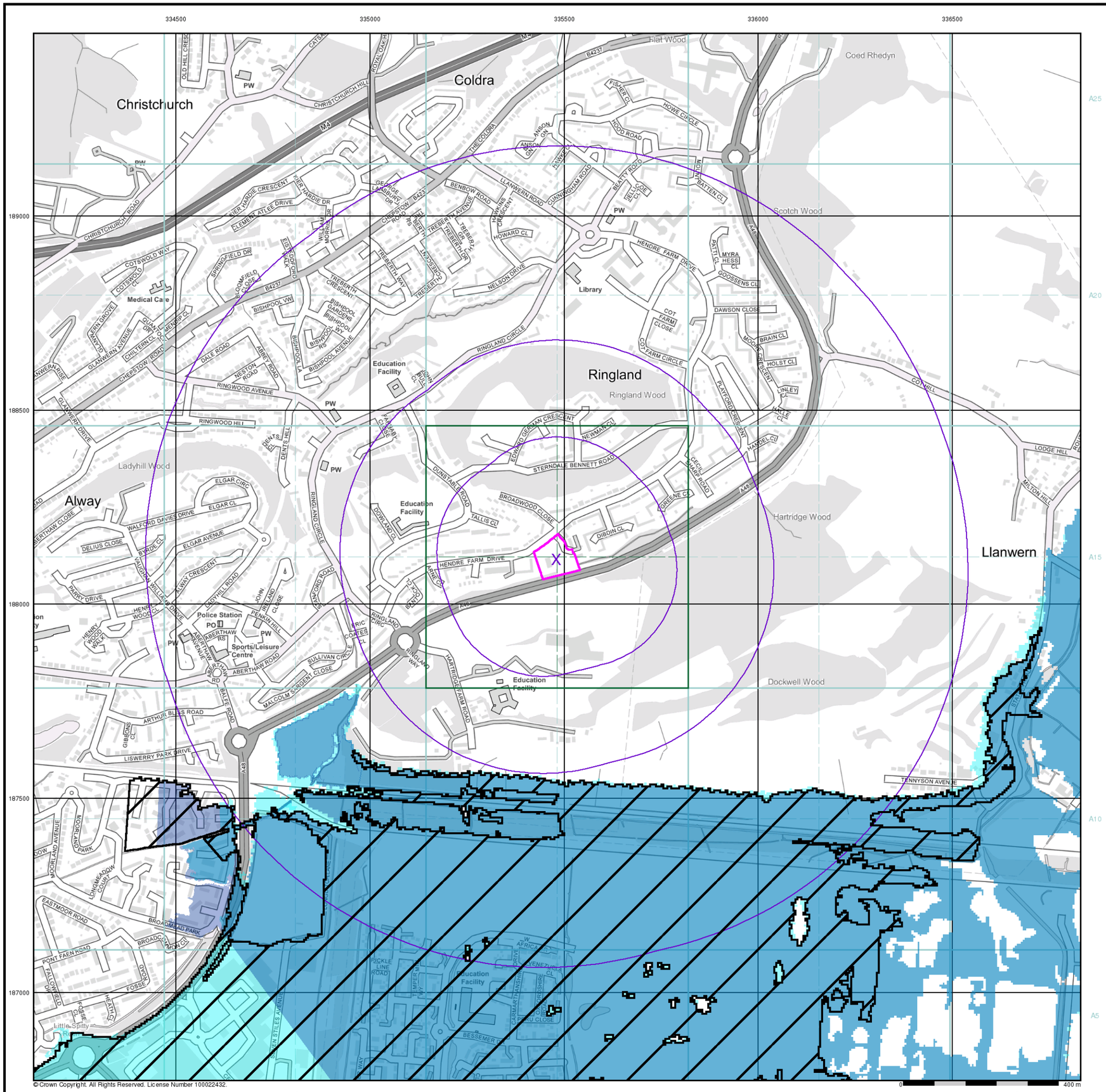


Intégral Géotechnique

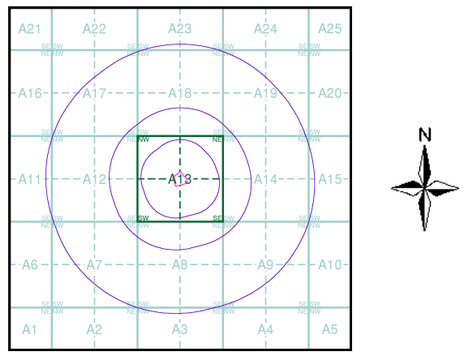
General

- Specified Site
- Specified Buffer(s)
- X 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



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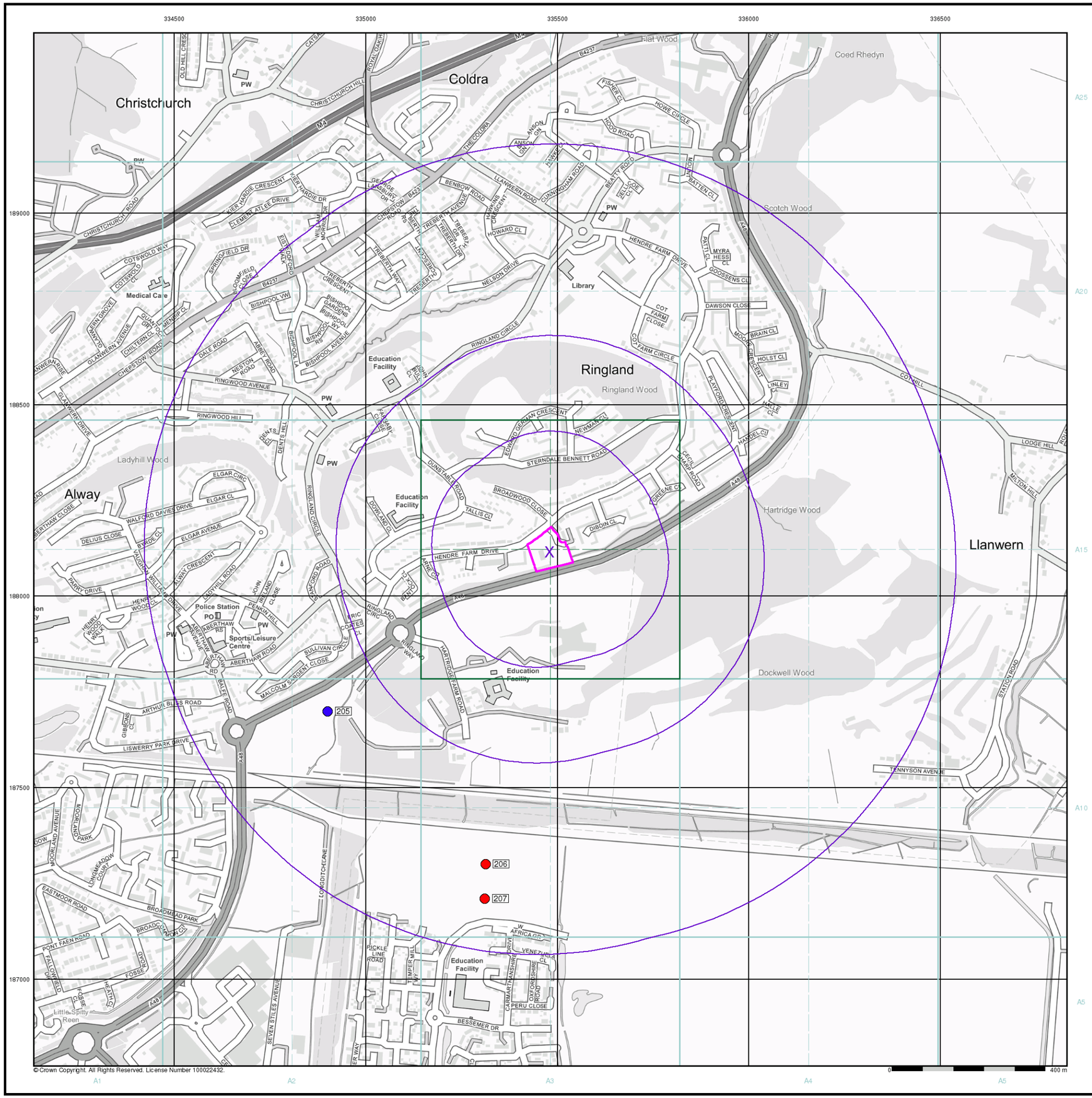


Intégral Géotechnique

General

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

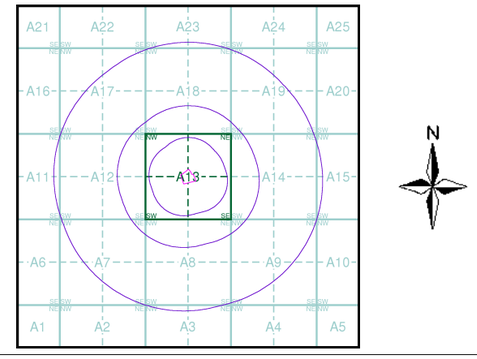
Agency and Hydrological (Boreholes)

- 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



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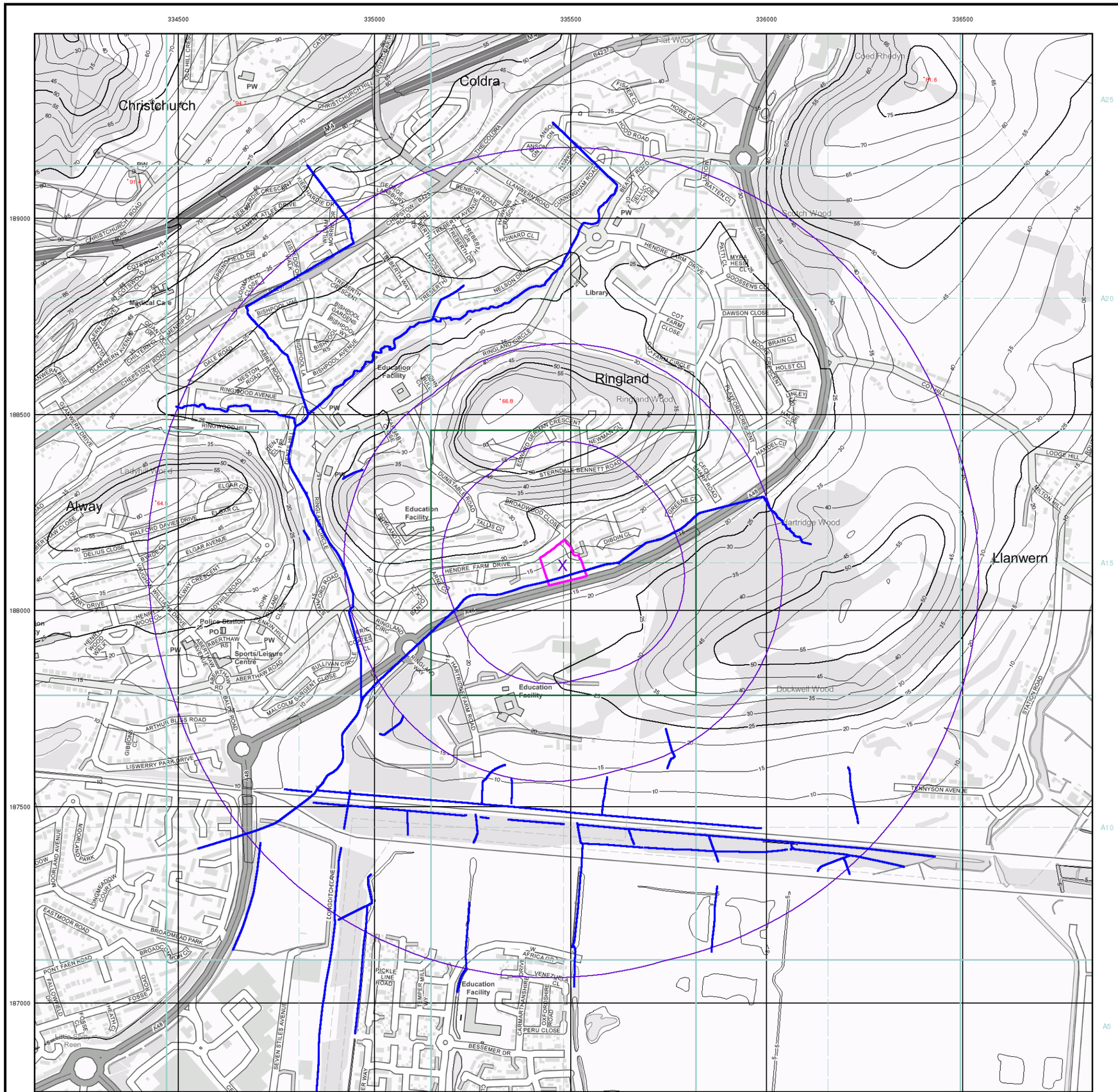


Intégral Géotechnique

General

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

OS Water Network Data

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

Contours (height in meters)

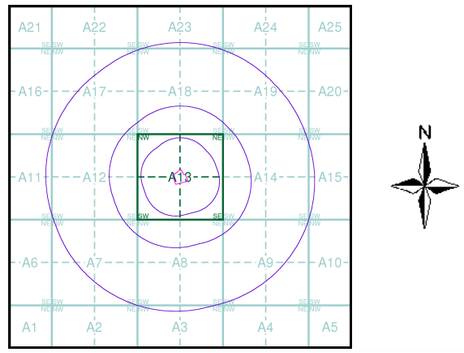
Standard Contour 105 100 95

Master Contour

Spot Height 167.3

- MLW Mean Low Water
- MHW Mean High Water

OS Water Network Map - Slice A



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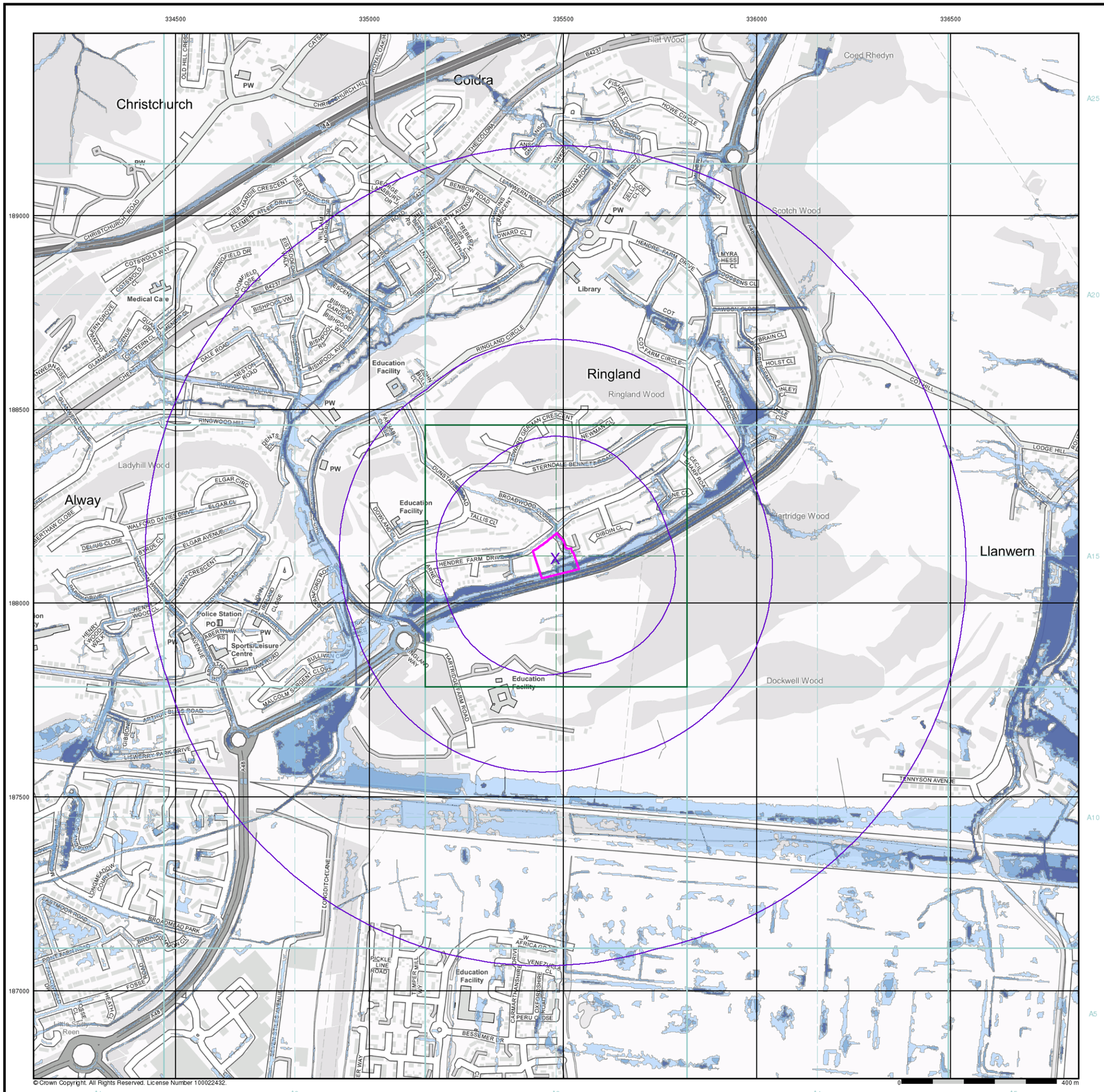


Intégral Géotechnique

General

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

Risk of Flooding from Surface Water

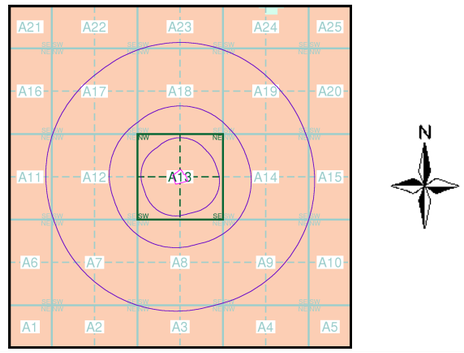
- High - 30 Year Return
- Medium - 100 Year Return
- Low - 1000 Year Return

Suitability

See the suitability map below

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

EA/NRW Suitability Map - Slice A



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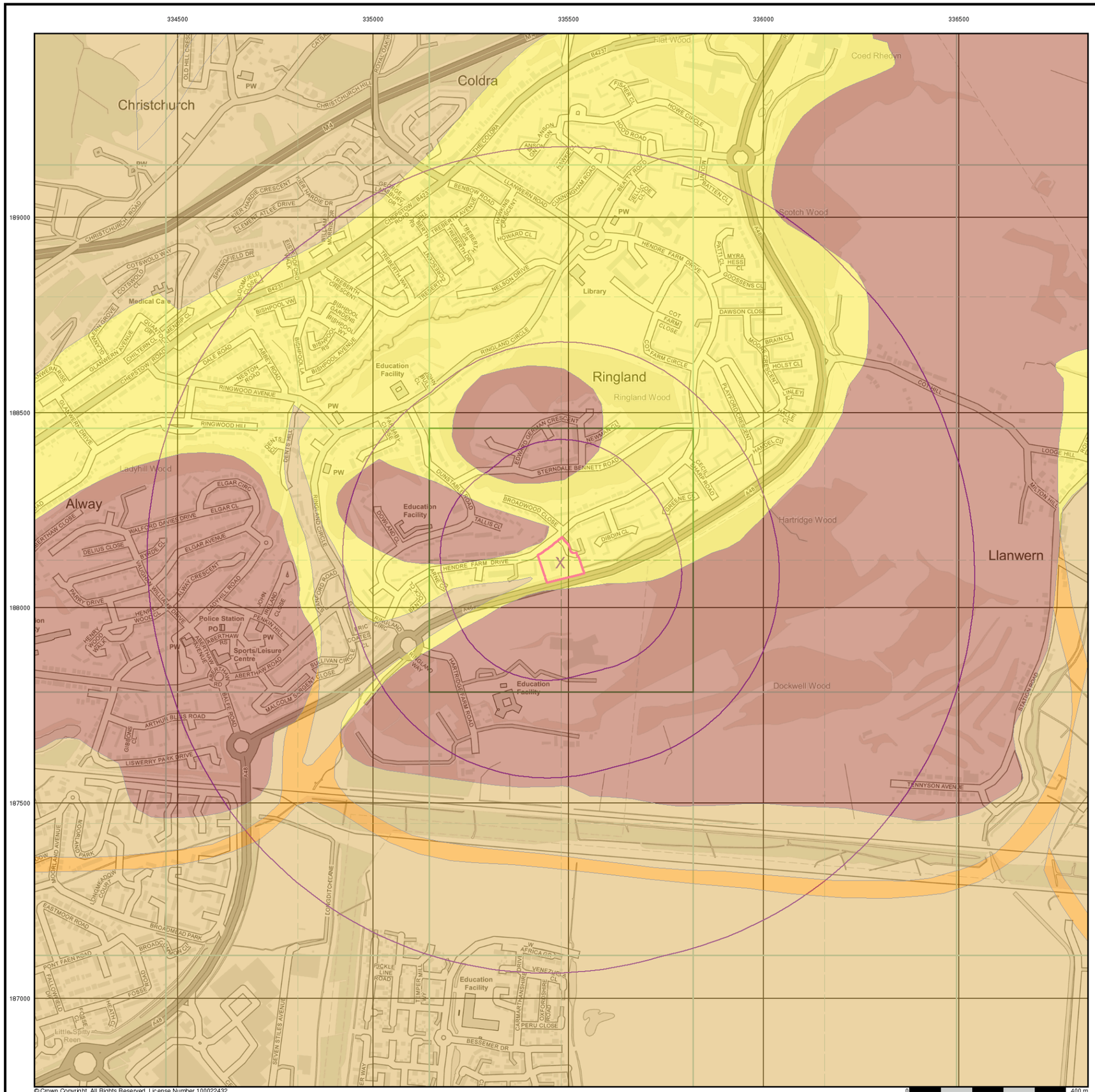


Intégral Géotechnique

General

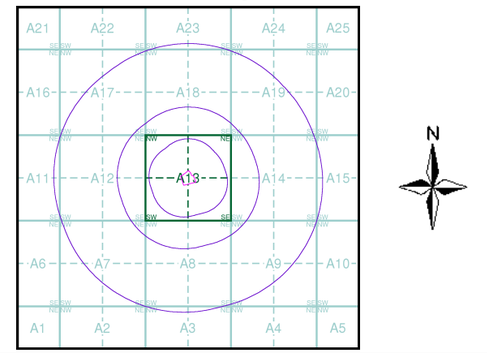
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Arsenic

Arsenic Concentrations mg/kg

- < 15
- 15 - 25
- 25 - 35
- 35 - 45
- 45 - 60
- 60 - 120
- > 120

Estimated Soil Chemistry Arsenic - Slice A



Order Details

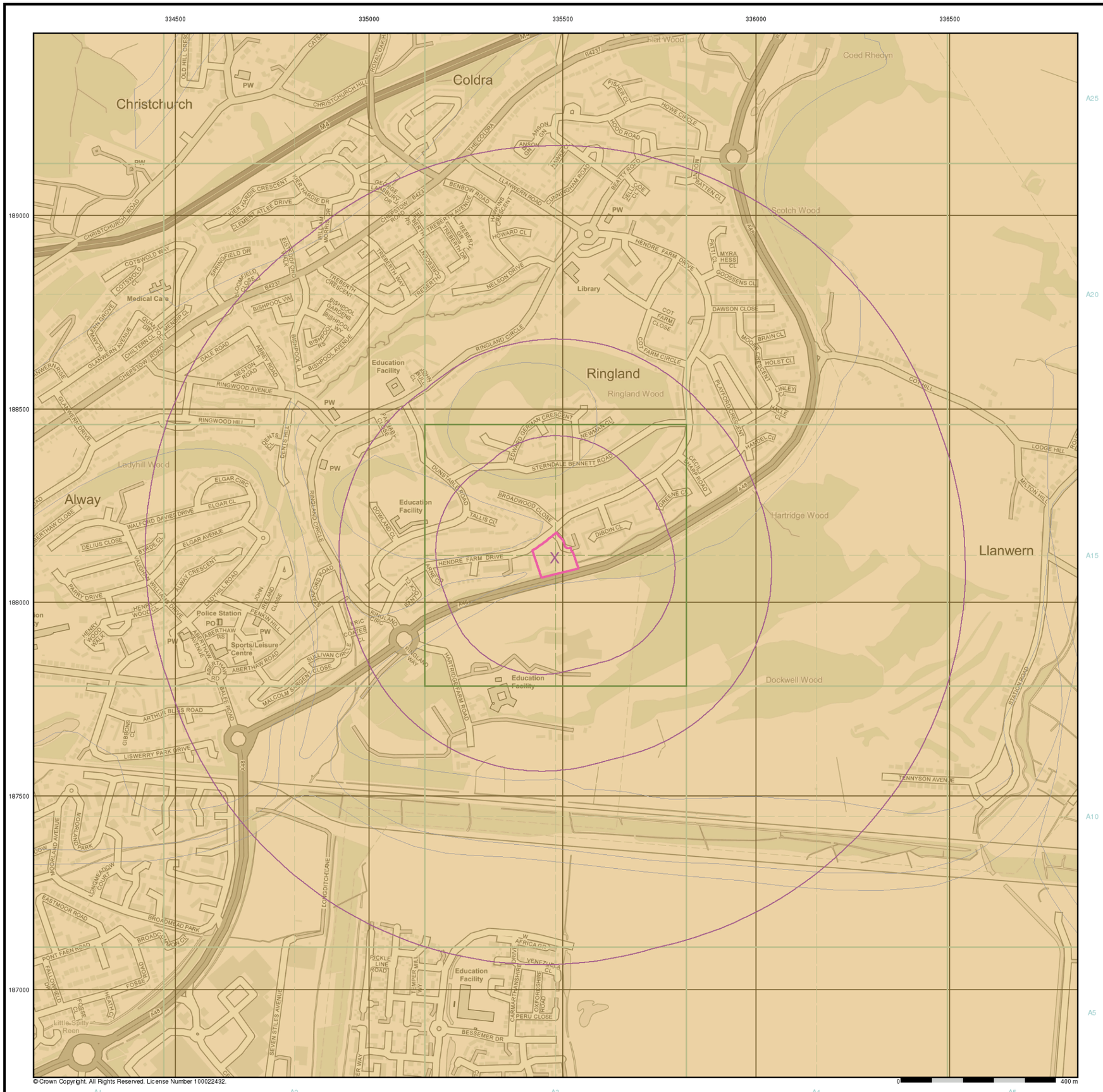
Order Details:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

Landmark INFORMATION GROUP

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



Intégral Géotechnique

General

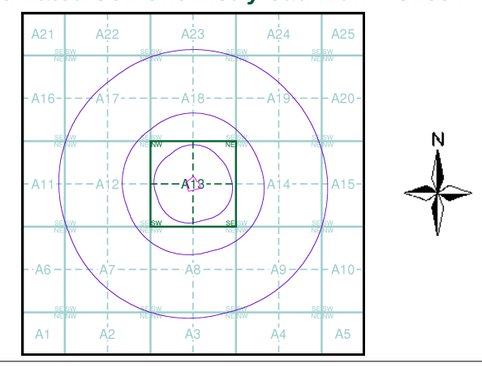
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Cadmium

Cadmium Concentrations mg/kg

- < 1.8
- 1.8 - 2.2
- 2.2 - 3.0
- > 3.0

Estimated Soil Chemistry Cadmium - Slice A



Order Details

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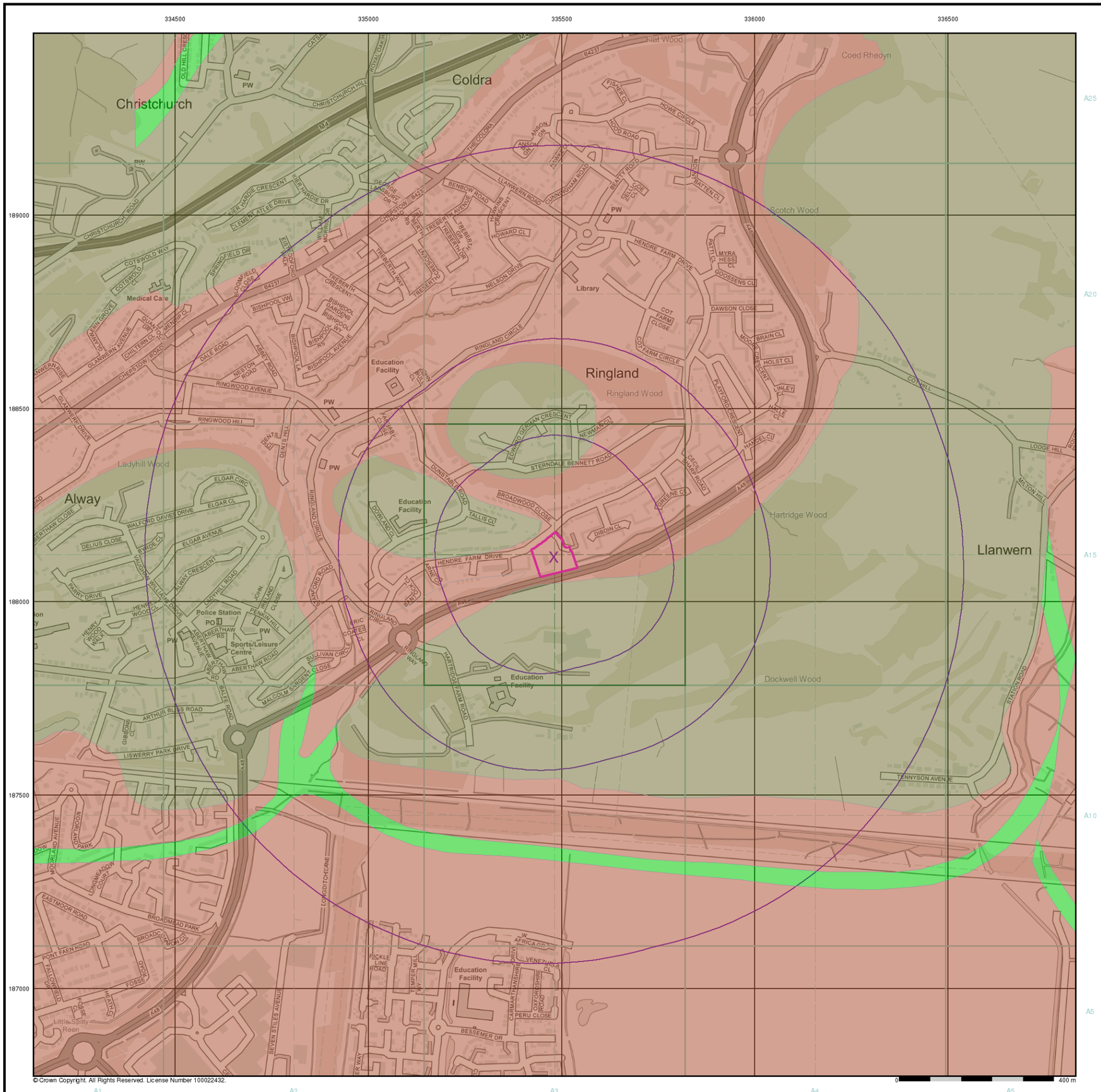


Intégral Géotechnique

General

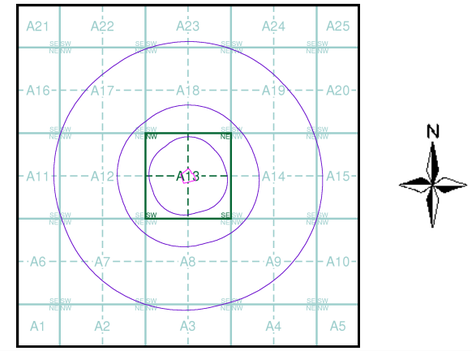
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Chromium

Chromium Concentrations mg/kg

- < 20
- 20 - 40
- 40 - 60
- 60 - 90
- 90 - 120
- 120 - 180
- > 180

Estimated Soil Chemistry Chromium - Slice A



Order Details

Order Details:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
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Site Area (Ha):	0.82
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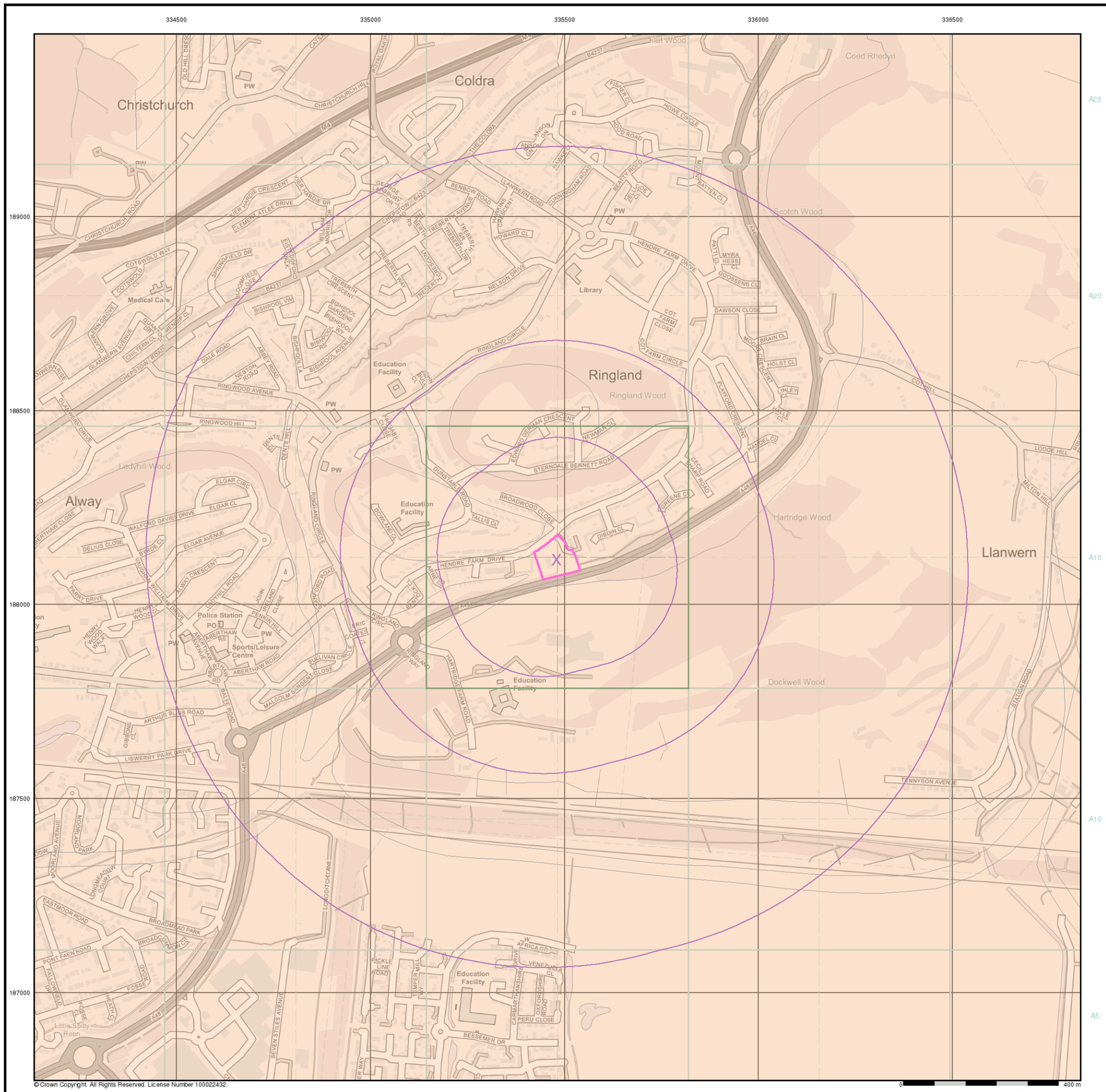


Intégral Géotechnique

General

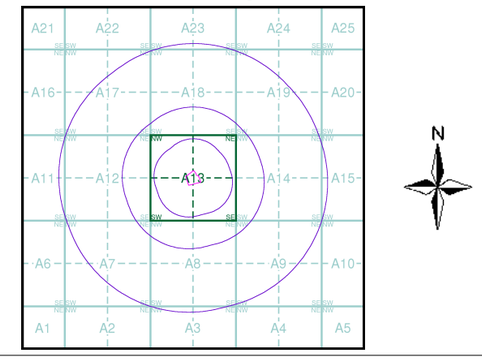
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Lead

Lead Concentrations mg/kg

- <100 mg/kg
- 100 - 200
- 200 - 300
- 300 - 600
- 600 - 1200
- >1200

Estimated Soil Chemistry Lead - Slice A



Order Details

Order Details:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details

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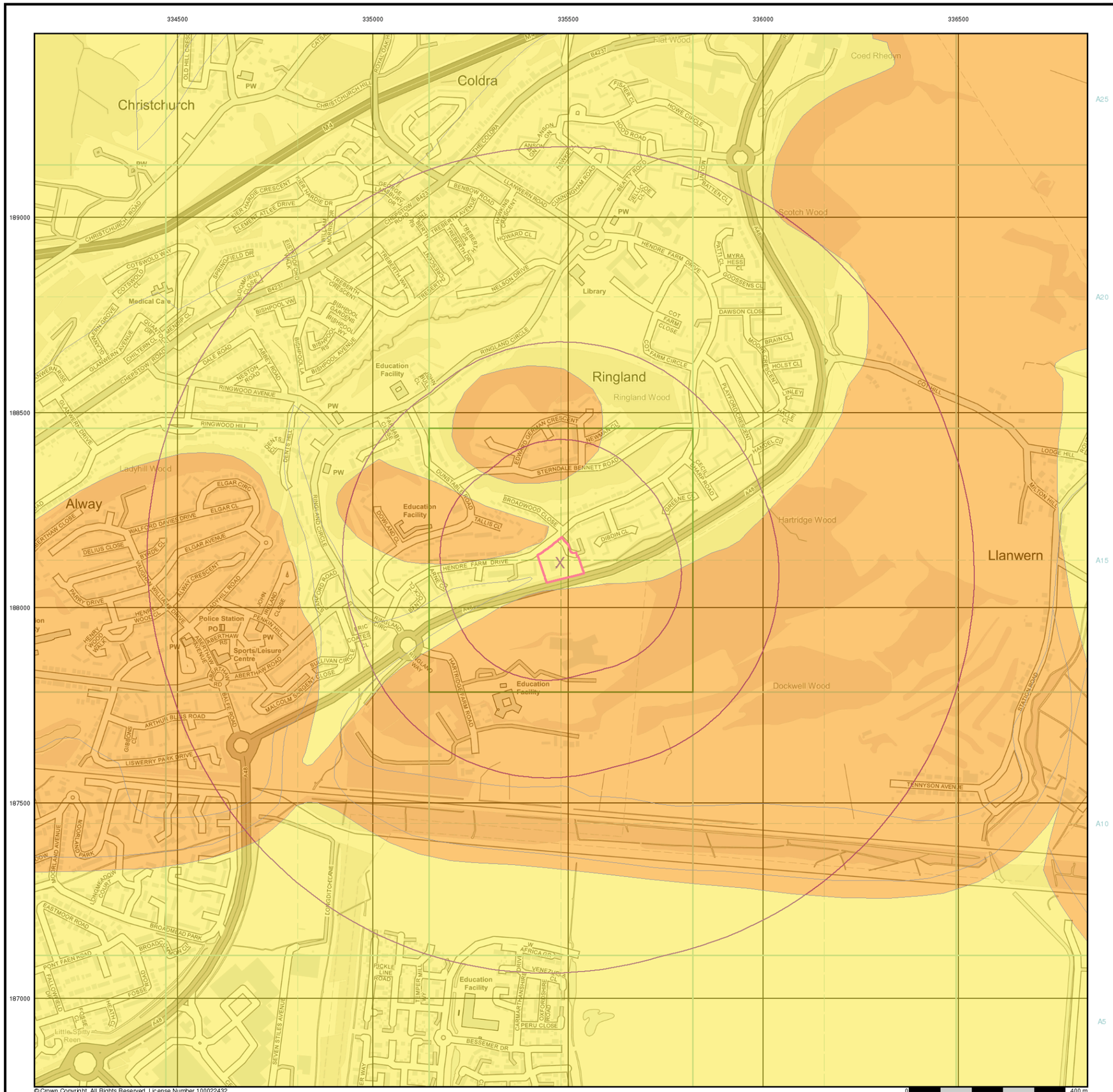


Intégral Géotechnique

General

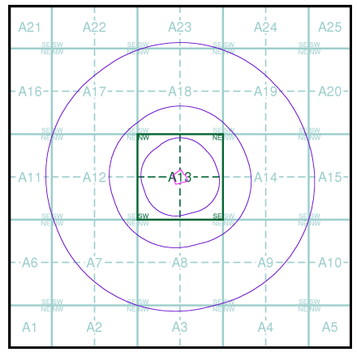
Specified Site | Specified Buffer(s) | X Bearing Reference Point

Estimated Soil Chemistry Nickel

Nickel Concentrations mg/kg

- < 15
- 15 - 30
- 30 - 45
- 45 - 60
- 60 - 80
- 80 - 100
- > 100

Estimated Soil Chemistry Nickel - Slice A



Order Details

Order Details:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details

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Intégral Géotechnique

General

Specified Site | Specified Buffer(s) | Bearing Reference Point | Map ID
Several of Type at Location | Pylon | Overhead Transmission Line

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- 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

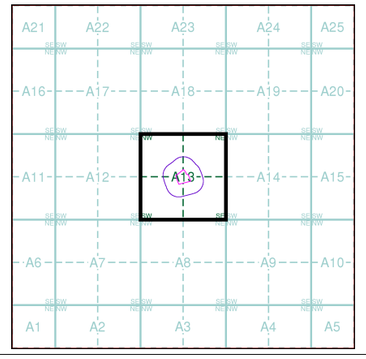
Geological

- 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

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Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Plot Buffer (m):	100

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

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Geology 1:50,000 Maps Legends

Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	TFD	Tidal Flat Deposits	Clay and Silt	Not Supplied - Holocene
	ALV	Alluvium	Clay, Silt, Sand and Gravel	Not Supplied - Holocene
	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
	LVN	Lavernock Shales Member	Mudstone	Not Supplied - Hettangian
	PNG	Penarth Group	Mudstone	Not Supplied - Rhaetian
	STM	St Mary's Well Bay Member	Limestone and Mudstone, Interbedded	Not Supplied - Rhaetian
	BAN	Blue Anchor Formation	Mudstone and Siltstone	Not Supplied - Norian
	BAN	Blue Anchor Formation	Mudstone	Not Supplied - Norian
	MMG	Mercia Mudstone Group	Mudstone	Not Supplied - Early Triassic
	BRS	Brownstones Formation	Sandstone	Not Supplied - Lochkovian
	SMG	St Maughans Formation	Argillaceous Rocks and [Subequal/Subordinate] Sandstone, Interbedded	Not Supplied - Early Devonian
	SMG	St Maughans Formation	Limestone	Not Supplied - Early Devonian
	SMG	St Maughans Formation	Sandstone	Not Supplied - Early Devonian
		Faults		

Intégral Géotechnique

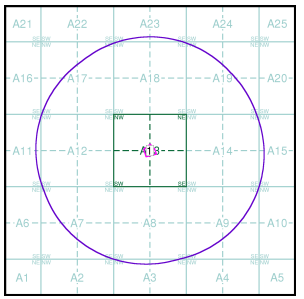
Geology 1:50,000 Maps

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

Geology 1:50,000 Maps Coverage

Map ID:	**1**
Map Sheet No:	**249**
Map Name:	**Newport**
Map Date:	**1969**
Bedrock Geology:	**Available**
Superficial Geology:	**Available**
Artificial Geology:	**Available**
Faults:	**Not Supplied**
Landslip:	**Available**
Rock Segments:	**Not Supplied**

Geology 1:50,000 Maps - Slice A

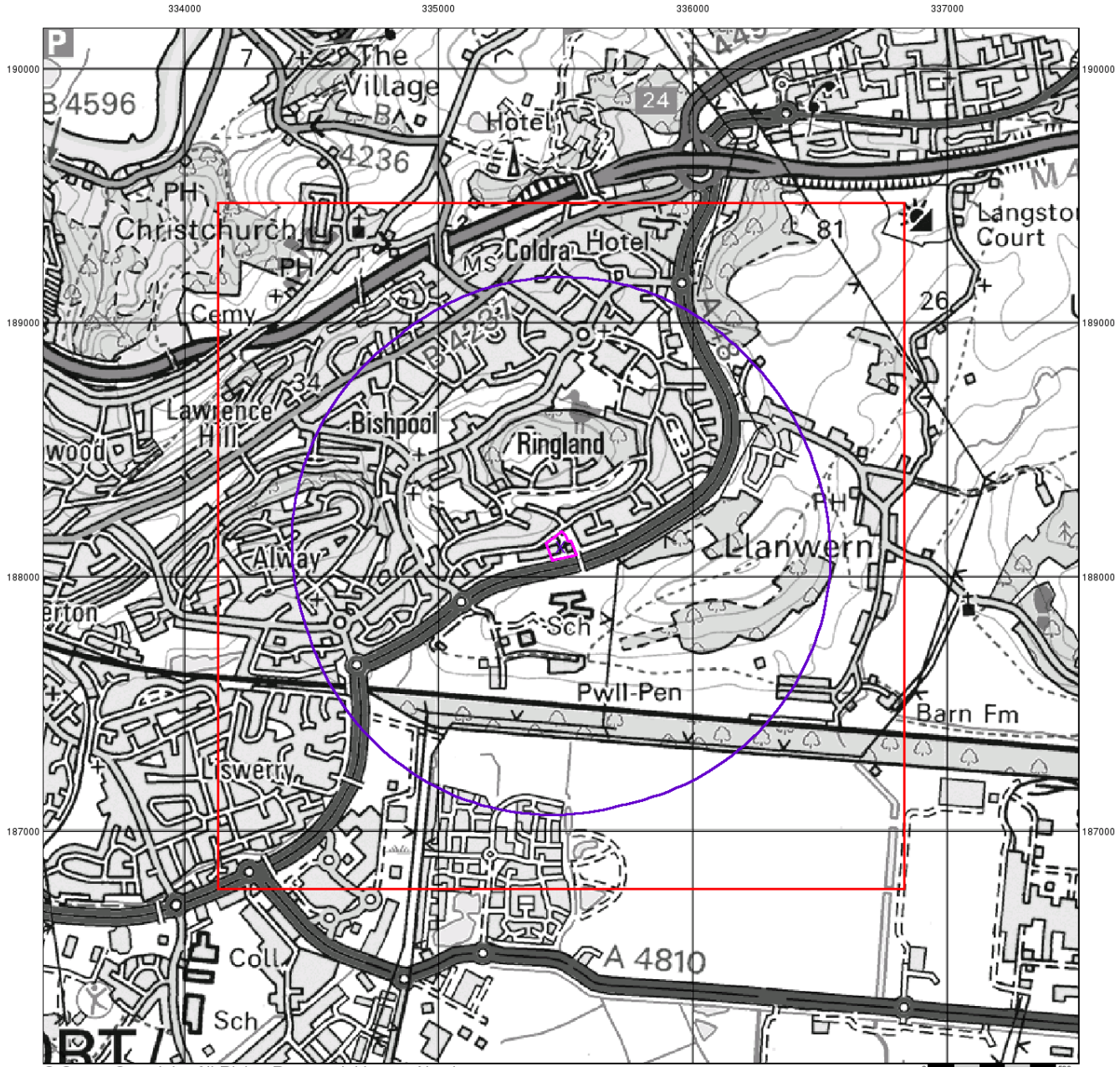


Order Details:

Order Number:	305828042_1_1
Customer Reference:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details:

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH



Intégral
Géotechnique

Artificial Ground and Landslip

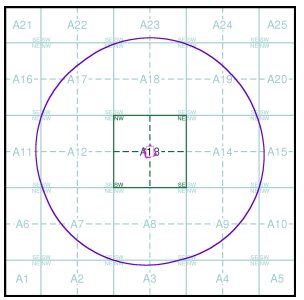
Artificial ground is a term used by BGS for those areas where the ground surface has been significantly modified by human activity. Information about previously developed ground is especially important, as it is often associated with potentially contaminated material, unpredictable engineering conditions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



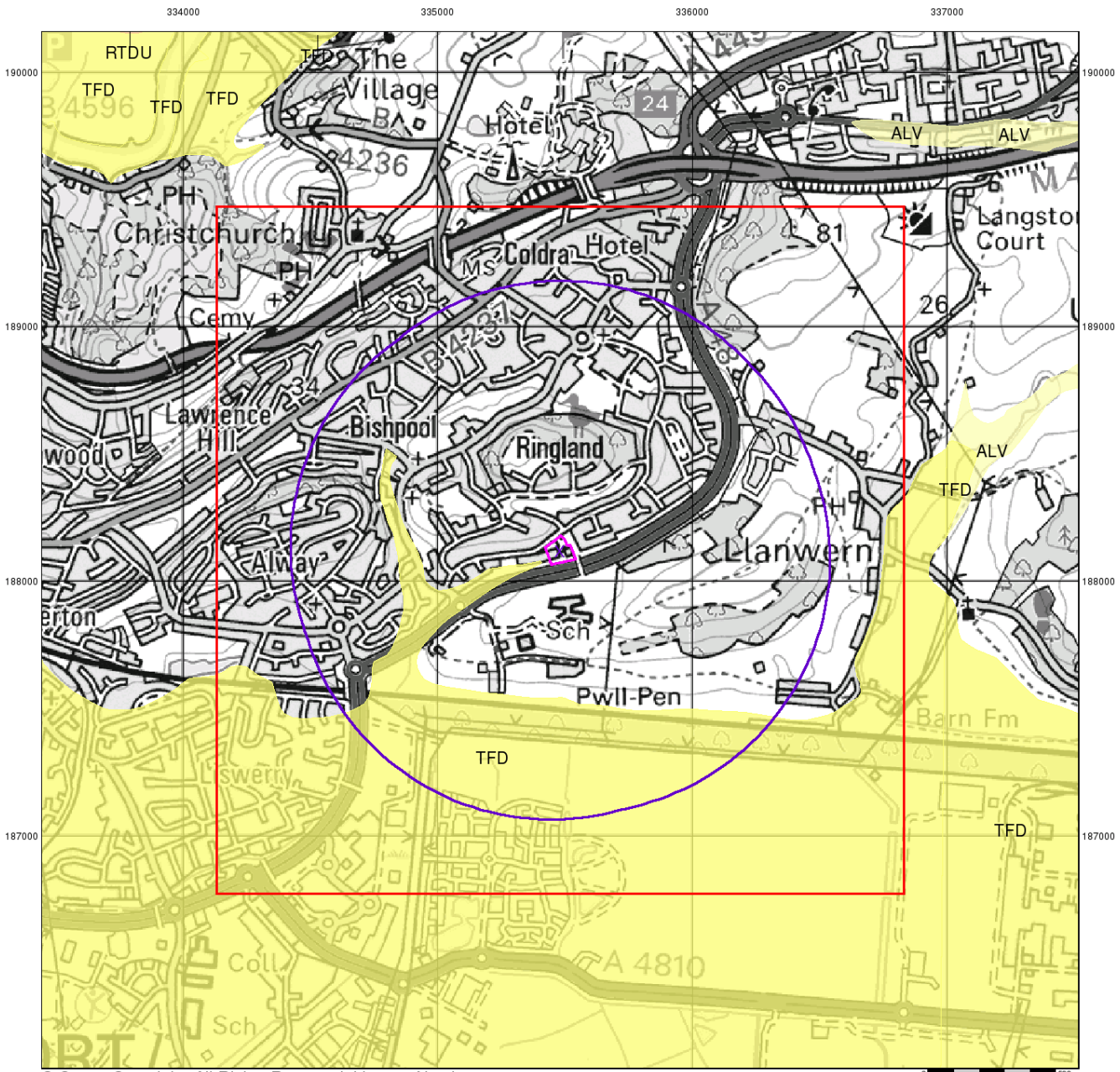
Order Details:

Order Number:	305828042_1_1
Customer Reference:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details:

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

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



Intégral
Géotechnique

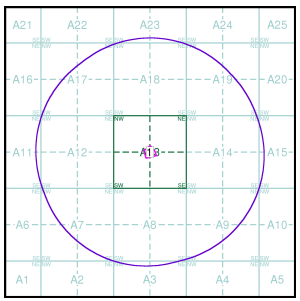
Superficial Geology

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



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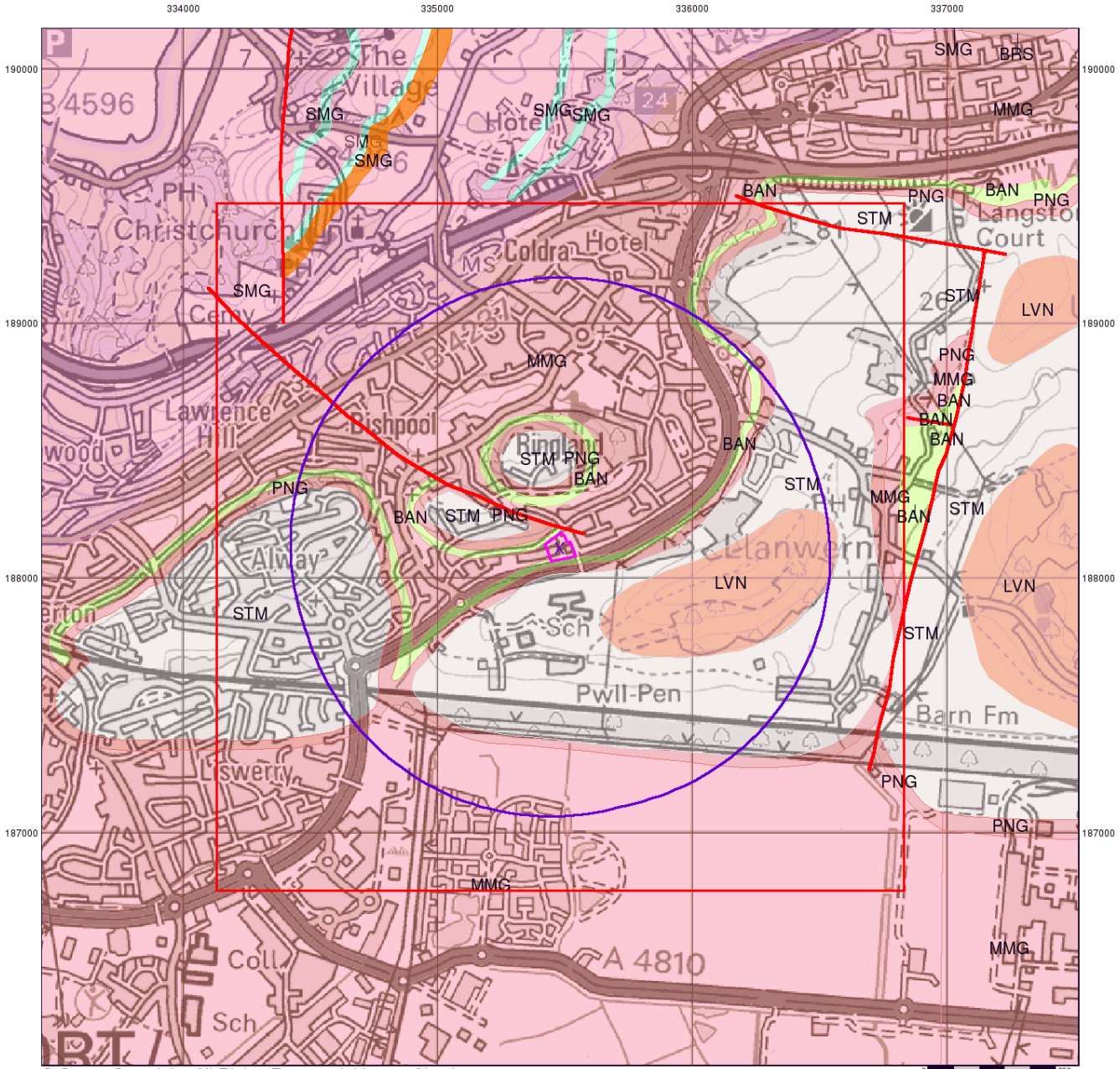


Intégral
Géotechnique

Bedrock and Faults

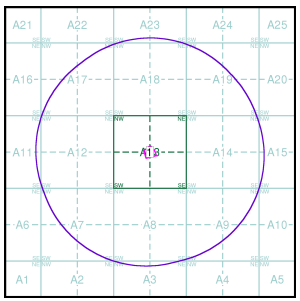
Bedrock geology is a term used for the main mass of rocks forming the Earth and are present everywhere, whether exposed at the surface in outcrops or concealed beneath superficial deposits or water.

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



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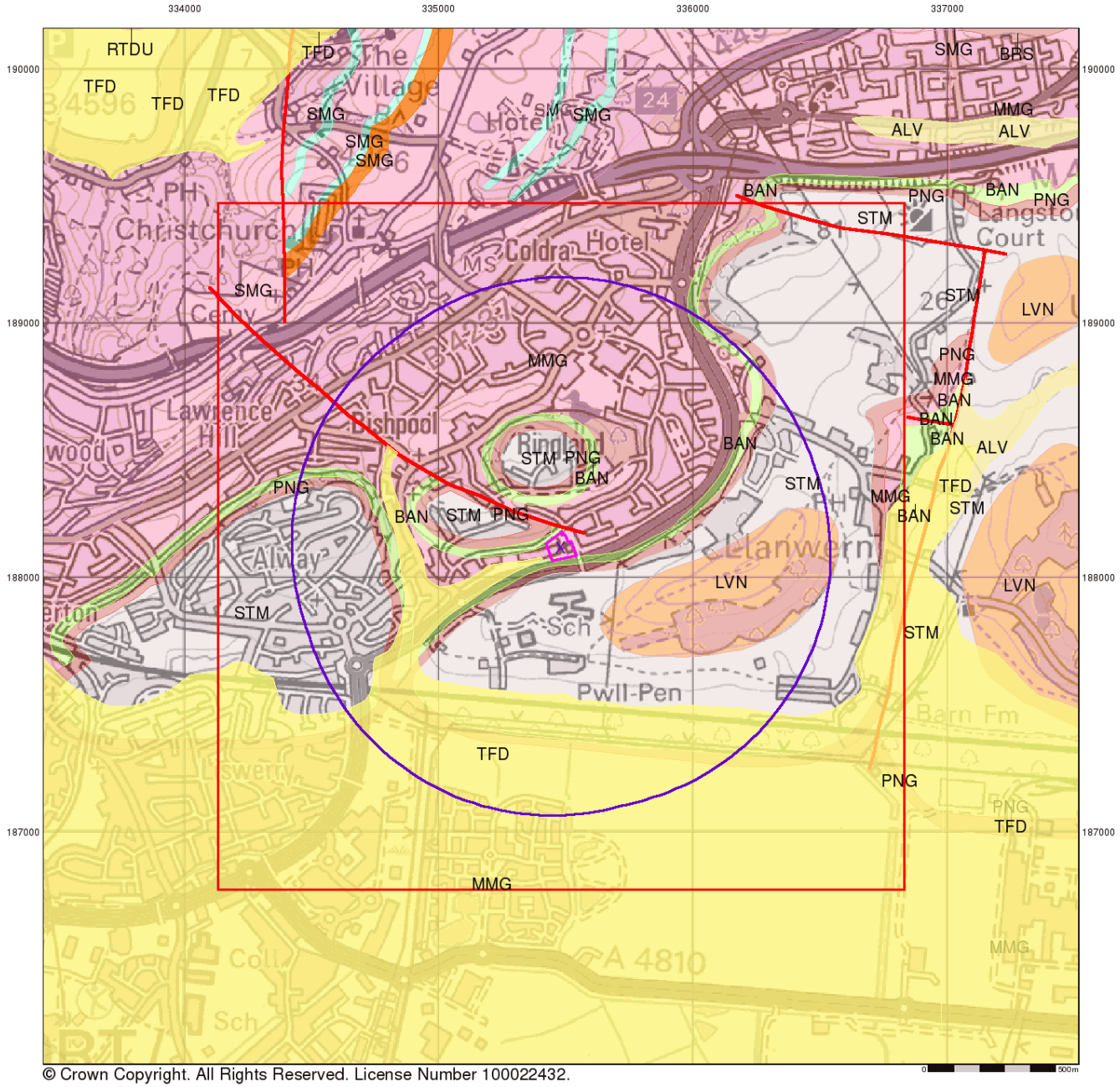
Web: www.envirocheck.co.uk



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.

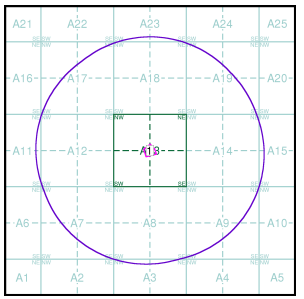
Additional Information

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



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Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details:

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Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

Chalk Pit, Clay Pit or Quarry
Gravel Pit
Sand Pit
Disused Pit or Quarry
Refuse or Slag Heap
Lake, Loch or Pond
Dunes
Boulders
Coniferous Trees
Non-Coniferous Trees
Orchard
Scrub
Coppice
Bracken
Heath
Rough Grassland
Marsh
Reeds
Saltings
Building
Direction of Flow of Water
Shingle
Sand
Glasshouse
Pylon
Pylon
Electricity Transmission Line
Sloping Masonry
Cutting
Embankment
Standard Gauge Multiple Track
Road Under
Road Over
Level Crossing
Foot Bridge
Standard Gauge Single Track
Siding, Tramway or Mineral Line
Narrow Gauge
Geographical County
Administrative County, County Borough or County of City
Municipal Borough, Urban or Rural District, Burgh or District Council
Borough, Burgh or County Constituency
Shown only when not coincident with other boundaries
Civil Parish
Shown alternately when coincidence of boundaries occurs

BP, BS	Boundary Post or Stone	Pol Sta	Police Station
Ch	Church	PO	Post Office
CH	Club House	PC	Public Convenience
F E Sta	Fire Engine Station	PH	Public House
FB	Foot Bridge	SB	Signal Box
Fn	Fountain	Spr	Spring
GP	Guide Post	TCB	Telephone Call Box
MP	Mile Post	TCP	Telephone Call Post
MS	Mile Stone	W	Well

1:10,000 Raster Mapping

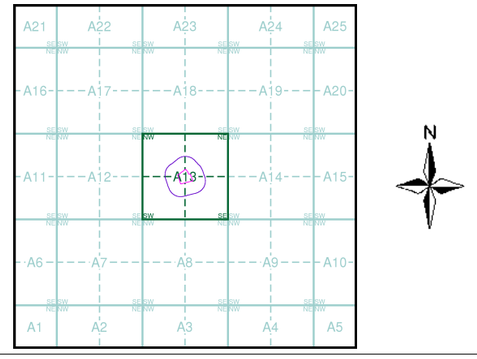
Gravel Pit
Refuse tip or slag heap
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Shingle
Mud
Sand
Sand Pit
Slopes
Top of cliff
General detail
Underground detail
Overhead detail
Narrow gauge railway
Multi-track railway
Single track railway
County boundary (England only)
Civil, parish or community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

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Monmouthshire	1:10,560	1886 - 1887	3
Monmouthshire	1:10,560	1902	4
Monmouthshire	1:10,560	1922	5
Monmouthshire	1:10,560	1938	6
Historical Aerial Photography	1:10,560	1947	7
Historical Aerial Photography	1:10,560	1947	8
Monmouthshire	1:10,560	1954	9
Ordnance Survey Plan	1:10,000	1965	10
Ordnance Survey Plan	1:10,000	1973	11
Ordnance Survey Plan	1:10,000	1981 - 1989	12
Newport	1:10,000	1983	13
Ordnance Survey Plan	1:10,000	1987	14
10K Raster Mapping	1:10,000	1999	15
10K Raster Mapping	1:10,000	2006	16
VectorMap Local	1:10,000	2022	17

Historical Map - Slice A



Order Details

Order Number: 305828042_1_1
Customer Ref: 14144/LS
National Grid Reference: 335480, 188120
Slice: A
Site Area (Ha): 0.82
Search Buffer (m): 1000

Site Details

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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
- 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

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
- Main Highway
- Highway under Construction
- Improved Dirt Road (former truck road)
- Double-track Railroad with First Class Station
- Dismantled Railroad
- Railroad Under Construction
- Shore Embankment
- River or Ditch with Embankment
- Direction and velocity of current
- 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

ST38NE_Newport

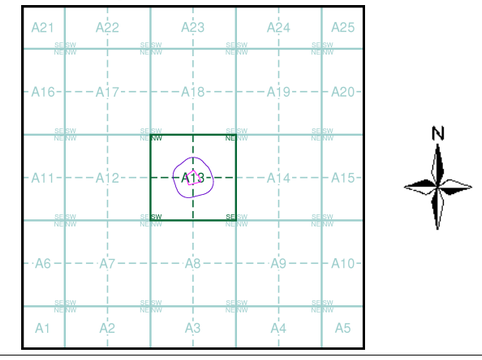
No.	Description
48	Post Office

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Monmouthshire	1:10,560	1886 - 1887	3
Monmouthshire	1:10,560	1902	4
Monmouthshire	1:10,560	1922	5
Monmouthshire	1:10,560	1938	6
Historical Aerial Photography	1:10,560	1947	7
Historical Aerial Photography	1:10,560	1947	8
Monmouthshire	1:10,560	1954	9
Ordnance Survey Plan	1:10,000	1965	10
Ordnance Survey Plan	1:10,000	1973	11
Ordnance Survey Plan	1:10,000	1981 - 1989	12
Newport	1:10,000	1983	13
Ordnance Survey Plan	1:10,000	1987	14
10K Raster Mapping	1:10,000	1999	15
10K Raster Mapping	1:10,000	2006	16
VectorMap Local	1:10,000	2022	17

Russian Map - Slice A



Order Details

Order Number: 305828042_1_1
Customer Ref: 14144/LS
National Grid Reference: 335480, 188120
Slice: A
Site Area (Ha): 0.82
Search Buffer (m): 1000

Site Details

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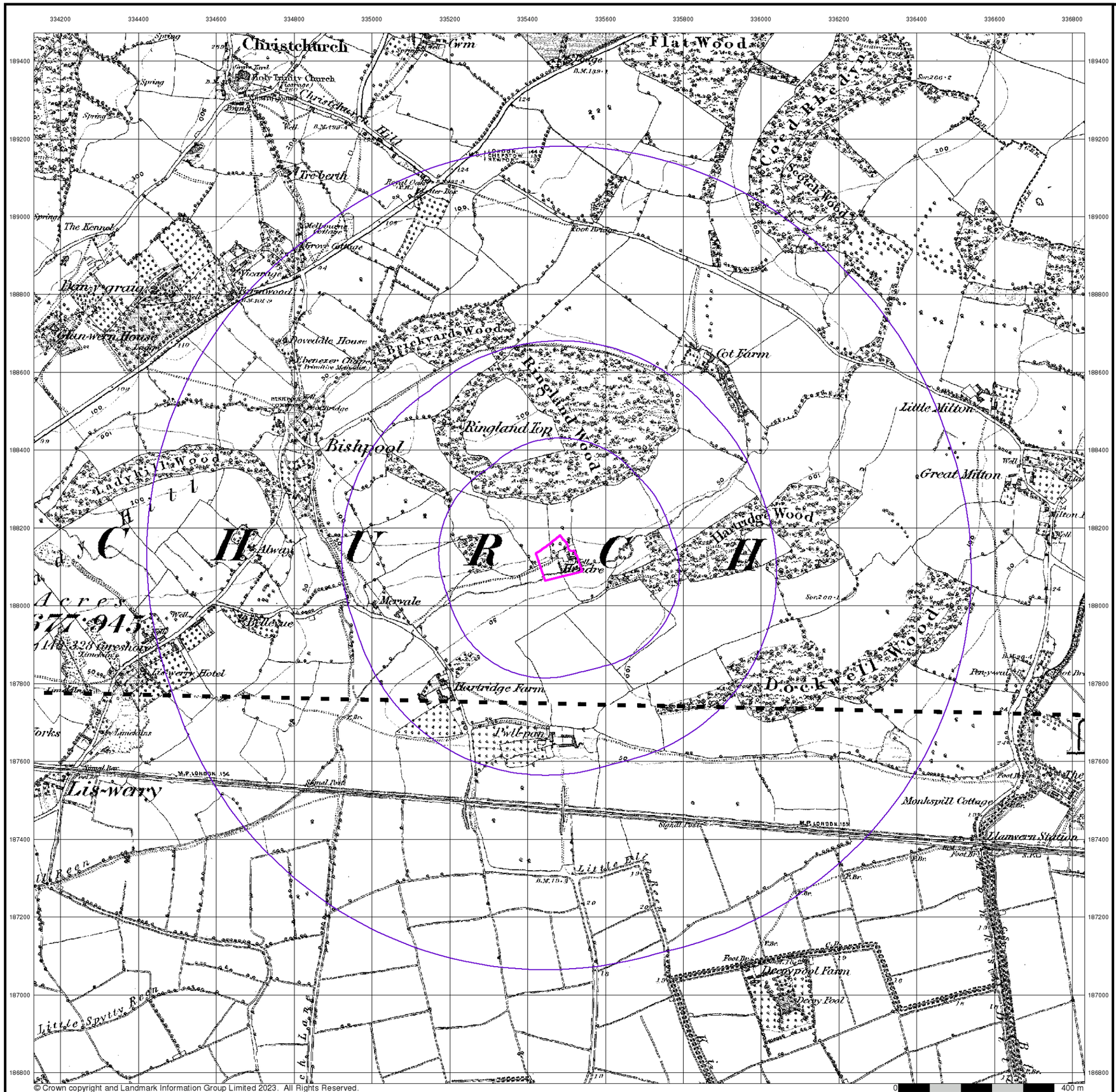


Intégral Géotechnique

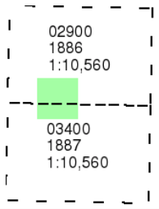
Monmouthshire

Published 1886 - 1887

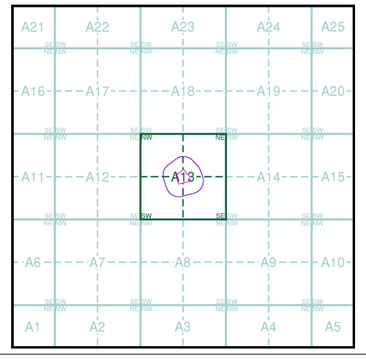
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number:	305828042_1_1
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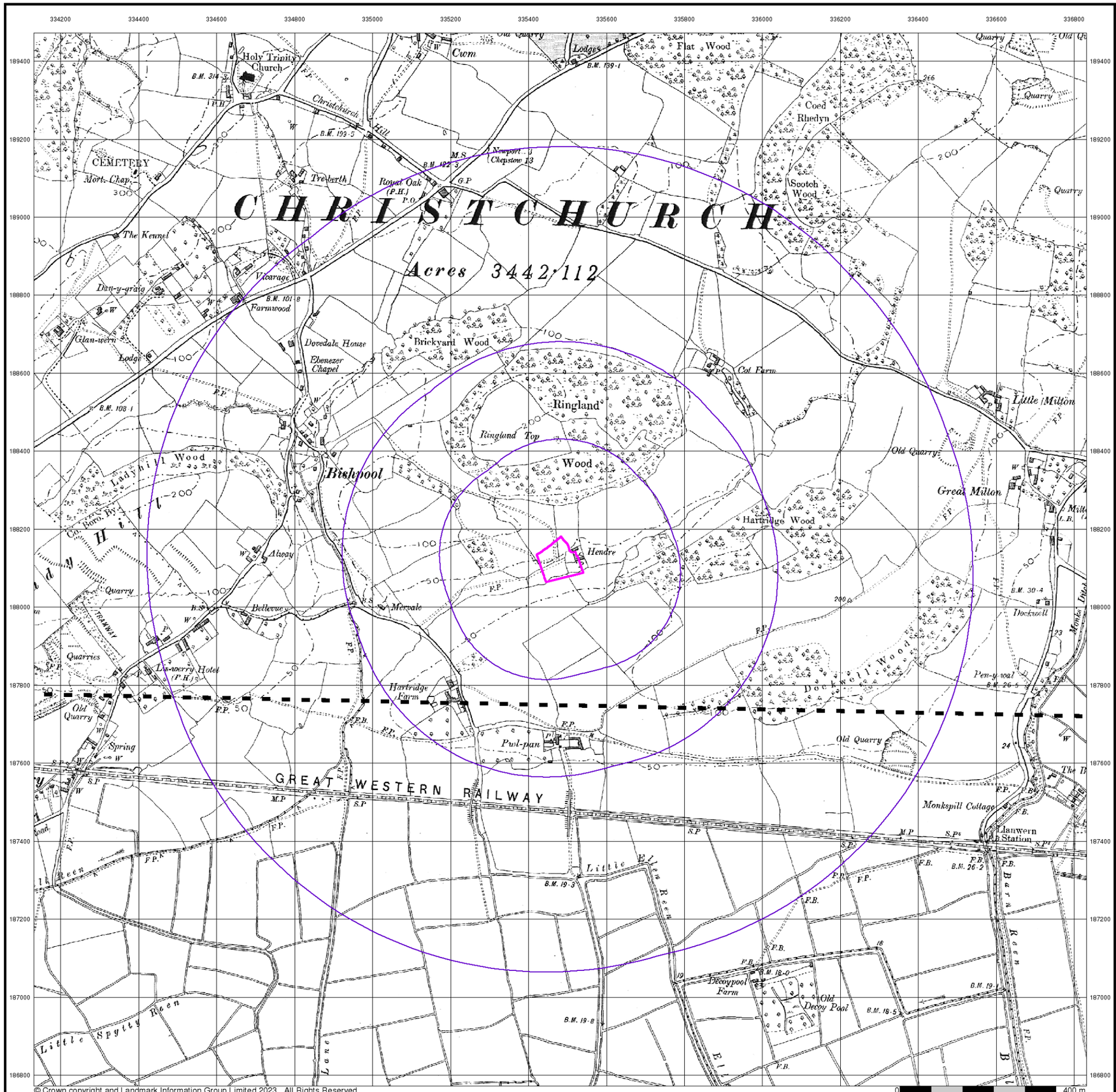


Intégral Géotechnique

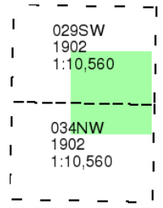
Monmouthshire

Published 1902

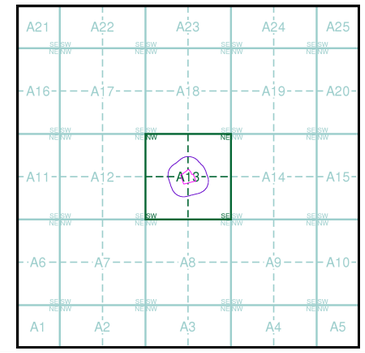
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



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National Grid Reference:	335480, 188120
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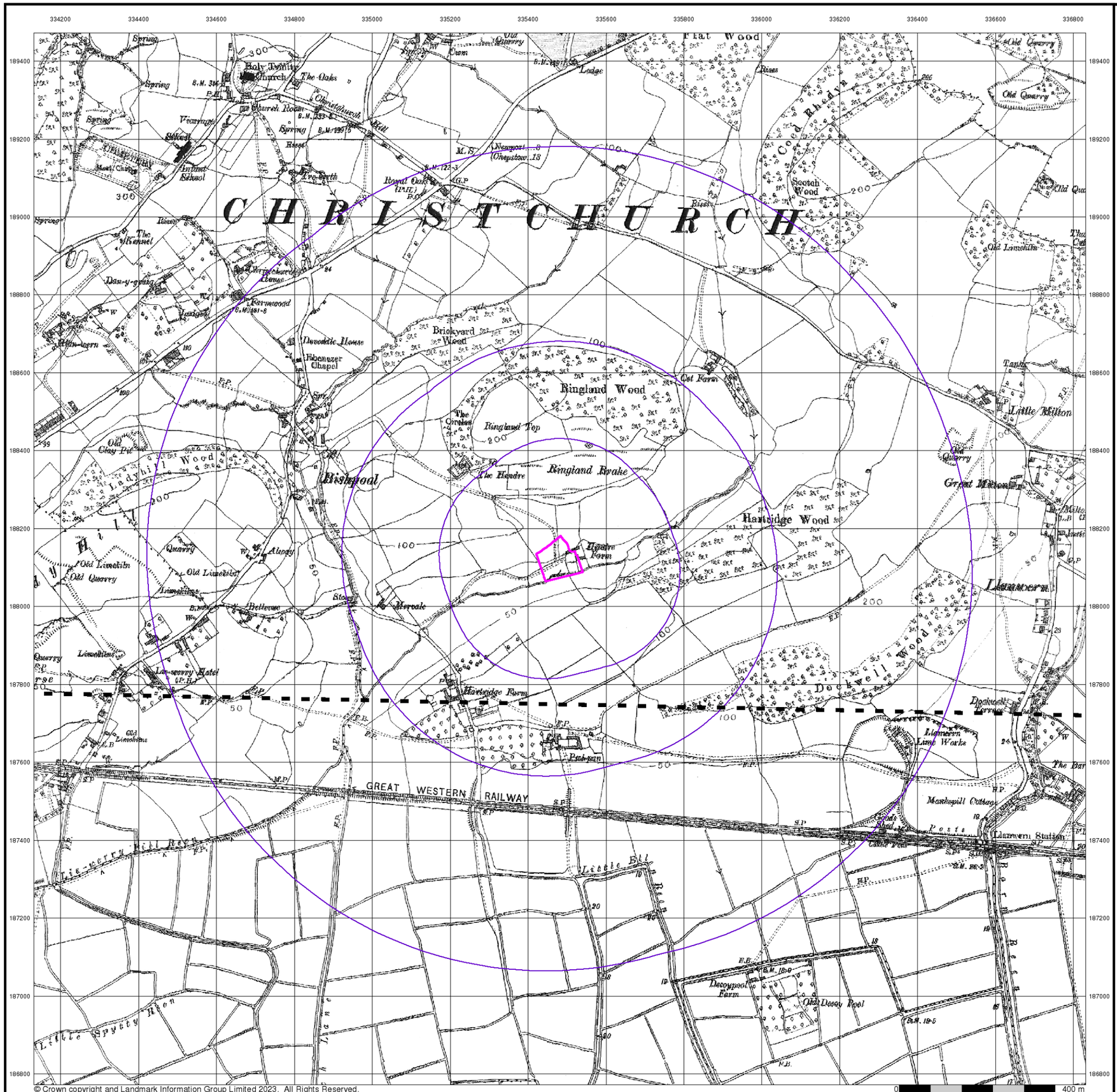

Intégral
Géotechnique

Monmouthshire

Published 1922

Source map scale - 1:10,560

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Map Name(s) and Date(s)

Historical Map - Slice A

Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
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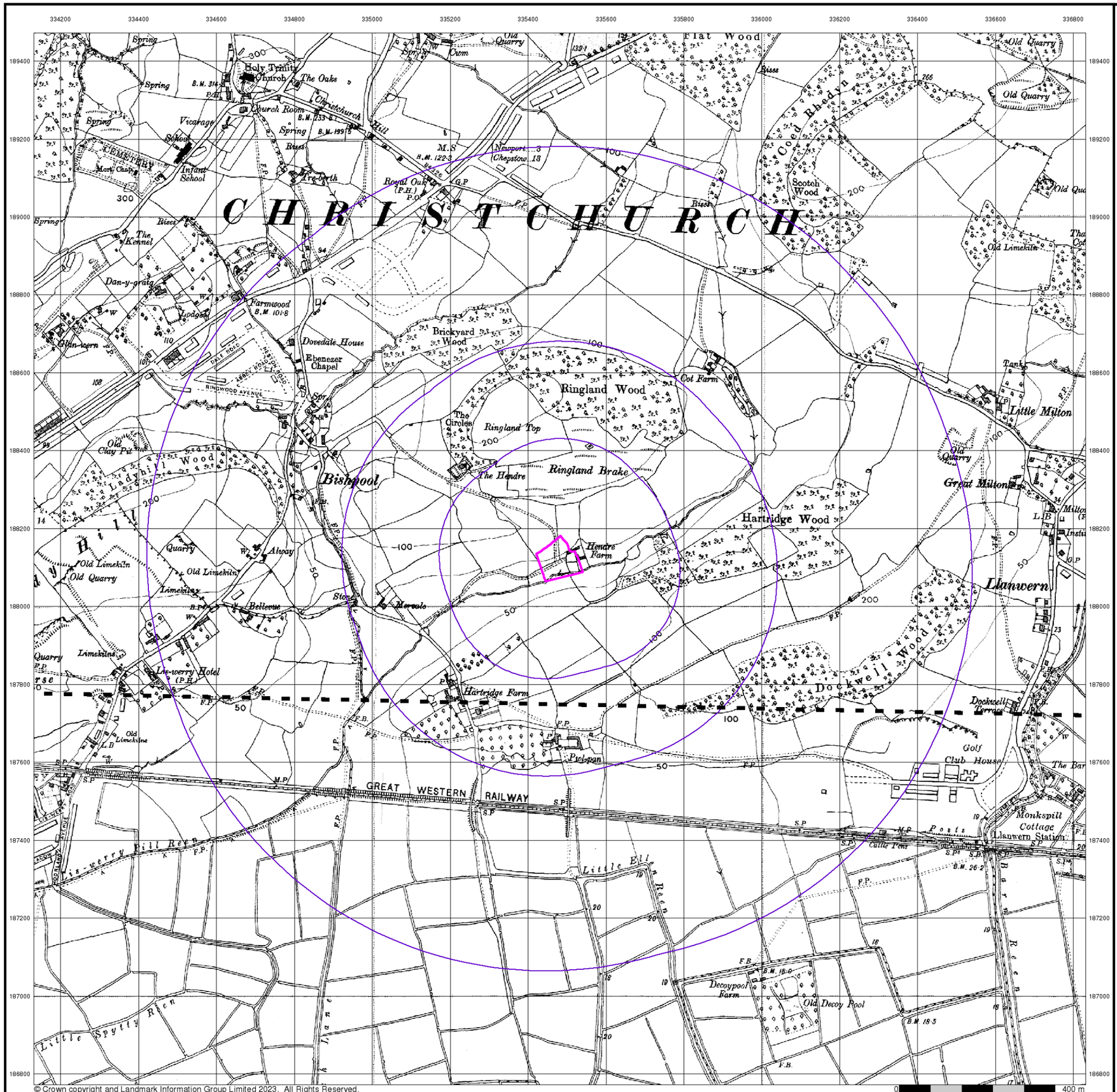


Intégral Géotechnique

Monmouthshire

Published 1938

Source map scale - 1:10,560

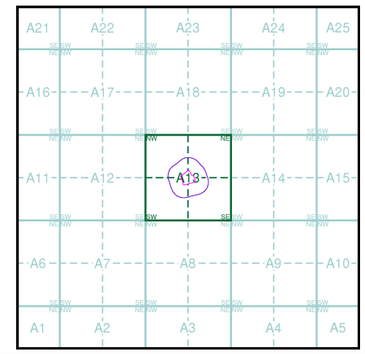
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some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

029SW
1938
1:10,560

034NW
1938
1:10,560

Historical Map - Slice A



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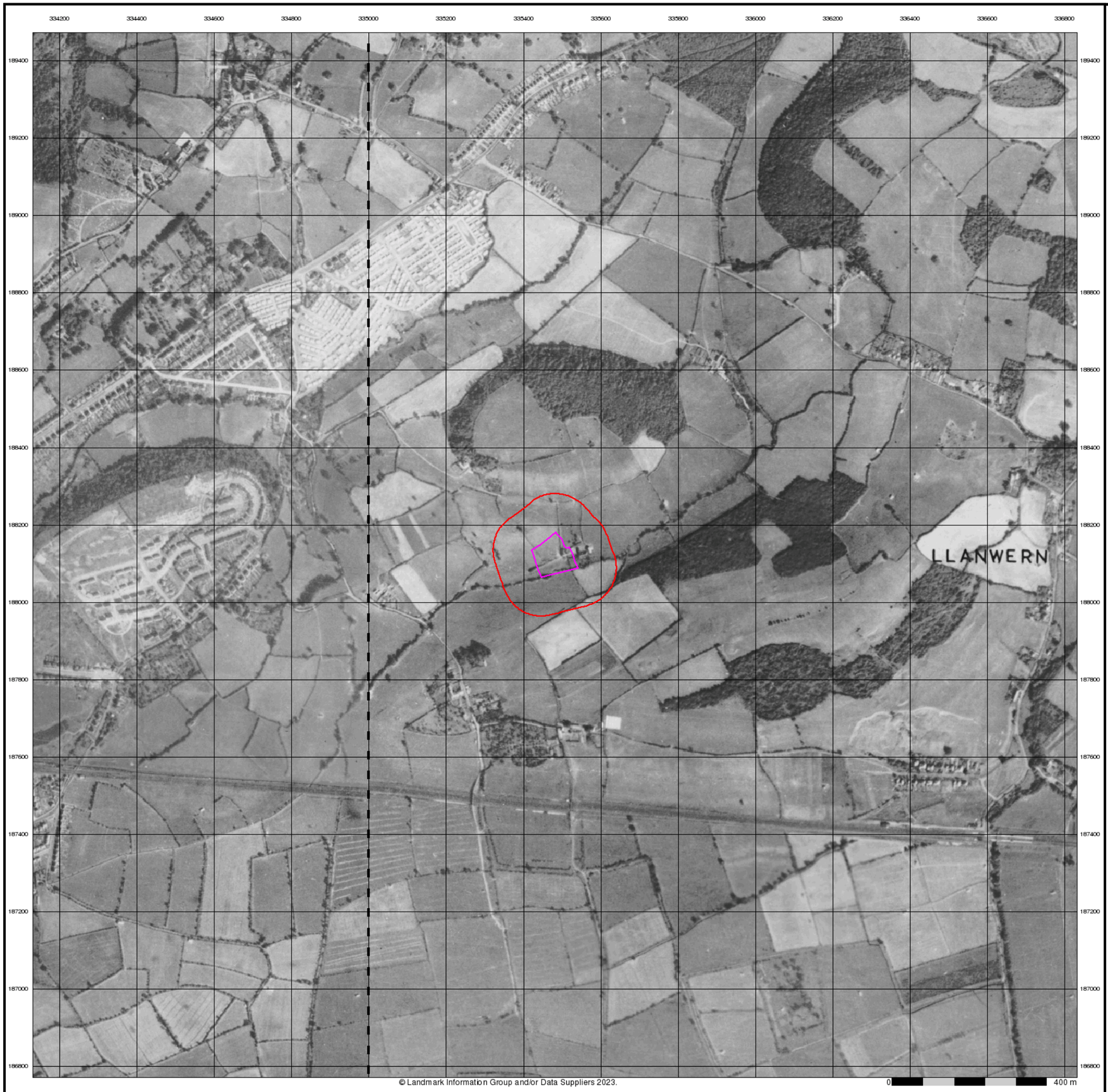


0 400 m

Intégral Géotechnique

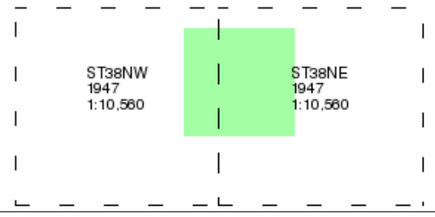
Historical Aerial Photography

Published 1947

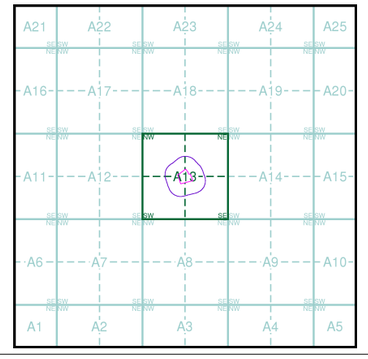
Source map scale - 1:10,560

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.

Map Name(s) and Date(s)



Historical Aerial Photography - Slice A



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Slice:	A
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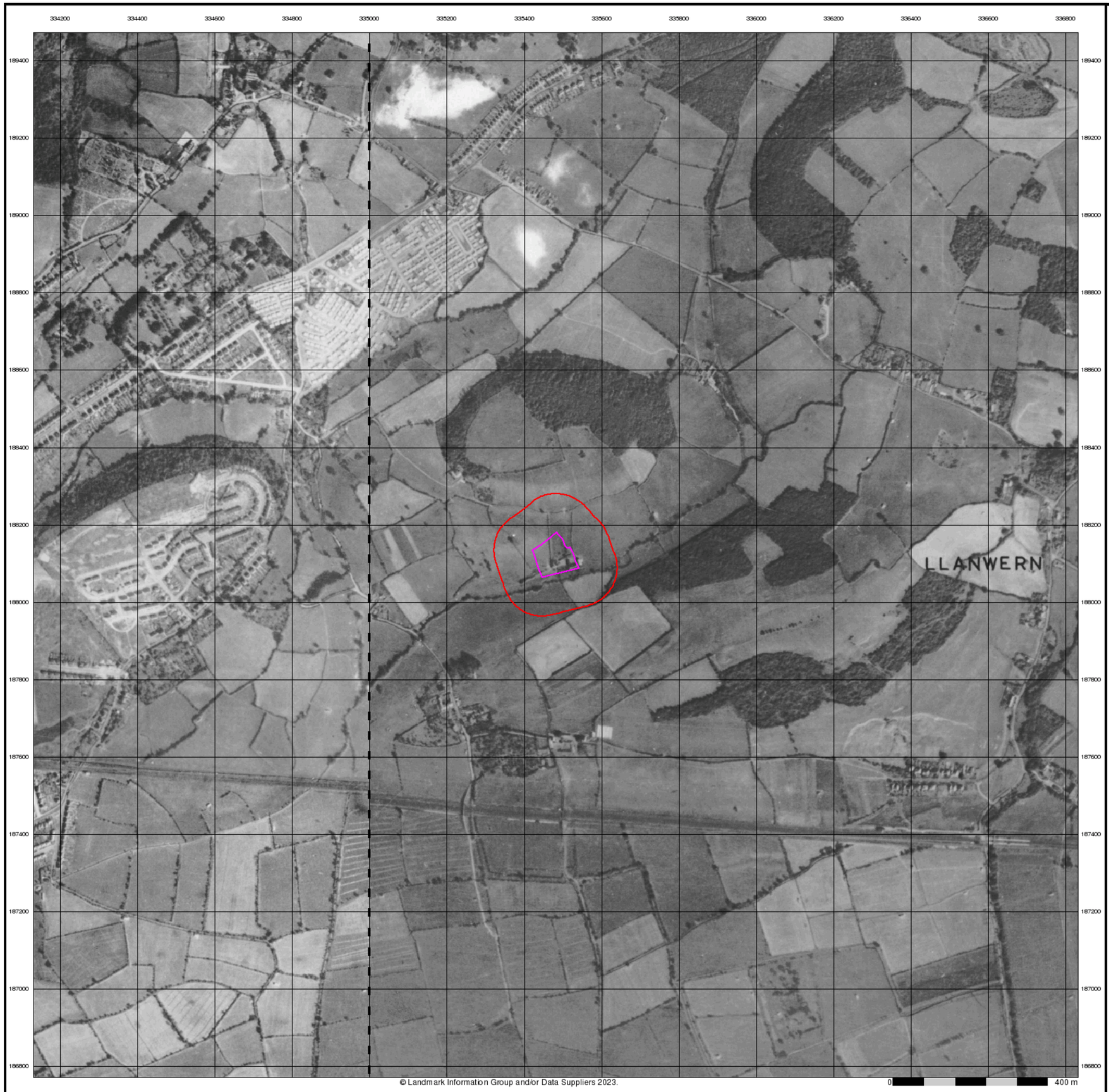

Intégral Géotechnique

Historical Aerial Photography

Published 1947

Source map scale - 1:10,560

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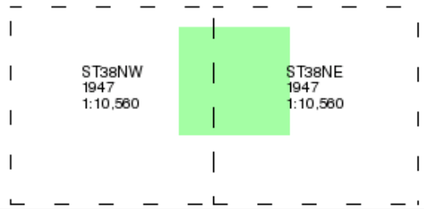
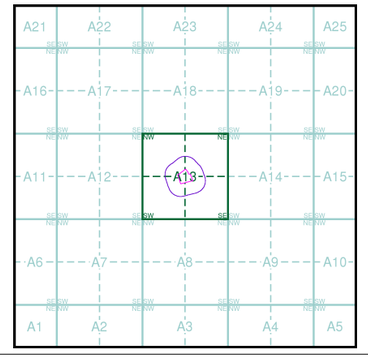


Historical Aerial Photography - Slice A



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Order Details

Order Number:	305828042_1_1
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National Grid Reference:	335480, 188120
Slice:	A
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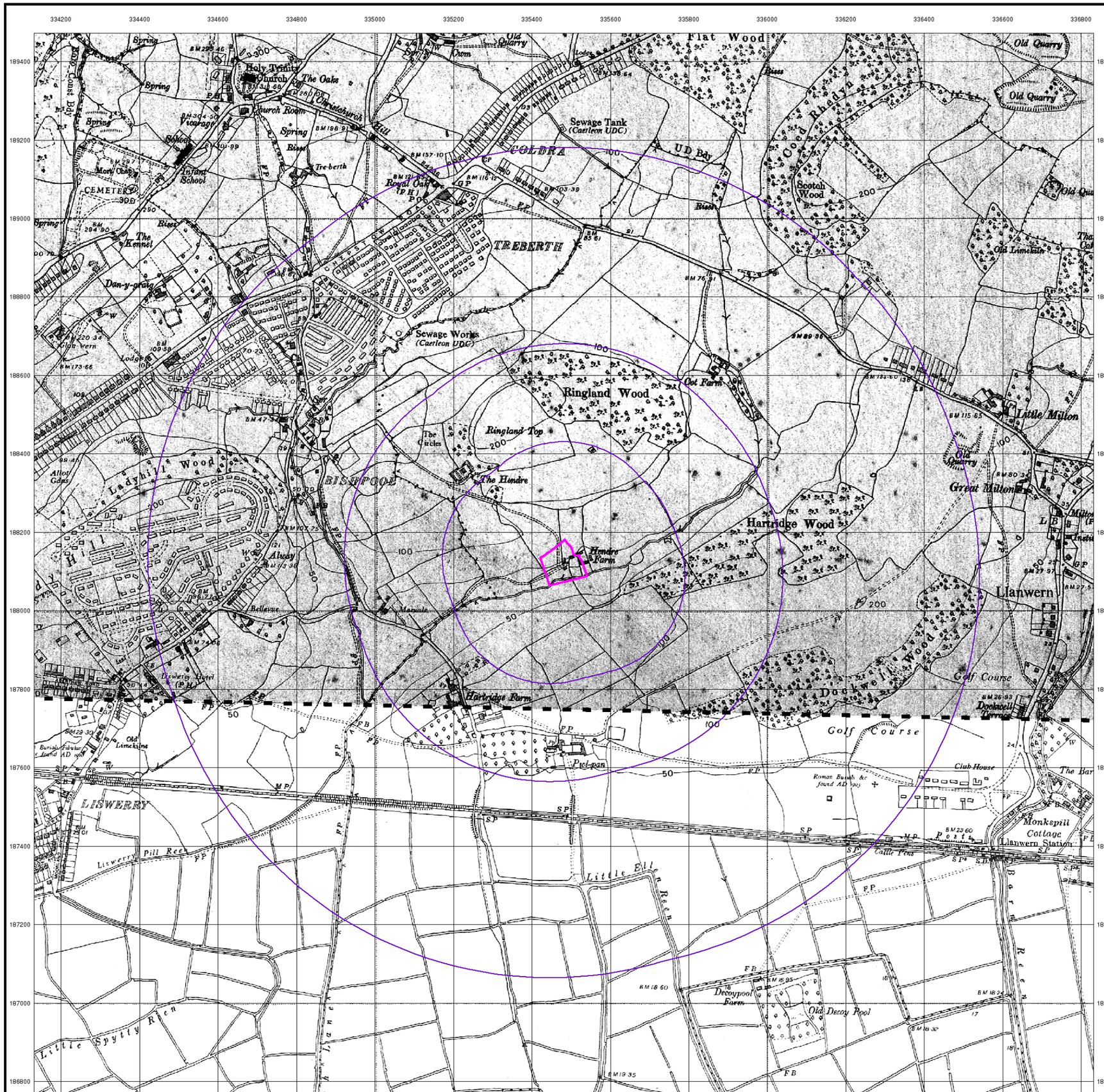


Intégral Géotechnique

Monmouthshire

Published 1954

Source map scale - 1:10,560

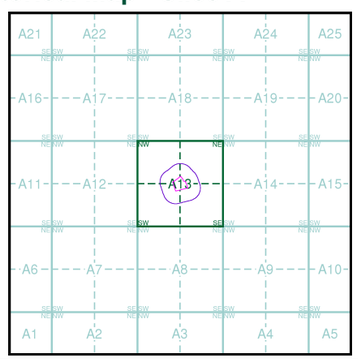
The historical maps shown were reproduced from maps predominantly held at the scale adopted for England, Wales and Scotland in the 1840`s. In 1854 the 1:2,500 scale was adopted for mapping urban areas; these maps were used to update the 1:10,560 maps. The published date given therefore is often some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

029SW
1954
1:10,560

034NW
1954
1:10,560

Historical Map - Slice A



Order Details

Order Number:	305828042_1_1
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Intégral Géotechnique

Ordnance Survey Plan

Published 1965

Source map scale - 1:10,000

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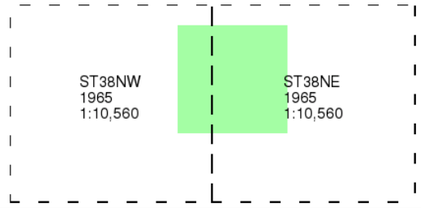
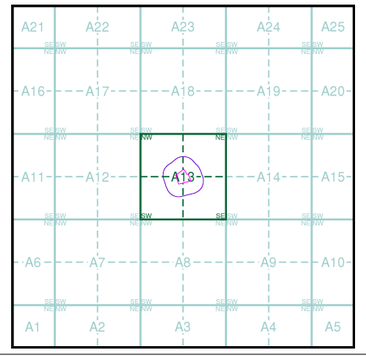


Historical Map - Slice A



Order Details

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Intégral Géotechnique

Ordnance Survey Plan

Published 1973

Source map scale - 1:10,000

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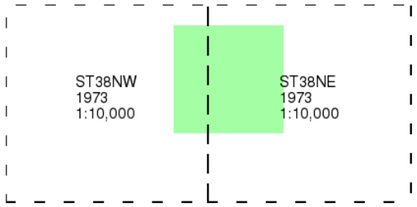
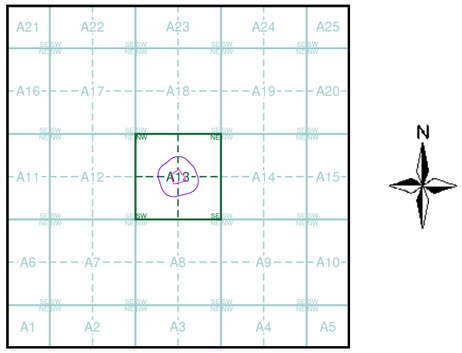
Map Name(s) and Date(s)



Historical Map - Slice A



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Intégral Géotechnique

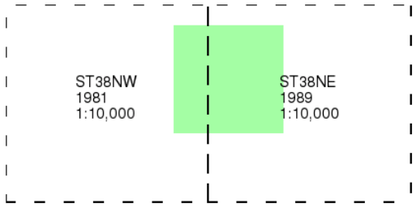
Ordnance Survey Plan

Published 1981 - 1989

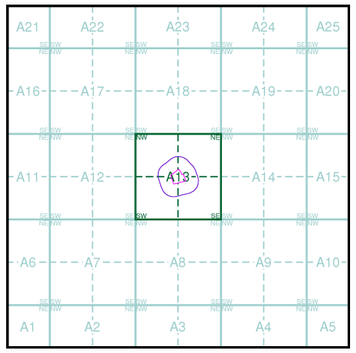
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



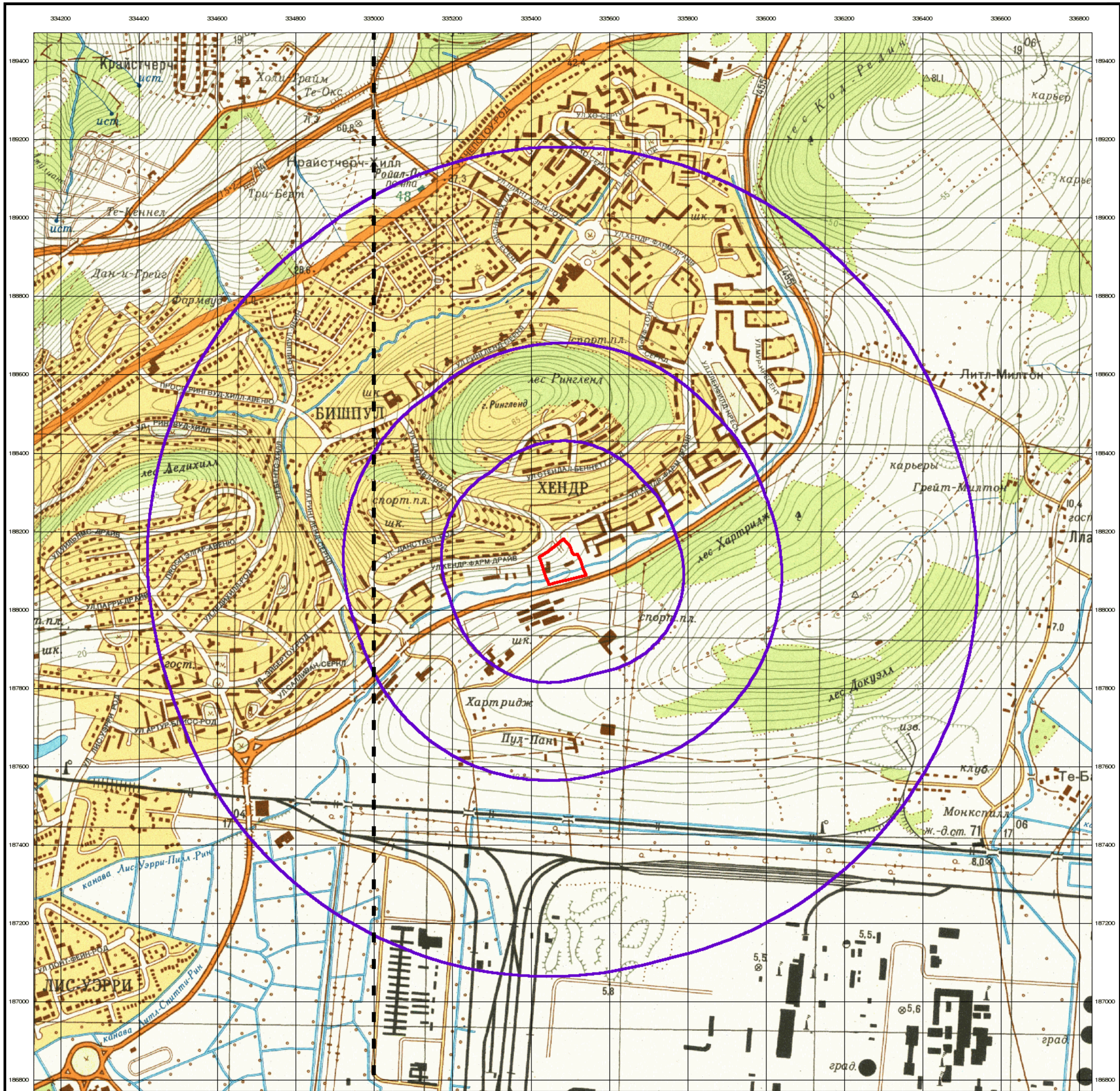
Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

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



0 400 m

Intégral Géotechnique

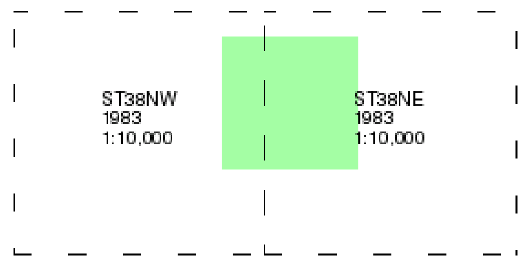
Newport

Published 1983

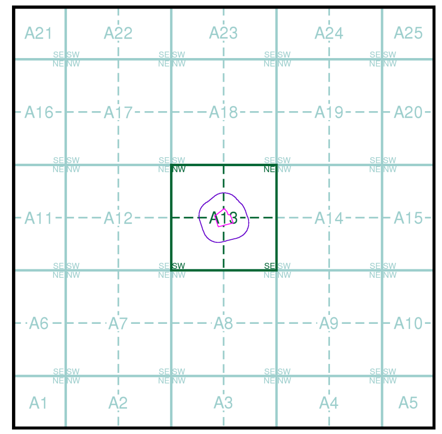
Source map scale - 1:10,000

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



N

Order Details

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Customer Ref: 14144/LS
National Grid Reference: 335480, 188120
Slice: A
Site Area (Ha): 0.82
Search Buffer (m): 1000

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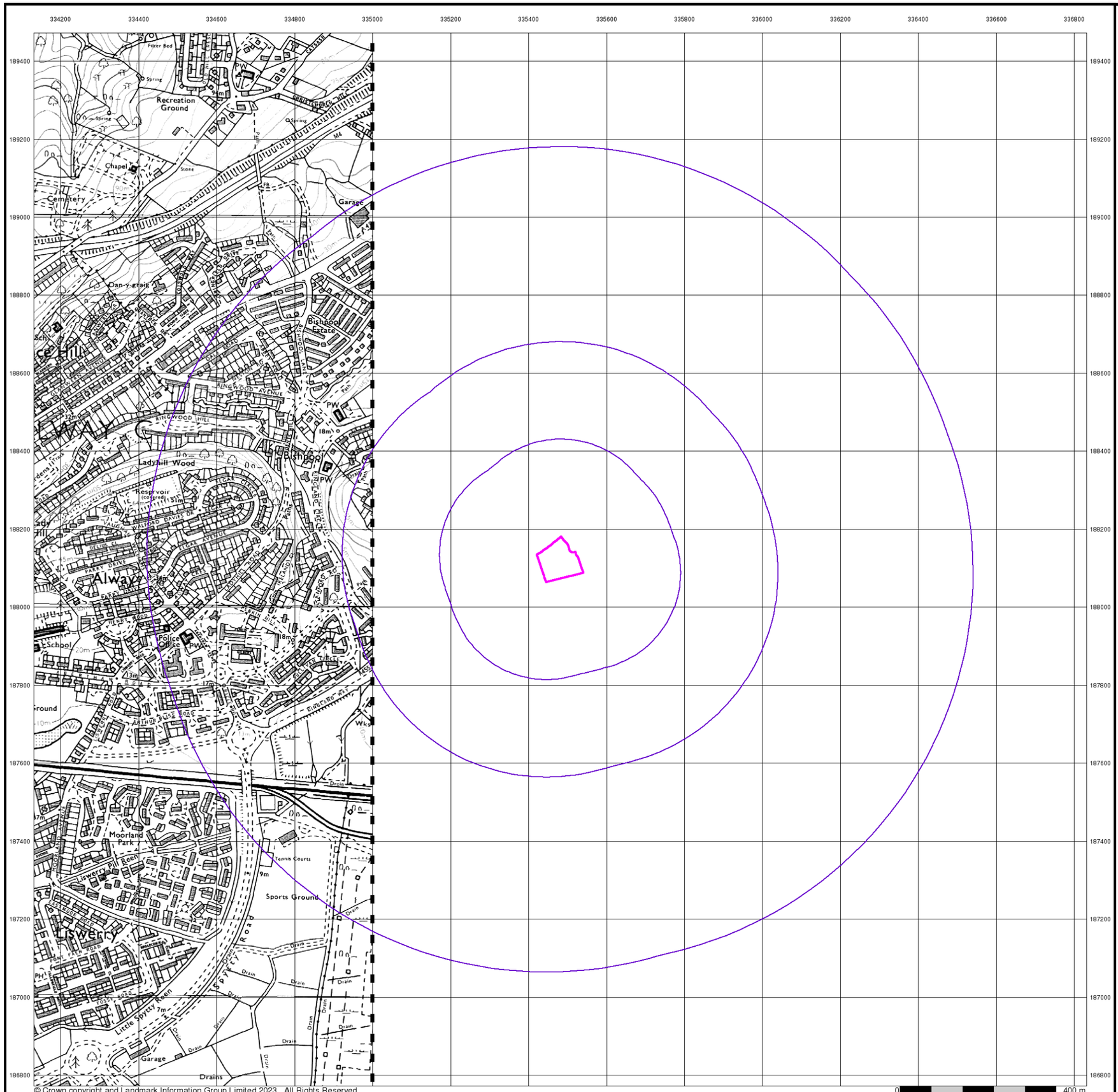

Intégral Géotechnique

Ordnance Survey Plan

Published 1987

Source map scale - 1:10,000

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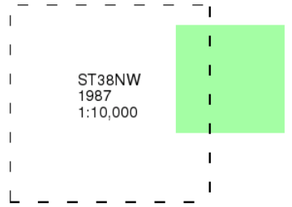
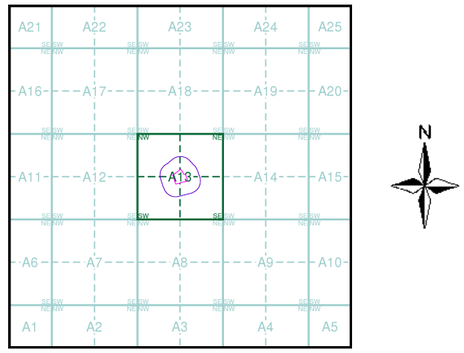


Historical Map - Slice A



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Intégral Géotechnique

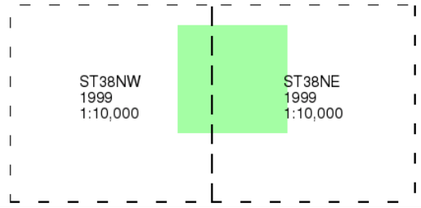
10k Raster Mapping

Published 1999

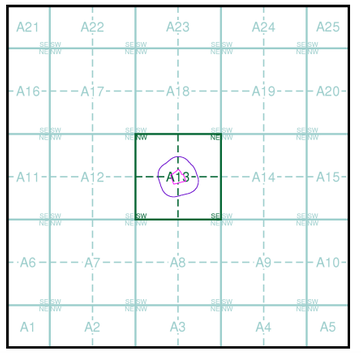
Source map scale - 1:10,000

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



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Intégral Géotechnique

10k Raster Mapping

Published 2006

Source map scale - 1:10,000

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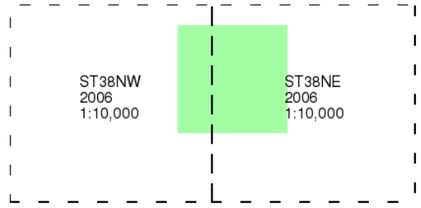
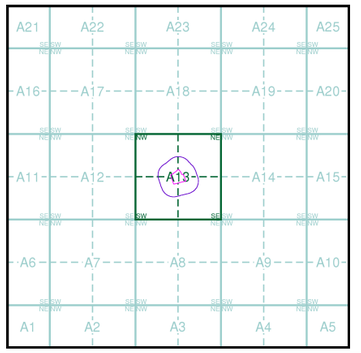
Map Name(s) and Date(s)



Historical Map - Slice A



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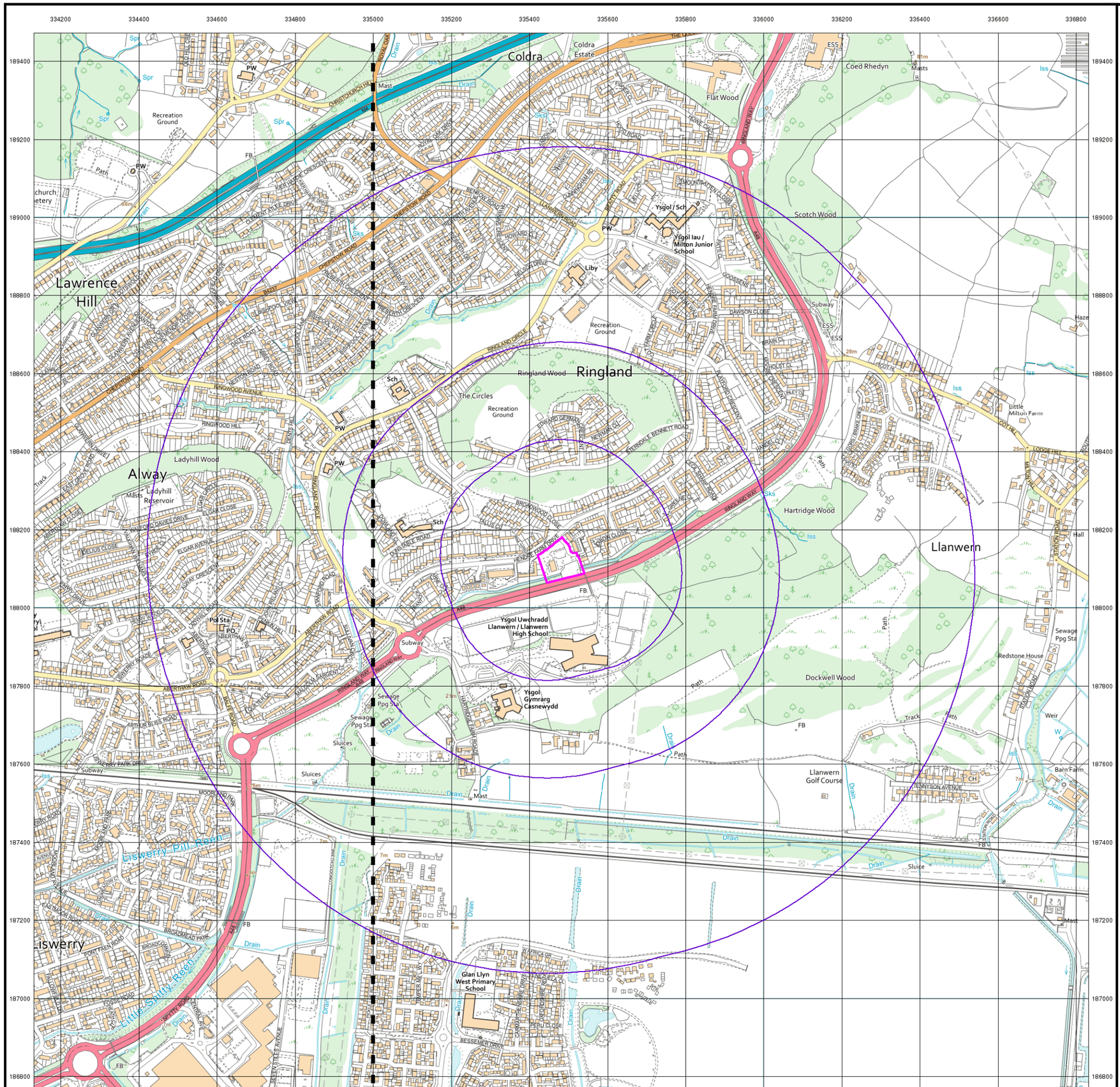


Intégral Géotechnique

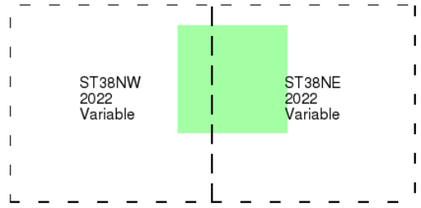
VectorMap Local

Published 2022

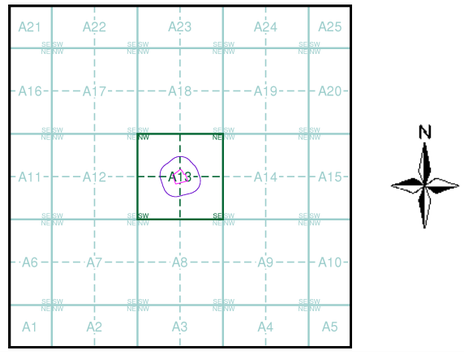
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



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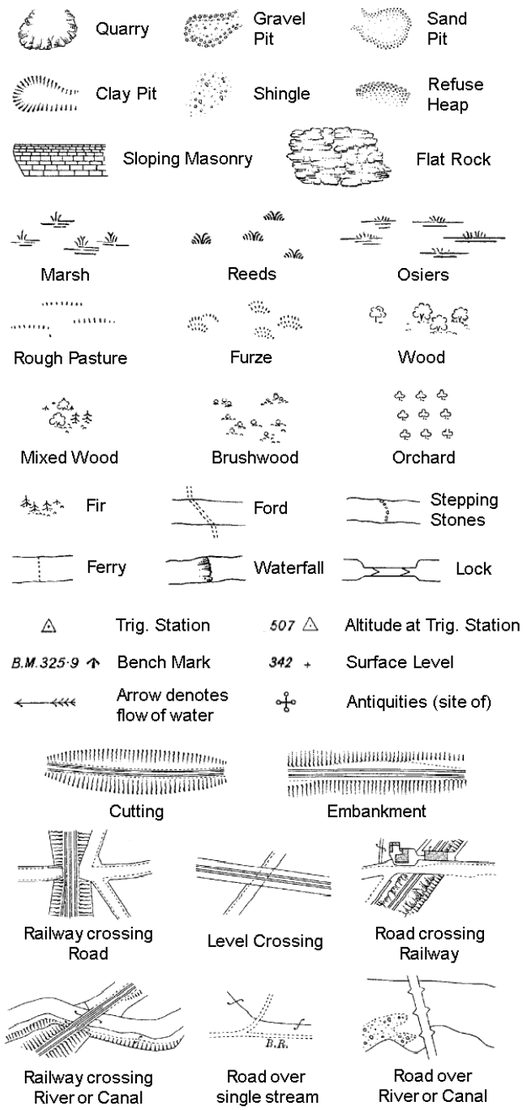
Historical Mapping Legends

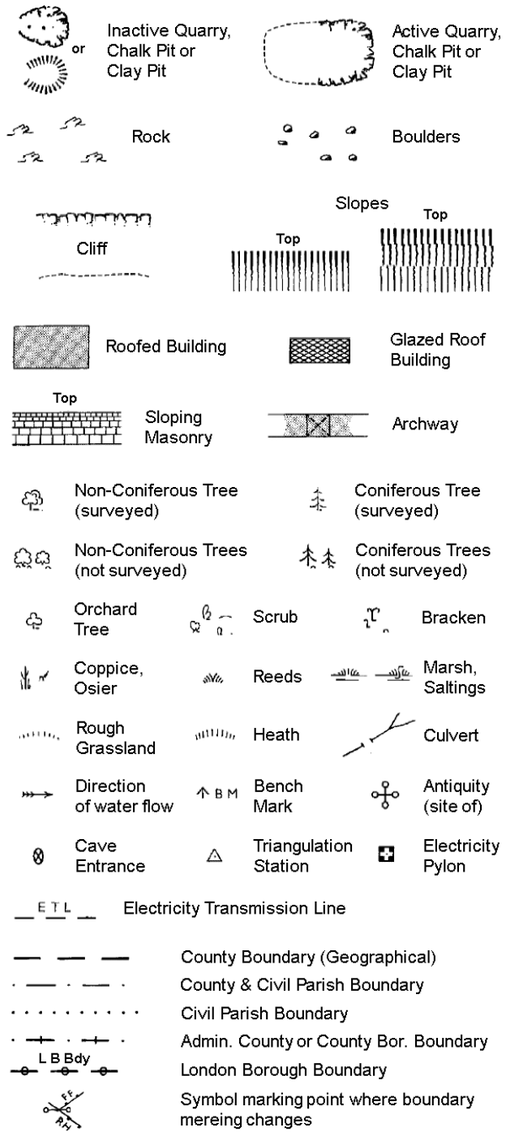
Ordnance Survey County Series and Ordnance Survey Plan 1:2,500



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

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

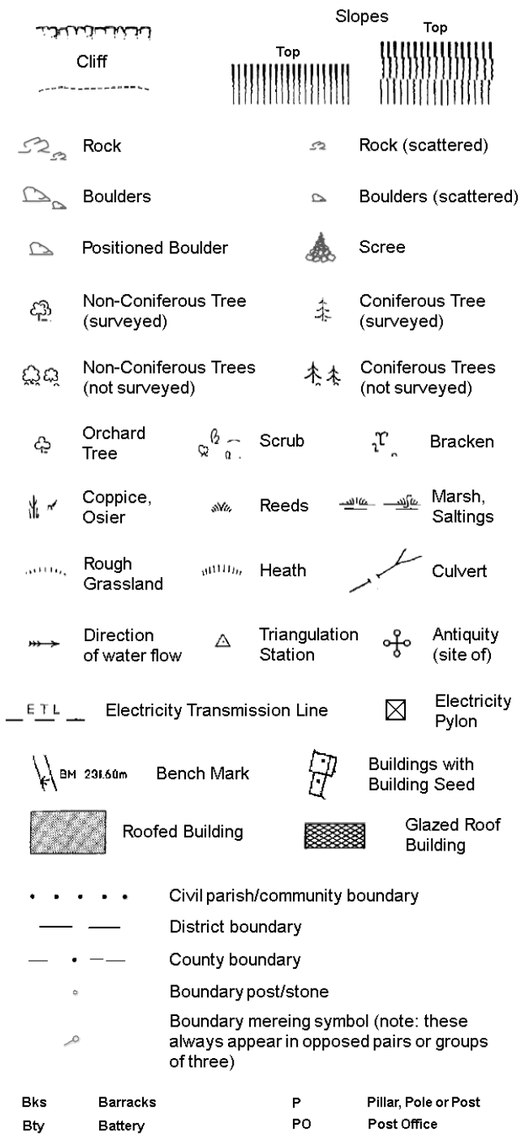
Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250



County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
L B Bdy London Borough Boundary
Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

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



Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

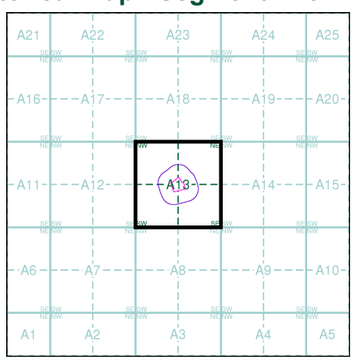
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

Intégral Géotechnique

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Monmouthshire	1:2,500	1883	2
Monmouthshire	1:2,500	1901	3
Monmouthshire	1:2,500	1920	4
Monmouthshire	1:2,500	1937	5
Ordnance Survey Plan	1:1,250	1964	6
Ordnance Survey Plan	1:2,500	1965 - 1968	7
Ordnance Survey Plan	1:2,500	1971	8
Ordnance Survey Plan	1:1,250	1973 - 1976	9
Supply of Unpublished Survey Information	1:1,250	1974	10
Supply of Unpublished Survey Information	1:1,250	1975	11
Additional SIMs	1:1,250	1987	12
Large-Scale National Grid Data	1:1,250	1992	13
Large-Scale National Grid Data	1:1,250	1994	14
Historical Aerial Photography	1:2,500	2000	15

Historical Map - Segment A13



Order Details

Order Number:	305828042_1_1
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Site Details

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Landmark INFORMATION GROUP
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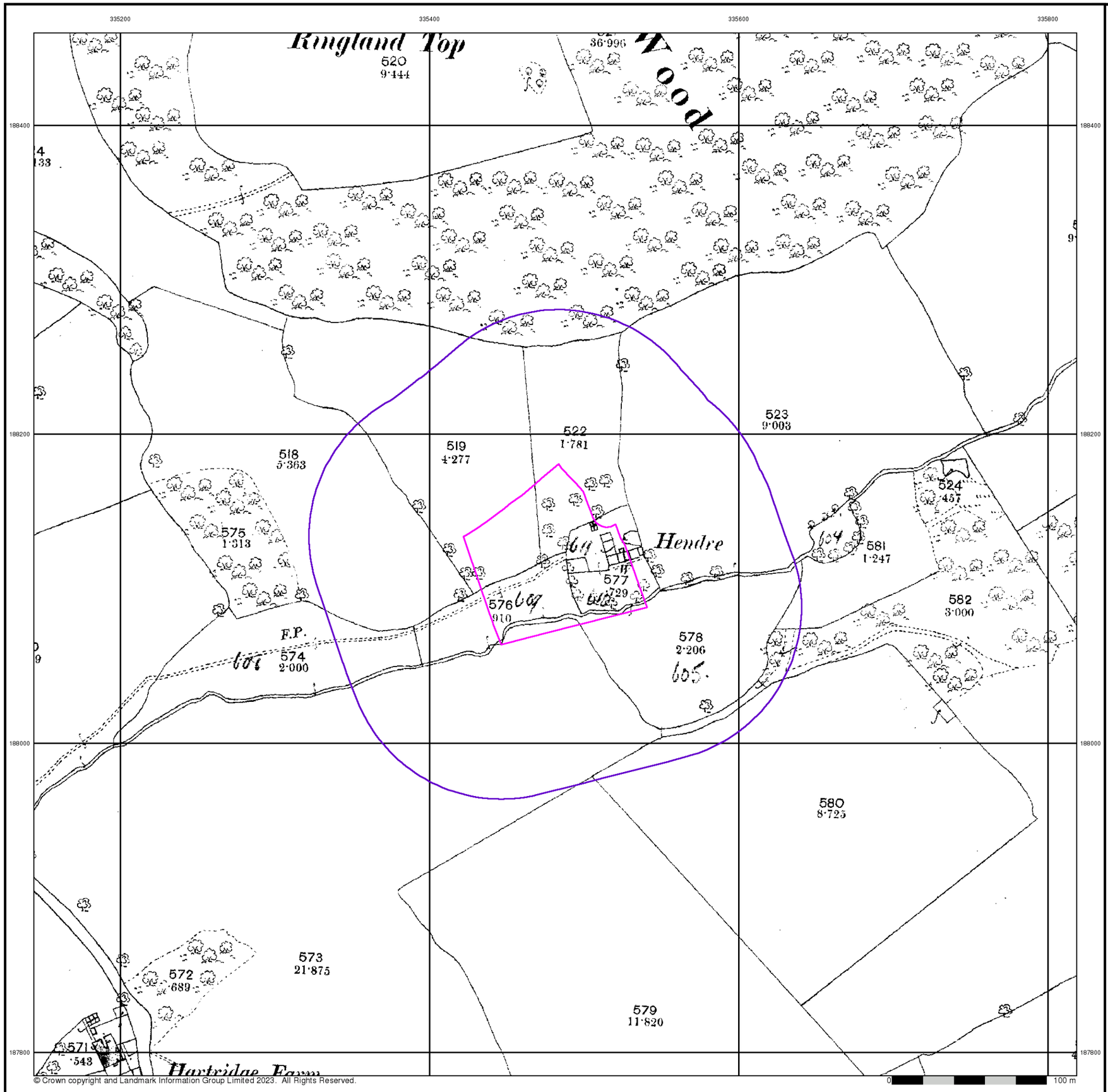


Intégral Géotechnique

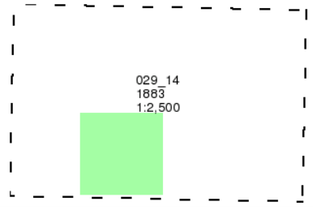
Monmouthshire

Published 1883

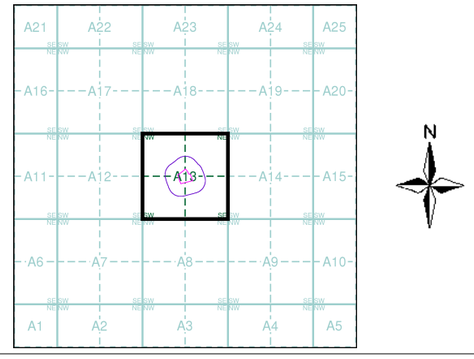
Source map scale - 1:2,500

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



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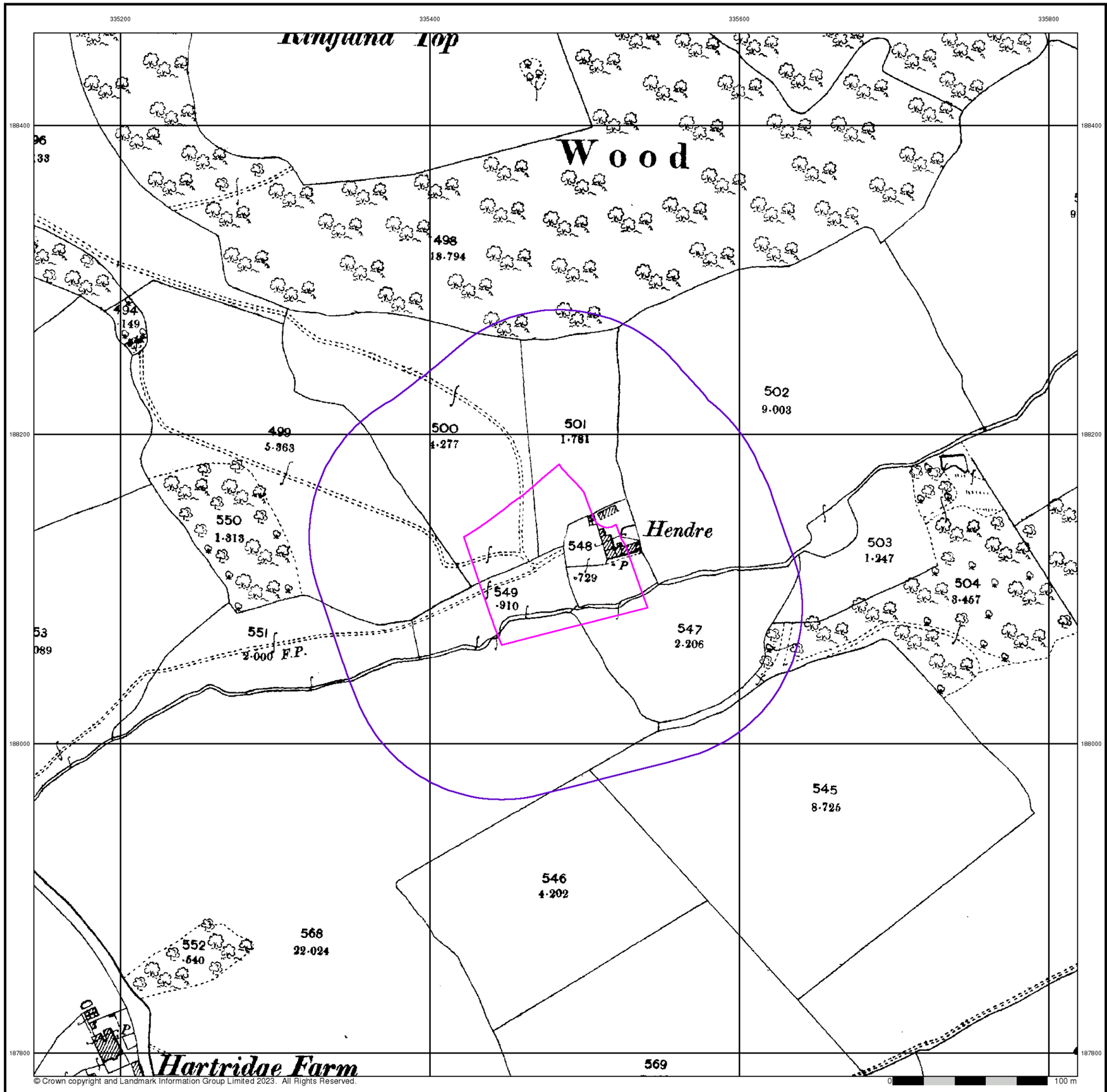

Intégral Géotechnique

Monmouthshire

Published 1901

Source map scale - 1:2,500

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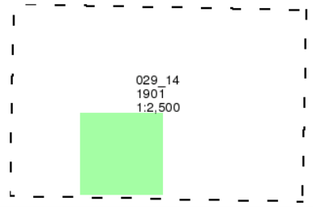
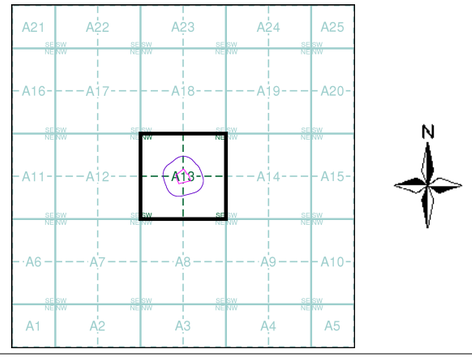


Historical Map - Segment A13



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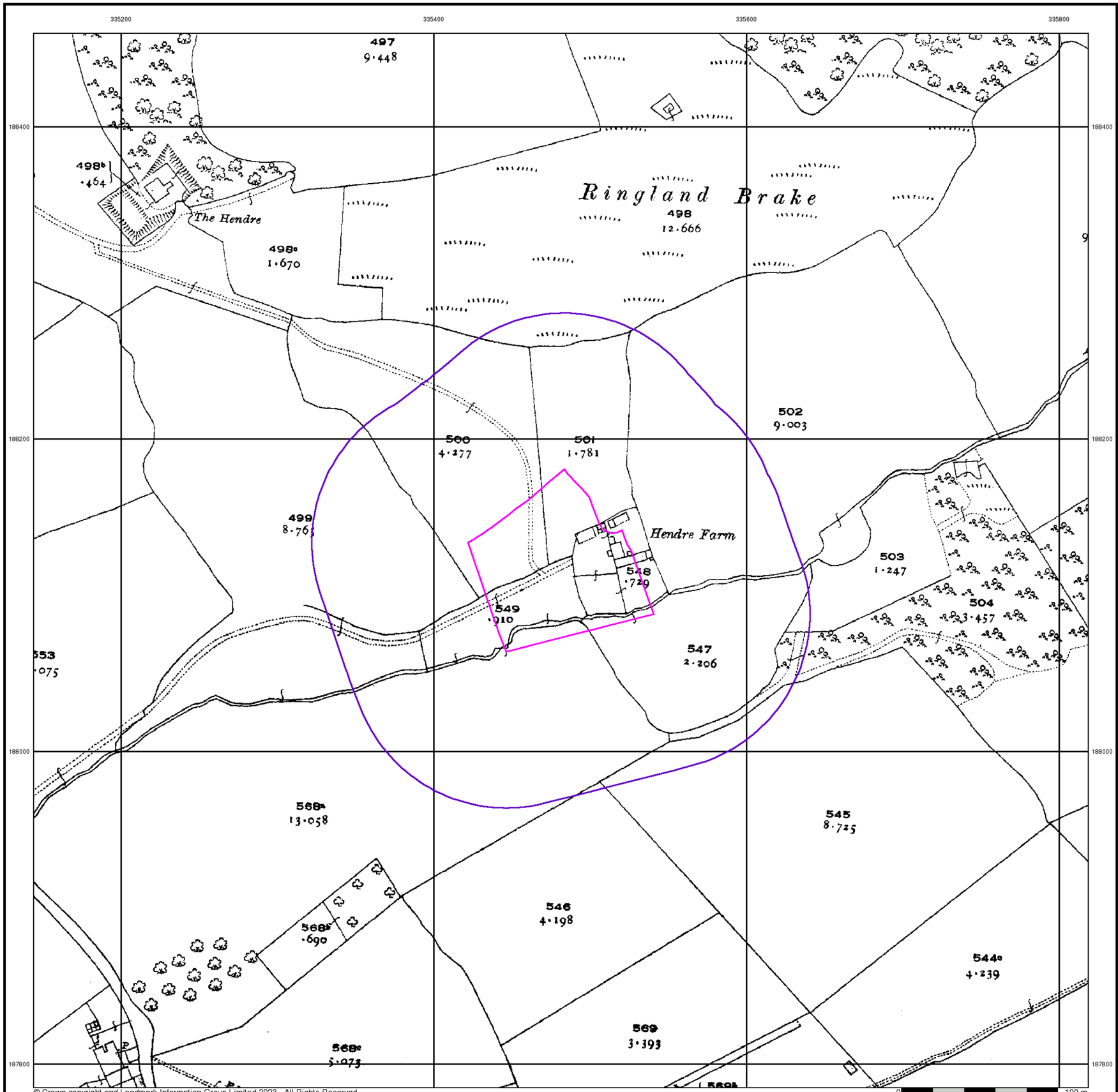

Intégral Géotechnique

Monmouthshire

Published 1920

Source map scale - 1:2,500

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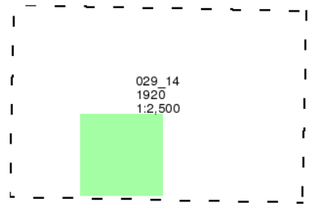
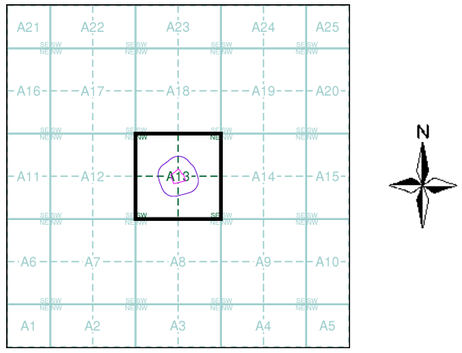


Historical Map - Segment A13



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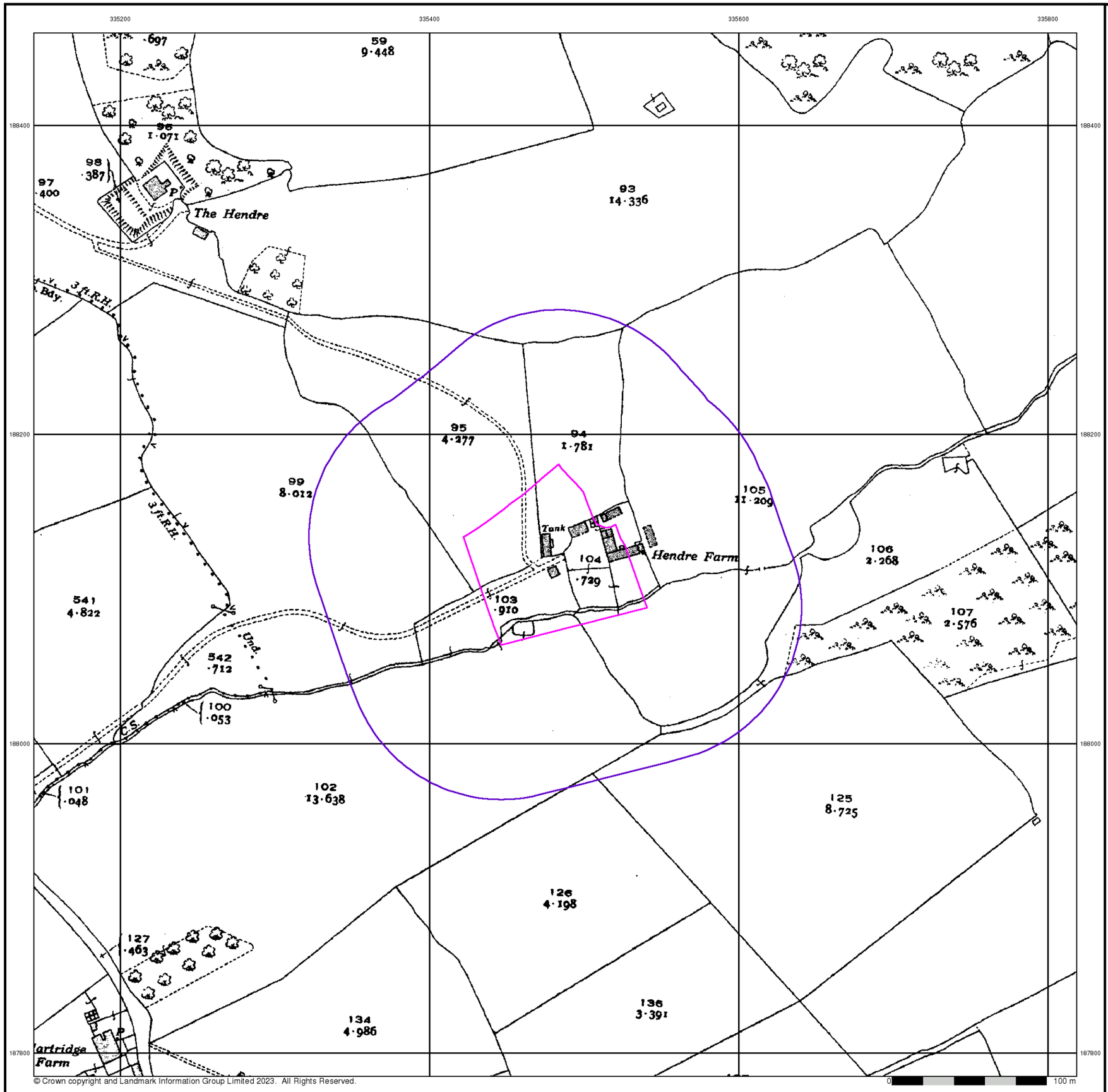

Intégral Géotechnique

Monmouthshire

Published 1937

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.

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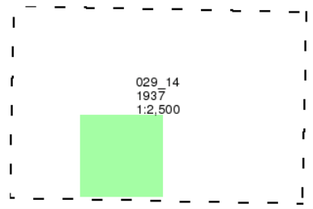
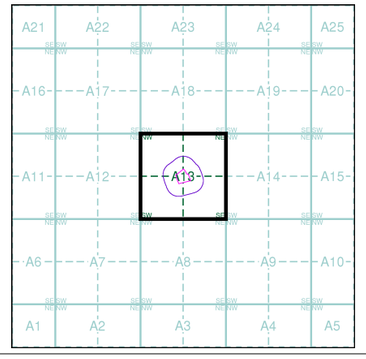


Historical Map - Segment A13



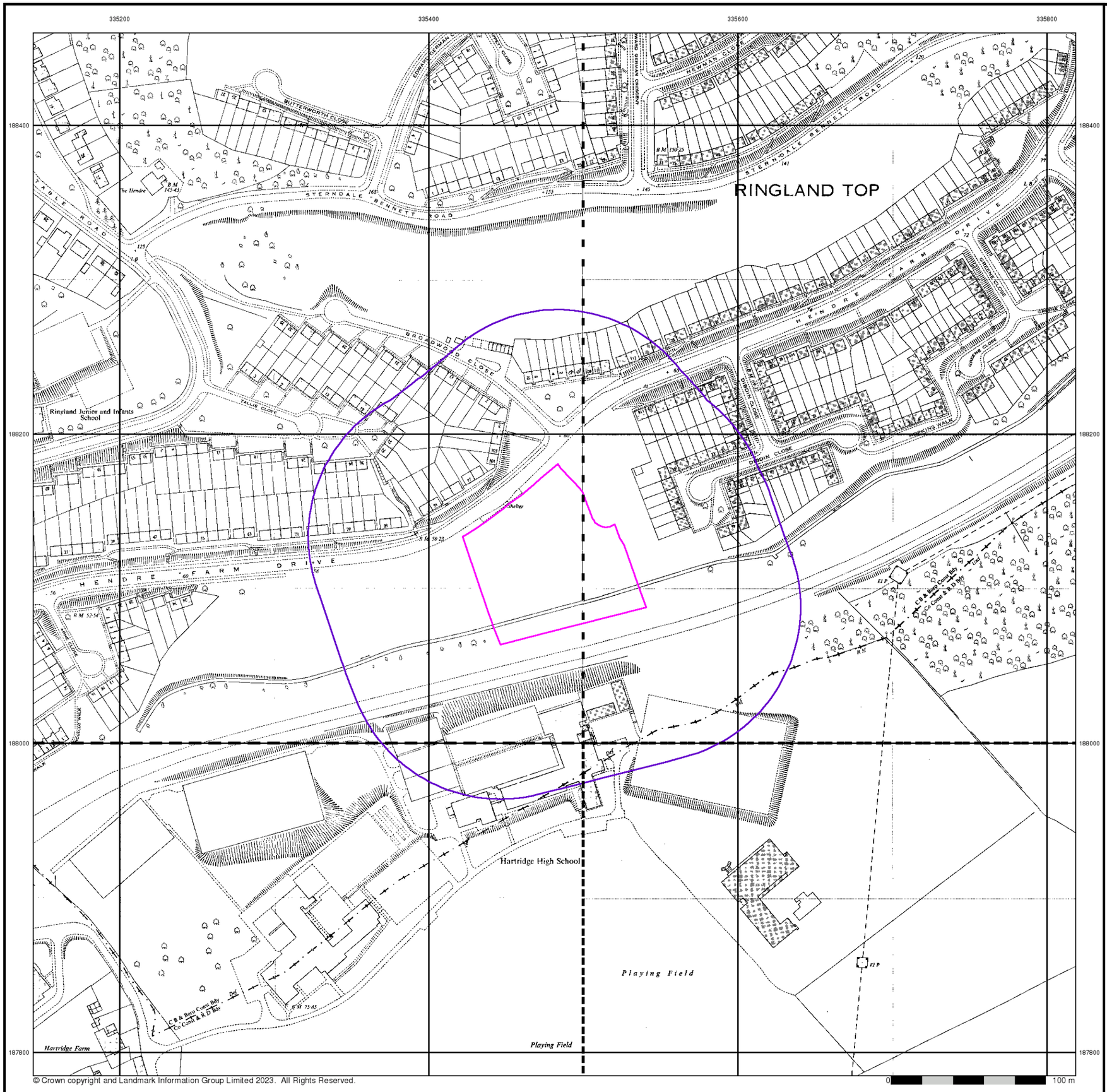
Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	100

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

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



Intégral Géotechnique

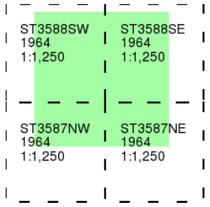
Ordnance Survey Plan

Published 1964

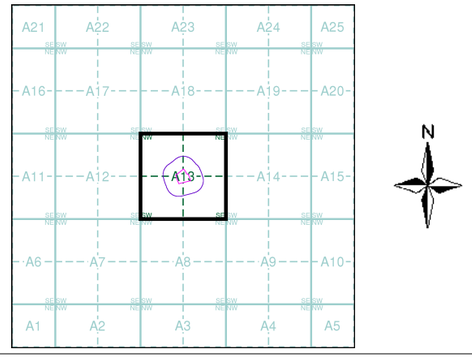
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
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Slice:	A
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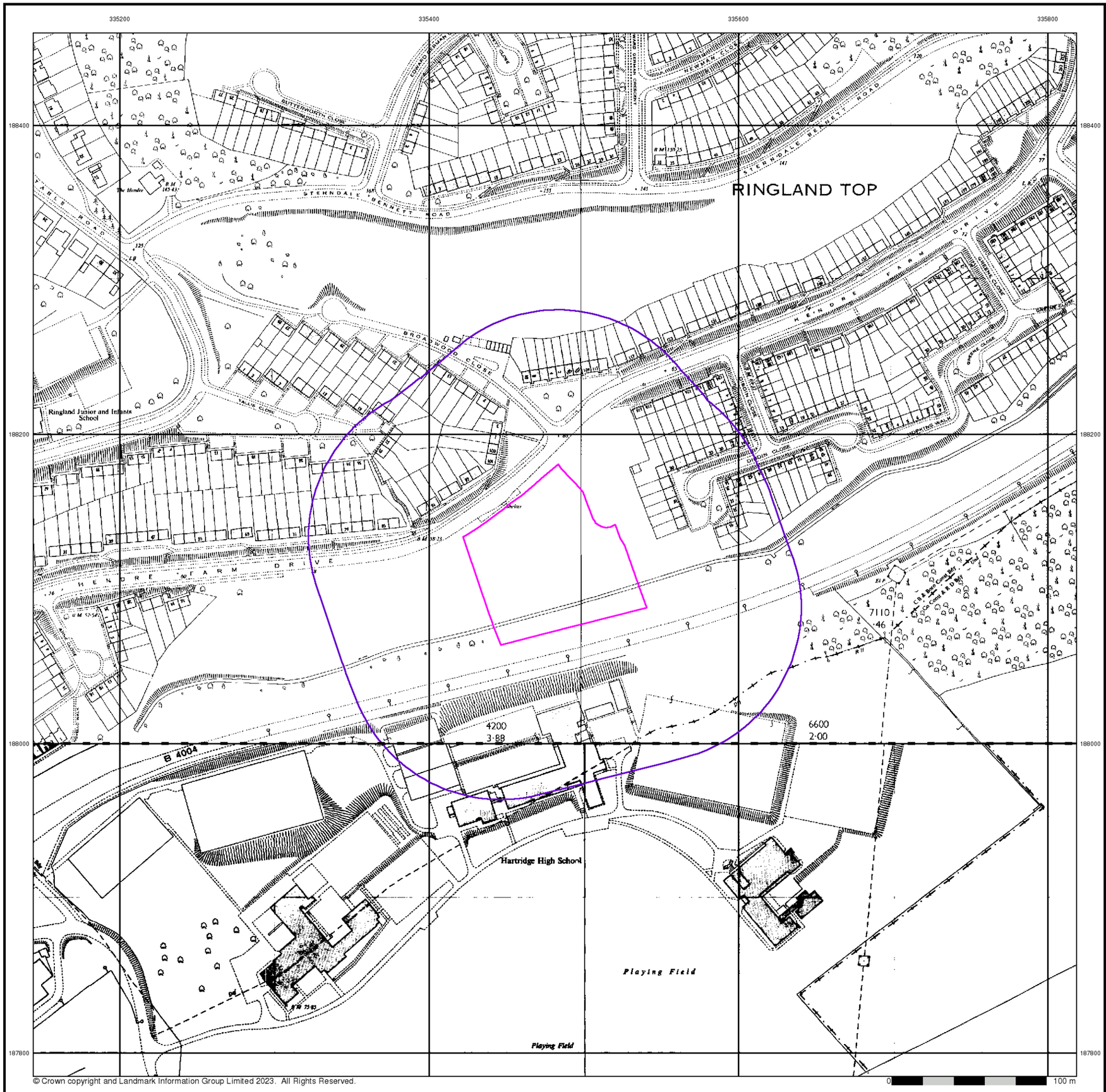


Intégral Géotechnique

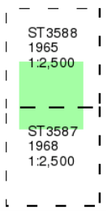
Ordnance Survey Plan

Published 1965 - 1968

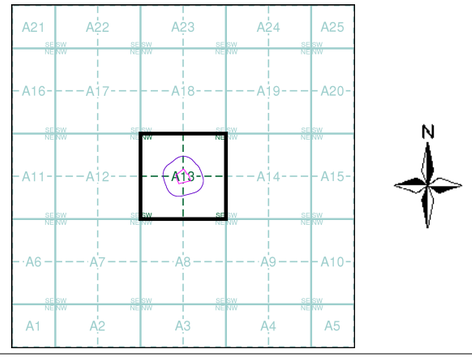
Source map scale - 1:2,500

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	100

Site Details

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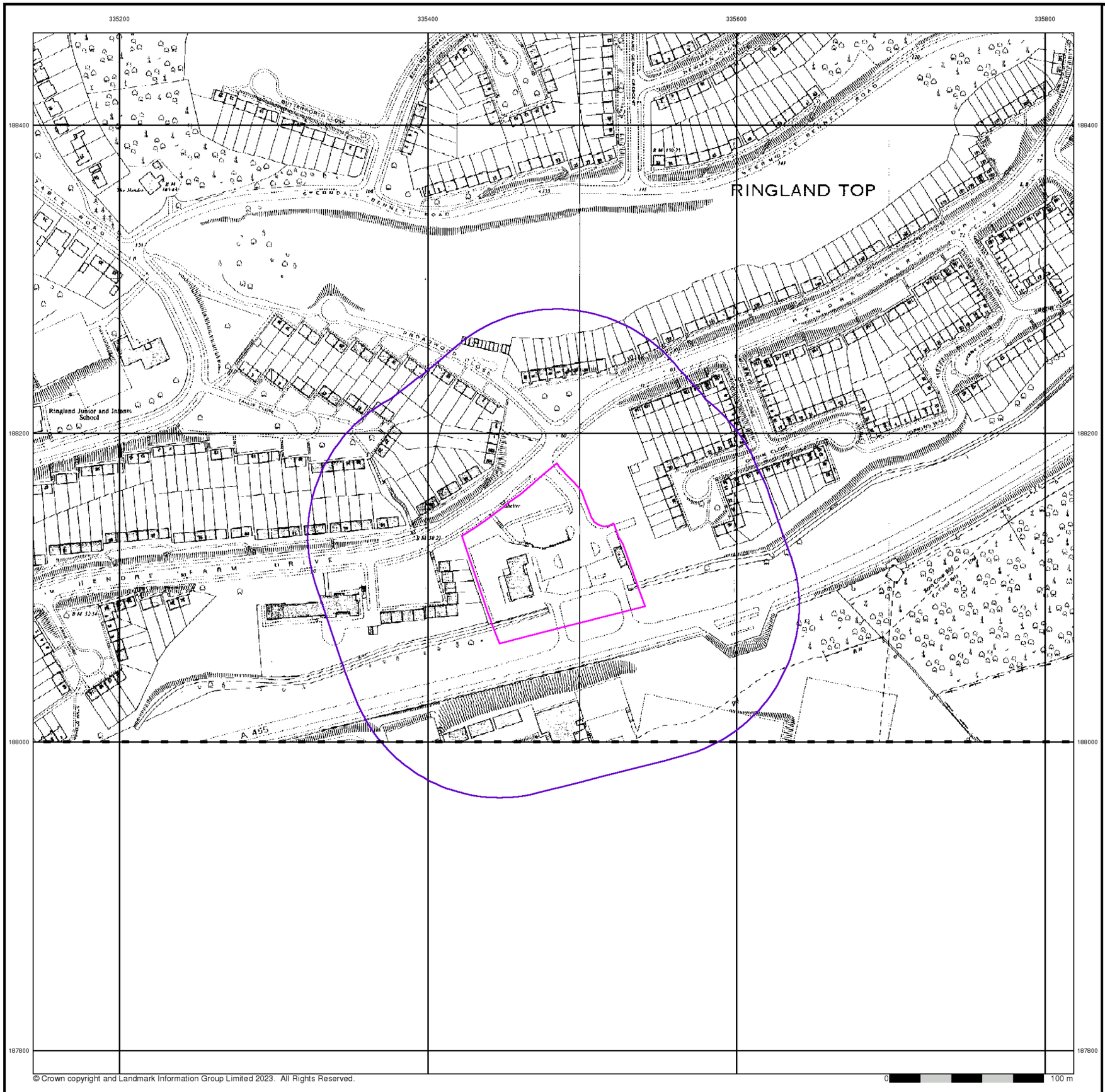


Intégral Géotechnique

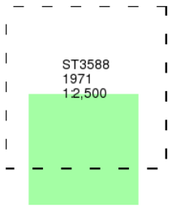
Ordnance Survey Plan

Published 1971

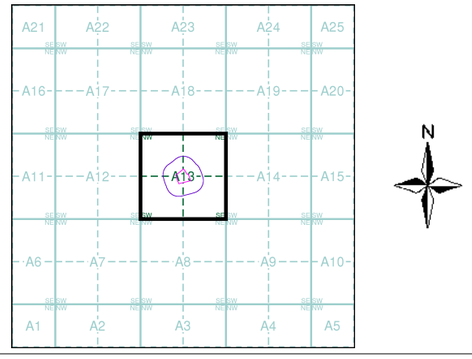
Source map scale - 1:2,500

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:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	100

Site Details

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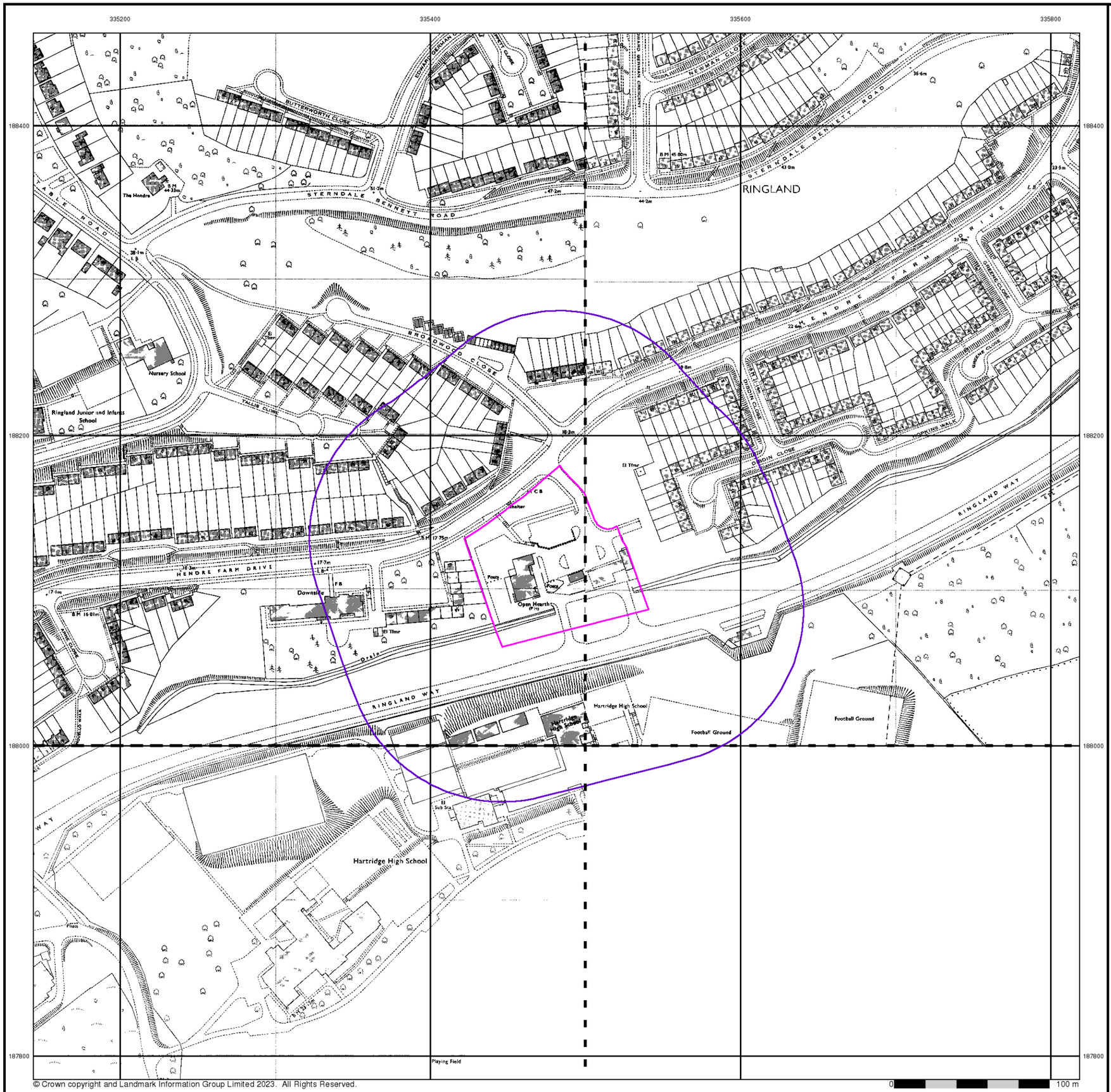


Intégral Géotechnique

Ordnance Survey Plan

Published 1973 - 1976

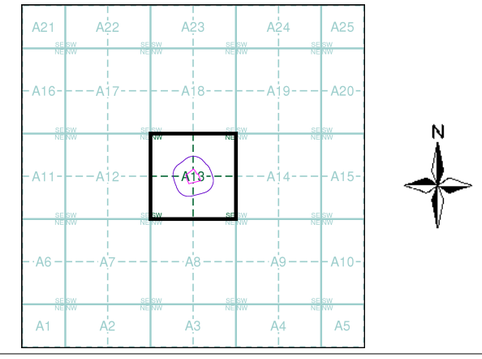
Source map scale - 1:1,250

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

Map Name(s) and Date(s)

ST3588SW 1973 1:1,250
ST3588SE 1976 1:1,250
ST3587NW 1973 1:1,250

Historical Map - Segment A13



Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	100

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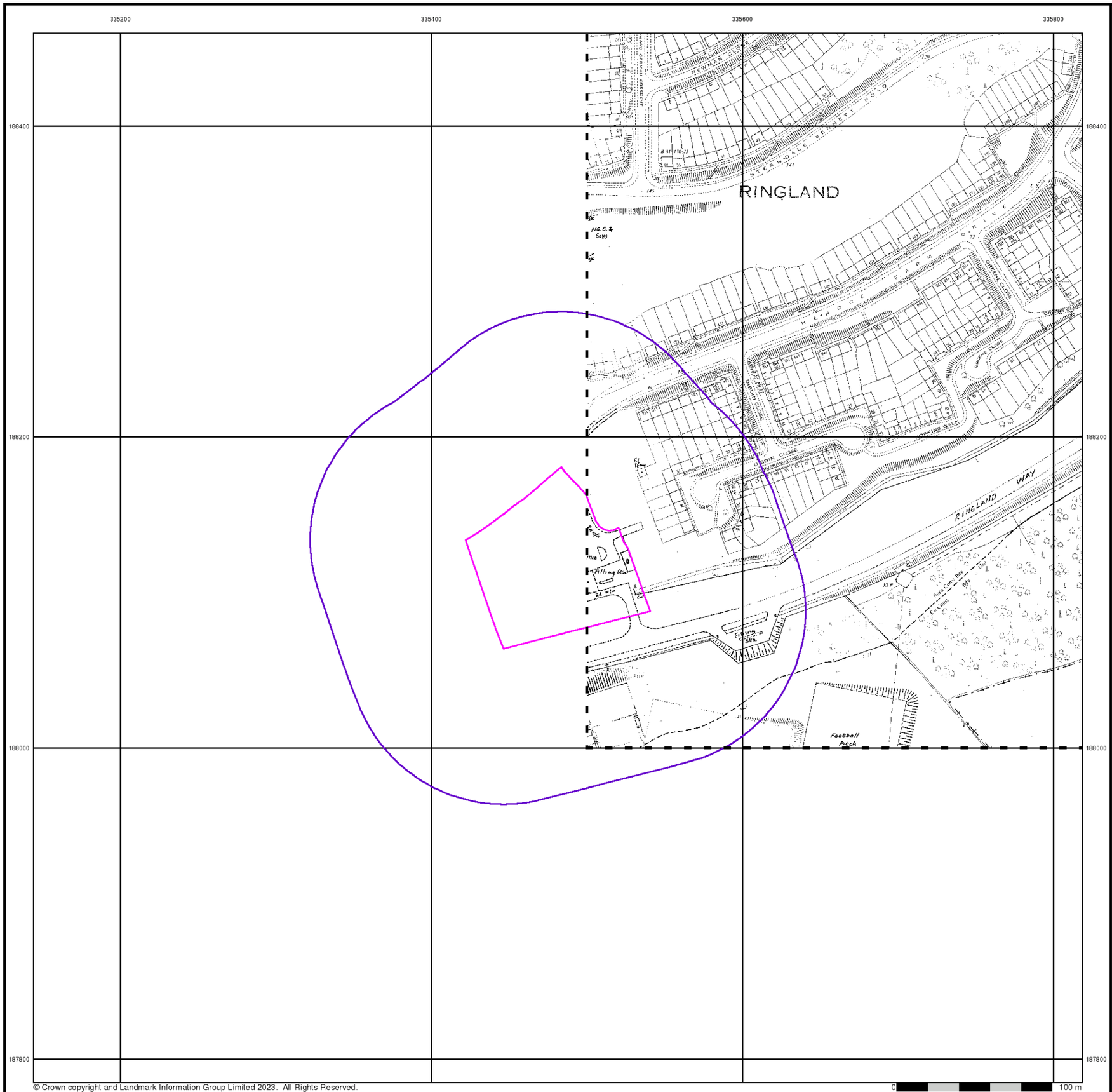


0 100 m

Intégral Géotechnique

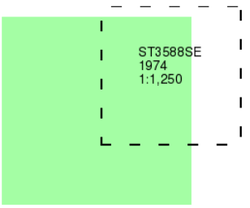
Supply of Unpublished Survey Information

Published 1974

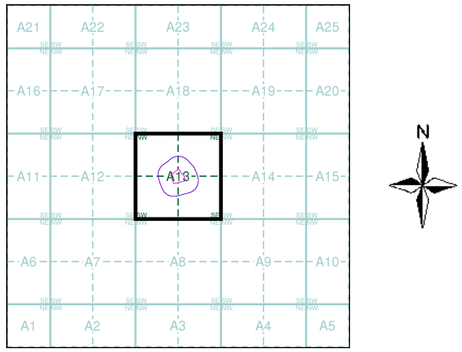
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	100

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

Landmark INFORMATION GROUP
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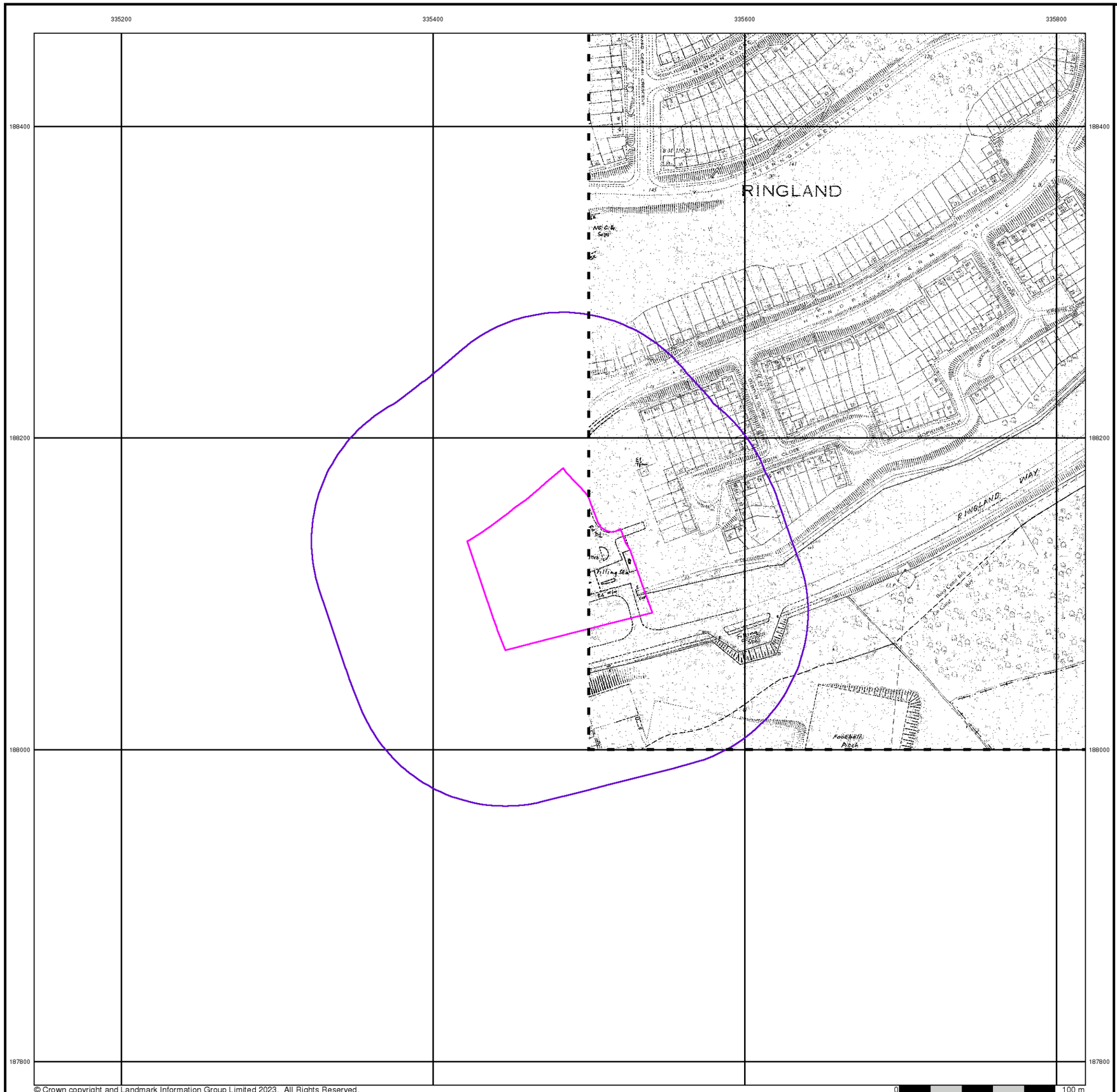

Intégral
Géotechnique

Supply of Unpublished Survey Information

Published 1975

Source map scale - 1:1,250

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

Map Name(s) and Date(s)

Historical Map - Segment A13

Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
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Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

Landmark
INFORMATION GROUP

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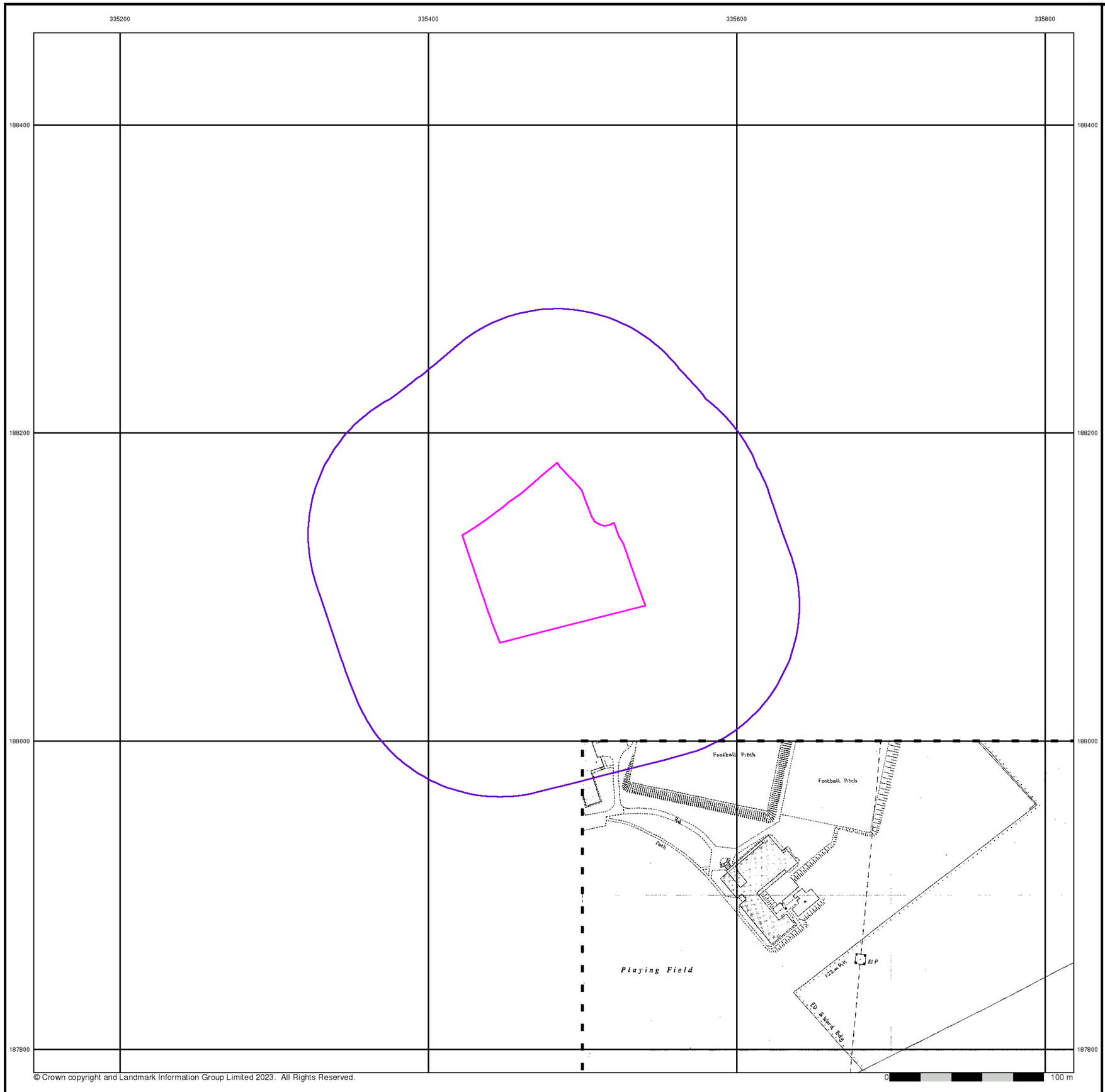
Web:	www.envirocheck.co.uk



0 100 m

Intégral Géotechnique

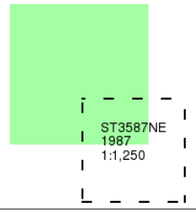
Additional SIMs

Published 1987

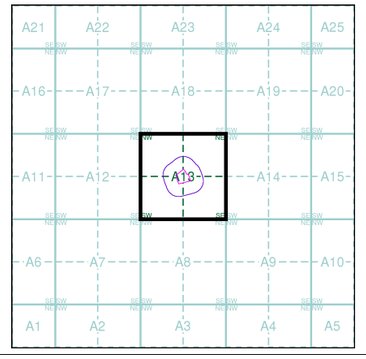
Source map scale - 1:1,250

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

Map Name(s) and Date(s)



Historical Map - Segment A13



Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	100

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

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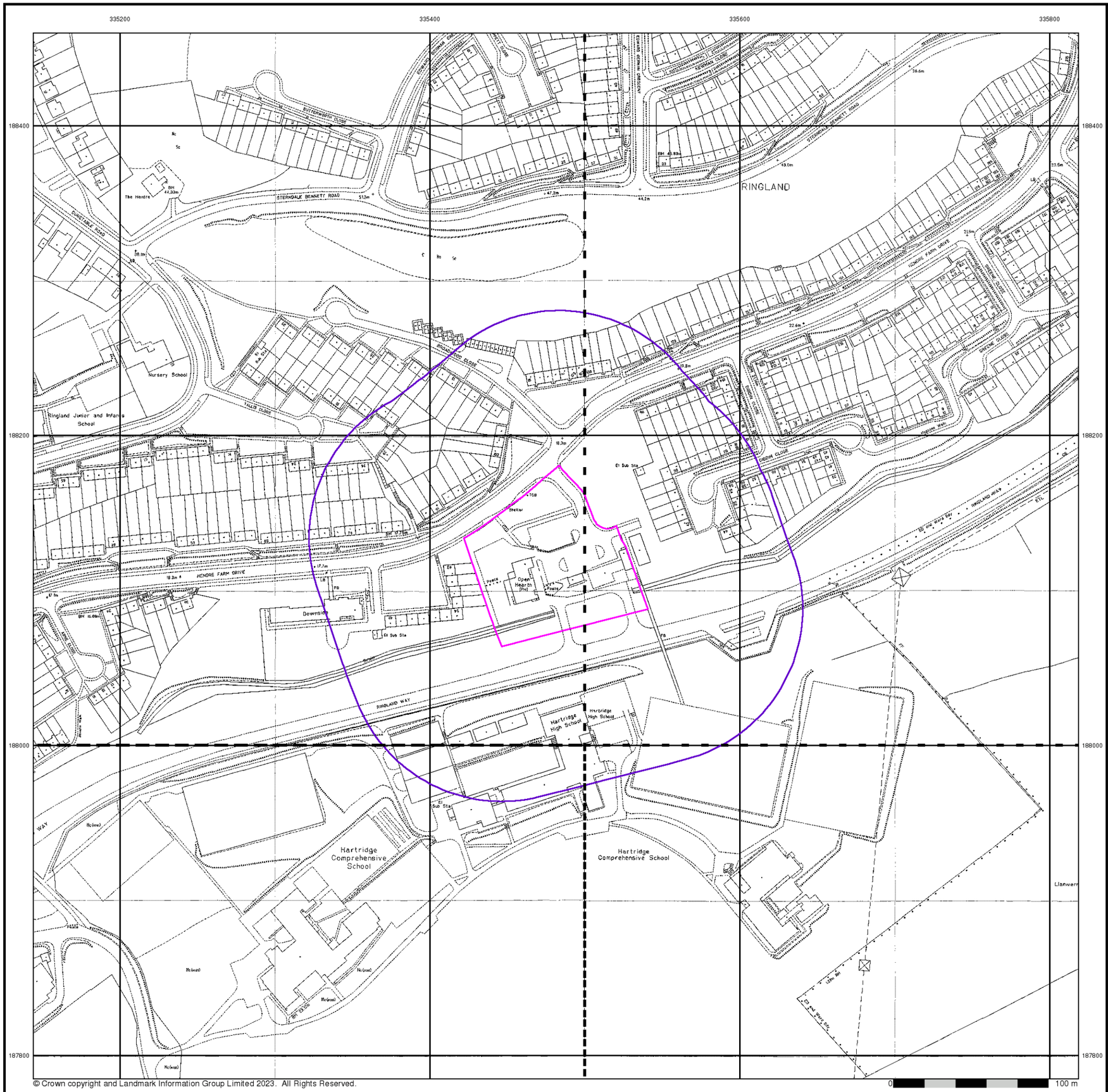
Web: www.envirocheck.co.uk



Intégral Géotechnique

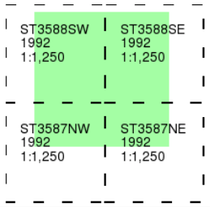
Large-Scale National Grid Data

Published 1992

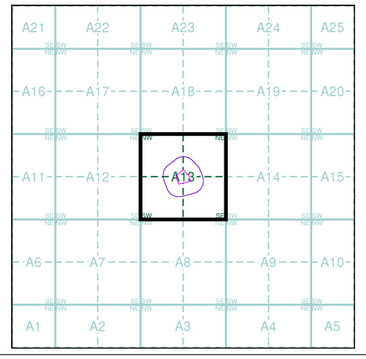
Source map scale - 1:1,250

'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:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	100

Site Details

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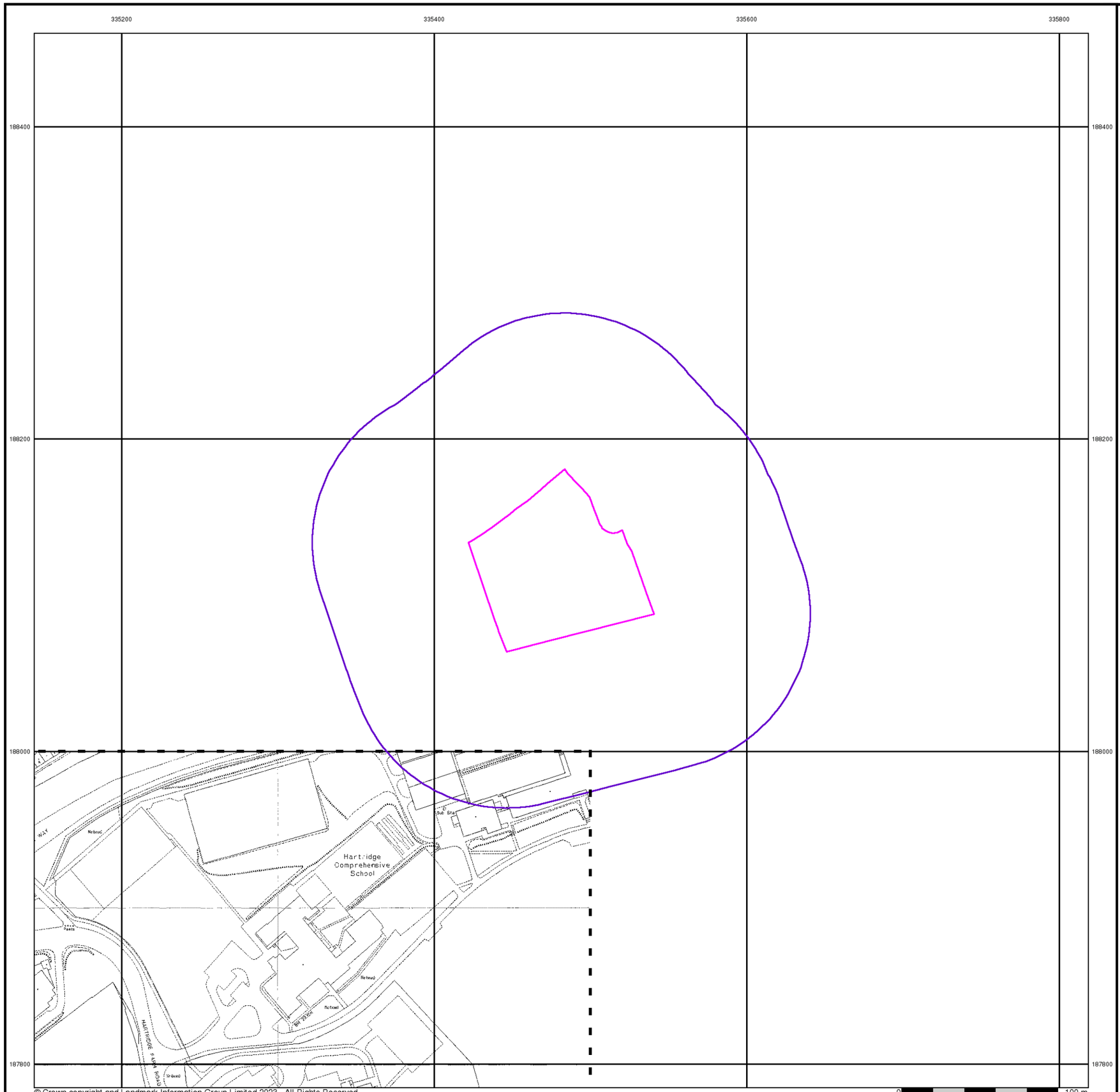


Intégral Géotechnique

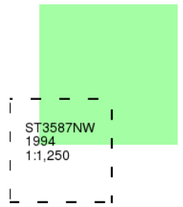
Large-Scale National Grid Data

Published 1994

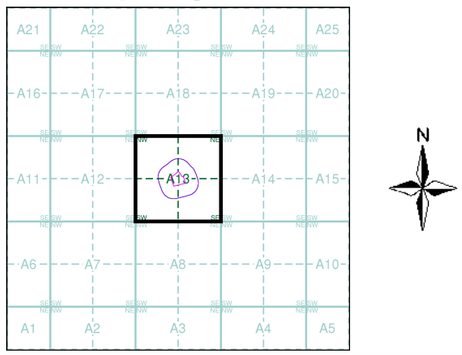
Source map scale - 1:1,250

'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:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	100

Site Details

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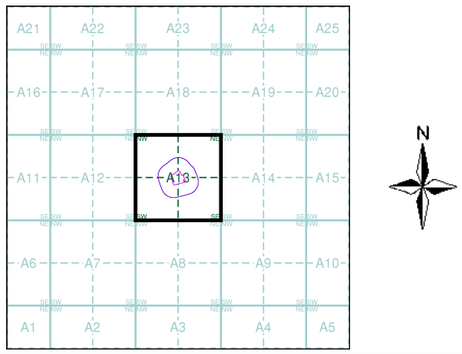
Intégral Géotechnique

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:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	100

Site Details

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Intégral
Géotechnique

Envirocheck® Report:

Mining and Ground Stability Datasheet

Order Details:

Order Number:
305828042_1_1

Customer Reference:
14144/LS

National Grid Reference:
335480, 188120

Slice:
A

Site Area (Ha):
0.82

Search Buffer (m):
1000

Site Details:

Open Hearth
Hendre Farm Drive
NEWPORT
NP19 9LH

Client Details:

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

Landmark INFORMATION GROUP

Intégral Géotechnique

Contents

Report Section and Details	Page Number
Summary	-
The Summary section provides an overview of the data contained within the report, detailing the number of data set features or the existence of a data set in relation to the buffer selected. For ease of reference, the report is broken down into 4 sections of data; Mining and Natural Cavities Data, Historical Land Use Information (1:2,500), Historical Land Use Information (1:10,000) and Ground Stability Data (1:50,000).	
Mining and Natural Cavities Data	1
The Mining and Natural Cavities Data section features data sets related to the existence of mining areas and their potential hazards; and details of naturally formed cavities. Data sets within this section are not plotted, with the exception of BGS Recorded Mineral Sites and Potential Mining Areas which feature on the Historical Land Use Information (1:10,000) map.	
Historical Land Use Information (1:2,500)	-
The Historical Land Use Information (1:2,500) section contains data captured from analysis carried out by Landmark of 1:1,250 and 1:2,500 scale historical Ordnance Survey mapping, identifying areas where, historically, the land uses were potentially contaminative. For the purpose of this Envirocheck module, only historical data relating to mining and ground stability has been included and plotted on the corresponding Historical Land Use Information (1:2,500) map. This section also includes the Subterranean Features data set, which details various man-made and man-used underground spaces obtained from the Subterranea Britannica society.	
Historical Land Use Information (1:10,000)	2
The Historical Land Use (1:10,000) section covers data captured from the systematic analysis carried out by Landmark of 1:10, 560 and 1:10,000 scale historical Ordnance Survey mapping dating back to the mid-19th century, identifying potentially contaminative past industrial land uses. For the purpose of this Envirocheck module, only data relating to mining and ground stability has been included and plotted on the accompanying Historical Land Use Information (1:10,000) map.	
Ground Stability Data (1:50,000)	3
The Ground Stability (1:50,000) section includes the BGS Geosure data suite, reporting features to 250m and plotted onto 3 separate maps. Also reported is brine subsidence, brine mining and salt mining data sets, of which Brine Pumping and Salt Mining Related Features are plotted, and subsidence insurance claims and insurance investigations data, which is not plotted.	
Historical Map List	5
The Historical Map List section details the historical mapping that has been analysed for your site, in relation to the Historical Land Use Information sections.	
Data Currency	6
Data Suppliers	7
Useful Contacts	8

Report Version v53.0

Intégral Géotechnique

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m
Mining and Natural Cavities Data					
BGS Recorded Mineral Sites	pg 1				1
Coal Mining Affected Areas			n/a	n/a	n/a
Man Made Mining Cavities					
Mining Instability			n/a	n/a	n/a
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential Mining Areas					
Historical Land Use Information (1:2,500)					
Extractive Industries or Potential Excavations from 1855-1909 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1893-1915 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1906-1937 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1924-1949 (100m)				n/a	n/a
Extractive Industries or Potential Excavations from 1950-1980 (100m)				n/a	n/a
Subterranean Features (100m)				n/a	n/a
Historical Land Use Information (1:10,000)					
Air Shafts					
Disturbed Ground					
General Quarrying	pg 2				4
Heap, unknown constituents					
Mineral Railway	pg 2				1
Mining & quarrying general					
Mining of coal & lignite					
Quarrying of sand & clay, operation of sand & gravel pits					
Former Marshes					
Potentially Infilled Land (Non-Water)	pg 2				4
Potentially Infilled Land (Water)	pg 2	1		2	9
Ground Stability Data (1:50,000)					
CBSCB Compensation District			n/a	n/a	n/a
Brine Pumping Related Features					
Brine Subsidence Solution Area					
Potential for Collapsible Ground Stability Hazards	pg 3	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards	pg 3	Yes	Yes	n/a	n/a
Potential for Ground Dissolution Stability Hazards	pg 3	Yes	Yes	n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 3	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 3	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 4	Yes	Yes	n/a	n/a
Salt Mining Related Features					

Intégral Géotechnique

Summary

Report Version v53.0

Intégral Géotechnique

Mining and Natural Cavities Data

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**BGS Recorded Mineral Sites** Site Name: Alway Location: Newport, Gwent Source: British Geological Survey, National Geoscience Information Service Reference: 176401 Type: Opencast **Status: Ceased** Operator: Unknown Operator Operator Location: Not Supplied Periodic Type: Triassic Geology: Blue Lias Formation Commodity: Limestone Positional Accuracy: Located by supplier to within 10m	A12NW (W)	906	1	334517 188173
	Coal Mining Affected Areas In an area which may not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				

Intégral Géotechnique

Historical Land Use Information (1:10,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
2	**General Quarrying** Use: Not Supplied Date of Mapping: 1887 - 1922	A9NE (SE)	804	-	336241 187696
3	**General Quarrying** Use: Not Supplied Date of Mapping: 1922	A12NW (W)	909	-	334514 188159
4	**General Quarrying** Use: Not Supplied Date of Mapping: 1886 - 1902	A14NE (E)	955	-	336446 188391
5	**General Quarrying** Use: Not Supplied Date of Mapping: 1902 - 1922	A11SE (W)	963	-	334463 188056
6	**Mineral Railway** Use: Not Supplied Date of Mapping: 1922	A9NE (SE)	919	-	336350 187654
7	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1989	A9NE (SE)	804	-	336241 187696
8	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1994	A12NW (W)	909	-	334514 188159
9	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1902	A14NE (E)	952	-	336442 188391
10	**Potentially Infilled Land (Non-Water)** Use: Unknown Filled Ground (Pit, quarry etc) Date of Mapping: 1994	A11SE (W)	964	-	334461 188064
11	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A13SE (S)	0	-	335485 188085
12	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A14NW (E)	333	-	335831 188262
13	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A7NE (SW)	431	-	335137 187764
14	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1954	A17SE (NW)	667	-	334913 188564
15	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A18SW (NW)	670	-	335168 188772
16	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A18SW (NW)	683	-	335161 188782
17	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A17SE (NW)	762	-	335024 188787
18	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1954	A12NW (W)	829	-	334623 188354
19	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A18NE (N)	930	-	335625 189099
20	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A17NE (NW)	932	-	334948 188943
21	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1922	A18NW (N)	937	-	335336 189105
22	**Potentially Infilled Land (Water)** Use: Unknown Filled Ground (Pond, marsh, river, stream, dock etc) Date of Mapping: 1965	A18NE (N)	949	-	335608 189121

Ground Stability Data (1:50,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	CBSCB Compensation District The site does not fall within the brine compensation area.				
	Brine Subsidence Solution Area The site does not fall within the brine subsidence solution area.				
23	**Potential for Collapsible Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
	Potential for Collapsible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	33	1	335407 188075
24	**Potential for Compressible Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	33	1	335407 188075
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
25	**Potential for Ground Dissolution Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	51	1	335492 188019
26	**Potential for Ground Dissolution Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	84	1	335366 188196
27	**Potential for Ground Dissolution Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	185	1	335432 188358
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
	Potential for Ground Dissolution Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	229	1	335697 187921
28	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	0	1	335451 188151
29	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
30	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	27	1	335498 188050
31	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	84	1	335366 188196
32	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	86	1	335481 188266
33	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (E)	126	1	335666 188086
34	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (W)	126	1	335297 188148
35	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	185	1	335432 188358
36	**Potential for Landslide Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	229	1	335697 187921
37	**Potential for Running Sand Ground Stability Hazards** Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	33	1	335407 188075

Ground Stability Data (1:50,000)

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
38	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	1	335480 188117
39	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	20	1	335485 188049
40	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	24	1	335432 188169
41	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	33	1	335407 188075
42	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	146	1	335451 188323
43	**Potential for Shrinking or Swelling Clay Ground Stability Hazards** Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	229	1	335697 187921
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	51	1	335492 188019
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	84	1	335366 188196
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	185	1	335432 188358

Historical Map List

The following mapping has been analysed for Historical Land Use Information (1:2,500):

The following mapping has been analysed for Historical Land Use Information (1:10,000):

1:10,560	Mapsheet	Published Date
Monmouthshire	029_00	1886
Monmouthshire	034_00	1887
Monmouthshire	029_SW	1902
Monmouthshire	034_NW	1902
Monmouthshire	029_SW	1922
Monmouthshire	034_NW	1922
Monmouthshire	034_NW	1938
Monmouthshire	029_SW	1954
Ordnance Survey Plan	ST38NE	1965
Ordnance Survey Plan	ST38NW	1965
1:10,000	**Mapsheet**	**Published Date**
Ordnance Survey Plan	ST38NE	1989
Ordnance Survey Plan	ST38NW	1994

Data Currency

Mining and Cavities Data	Version	Update Cycle
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	November 2022	Bi-Annually
Coal Mining Affected Areas The Coal Authority - Property Searches	March 2014	Annual Rolling Update
Man Made Mining Cavities Stantec UK Ltd	December 2021	Bi-Annually
Mining Instability Ove Arup & Partners	June 1998	Not Applicable
Natural Cavities Stantec UK Ltd	December 2021	Bi-Annually
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	May 2015	Not Applicable
Historical Land Use Information (1:2,500)	**Version**	**Update Cycle**
Subterranean Features Landmark Information Group Limited	June 2022	Bi-Annually
Ground Stability Data (1:50,000)	**Version**	**Update Cycle**
CBSCB Compensation District Cheshire Brine Subsidence Compensation Board (CBSCB) Cheshire Brine Subsidence Compensation Board (CBSCB)	August 2011 November 2020	As notified
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	April 2020	As notified
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	January 2019	As notified
Brine Subsidence Solution Area Johnson Poole & Bloomer	December 2020	Annual Rolling Update

Data Suppliers

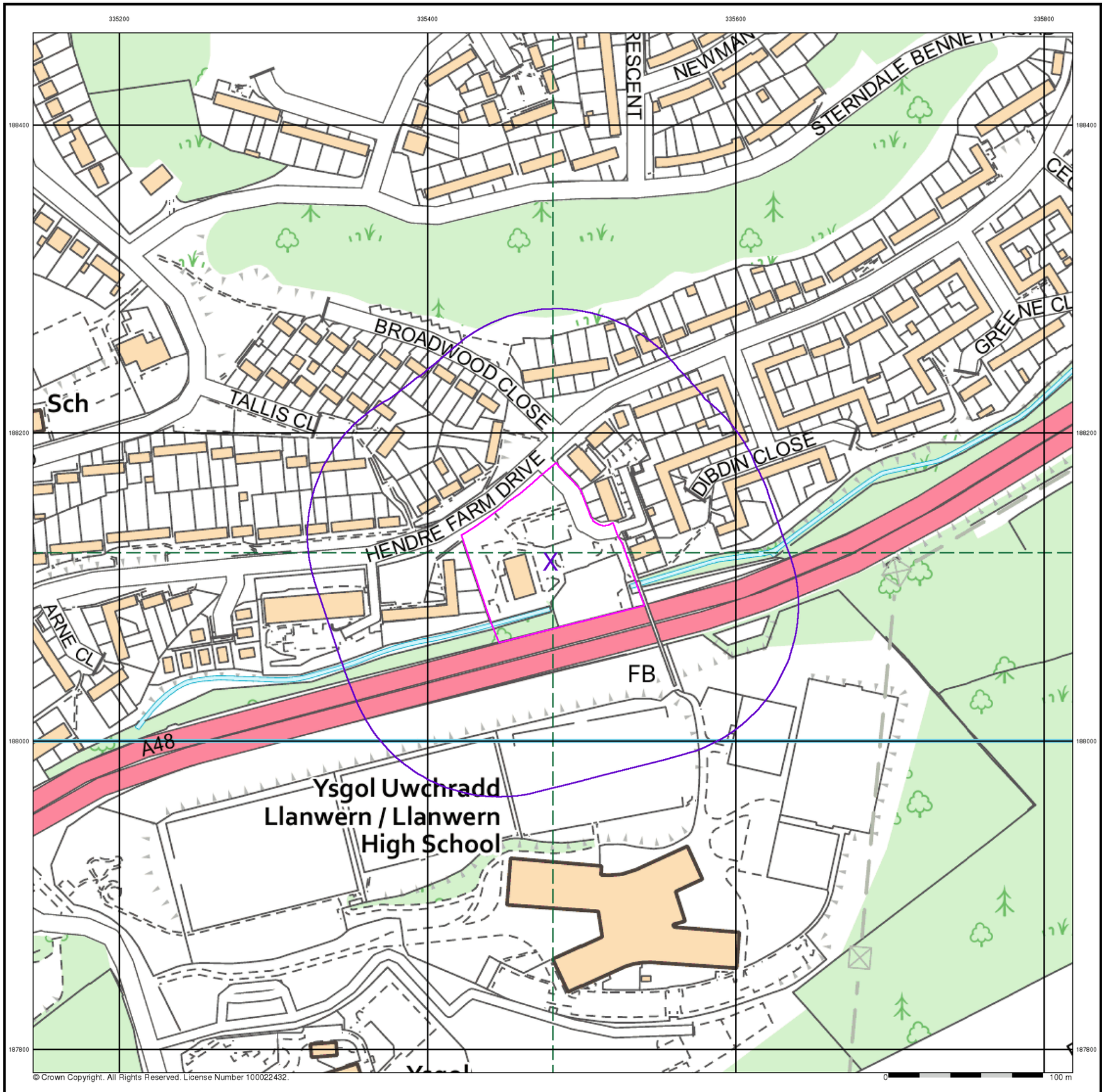
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Map data
British Geological Survey	British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
The Coal Authority	The Coal Authority
Ove Arup	ARUP
Stantec UK Ltd	Stantec
Wardell Armstrong	wardell armstrong your earth our world
Johnson Poole & Bloomer	JPB

Intégral Géotechnique

Useful Contacts

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
-	**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



Intégral Géotechnique

Historical Land Use Information (1:2,500)

General

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

Several of Type at Location

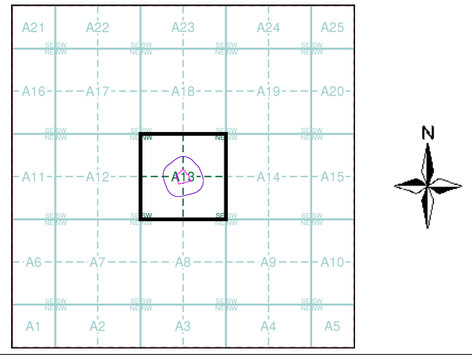
Potentially Contaminative Industrial Uses (Extractive Industries Activity)

	Point	Line	Polygon
Extractive Industries Activity from 1855 - 1909	▲	—	▭
Extractive Industries Activity from 1893 - 1915	▲	—	▭
Extractive Industries Activity from 1906 - 1937	▲	—	▭
Extractive Industries Activity from 1924 - 1949	▲	—	▭
Extractive Industries Activity from 1950 - 1980	▲	—	▭

Subterranean Features

	Point	Line	Polygon
Subterranean Features	▼	- - -	▭

Mining and Ground Stability - Segment A13



Order Details

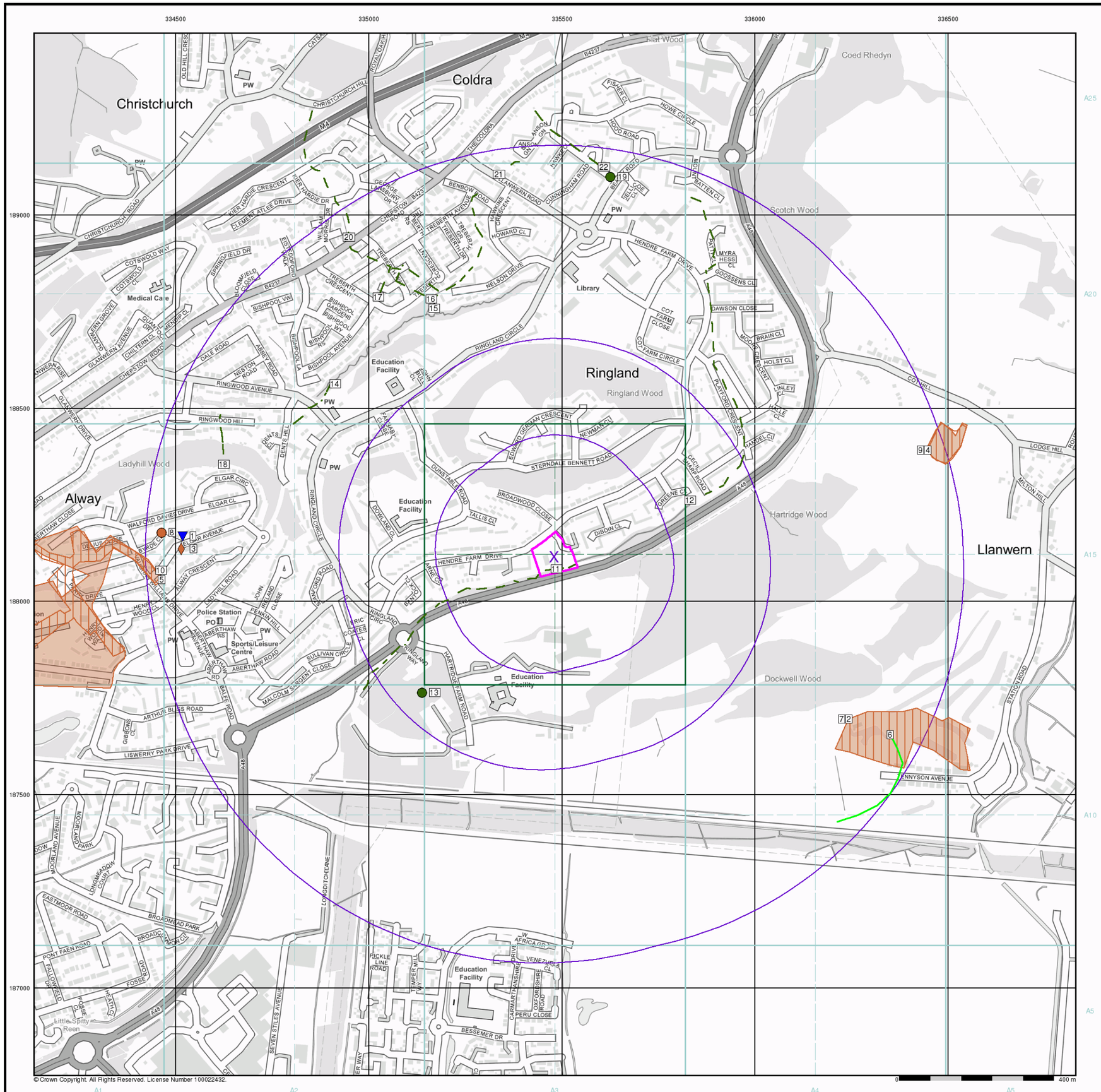
Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Plot Buffer (m):	100

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

Landmark INFORMATION GROUP

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



Intégral Géotechnique

Historical Land Use Information (1:10,000)

General

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

Several of Type at Location

Potentially Contaminative Industrial Uses (Past Land Uses - Mining)

	Point	Line	Polygon
Air Shafts	◆		
Disturbed Ground	◆		
General Quarrying	◆		
Heap, unknown constituents	◆		
Mineral Railway	◆		
Mining and Quarrying General	◆		
Mining of Coal & Lignite	◆		
Quarrying of Sand and Clay, Operation of Sand and Gravel Pits	◆		

Historical Land Use

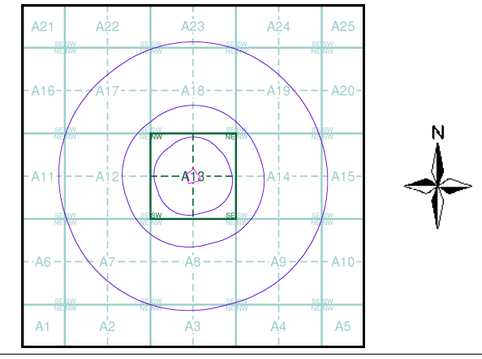
	Point	Line	Polygon
Potentially Infilled Land (Non-Water)	●		
Potentially Infilled Land (Water)	●		
Former Marsh	✠		

Mining Data

Potential Mining Area

BGS Recorded Mineral Site

Mining and Ground Stability - Slice A



Order Details

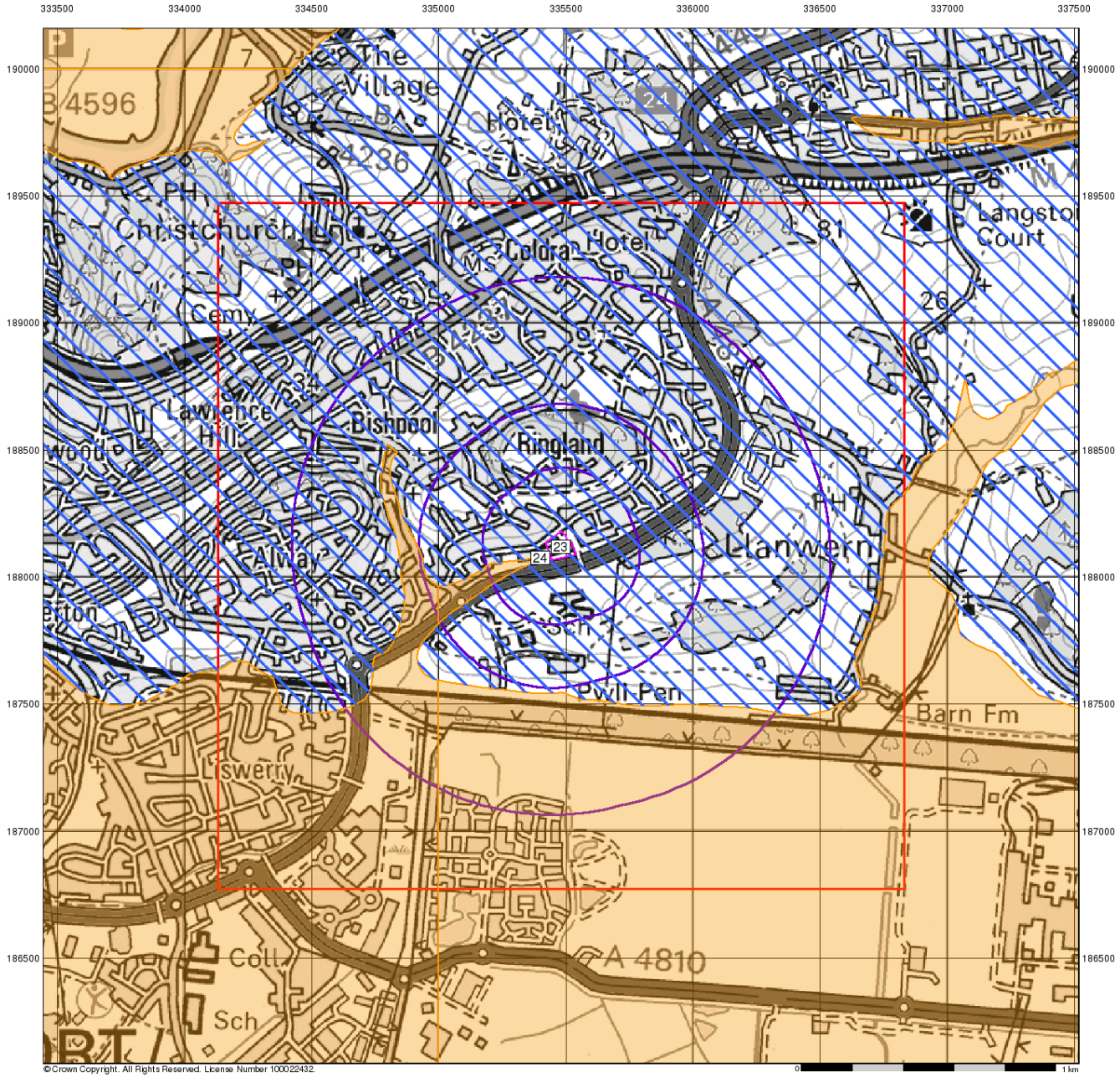
Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

Landmark INFORMATION GROUP

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



Intégral
Géotechnique

Ground Stability Data (1:50,000)

General

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

Potential for Compressible Ground Stability Hazards

High | Low
Moderate | Very Low

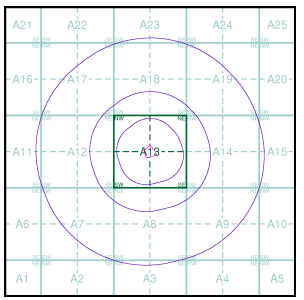
Potential for Collapsible Ground Stability Hazards

High | Low
Moderate | Very Low

Brine Pumping and Salt Mining

	Point	Polygon
Brine Pumping Related Feature	▲	▨
Salt Mining Related Feature	▲	▨

Mining and Ground Stability - Slice A



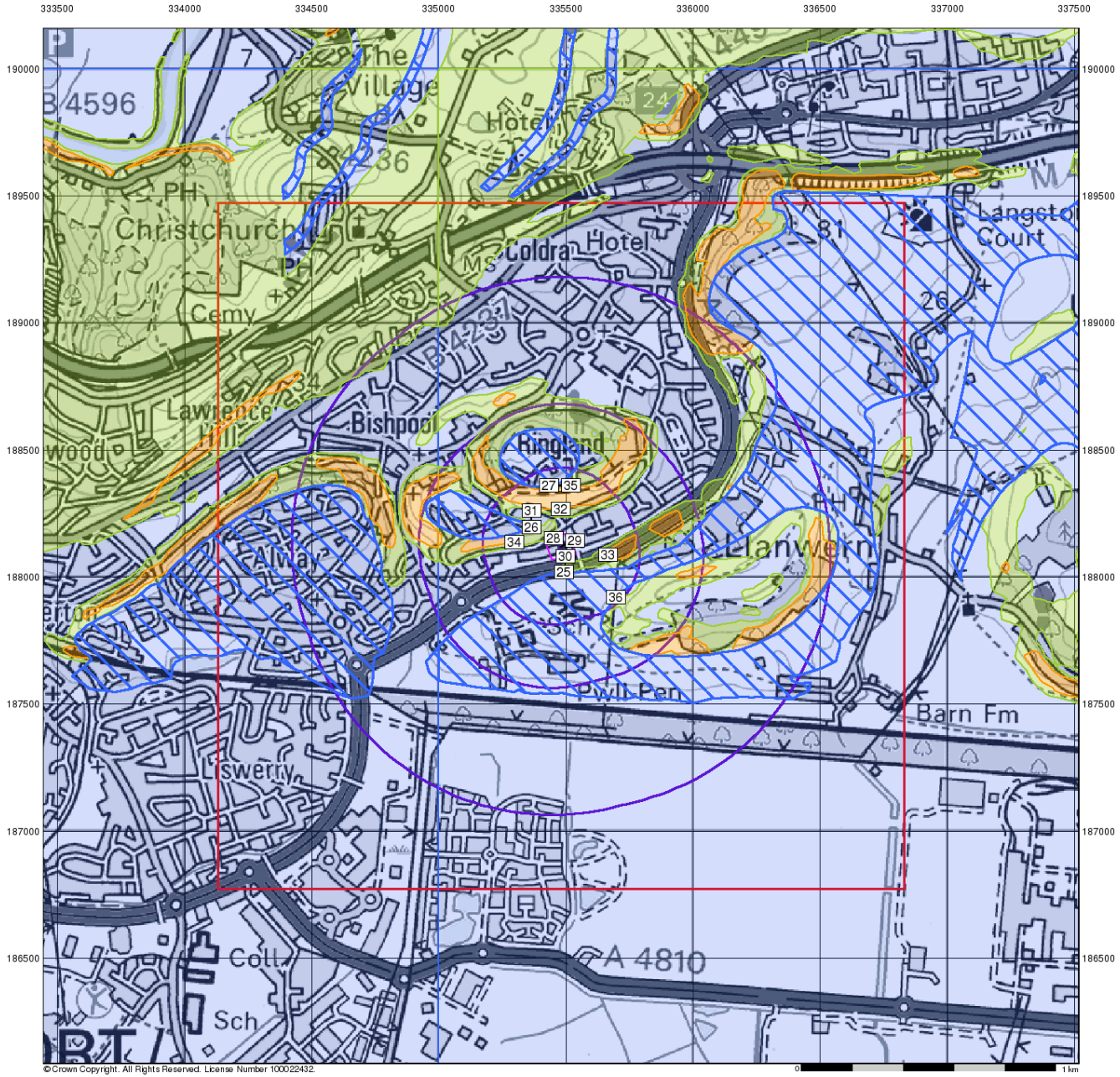
Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

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



Intégral
Géotechnique

Ground Stability Data (1:50,000)

General

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

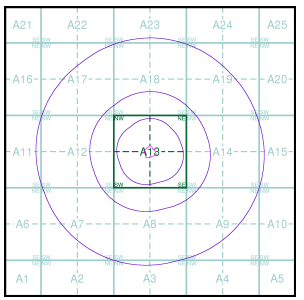
Potential for Landslide Ground Stability Hazards

High | Low
Moderate | Very Low

Potential for Ground Dissolution Stability Hazards

High | Low
Moderate | Very Low

Mining and Ground Stability - Slice A



Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

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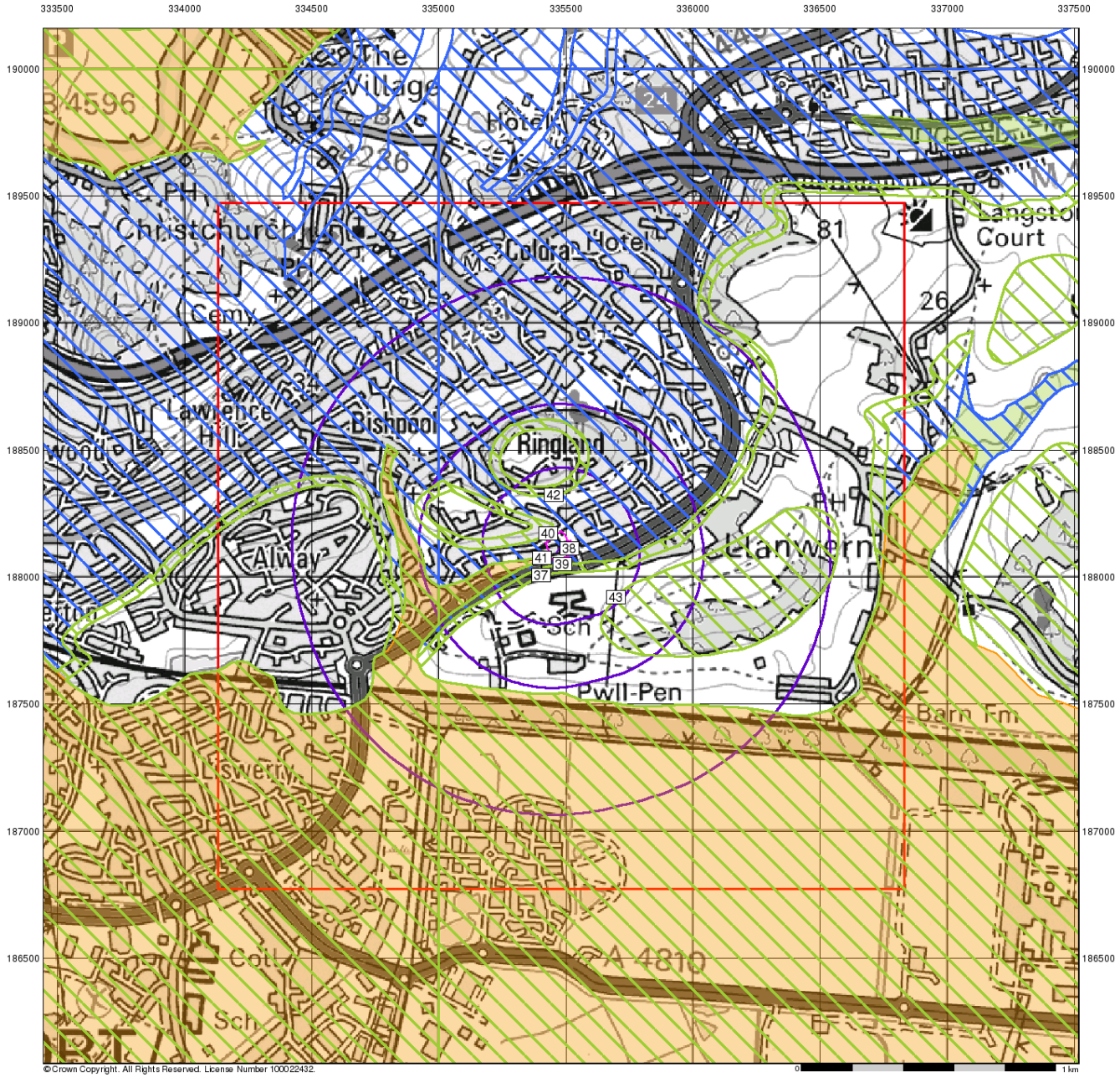
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



Intégral Géotechnique

Ground Stability Data (1:50,000)

General

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

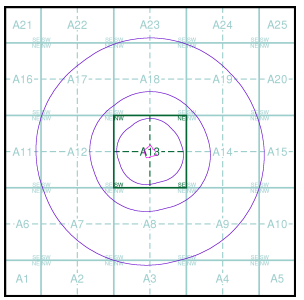
Potential for Running Sand Ground Stability Hazards

High | Low | Moderate | Very Low

Potential for Shrinking or Swelling Clay Ground Stability Hazards

High | Low | Moderate | Very Low

Mining and Ground Stability - Slice A



Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Slice:	A
Site Area (Ha):	0.82
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Fax: 0844 844 9951
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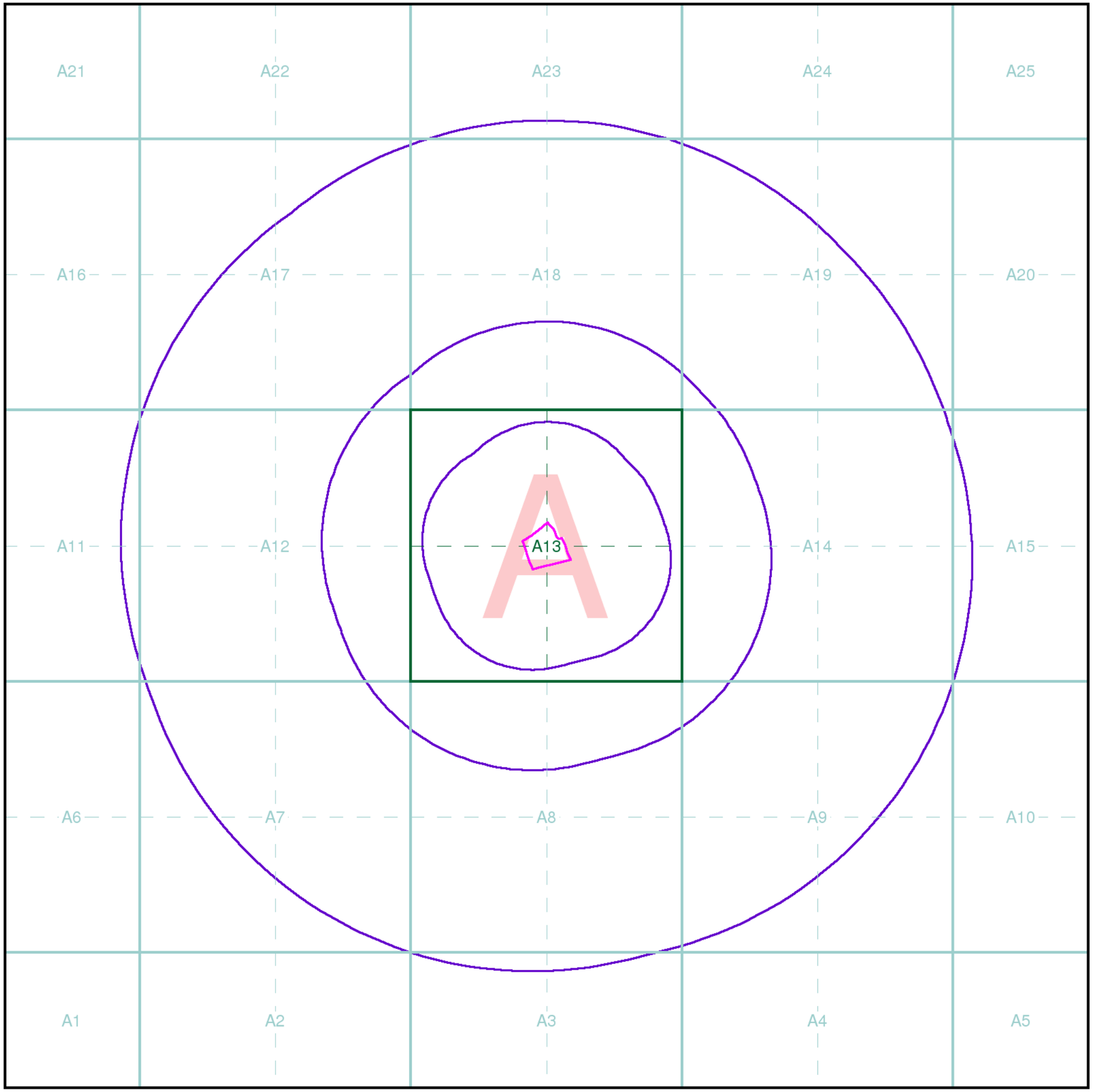


Intégral Géotechnique

Index Map

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

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

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

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

A selection of organisations who provide data within this report:

Map data

British Geological Survey
NATURAL ENVIRONMENT RESEARCH COUNCIL

Cyfoeth Naturiol Cymru
Natural Resources Wales

Envirocheck reports are compiled from 136 different sources of data.

Client Details

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

Order Details

Order Number:	305828042_1_1
Customer Ref:	14144/LS
National Grid Reference:	335480, 188120
Site Area (Ha):	0.82
Search Buffer (m):	1000

Site Details

Open Hearth, Hendre Farm Drive, NEWPORT, NP19 9LH

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

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

APPENDIX C

BGS RADON GEOREPORT

GeoReports

British Geological Survey

Laura Pullin
Integral Geotechnique (Wales) Ltd
Integral House
7 Beddau Way
Caerphilly
CF83 2AX

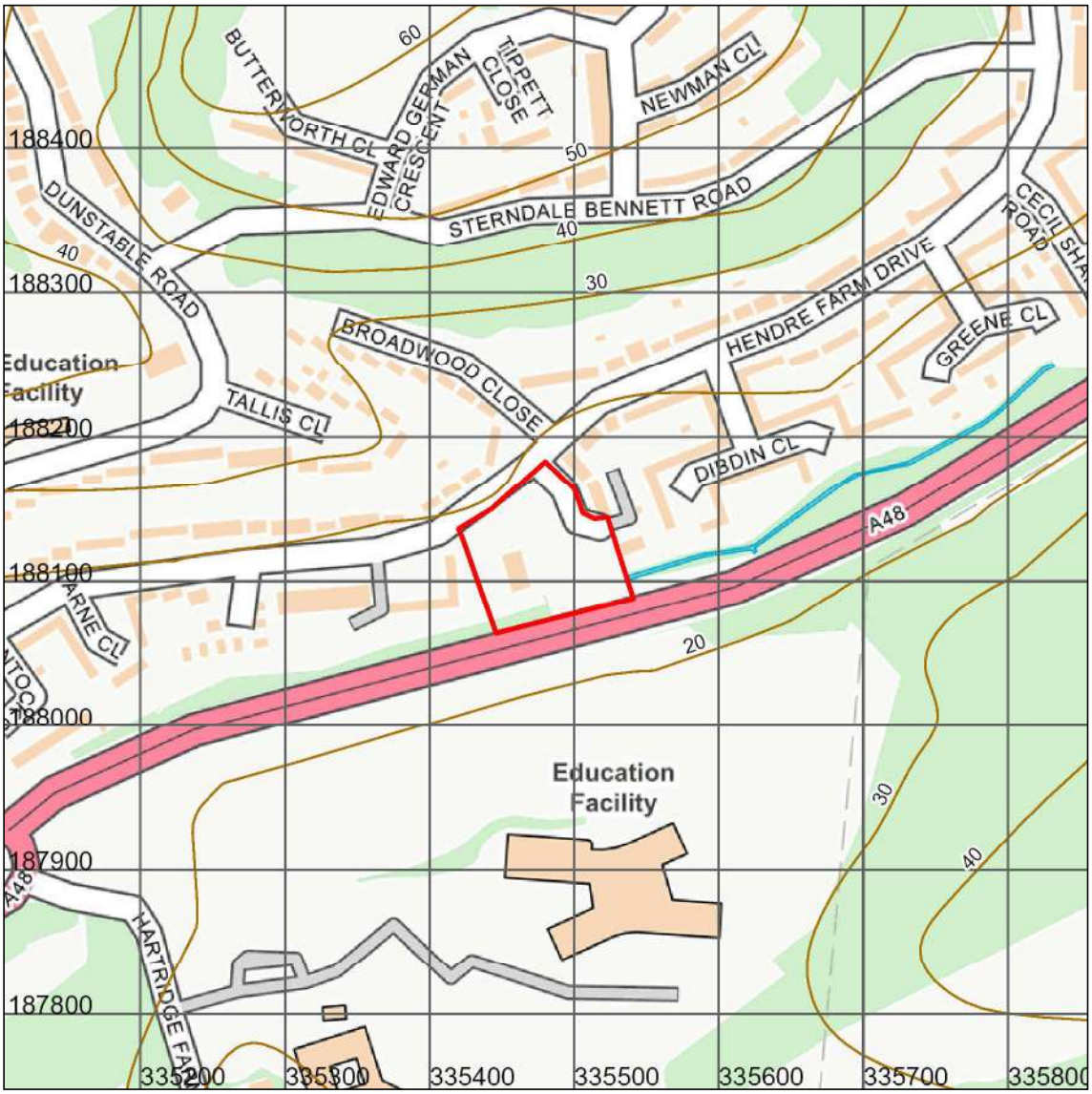
Radon Report

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_330215/41061***

Client reference: 14144 Open Hearth

Search location



Contains OS data © Crown Copyright and database right 2023. OS OpenMap Local: Scale: 1:5 000 (1cm = 50 m)
Search location indicated in red

This report describes a site located at National Grid Reference 335480, 188124. Note that for sites of irregular shape, this point may lie outside the site boundary. Where the client has submitted a site plan the assessment will be based on the area given.

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?

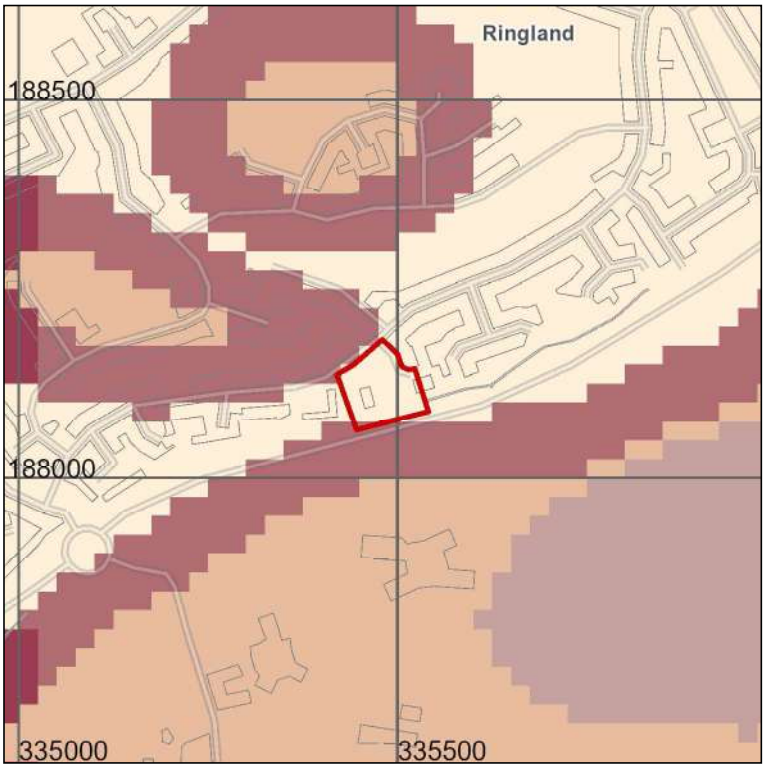
BASIC RADON PROTECTIVE MEASURES ARE REQUIRED FOR THE REPORT AREA.

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 UKHSA 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%

Scale: 1:10 000 (1cm = 100 m)
Search area indicated in red

Is the property in a radon Affected Area as defined by the UK Health Security Agency (UKHSA) and if so what percentage of homes are estimated to be at or above the Action Level? **YES**

Additional Information

THE PROPERTY IS IN A RADON AFFECTED AREA WHERE 5 TO 10% OF HOMES ARE ESTIMATED TO BE AT OR ABOVE THE ACTION LEVEL.

The UKHSA 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 be at or above 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 high radon level within the property; the only way to determine the radon level is to carry out a radon measurement.

The UKHSA advises that radon gas should be measured in all properties within radon Affected Areas and that homes with radon levels at or 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. The UKHSA 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 the UKHSA. 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 at or 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 the UKHSA 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 is at or above the Action Level, measures should be taken to reduce the concentration.

Radon in workplaces

The Ionising Radiation Regulations 2017 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.ukwebsite: www.brebookshop.com

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Terms and Conditions

General Terms & Conditions

This Report is supplied in accordance with the GeoReports Terms & Conditions available on the BGS website at https://shop.bgs.ac.uk/georeports and also available from the BGS Enquiry Service at the above address.

Important notes about this Report

- The data, information and related records supplied in this Report by BGS can only be indicative and should not be taken as a substitute for specialist interpretations, professional advice and/or detailed site investigations. You must seek professional advice before making technical interpretations on the basis of the materials provided.
- 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.
- Although samples and records are maintained with all reasonable care, there may be some deterioration in the long term.
- The most appropriate techniques for copying original records are used, but there may be some loss of detail and dimensional distortion when such records are copied.
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- Data, information and related records, which have been donated to BGS, have been produced for a specific purpose, and that may affect the type and completeness of the data recorded and any interpretation. The nature and purpose of data collection, and the age of the resultant material may render it unsuitable for certain applications/uses. You must verify the suitability of the material for your intended usage.
- If a report or other output is produced for you on the basis of data you have provided to BGS, or your own data input into a BGS system, please do not rely on it as a source of information about other areas or geological features, as the report may omit important details.
- 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.

Report issued by
BGS Enquiry Service

APPENDIX D

WINDOWLESS SAMPLE BOREHOLE LOGS

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Project Name: **Open Hearth, Ringland**		Project No.: **14144**	Borehole No.: **WS01** Sheet 1 of 1
Location: Newport	Client: Willis Construction	Coordinates:	Hole Type: WLS
Equipment: Dart 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101+97mm	Depth of Casing:	Dates 04/01/2023 -	Logged By: LS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
		0.10	ES		0.20			(Disturbed Topsoil) Loose to medium dense dark brown very clayey gravelly SAND with frequent rootlets. Gravel is fine to coarse sub angular and angular mudstone with occasional plastic and brick fragments.
		1.00	C	N=33 (0,0/4,8,10,11)				(MADE GROUND) Firm becoming firm to stiff orange brown slightly sandy gravelly CLAY with occasional cobbles sub angular mudstone. Gravel is fine to coarse sub angular and angular mudstone, occasional brick fragments, slag and clinker.
		1.70	D		1.65			Stiff becoming hard red and orange brown mottled light green slightly friable silty CLAY.
		1.80	C	N=59 (7,8/59 for 245mm)	1.80			End of Borehole at 1.80 m

Remarks:

1. Windowless sample borehole refused at 1.8mbgl. 2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

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Project Name: **Open Hearth, Ringland**		Project No.: **14144**	Borehole No.: **WS02** Sheet 1 of 1
Location: Newport	Client: Willis Construction	Coordinates:	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101+97mm	Depth of Casing:	Dates 04/01/2023 -	Logged By: LS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.10			(MADE GROUND) Bituminous Material.
		0.30	ES					(MADE GROUND) Compact grey gravel over loose grey sandy slightly silty GRAVEL. Gravel is fine to coarse sub angular and angular limestone.
					0.70			(MADE GROUND) Medium dense beige and light brown slightly clayey slightly sandy GRAVEL. Gravel is fine to coarse sub angular and angular limestone.
					0.90			(MADE GROUND) Medium dense slightly silty slightly sandy COBBLES of sub angular and angular sandstone.
		1.00	C	N=12 (2,2/2,3,3,4)	1.00			Firm orange brown slightly sandy gravelly CLAY with occasional cobbles of sub angular mudstone. Gravel is fine to coarse sub angular and angular mudstone.
					1.50			Stiff becoming hard red and orange brown mottled light green slightly friable silty CLAY.
		1.70	C	N=50 (4,5/50 for 235mm)	1.70			End of Borehole at 1.70 m

Remarks:

1. Windowless sample borehole refused at 1.7mbgl. 2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Open Hearth, Ringland**		Project No.: **14144**	Borehole No.: **WS03** Sheet 1 of 1
Location: Newport	Client: Willis Construction	Coordinates:	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101+97mm	Depth of Casing:	Dates 04/01/2023 -	Logged By: LS

Well	Water Strikes	Samples & In situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			(MADE GROUND) Bituminous Material.
		0.20	ES		0.30			(MADE GROUND) Medium dense grey very clayey sandy GRAVEL. Gravel is fine to coarse sub angular and angular limestone, ash, slag and clinker.
								Firm becoming stiff orange brown very friable silty CLAY.
								Becoming mottled green below 0.8mbgl.
		1.00	C	N=42 (2,7/6,8,12,16)				
		1.50	D		1.50			End of Borehole at 1.50 m

Remarks:

1. Windowless sample borehole refused at 1.5mbgl. 2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

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Project Name: **Open Hearth, Ringland**		Project No.: **14144**	Borehole No.: **WS04** Sheet 1 of 1
Location: Newport	Client: Willis Construction	Coordinates:	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101+97+86+75mm	Depth of Casing:	Dates 04/01/2023 -	Logged By: LS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.10			(MADE GROUND) Bituminous Material.
								(MADE GROUND) Loose to medium dense dark grey slightly sandy slightly clayey GRAVEL. Gravel is fine to coarse sub angular and angular limestone and occasional brick fragments, ash, slag and clinker.
		0.40	ES		0.40			(MADE GROUND) Soft dark and orange brown silty gravelly CLAY with occasional cobbles of sub angular mudstone. Gravel is fine to coarse sub angular and angular mudstone.
					0.70			*Becoming light brown below 0.65mbgl.*
					0.90			(MADE GROUND) Loose dark grey and black clayey sandy GRAVEL. Gravel is fine to coarse sub angular and angular limestone and occasional ash, slag and clinker
		1.00	C	N=6 (1,1/2,1,2,1)				(MADE GROUND) Soft light brown and orange brown gravelly silty CLAY. Gravel is fine to coarse sub angular and angular mudstone and occasional ash, slag and clinker.
		2.00	C	N=7 (1,2/2,1,2,2)				
					2.20			Firm becoming stiff red brown silty CLAY with fine grained mudstone lithorelicts.
		3.00	C	N=23 (2,3/3,7,7,6)				
		3.70	C	N=52 (7,8/52 for 235mm)	3.70			End of Borehole at 3.70 m

Remarks:

1. Windowless sample borehole refused at 3.7mbgl. 2. No groundwater encountered.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

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Project Name: **Open Hearth, Ringland**		Project No.: **14144**	Borehole No.: **WS05** Sheet 1 of 1
Location: Newport	Client: Willis Construction	Coordinates:	Hole Type: WLS
Equipment: DART 346	Diameter of Casing:	Level:	Scale 1:25
Diameter of Boring: 101+97mm	Depth of Casing:	Dates 04/01/2023 -	Logged By: LS

Well	Water Strikes	Samples & In situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m AOD)	Legend	Stratum Description
					0.10			(MADE GROUND) Bituminous Material.
		0.30	ES					(SUB BASE) Compact orange and beige clayey slightly sandy GRAVEL of fine to coarse sub angular and angular limestone.
	0.40 ▼				0.40			Firm becoming stiff orange brown silty friable CLAY with occasional light green spots.
		1.00	C	N=51 (7,9/10,11,14,16)	1.00			Stiff becoming hard of gravelly silty CLAY. Gravel is fine to coarse sub angular and angular mudstone.
		1.10	D					
		1.30	C	50 (17,19/50 for 100mm)				
					1.50			End of Borehole at 1.50 m

Remarks:

1. Windowless sample borehole refused at 1.5mgl. 2. Perched groundwater encountered at 0.4mbgl.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
SPT - Standard Penetration Test (split spoon)
CPT - Standard Penetration Test (solid cone)
W - Water sample
U - Undisturbed sample
TCR - Total Core Recovery
SCR - Solid Core Recovery
RQD - Rock Quality Designation

AGS

APPENDIX E

HAND EXCAVATED TRIAL PIT LOG

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Project Name:	Project No.:	Trial Pit No.:
Open Hearth, Ringland	**14144**	**HD1** Sheet 1 of 1

Location:	Client:	Logged By:	Scale
Newport	Willis Construction	LS	1:25

Equipment: Hand Excavated

Coordinates:

Date Excavated: 04/01/2023

Level:

Dimensions

0.10m

Depth : 0.20m

0.10m

Samples & In-situ Testing			Depth (m)	Level (m AOD)	Legend	Stratum Description
Depth (m)	Type	Results				
0.10	ES		0.20			(Disturbed Topsoil) Loose to medium dense dark brown very clayey gravelly SAND with frequent rootlets. Gravel is fine to coarse sub angular and angular mudstone with occasional plastic.
						End of Trialpit at 0.20 m

1
2
3
4
5

Remarks:

1. Hand excavated trial pit terminated at 0.3mbgl, environmental sample collected. 2. No groundwater encountered.

Groundwater: No groundwater encountered.

Stability: Trial pit sides were stable in the short term.

Key:

D - Small disturbed sample
B - Bulk disturbed sample
ES - Environmental soil sample
W - Water sample

AGS

APPENDIX F

FALLING HEAD PERMEABILITY TEST RESULTS

PERMEABILITY TEST DATA

PROJECT	Open Hearth, Ringland, Newport	**JOB No.**	14144

TYPE	FALLING		
DATE	04.01.23	**TIME**	10:00 hrs
BOREHOLE NUMBER	WS02	**TEST No.**	1
Depth of borehole at start of test (mBGL) h_i		1.70	m
Depth of borehole at end of test (mBGL) h_e		1.70	m
Borehole diameter (m) D		0.087	m
Piezometer diameter (m) d			m
Filter Backfill		No	
Soil in casing (m) L		0.00	m
L/D Ratio		19.5	
Hole in Soil below base of casing (m) L		1.70	m
Depth of casing (mBGL) h_c		0.00	m
Height of casing above ground level h_{uc}		0.00	m
Ground water level (mBGL) H_G		1.70	m
Water level at start of test below top of casing h_o		0.00	m
	$H_{G\ TEST}$	1.70	m

Elapsed Time t (mins)	t (s)	Depth of water below top of casing h (m)	Head of Water $H = (H_G - h)$ (m)	Ratio H/H_0
0	0	1.00	0.7	0.41
0.5	30	1.00	0.7	0.41
2	120	1.00	0.7	0.41
5	300	1.00	0.7	0.41
10	600	1.00	0.7	0.41
20	1200	1.00	0.7	0.41
40	2400	1.00	0.7	0.41
60	3600	1.00	0.7	0.41
100	6000	1.00	0.7	0.41

TEST SECTION

Length L = **1.70** m

Area A = **0.4706** m^2

INTAKE FACTOR

Refer to BS 5930 Figure 7

Type **Special**

$$F = \frac{D*2.32*\Pi*(L/D)}{\log_e[1.1(L/D)+((1+1.1(L/D)^2)^{0.5}]}$$

F = **3.31**

TIME LAG

T = Time from start of test when $h = 0.37\ h_o$

See graph opposite

T = **N/A** s

PERMEABILITY

$K = A / (F * T)$

K = **N/A** m/s

COMMENTS Infiltration not observed

PERMEABILITY TEST DATA

PROJECT	Open Hearth, Ringland, Newport	**JOB No.**	14144

TYPE	FALLING		
DATE	04.01.23	**TIME**	13:00 hrs
BOREHOLE NUMBER	WS05	**TEST No.**	1
Depth of borehole at start of test (mBGL) h_i		1.50	m
Depth of borehole at end of test (mBGL) h_e		1.50	m
Borehole diameter (m) D		0.087	m
Piezometer diameter (m) d			m
Filter Backfill		No	
Soil in casing (m) L		0.00	m
L/D Ratio		17.2	
Hole in Soil below base of casing (m) L		1.50	m
Depth of casing (mBGL) h_c		0.00	m
Height of casing above ground level h_{uc}		0.00	m
Ground water level (mBGL) H_G		0.40	m
Water level at start of test below top of casing h_o		0.00	m
	$H_{G\ TEST}$	0.40	m

Elapsed Time t (mins)	t (s)	Depth of water below top of casing h (m)	Head of Water $H = (H_G - h)$ (m)	Ratio H/H_0
0	0	0.40	0.0	0.00
0.5	30	0.40	0.0	0.00
2	120	0.40	0.0	0.00
3	180	0.40	0.0	0.00
4	240	0.40	0.0	0.00
5	300	0.40	0.0	0.00
6	360	0.40	0.0	0.00
7	420	0.40	0.0	0.00
8	480	0.40	0.0	0.00
10	600	0.40	0.0	0.00
15	900	0.40	0.0	0.00
30	1800	0.40	0.0	0.00
60	3600	0.40	0.0	0.00

TEST SECTION

Length L = **1.50** m

Area A = **0.4159** m^2

INTAKE FACTOR

Refer to BS 5930 Figure 7

Type **Special**

$$F = \frac{D*2.32*\Pi*(L/D)}{\log_e[1.1(L/D)+((1+1.1(L/D)^2)^{0.5}]}$$

F = **3.03**

TIME LAG

T = Time from start of test when $h = 0.37\ h_o$

See graph opposite

T = **N/A** s

PERMEABILITY

K = A / (F * T)

K = **N/A** m/s

COMMENTS Infiltration not observed

APPENDIX G

LABORATORY CHEMICAL TEST RESULTS

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Analytical Report Number : 23-10727

Project / Site name:	Open Hearth, Ringland, Newport	**Samples received on:**	06/01/2023
Your job number:	14144	**Samples instructed on/ Analysis started on:**	09/01/2023
Your order number:		**Analysis completed by:**	18/01/2023
Report Issue Number:	1	**Report issued on:**	18/01/2023
Samples Analysed:	6 soil samples		

Signed:

Joanna Wawrzeczko
Reporting 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

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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: 23-10727
Project / Site name: Open Hearth, Ringland, Newport

Lab Sample Number				2548129	2548130	2548131	2548132	2548133
Sample Reference				WS01	WS02	WS03	WS04	WS05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.30	0.20	0.40	0.30
Date Sampled				06/01/2023	06/01/2023	06/01/2023	06/01/2023	06/01/2023
Time Taken				None Supplied	None Supplied	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	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	21	4	14	9.8	2.4
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.8	0.8	0.8
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	JSW	JSW	JSW	JSW	JSW
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.9	10.9	10.8	11.2	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	670	1400	3700	5700	450
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0087	0.042	0.22	0.48	0.033
Sulphide	mg/kg	1	MCERTS	< 1.0	140	360	3200	19
Total Sulphur	mg/kg	50	MCERTS	410	880	2500	4400	420
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	4.2	0.5	2.4	1.7	0.2
Loss on Ignition @ 450oC	%	0.2	MCERTS	9.7	2	12.1	5.4	0.6
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	0.21	0.28	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.06	0.13	< 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	0.37	0.05	0.6	0.86	< 0.05
Anthracene	mg/kg	0.05	MCERTS	0.05	< 0.05	0.05	0.14	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.91	0.08	0.51	1.3	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.73	0.08	0.44	1.1	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.7	0.07	0.48	1.1	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.83	0.09	0.54	1.2	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.1	0.19	0.71	1.9	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.53	0.06	0.29	0.54	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.71	0.1	0.41	0.82	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.49	0.11	0.29	0.69	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.1	< 0.05	0.12	0.24	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.51	0.14	0.39	0.83	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	7.11	0.97	5.1	11.2	< 0.80

Analytical Report Number: 23-10727
Project / Site name: Open Hearth, Ringland, Newport

Lab Sample Number				2548129	2548130	2548131	2548132	2548133
Sample Reference				WS01	WS02	WS03	WS04	WS05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	0.30	0.20	0.40	0.30
Date Sampled				06/01/2023	06/01/2023	06/01/2023	06/01/2023	06/01/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	22	6.8	10	10	2.6
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.58	1	5.6	7.7	0.09
Boron (water soluble)	mg/kg	0.2	MCERTS	1.6	8	2.2	2.9	< 0.2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	2.4	< 0.2	< 0.2	0.3
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20	2200	61	100	7.1
Copper (aqua regia extractable)	mg/kg	1	MCERTS	61	250	44	33	27
Lead (aqua regia extractable)	mg/kg	1	MCERTS	57	180	20	26	53
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	14	43	18	12	2.8
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	20	360	98	180	8.1
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	200	730	45	59	67

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-10727
Project / Site name: Open Hearth, Ringland, Newport

Lab Sample Number				2548134
Sample Reference				HD1-previous WS: TBC
Sample Number				None Supplied
Depth (m)				0.10
Date Sampled				06/01/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	38
Total mass of sample received	kg	0.001	NONE	0.8

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	JSW

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.4
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	890
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.046
Sulphide	mg/kg	1	MCERTS	< 1.0
Total Sulphur	mg/kg	50	MCERTS	450
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	5.5
Loss on Ignition @ 450oC	%	0.2	MCERTS	10.6

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	0.06
Phenanthrene	mg/kg	0.05	MCERTS	0.32
Anthracene	mg/kg	0.05	MCERTS	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.73
Pyrene	mg/kg	0.05	MCERTS	0.56
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.52
Chrysene	mg/kg	0.05	MCERTS	0.65
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.96
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.37
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.6
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.36
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.09
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.37

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	5.64

Analytical Report Number: 23-10727
Project / Site name: Open Hearth, Ringland, Newport

Lab Sample Number				2548134
Sample Reference				HD1-previous WS: TBC
Sample Number				None Supplied
Depth (m)				0.10
Date Sampled				06/01/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	4
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	1.1
Boron (water soluble)	mg/kg	0.2	MCERTS	2.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	28
Copper (aqua regia extractable)	mg/kg	1	MCERTS	41
Lead (aqua regia extractable)	mg/kg	1	MCERTS	39
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	29
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	39
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	120

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-10727
Project / Site name: Open Hearth, Ringland, Newport

* 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 *
2548129	WS01	None Supplied	0.1	Brown loam and sand with gravel and vegetation.
2548130	WS02	None Supplied	0.3	Brown gravelly sand.
2548131	WS03	None Supplied	0.2	Brown gravelly sand.
2548132	WS04	None Supplied	0.4	Brown gravelly sand.
2548133	WS05	None Supplied	0.3	Brown gravelly sand.
2548134	1-previous WS:	None Supplied	0.1	Brown loam and sand with gravel and vegetation.

Analytical Report Number : 23-10727
Project / Site name: Open Hearth, Ringland, Newport

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
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
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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion 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
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
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
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
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
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 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
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
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
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
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS

Analytical Report Number : 23-10727
Project / Site name: Open Hearth, Ringland, Newport

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

APPENDIX H

LABORATORY GEOTECHNICAL TEST RESULTS

Results Summary

Apex Testing Solutions Limited
Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ

Telephone: 01656 746762
E-mail: andrew.grogan@apex-drilling.com
laura.davis@apex-drilling.com

Reporting Details		**Key Information**	
Company Name:	Integral Geotechnique	**Site Name:**	Open hearth, Ringland
Address:	7 Beddau Way	**Job Number:**	D23019
	Castlegate Business Park	**Date Received:**	11/01/2023
	Caerphilly	**Job Coordinator:**	K. Lester
	CF83 2AX		
Contact Name:	**LS**		
Contact Number:	**2920807991**		

Item No.	Tests Undertaken	Number of Tests
1	Moisture Content - BS1377 -2: 1990	3
2	Atterburg Limits (4 point) - BS1377-2: 1990	3
3	# pH & sulphate (pH/SO4)	3

Results Issued: 24/01/2023

Comments

Results herein relate only to samples received in the laboratory and where not sampled by Apex Testing Solutions personnel relate to the samples as received.
Where tests are UKAS accredited any Opinion and/or Interpretation expressed herein are outside the scope of the UKAS Accreditation. The reports shall not be reproduced in full without the written approval of the laboratory.

Please contact the job coordinator should any further information be required.

Unit 7-8 Hawarden Business Park
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Deeside
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Tel: (01244) 528777
email: hawardencustomerservices@alsglobal.com
Website: www.alsenvironmental.co.uk

Apex Testing Solutions Limited
Sturmi Way
Village Farm Industrial Estate
Pyle
Bridgend
CF33 6BZ

Attention: Andrew Grogan

CERTIFICATE OF ANALYSIS

Date of report Generation:	24 January 2023
Customer:	Apex Testing Solutions Limited
Sample Delivery Group (SDG):	230119-51
Your Reference:	D23019
Location:	Open Hearth, Ringland, Newport
Report No:	676148
Order Number:	ATS 1758

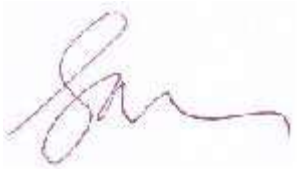
We received 3 samples on Thursday January 19, 2023 and 3 of these samples were scheduled for analysis which was completed on Tuesday January 24, 2023. Accredited laboratory tests are defined within the report, but opinions, interpretations and on-site data expressed herein are outside the scope of ISO 17025 accreditation.

Should this report require incorporation into client reports, it must be used in its entirety and not simply with the data sections alone.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden.

All sample data is provided by the customer. The reported results relate to the sample supplied, and on the basis that this data is correct.
Incorrect sampling dates and/or sample information will affect the validity of results.
The customer is not permitted to reproduce this report except in full without the approval of the laboratory.

Approved By:



Sonia McWhan

Operations Manager

1291

CERTIFICATE OF ANALYSIS

SDG: 230119-51 **Report Number:** 676148 **Superseded Report:**
Client Ref.: D23019 **Location:** Open Hearth, Ringland, Newport

Received Sample Overview

Lab Sample No(s)	Customer Sample Ref.	AGS Ref.	Depth (m)	Sampled Date
27429372	WS01		1.70 - 1.70	17/01/2023
27429374	WS03		1.50 - 1.50	17/01/2023
27429376	WS05		1.10 - 1.10	17/01/2023

Only received samples which have had analysis scheduled will be shown on the following pages.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230119-51 **Report Number:** 676148 **Superseded Report:**
Client Ref.: D23019 **Location:** Open Hearth, Ringland, Newport

Results Legend

X Test

N No Determination Possible

Sample Types -
S - Soil/Solid
UNS - Unspecified Solid
GW - Ground Water
SW - Surface Water
LE - Land Leachate
PL - Prepared Leachate
PR - Process Water
SA - Saline Water
TE - Trade Effluent
TS - Treated Sewage
US - Untreated Sewage
RE - Recreational Water
DW - Drinking Water Non-regulatory
UNL - Unspecified Liquid
SL - Sludge
G - Gas
OTH - Other

			Lab Sample No(s)	Customer Sample Reference	AGS Reference	Depth (m)	Container	Sample Type
			27429372	WS01		1.70 - 1.70	250g Amber Jar (ALE210)	S
			27429374	WS03		1.50 - 1.50	250g Amber Jar (ALE210)	S
			27429376	WS05		1.10 - 1.10	250g Amber Jar (ALE210)	S
Anions by Kone (soil)	All	NDPs: 0 Tests: 3	X	X			X	
pH	All	NDPs: 0 Tests: 3	X	X			X	
Sample description	All	NDPs: 0 Tests: 3	X	X			X	

CERTIFICATE OF ANALYSIS

SDG: 230119-51 **Report Number:** 676148 **Superseded Report:**
Client Ref.: D23019 **Location:** Open Hearth, Ringland, Newport

Sample Descriptions

Grain Sizes

very fine	<0.063mm	fine	0.063mm - 0.1mm	medium	0.1mm - 2mm	coarse	2mm - 10mm	very coarse	>10mm

Lab Sample No(s)	Customer Sample Ref.	Depth (m)	Colour	Description	Inclusions	Inclusions 2
27429372	WS01	1.70 - 1.70	Dark Brown	Sandy Clay Loam	Stones	Vegetation
27429374	WS03	1.50 - 1.50	Dark Brown	Clay	Stones	None
27429376	WS05	1.10 - 1.10	Dark Brown	Clay	None	None

These descriptions are only intended to act as a cross check if sample identities are questioned, and to provide a log of sample matrices with respect to MCERTS validation. They are not intended as full geological descriptions.

We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally ocurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample.

Other coarse granular materials such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

Validated

CERTIFICATE OF ANALYSIS

SDG: 230119-51 **Report Number:** 676148 **Superseded Report:**

Client Ref.: D23019 **Location:** Open Hearth, Ringland, Newport

Results Legend

#	ISO17025 accredited.
M	mCERTS accredited.
aq	Aqueous / settled sample.
diss.filt	Dissolved / filtered sample.
tot.unfilt	Total / unfiltered sample.
*	Subcontracted - refer to subcontractor report for accreditation status.
**	% recovery of the surrogate standard to check the efficiency of the method. The results of individual compounds within samples aren't corrected for the recovery
(F)	Trigger breach confirmed
1-4+§@	Sample deviation (see appendix)

Component	LOD/Units	Method	Customer Sample Ref.	WS01	WS03	WS05			
			Depth (m)	1.70 - 1.70	1.50 - 1.50	1.10 - 1.10			
			Sample Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)			
			Date Sampled	17/01/2023	17/01/2023	17/01/2023			
			Sample Time	-	-	-			
			Date Received	19/01/2023	19/01/2023	19/01/2023			
			SDG Ref	230119-51	230119-51	230119-51			
			Lab Sample No.(s)	27429372	27429374	27429376			
			AGS Reference						
Moisture Content Ratio (% of as received sample)	%	PM024		17	14	10			
pH	1 pH Units	TM133		8.29 M	8.9 M	8.85 M			
Water Soluble Sulphate as SO4 2:1 Extract	<0.004 g/l	TM243		0.0273 M	0.043 M	0.0099 M			

CERTIFICATE OF ANALYSIS

SDG: 230119-51 **Report Number:** 676148 **Superseded Report:**
Client Ref.: D23019 **Location:** Open Hearth, Ringland, Newport

Table of Results - Appendix

Method No	Reference	Description
PM024	Modified BS 1377	Soil preparation including homogenisation, moisture screens of soils for Asbestos Containing Material
TM133	BS 1377: Part 3 1990;BS 6068-2.5	Determination of pH in Soil and Water using the GLpH pH Meter
TM243		Mixed Anions In Soils By Kone

NA = not applicable.

Chemical testing (unless subcontracted) performed at ALS Laboratories (UK) Limited Hawarden (Method codes TM).

CERTIFICATE OF ANALYSIS

SDG: 230119-51 **Report Number:** 676148 **Superseded Report:**
Client Ref.: D23019 **Location:** Open Hearth, Ringland, Newport

Test Completion Dates

Lab Sample No(s)	27429372	27429374	27429376
Customer Sample Ref.	WS01	WS03	WS05
AGS Ref.			
Depth	1.70 - 1.70	1.50 - 1.50	1.10 - 1.10
Type	Soil/Solid (S)	Soil/Solid (S)	Soil/Solid (S)
Anions by Kone (soil)	24-Jan-2023	24-Jan-2023	24-Jan-2023
pH	20-Jan-2023	20-Jan-2023	20-Jan-2023
Sample description	19-Jan-2023	19-Jan-2023	19-Jan-2023

Appendix

1. Results are expressed on a dry weight basis (dried at 35ºC) for all soil analyses except for the following: NRA and CEN Leach tests, flash point LOI, pH, ammonium as NH4 by the BRE method, VOC TICs and SVOC TICs.

2. If sufficient sample is received a sub sample will be retained free of charge for 30 days after analysis is completed (e-mailed) for all sample types unless the sample is destroyed on testing. The prepared soil sub sample that is analysed for asbestos will be retained for a period of 6 months after the analysis date. All bulk samples will be retained for a period of 6 months after the analysis date. All samples received and not scheduled will be disposed of one month after the date of receipt unless we are instructed to the contrary. Once the initial period has expired, a storage charge will be applied for each month or part thereof until the client cancels the request for sample storage. ALS reserve the right to charge for samples received and stored but not analysed.

3. With respect to turnaround, we will always endeavour to meet client requirements wherever possible, but turnaround times cannot be absolutely guaranteed due to so many variables beyond our control.

4. We take responsibility for any test performed by sub-contractors (marked with an asterisk). We endeavour to use UKAS/MCERTS Accredited Laboratories, who either complete a quality questionnaire or are audited by ourselves. For some determinands there are no UKAS/MCERTS Accredited Laboratories, in this instance a laboratory with a known track record will be utilised.

5. If no separate volatile sample is supplied by the client, or if a headspace or sediment is present in the volatile sample, the integrity of the data may be compromised. This will be flagged up as an invalid VOC on the test schedule and the result marked as deviating on the test certificate.

6. NDP - No determination possible due to insufficient/unsuitable sample.

7. Results relate only to the items tested.

8. LoDs (Limit of Detection) for wet tests reported on a dry weight basis are not corrected for moisture content.

9. **Surrogate recoveries** - Surrogates are added to your sample to monitor recovery of the test requested. A % recovery is reported, results are not corrected for the recovery measured. Typical recoveries for organics tests are 70-130%. Recoveries in soils are affected by organic rich or clay rich matrices. Waters can be affected by remediation fluids or high amounts of sediment. Test results are only ever reported if all of the associated quality checks pass; it is assumed that all recoveries outside of the values above are due to matrix affect.

10. Stones/debris are not routinely removed. We always endeavour to take a representative sub sample from the received sample.

11. In certain circumstances the method detection limit may be elevated due to the sample being outside the calibration range. Other factors that may contribute to this include possible interferences. In both cases the sample would be diluted which would cause the method detection limit to be raised.

12. For dried and crushed preparations of soils volatile loss may occur e.g volatile mercury.

13. For leachate preparations other than Zero Headspace Extraction (ZHE) volatile loss may occur.

14. For the BSEN 12457-3 two batch process to allow the cumulative release to be calculated, the volume of the leachate produced is measured and filtered for all tests. We therefore cannot carry out any unfiltered analysis. The tests affected include volatiles GCFID/GCMS and all subcontracted analysis.

15. Analysis and identification of specific compounds using GCFID is by retention time only, and we routinely calibrate and quantify for benzene, toluene, ethylbenzenes and xylenes (BTEX). For total volatiles in the C5-C12 range, the total area of the chromatogram is integrated and expressed as ug/kg or ug/l. Although this analysis is commonly used for the quantification of gasoline range organics (GRO), the system will also detect other compounds such as chlorinated solvents, and this may lead to a falsely high result with respect to hydrocarbons only. It is not possible to specifically identify these non-hydrocarbons, as standards are not routinely run for any other compounds, and for more definitive identification, volatiles by GCMS should be utilised.

16. We are accredited to MCERTS for sand, clay and loam/topsoil, or any of these materials - whether these are derived from naturally occurring soil profiles, or from fill/made ground, as long as these materials constitute the major part of the sample. Other coarse granular material such as concrete, gravel and brick are not accredited if they comprise the major part of the sample.

17 Data retention. All records, communications and reports pertaining to the analysis are archived for seven years from the date of issue of the final report.

General

18. **Tentatively Identified Compounds (TICs)** are non-target peaks in VOC and SVOC analysis. All non-target peaks detected with a concentration above the LoD are subjected to a mass spectral library search. Non-target peaks with a library search confidence of >75% are reported based on the best mass spectral library match. When a non-target peak with a library search confidence of <75% is detected it is reported as “mixed hydrocarbons”. Non-target compounds identified from the scan data are semi-quantified relative to one of the deuterated internal standards, under the same chromatographic conditions as the target compounds. This result is reported as a semi-quantitative value and reported as Tentatively Identified Compounds (TICs). TICs are outside the scope of UKAS accreditation and are not moisture corrected.

19. **Sample Deviations**

If a sample is classed as deviated then the associated results may be compromised.

1	**Container with Headspace provided for volatiles analysis**
2	**Incorrect container received**
3	**Deviation from method**
4	**Matrix interference**
♦	**Sample holding time exceeded in laboratory**
@	**Sample holding time exceeded due to late arrival of instructions or samples**
§	**Sampled on date not provided**

20. **Asbestos**

When requested, the individual sub sample scheduled will be analysed in house for the presence of asbestos fibres and asbestos containing material by our documented in house method TM048 based on HSG 248 (2021), which is accredited to ISO17025. If a specific asbestos fibre type is not found this will be reported as “Not detected”. If no asbestos fibre types are found all will be reported as “Not detected” and the sub sample analysed deemed to be clear of asbestos. If an asbestos fibre type is found it will be reported as detected (for each fibre type found). Testing can be carried out on asbestos positive samples, but, due to Health and Safety considerations, may be replaced by alternative tests or reported as No Determination Possible (NDP). The quantity of asbestos present is not determined unless specifically requested.

Identification of Asbestos in Bulk Materials & Soils

The results for identification of asbestos in bulk materials and soils are obtained from supplied bulk materials andd soils which have been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining, based on HSG 248 (2021).

The results for identification of asbestos in soils are obtained from a homogenised sub sample which has been examined to determine the presence of asbestos fibres using ALS (Hawarden) in-house method of transmitted/polarised light microscopy and central stop dispersion staining.

Asbestos Type	Common Name
Chrysotile	White Asbestos
Amosite	Brown Asbestos
Crocidolite	Blue Asbestos
Fibrous Actinolite	-
Fibrous Anthophyllite	-
Fibrous Tremolite	-

Visual Estimation Of Fibre Content

Estimation of fibre content is not permitted as part of our UKAS accredited test other than: - Trace - Where only one or two asbestos fibres were identified.

Respirable Fibres

Respirable fibres are defined as fibres of <3 µm diameter, longer than 5 µm and with aspect ratios of at least 3:1 that can be inhaled into the lower regions of the lung and are generally acknowledged to be most important predictor of hazard and risk for cancers of the lung.

Further guidance on typical asbestos fibre content of manufactured products can be found in HSG 264.

The identification of asbestos containing materials and soils falls within our schedule of tests for which we hold UKAS accreditation, however opinions, interpretations and all other information contained in the report are outside the scope of UKAS accreditation.

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D23019	**Client:**	Integral Geotechnique
Project Name:	Open Hearth, Ringland, Newport	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	31056		

Site Ref / Hole ID:	WS01	**Depth (m):**	1.70 - 1.70
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Dark brown slightly sandy gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	Unkown	**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 January 2023	**Date Tested:**	19 January 2023

Test Results

Moisture Content (%)	27.2

Remarks:

QA Ref.	**Apex Testing Solutions**		Approver	Date	Fig
EN ISO 17892-1:2014 E	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	*G Llewellyn*	20/01/2023	**MC**
			G Llewellyn, Senior Technician		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

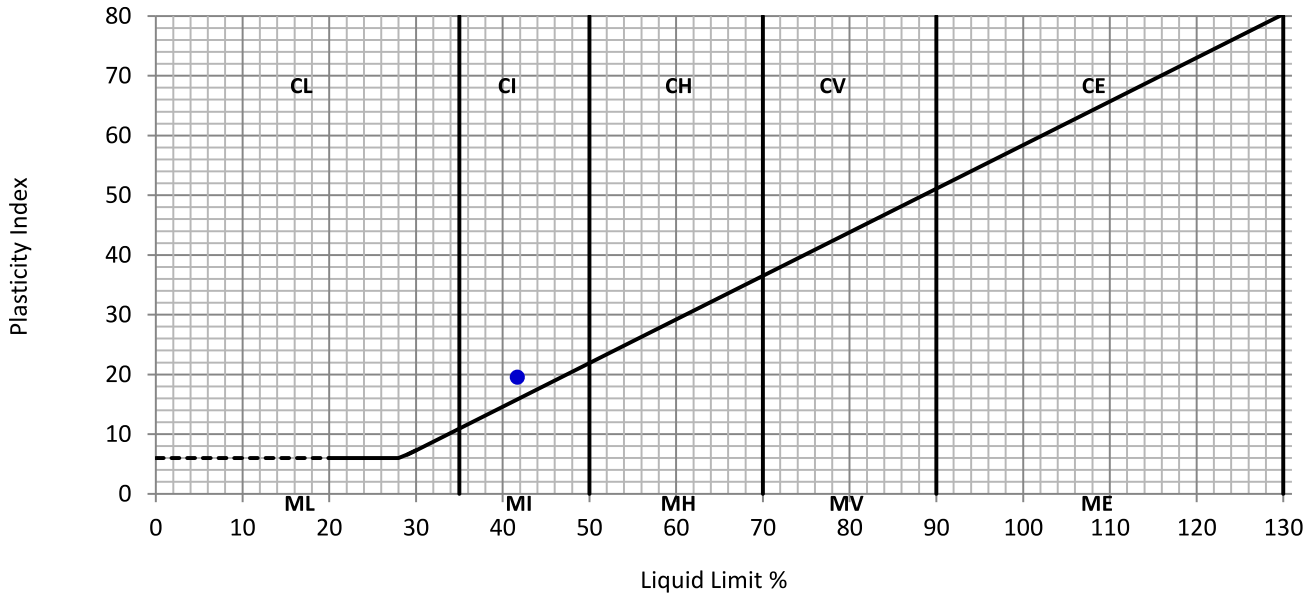
Project No:	D23019	**Client:**	Integral Geotechnique
Project Name:	Open Hearth, Ringland, Newport	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly
ATS Sample No:	31056		CF83 2AX

Site Ref / Hole ID:	WS01	**Depth (m):**	1.70 - 1.70
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Dark brown slightly sandy gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	Unkown	**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 January 2023	**Date Tested:**	19 January 2023

Test Results

Liquid Limit	42	%
Plastic Limit	22	%
Plasticity Index	20	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	55	%



Remarks:

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D23019	**Client:**	Integral Geotechnique
Project Name:	Open Hearth, Ringland, Newport	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	31057		

Site Ref / Hole ID:	WS03	**Depth (m):**	1.50 - 1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	Unkown	**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 January 2023	**Date Tested:**	19 January 2023

Test Results

Moisture Content (%)	19.7

Remarks:

QA Ref.	**Apex Testing Solutions**		Approver	Date	Fig
EN ISO 17892-1:2014 E	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	*G Llewellyn*	20/01/2023	**MC**
			G Llewellyn, Senior Technician		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

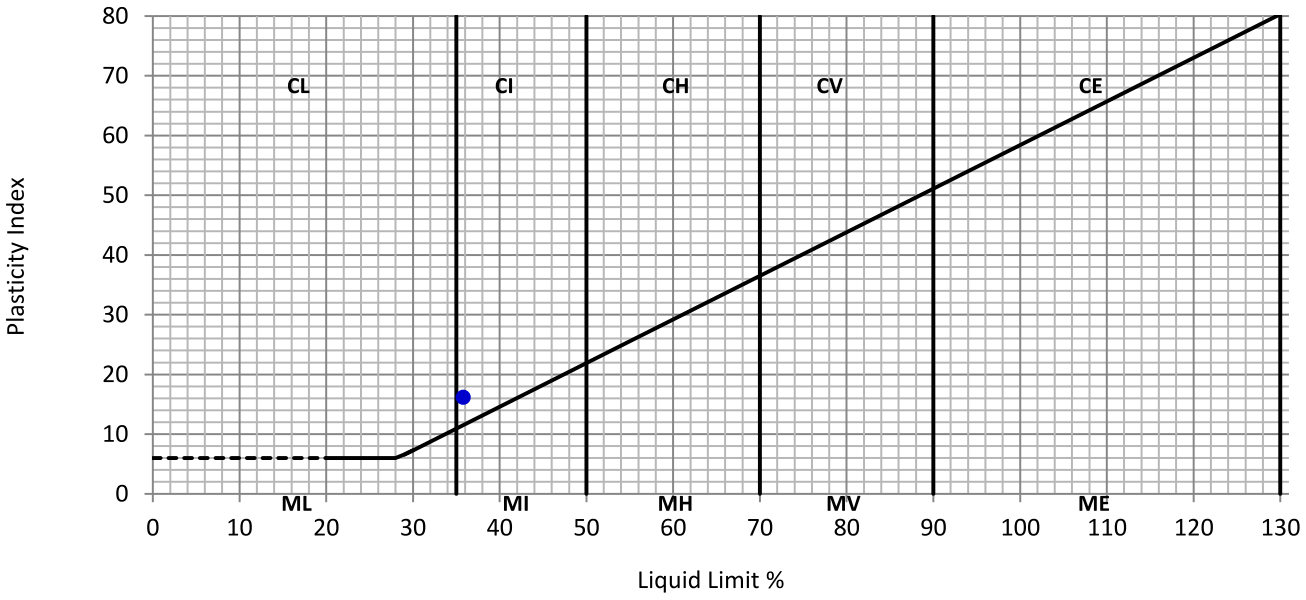
Project No:	D23019	**Client:**	Integral Geotechnique
Project Name:	Open Hearth, Ringland, Newport	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly
ATS Sample No:	31057		CF83 2AX

Site Ref / Hole ID:	WS03	**Depth (m):**	1.50 - 1.50
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	Unkown	**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 January 2023	**Date Tested:**	19 January 2023

Test Results

Liquid Limit	36	%
Plastic Limit	20	%
Plasticity Index	16	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	9	%



Remarks:

QA Ref. BS1377 - 2 Rev. 3.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver: G Llewellyn G Llewellyn, Senior Technician	Date: 20/01/2023	Fig. ATT

TEST REPORT

Determination Of Water Content

ISO 17892-1: 2014

Project No:	D23019	**Client:**	Integral Geotechnique
Project Name:	Open Hearth, Ringland, Newport	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly CF83 2AX
ATS Sample No:	31058		

Site Ref / Hole ID:	WS05	**Depth (m):**	1.10 - 1.10
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	Unkown	**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 January 2023	**Date Tested:**	19 January 2023

Test Results

Moisture Content (%)	15.5

Remarks:

QA Ref.	**Apex Testing Solutions**		Approver	Date	Fig
EN ISO 17892-1:2014 E	Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	*G Llewellyn*	20/01/2023	**MC**
			G Llewellyn, Senior Technician		

TEST REPORT

LIQUID LIMIT, PLASTIC LIMIT & PLASTICITY INDEX

BS 1377:Part 2:1990. Clause 4.3/5.3/5.4

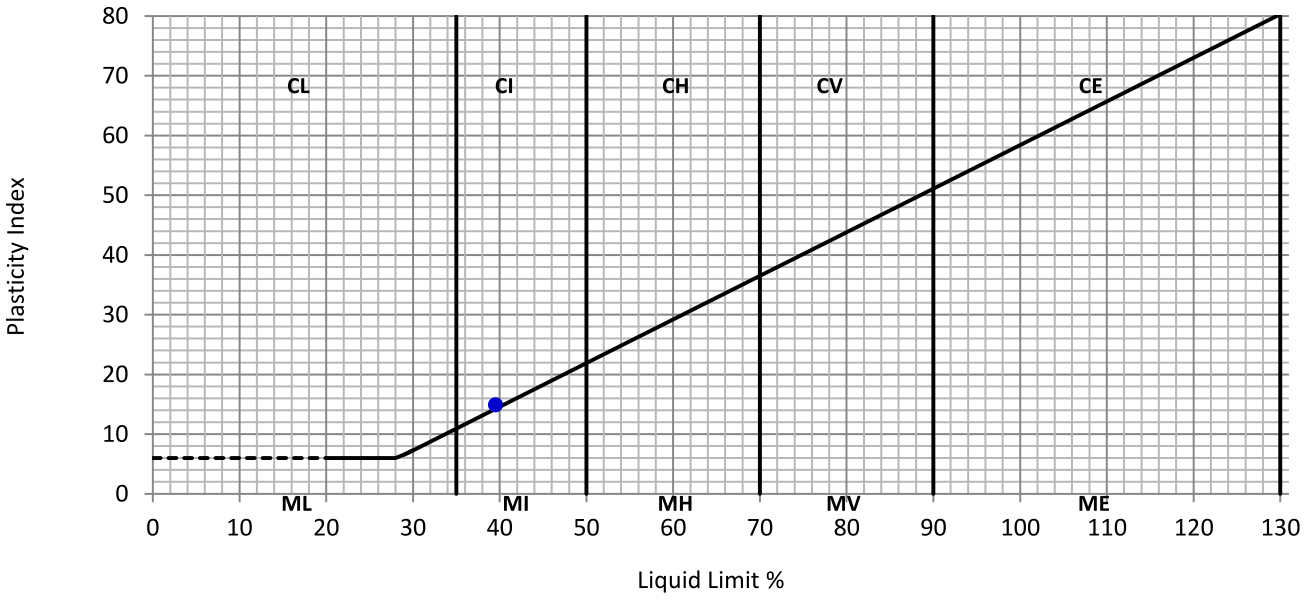
Project No:	D23019	**Client:**	Integral Geotechnique
Project Name:	Open Hearth, Ringland, Newport	**Address:**	7 Beddau Way Castlegate Business Park Caerphilly
ATS Sample No:	31058		CF83 2AX

Site Ref / Hole ID:	WS05	**Depth (m):**	1.10 - 1.10
Sample No:		**Sample Type:**	Bulk
Sampling Certificate Received:	No	**Material Description:**	Brown slightly gravelly CLAY
Location in Works:	N/A	**Material Source:**	Site Generated
Date Sampled:	Unkown	**Material Supplier:**	Site Generated
Sampled By:	Client	**Specification:**	BS1377
Date Received:	17 January 2023	**Date Tested:**	19 January 2023

Test Results

Liquid Limit	40	%
Plastic Limit	25	%
Plasticity Index	15	%

Preparation:	4.2.4 Sieved Specimen	
Proportion retained on 425µm sieve:	18	%



Remarks:

QA Ref. BS1377 - 2 Rev. 3.0	**Apex Testing Solutions** Sturmi Way, Village Farm Industrial Est, Pyle, Bridgend, CF33 6BZ Tel: 01656 746762 Fax: 01656 749096	7771	Approver: G Llewellyn G Llewellyn, Senior Technician	Date: 20/01/2023	Fig. ATT

APPENDIX I

SUMMARY OF CHEMICAL RESULTS –DISTURBED TOPSOIL

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14144
Site: Open Hearth, Ringland, Newport
Soil Type: Disturbed Topsoil
Soil Organic Matter: 1%

METALS AND SEMI-METALS

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	**WS01**	**0.10**	22	1.6	0.58	< 0.2	20	< 1.8	61	57	< 0.3	14	< 1.0	20	200
2	**HD1**	**0.10**	4	2.9	1.1	0.4	28	< 1.8	41	39	< 0.3	29	< 1.0	39	120
	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

Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14144
Site: Open Hearth, Ringland, Newport
Soil Type: Disturbed Topsoil
Soil Organic Matter: 1%

INORGANIC CHEMICALS & OTHERS

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	WS01	0.10	< 1.0	9.70	21.00	< 1.0	7.90	0.01	670.00	< 1.0	410.00	4.20	7.22	Not-detected	#N/A
2	HD1	0.10	< 1.0	10.60	38.00	< 1.0	8.40	0.05	890.00	< 1.0	450.00	5.50	9.46	Not-detected	#N/A
	Screening Criteria Value		**34.0**	-	-	**120.0**	-	-	-	-	-	-	-	-	**0.001**
	Source of Screening Criteria Value		ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14144
Site: Open Hearth, Ringland, Newport
Soil Type: Disturbed Topsoil
Soil Organic Matter: 1%

POLYAROMATIC HYDROCARBONS (PAH)

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	WS01	0.10	0.05	< 0.05	0.05	0.7	0.71	1.1	0.51	0.53	0.83	0.1	0.91	< 0.05	0.49	< 0.05	0.37	0.73
2	HD1	0.10	0.05	< 0.05	< 0.05	0.52	0.6	0.96	0.37	0.37	0.65	0.09	0.73	0.06	0.36	< 0.05	0.32	0.56
	Screening Criteria Value		210.0	170.0	2400.0	7.2	2.2	2.6	320.0	77.0	15.0	0.24	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

Intégral Géotechnique

APPENDIX J

SUMMARY OF CHEMICAL RESULTS – MADE GROUND

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14144
Site: Open Hearth, Ringland, Newport
Soil Type: Made Ground
Soil Organic Matter: 1%

METALS AND SEMI-METALS

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	WS02	0.30	6.8	8	1	2.4	2200	< 1.8	250	180	< 0.3	43	< 1.0	360	730
2	WS03	0.20	10	2.2	5.6	< 0.2	61	< 1.8	44	20	< 0.3	18	< 1.0	98	45
3	WS04	0.40	10	2.9	7.7	< 0.2	100	< 1.8	33	26	< 0.3	12	< 1.0	180	59
4	WS05	0.30	2.6	< 0.2	0.09	0.3	7.1	< 1.8	27	53	< 0.3	2.8	< 1.0	8.1	67
	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

Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14144
Site: Open Hearth, Ringland, Newport
Soil Type: Made Ground
Soil Organic Matter: 1%

INORGANIC CHEMICALS & OTHERS

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	**WS02**	**0.30**	< 1.0	2.00	4.00	< 1.0	10.90	0.04	1400.00	140.00	880.00	0.50	0.86	Not-detected	#N/A
2	**WS03**	**0.20**	< 1.0	12.10	14.00	< 1.0	10.80	0.22	3700.00	360.00	2500.00	2.40	4.13	Not-detected	#N/A
3	**WS04**	**0.40**	< 1.0	5.40	9.80	< 1.0	11.20	0.48	5700.00	3200.00	4400.00	1.70	2.92	Not-detected	#N/A
4	**WS05**	**0.30**	< 1.0	0.60	2.40	< 1.0	8.20	0.03	450.00	19.00	420.00	0.20	0.34	Not-detected	#N/A
	Screening Criteria Value		**34.0**	-	-	**120.0**	-	-	-	-	-	-	-	-	**0.001**
	Source of Screening Criteria Value		ATRISK	-	-	S4UL	-	-	-	-	-	-	-	-	IOM

Intégral Géotechnique

SUMMARY OF LABORATORY SOIL TEST RESULTS

Job No.: 14144
Site: Open Hearth, Ringland, Newport
Soil Type: Made Ground
Soil Organic Matter: 1%

POLYAROMATIC HYDROCARBONS (PAH)

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	WS02	0.30	< 0.05	< 0.05	< 0.05	0.07	0.1	0.19	0.14	0.06	0.09	< 0.05	0.08	< 0.05	0.11	< 0.05	0.05	0.08
2	WS03	0.20	< 0.05	0.06	0.05	0.48	0.41	0.71	0.39	0.29	0.54	0.12	0.51	< 0.05	0.29	0.21	0.6	0.44
3	WS04	0.40	< 0.05	0.13	0.14	1.1	0.82	1.9	0.83	0.54	1.2	0.24	1.3	< 0.05	0.69	0.28	0.86	1.1
4	WS05	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
	Screening Criteria Value		210.0	170.0	2400.0	7.2	2.2	2.6	320.0	77.0	15.0	0.24	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

Intégral Géotechnique

FIGURES

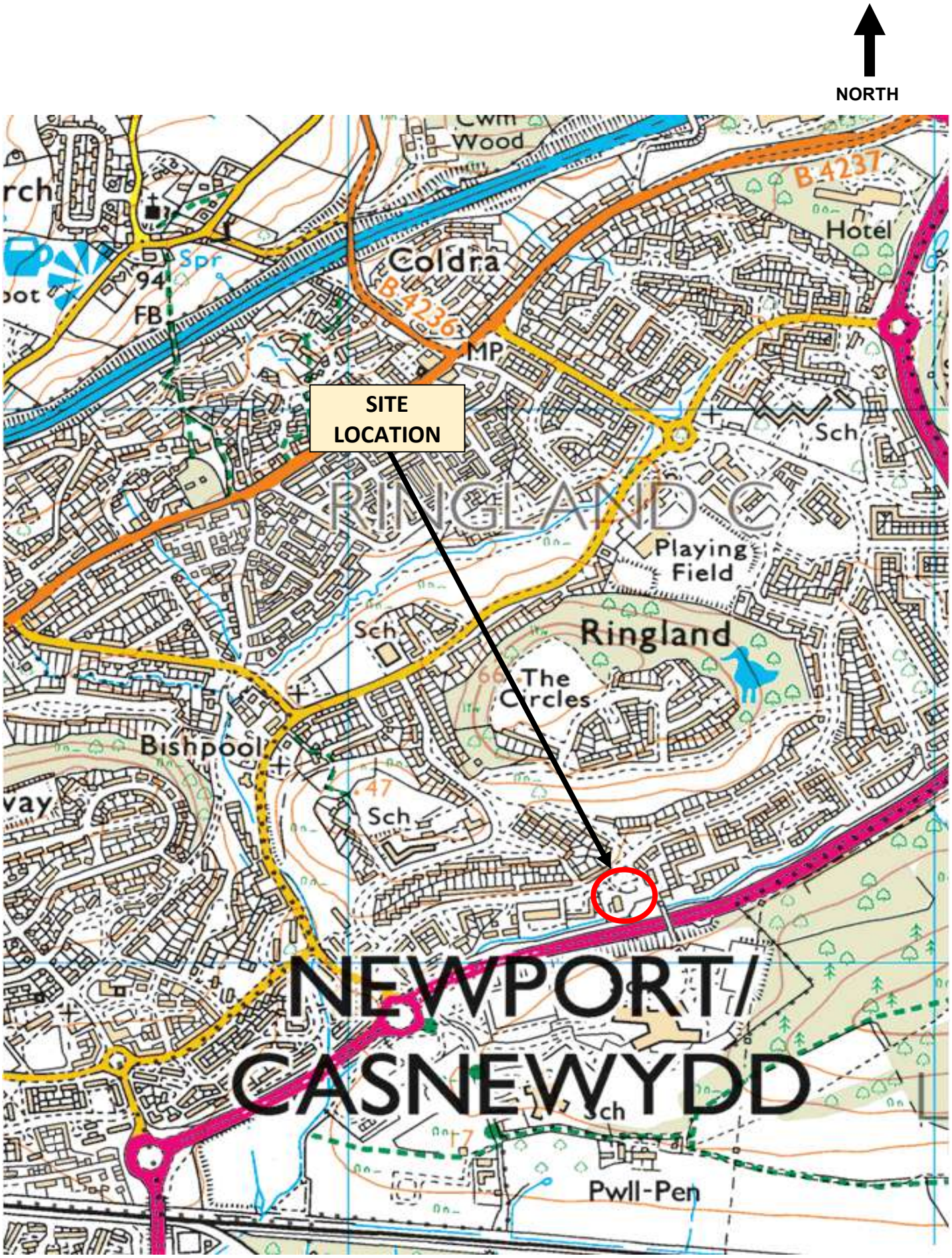


Figure 1: Site Location

14144 - Open Hearth, Ringland, Newport

Intégral Géotechnique

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

NORTH

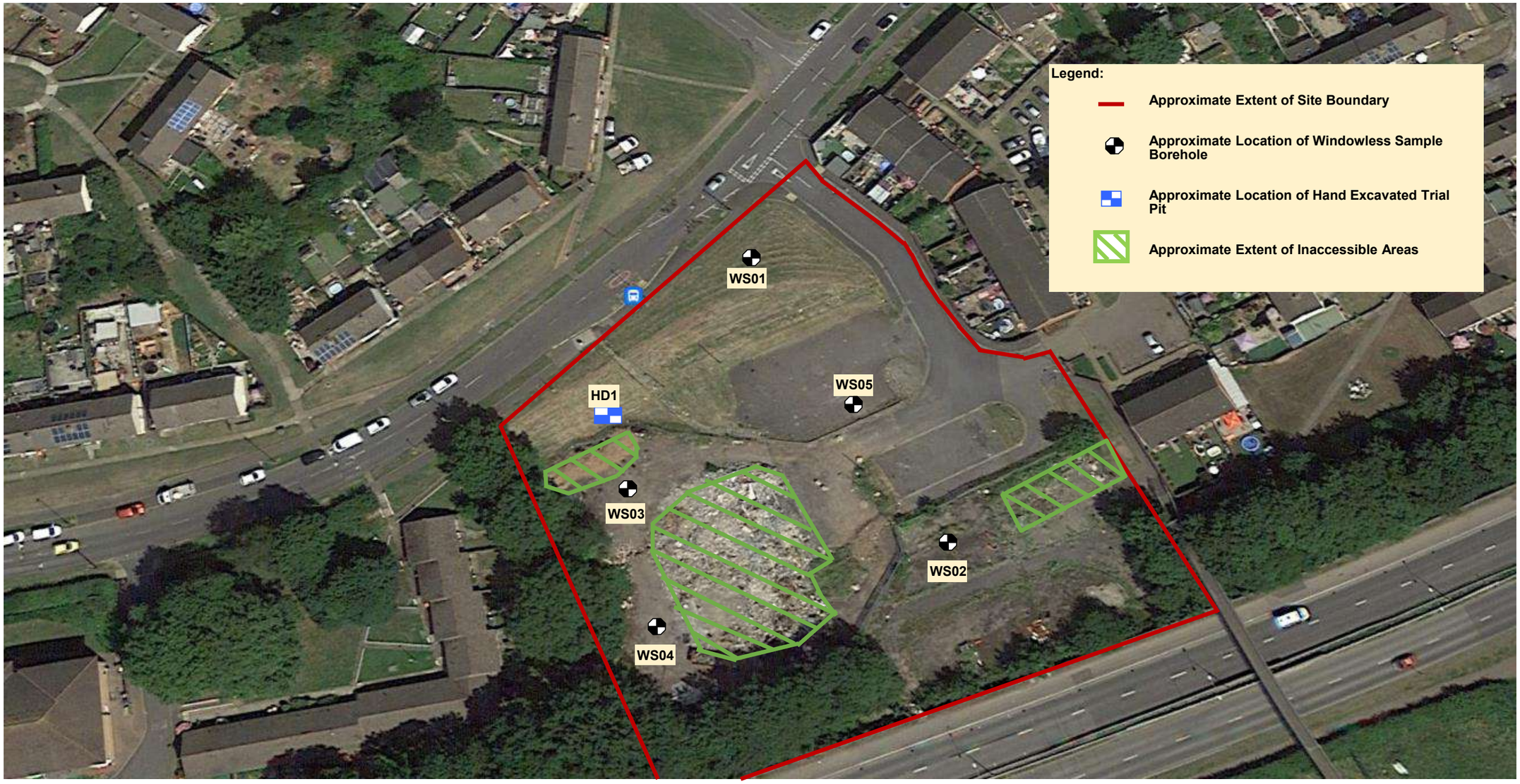


Figure 2: Site Plan

Open Hearth, Ringland, Newport

Intégral Géotechnique

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

Legend:

- Approximate Extent of Site Boundary
- Approximate Windowless Sample Borehole Location
- Approximate Hand Excavated Trial Pit Location

Figure 3: Proposed Development Plan

Project: Open Hearth, Ringland, Newport	Job No.: 14144	Intégral Géotechnique
Client: Willis Construction	Scale: NTS	Integral House, 7 Beddau Way, Castlegate Business Park, Caerphilly, CF83 2AX. Tel: 029 2080 7991