

Phase 1 Site Investigation & Preliminary Risk Assessment

Client: Lidl Great Britain
Ltd

Cymann, Lampeter

Report No: 1304.01.01

August 2024





Executive Summary

Remada Ltd was commissioned by Lidl Great Britain Ltd ('the client') to undertake a Phase 1 Geoenvironmental Site Investigation for a proposed store at Pen-y-Bont, Cymann, Lampeter. The objectives of this assessment were to present a preliminary conceptual site model to identify plausible pollutant linkages as a preliminary risk assessment and to provide recommendations for subsequent investigation work.

Site Setting

The site occupies a broadly rectangular plot of land to the west side of the junction of the A482 & A485. A wooden post and rail fence appears to separate the pedestrian footpaths to the roads from the site. The site itself is a more or less flat field except for the northeastern corner adjacent to the road junction where a unpaved car park has been constructed from a capping or subbase material. The car park is accessed via a bell mouth on the A485 approximately 50m south the junction.

Site History

The earliest available historical mapping of 1887 and 1888 shows the site to be predominantly occupied by north-east to south-west orientated fields, although several residential-related buildings labelled 'Pen-y-bont' are present adjacent to the eastern boundary. By 1905, an additional building appears to have been constructed in the eastern area of the site. These buildings on-site appear to have been partially removed from-site after 1964, with all having disappeared by the mapping of 1992. By 1995, a rectangular structure (possibly an agricultural building) had been constructed near the centre of the site although (as of August 2024) this appears to be no longer present.

Geology / Hydrogeology

Published geological maps record that the site is predominantly underlain by superficial Alluvium deposits (a Secondary A Aquifer), although Till deposits (a Secondary Aquifer – Undifferentiated) are indicated to be present adjacent to the south and east of the study site. The bedrock geology is indicated to comprise mudstone, siltstone and sandstone of the Devil's Bridge Formation (a Secondary B Aquifer).

Mining

The site is located within an area which might not be affected by coal mining activity.

Radon

The site is located in an Intermediate Probability Radon Area as between 5% and 10% of properties are above the Action Level, therefore basic protective measures are necessary.

Recommendations

Environmental

The desk study has identified a number of on-site and off-site potential sources of contamination that would require further investigation. The following is recommended:

- Investigation of the lateral and vertical extent of any made ground/fill beneath the proposed store footprint;
- Collection of soil and groundwater samples from the areas identified above for contaminants of concern; and
- Ground gas monitoring.

Geotechnical

It is recommended that a ground investigation is undertaken to enable preliminary foundation design.



Contents

1. INTRODUCTION	1
1.1. OBJECTIVES.....	1
1.2. SCOPE OF WORK	1
1.3. PREVIOUS REPORTS	1
1.4. LIMITATIONS.....	1
2. DESK STUDY.....	2
2.1. DESCRIPTION OF SITE	2
2.2. SITE SETTING	2
2.3. SITE HISTORY	2
2.4. PROPOSED SITE USE	4
2.5. ENVIRONMENTAL SETTING	4
2.6. INDUSTRIAL LAND USE.....	6
2.7. ENVIRONMENTAL PERMITS, INCIDENTS & REGISTERS	6
2.8. LANDFILL & WASTE SITES.....	6
2.9. MINING	6
2.10. UNEXPLODED ORDNANCE (UXO) Risk.....	6
3. PRELIMINARY RISK ASSESSMENT.....	7
3.1. INTRODUCTION.....	7
3.2. POTENTIAL SOURCES	7
3.3. POTENTIAL CONTAMINANTS OF CONCERN (PCOCs).....	7
3.4. POTENTIAL RECEPTORS	7
3.5. PRELIMINARY CONCEPTUAL MODEL	8
4. CONCLUSIONS & RECOMMENDATIONS	10
4.1. CONCLUSIONS	10
4.2. RECOMMENDATIONS.....	10
REFERENCES & GUIDANCE.....	11
STUDY LIMITATIONS.....	12

TABLES

Table 1 Preliminary Conceptual Site Model

FIGURES

Figure 1 Site Location Plan
Figure 2 Existing Layout
Figure 3 Proposed Indicative Site Layout

APPENDICES

Appendix A Historical Mapping
Appendix B Envirocheck Mapping
Appendix C Envirocheck Datasheet
Appendix D UXO Risk Mapping

Issue No	Date	Prepared By	Technical Review	Authorised
01	15.08.2024	P Dickinson	G Jones	G Jones



1. INTRODUCTION

Remada Ltd was commissioned by Lidl Great Britain Ltd ('the client') to undertake a Phase 1 Preliminary Risk Assessment for a proposed store at Pen-y-Bont, Cymann, Lampeter, at the location indicated in Figure 1.

1.1. Objectives

The objectives of this assessment are as follows:

- to develop a preliminary conceptual model of the site to identify plausible pollutant linkages; and
- to provide recommendations for subsequent investigation work.

1.2. Scope of Work

The scope of work comprised a:

- review of local geological, hydrogeological, ground stability, and environmental data and historical mapping pertaining to the site and surrounding area; and
- identification of potential sources, pathways, and receptors, and development of a preliminary conceptual site model.

The scope of work did not include a site reconnaissance visit.

Due to the study site's positioning within Wales, the scope was also designed in line with the Welsh Land Contamination Working Group's Development of Land Affected by Contamination: A Guide for Developers version 3: May 2017. This guidance represents the culmination of a co-operative effort involving the Welsh Local Government Association (WLGA) and Natural Resources Wales (NRW). For the purpose of this report, any references to the Environment Agency (EA) should be seen as interchangeable with NRW.

1.3. Previous Reports

It is not known if historic reports are available for review.

1.4. Limitations

The comments given in this report and the opinions expressed are based on the information reviewed and observations during site work. However, there may be conditions pertaining to the site that have not been disclosed by this assessment and therefore could not be taken into account.



2. DESK STUDY

2.1. Description of Site

Site Description	The site occupies a broadly rectangular plot of land to the west side of the junction of the A482 & A485. A wooden post and rail fence appears to separate the pedestrian footpaths to the roads from the site. The site itself is a more or less flat field except for the northeastern corner adjacent to the road junction where a unpaved car park has been constructed from a capping or subbase material. The car park is accessed via a bell mouth on the A485 approximately 50m south the junction. The existing site layout is indicated in Figure 2 .
Area of Site	Circa 1.49 hectares.
Site Elevation	The topographic elevation of the site is approximately 115.8m aOD (metres above ordnance datum).
National Grid Co-ordinates	258210, (E), 247360 (N)

2.2. Site Setting

The site is situated in a predominantly agricultural and residential area.

North:	The A482 road forms the north-eastern boundary of the site, with predominantly agricultural land and the River Teifi beyond.
East:	The A485 road forms the south-eastern boundary of the site, with predominantly residential properties beyond.
South:	The land to the south predominantly comprises agricultural fields, with some residential properties fronting onto the A485.
West:	The land to the west predominantly comprises agricultural fields, with the River Teifi beyond.

2.3. Site History

A summary of the historical land use of the site and surrounding area follows.

Map Date	Description of on-site activities
1887 - 1888	The earliest available historical mapping of 1887 and 1888 shows the site to be predominantly occupied by north-east to south-west orientated fields. An elongated rectangular building labelled 'Pen-y-bont' is present adjacent to the eastern boundary, with associated garden and adjacent unlabelled building to its north.
1905	An additional building appears to have been constructed in the eastern area of the site, positioned westwards of the previously identified elongated building, and likely a residential property.
1906	Similar to above.
1938	Similar to above.



1953	Similar to above.
1964	Similar to above.
1974	The most northerly of the buildings previously indicated on-site has been removed.
1992	All buildings previously shown on-site have been removed, with the site now indicated to comprise one large field.
1995	A rectangular structure (possibly an agricultural building) has been constructed near the centre of the site.
1996	Similar to above.
2000	Similar to above.
2024	The previously identified structure in the central area of the site is no longer shown; likely demolished.

Map Date	Description of off-site activities
1887 - 1888	The earliest available historical mapping indicates the site to be located within a predominantly rural setting, with fields to the north, west and south-west. A road following the course of the present-day A482 is present beyond the site's north-eastern boundary, whilst the south-eastern boundary is formed by a road occupying the present-day A485's footprint. A row of residential properties are present from circa 10m south-east of the site. A feature labelled as 'Teify-side Tannery' is present from circa 80m east of the site, whilst a 'Pump' is present from 10m east. A north-east to south-west orientated railway embankment is present from circa 80m west of the site at its nearest point.
1905	Similar to the above, although there has been a small expansion of the tannery to the east, which is now labelled as 'Tivy Side Tannery'.
1906	Similar to above.
1938	Similar to above.
1953	Similar to above.
1964	The former tannery to the east is now labelled as 'Works'.
1973	Whilst the former buildings of the tannery appear to remain, a Garage appears to have been established within one of these from circa 10m east of the site.
1974	Similar to above.
1992	The railway line to the west is now labelled as 'dismantled', although the embankment remains.
1995	The former garage to the east of the site is no longer labelled.
2000	Similar to above.



2024	Similar to above.
------	-------------------

2.4. Proposed Site Use

It is understood that the proposed site use for the site will be a Lidl retail store with associated car park and soft landscaping. A proposed indicative site layout plan is presented as **Figure 3**, with the site being accessed from the A485 along the south-eastern boundary. The proposed store footprint is indicated to be in the north-western area of the site, with the remaining areas being a combination of car parking, HGV access and soft landscaping. The south-western area of the site is indicated to be 'surplus land for flood mitigation measures'.

2.5. Environmental Setting

2.5.1. Made Ground and Superficial Geology

Information from the environmental report and the British Geological Survey (BGS) 1:50,000 scale map Sheet 195 (Lampeter) does not indicate any artificial ground either on, or in the immediate vicinity of, the study site. Artificial Ground is a term used by the BGS for those areas where the ground surface has been significantly modified by human activity, and includes made ground, worked ground, infilled ground, landscaped ground and disturbed ground. It is not expected to be encountered according to the mapping; however, taking consideration of the site's historic use and satellite imagery it is likely that made ground will be encountered underlying some areas of the site.

The superficial deposits underlying the site are indicated to comprise Alluvium. The BGS describe these as typically comprising *'soft to firm consolidated, compressible silty clay, but can contain layers of silt, sand, peat and basal gravel. A stronger, desiccated surface zone may be present'*.

Immediately to the south and east of the study site, the superficial deposits are indicated to comprise Devensian Till. The BGS describe these deposits as typically comprising *'a heterogenous mixture of clay, sand, gravel, and boulders varying widely in size and shape'*.

The superficial Alluvium deposits are designated as a Secondary A Aquifer, which the Environment Agency define as comprising *'permeable layers that can support local water supplies, and may form an important source of base flow to rivers'*.

The superficial Till deposits adjacent to the site are designated as a Secondary Aquifer – Undifferentiated, which are *'aquifers where it is not possible to apply either a Secondary A or B definition because of the variable characteristics of the rock type'* (ref Envirocheck **Appendix B**).

2.5.2. Bedrock Geology

The bedrock underlying the superficial deposits on-site are formed of the Devil's Bridge Formation. The BGS' *'The Geology of the Area around Lampeter, Llangybi and Llanfair Clydogau'* 2004 describes the Devil's Bridge Formation as typically comprising *'clean, bouma-type laminated and rippled thin, tabular turbidite siltstones and fine sandstones alternating with thick, structureless turbidite mudstones on a decimetre scale'*.

The bedrock is designated as a Secondary B Aquifer, which the Environment Agency define as *'mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks (called fissures) and openings or eroded layers'* (ref Envirocheck **Appendix B**).



2.5.3. Historic BGS Borehole Records

There are no pertinent historic BGS borehole records within a relevant distance of the site.

2.5.4. Groundwater Abstractions

There is one (1 No.) groundwater abstraction licence recorded within 1km of the study site. This is located 392m to the north and pertains to the abstraction from a well at Brongest Farm for the purpose of 'general farming and domestic' use (ref Envirocheck **Appendix B**).

2.5.5. Source Protection Zones

The site is not located within a Groundwater Source Protection Zone (ref Envirocheck **Appendix B**).

2.5.6. Surface Water Features and Abstractions

The nearest surface water feature is unnamed brook or ditch encroaching into the western perimeter of the site. The water course flows to the Afon Teifi which is situated approximately 200m to the west of the site. The nearest point of the Afon Teifi is the northside of the A482 which forms the northern perimeter to the site (ref Envirocheck **Appendix B**).

There are no surface water abstraction licences recorded within 1km of the study site (ref Envirocheck **Appendix B**).

2.5.7. Flooding Vulnerability

The majority of the site is indicated to be located within an area prone to '*Flooding from Rivers or Sea with Defences (Zone III)*', whilst the eastern and southern margins of the site located within an area of '*Extreme Flooding from Rivers or Sea without Defences (Zone 3)*' (ref Envirocheck **Appendix B**).

2.5.8. Ground Stability

The Envirocheck Report (**Appendix B**) provides the following information regarding ground stability.

Collapsible Deposits	There are 'very low' and 'no' hazard ratings from collapsible rocks.
Compressible Ground	There are 'low' and 'no' hazard ratings from compressible ground.
Rock Solubility / Dissolution	There is a 'no' hazard rating from rock solubility at the site.
Landslides	There is a 'very low' hazard rating from landslides.
Running Sand	There are 'low' and 'very low' hazard ratings for running sands.
Shrinking / Swelling of Clay	There is a 'very low' hazard rating for shrinkage / swelling of clay.

2.5.9. Radon

The site is located in an Intermediate Probability Radon Area, as 5% to 10% of properties are estimated to be at or above the Action Level. Consequently, basic radon protective measures are necessary for this site (ref Envirocheck **Appendix B**).

2.5.10. Environmentally Sensitive Site Designations

The nearest environmentally sensitive zone is the Afon Teifi situated to the northside of the A482 (ref Envirocheck **Appendix B**).



2.6. Industrial Land Use

There are three (3 No.) contemporary trade directory entries locations within 400m of the site. These comprise a Tyre Dealers located 18m east (inactive), a Hardware business (19m east – inactive) and a Machine Shop located 72m east (ref Envirocheck **Appendix B**).

There are no fuel station entries within 1km of the study site (ref Envirocheck **Appendix B**).

2.7. Environmental Permits, Incidents & Registers

There are no permitted process entries recorded within 1km of the study site (ref Envirocheck **Appendix B**).

There are three (3 No.) recorded pollution incident entries within 250m of the site. The nearest was located 126m to the west and pertains to crude sewage impacting controlled waters due to overflow in 1997. The incident was recorded as being a Category 3 (Minor Incident) (ref Envirocheck **Appendix B**).

2.8. Landfill & Waste Sites

The Envirocheck search has included a check on the Local Authority's landfill coverage at the site. Ceredigion Council has supplied landfill data, although Carmarthenshire County Council has no data to supply.

There are two (2 No.) historical landfill sites recorded within 1km of the study site. The nearest is located 198m east of the site at Cymanne No.2, with the deposited waste including industrial and household waste types. The other site is Lampeter Sewage Treatment Works, located 506m to the west, which was active between 1880 and 1949. The deposited waste including industrial, commercial and household waste types (ref Envirocheck **Appendix B**).

2.9. Mining

The site is located within an area which might not be affected by coal mining activity (ref Envirocheck **Appendix B**).

2.10. Unexploded Ordnance (UXO) Risk

A non-specialist UXO screening exercise was initially carried out for the site by considering (a) any evidence of UK defence activities on or near the site evident from the gathered desk study information and (b) the unexploded aerial-delivered ordnance (UXO) regional risk mapping produced by Zetica.

There is no indication of former military use from the desk study.

Furthermore, the freely available Zetica UXO risk mapping (presented in **Appendix D**) indicates the site to be located within an area where the bomb risk is 'Low'. This is defined by Zetica as an area having an indicated bombing density of 15 bombs per 1000 acres or less.



3. PRELIMINARY RISK ASSESSMENT

3.1. Introduction

A Preliminary Risk Assessment (PRA) has been completed for the site. This PRA identifies the potential sources, pathways, and receptors for the site, in order to assess the potential risks posed by identified potential sources to human health and / or controlled waters receptors. When required, the viability of the Source-Pathway-Receptor pollutant linkage must be evaluated further to determine whether an actual risk is present.

3.2. Potential Sources

On-site Historical

- None, pasture/grazing land.
- Former residential properties ('Pen-y-bont').

On-site Current

- Made ground in north-east corner and car parking

Off-site Historical

- Tannery to east of A92.
- Garage to the east of A482
- Pumping station to south.
- Railway line and associated embankment to west.

Off-site Current

- Residential housing.
- A482/A485 and traffic

3.3. Potential Contaminants of Concern (PCOCs)

- Metals.
- Asbestos (associated with demolition and redevelopment of the existing site).
- Total petroleum hydrocarbons (TPH)
- Polycyclic aromatic hydrocarbons (PAH).
- Ground gases (carbon dioxide and methane)
- Radon gas

A tannery was identified from circa 80m east of the site on the mapping of 1887/88 and remained labelled until after the mapping of 1953. The wastes derived from tanneries include aqueous effluents containing suspended and dissolved organic matter, curing salt and grease and unused process chemicals. Solid and semi-solid wastes derived from tanneries include trimmings and fleshings obtained before or after the dehairing processes; in the latter case they contain lime.

The potential contaminants associated with tanneries include chromium-containing tanning agents, vegetable tans, synthetic tans, oil tans, alum, biocides, solvents, sulphuric acid, sodium hydroxide, calcium hydroxide (lime), lubricants, metal pigments, dyes, binders, enzymes, lacquers and fuel oils.

3.4. Potential Receptors

Human Health



- On-site Lidl store staff.
- Construction workers.
- On-site general public and visiting staff (such as contractors, including those conducting excavation works).
- Neighbouring residents

Controlled Waters

- Secondary (A and Undifferentiated) Aquifers in Superficial Deposits
- Secondary (B) Aquifer in bedrock;
- River Teifi and associated streams / drains.

3.5. Preliminary Conceptual Model

The Preliminary Conceptual Site Model of the site has been prepared and illustrates the potentially active pollutant linkages. A pollutant linkage is present only when a source, pathway and receptor exist together.

- A **source** is a substance that has potential to cause harm or adversely affect human health, water resources or the wider environment.
- A **pathway** is the route or means by which a source of contamination can migrate resulting in exposure to a receptor.
- A **receptor** is something that could be adversely affected by a contaminant such as human health, an ecological system, animals or crops, buildings or controlled waters.

The Preliminary Conceptual Site Model is presented in **Table 1**.



Potential Source Areas	Potential Contaminant of Concern	Pathways	Potential Receptor	Exposure Route (Human unless otherwise stated)	Potential Identified Linkage (unmitigated)	Findings of Ground investigation	Risk (Un-mitigated)	Proposed Remediation (Mitigation) Measures	Residual Risk Estimation
<u>On-site Sources</u>				• Direct Soil Ingestion	• Yes	To be assessed (TBA)	Potential risk	(To be assessed (TBA)	(To be assessed (TBA)
Made Ground Cars / Parking		Disturbance due to construction plant causing direct contact, dusts, vapours.		• Indoor Dust ingestion	• Yes	As above	Potential risk	TBA	TBA
				• Skin Contact with Soils	• Yes	As above	Potential risk	TBA	TBA
<u>Off-site Sources</u>	Asbestos / Metals As, Be, Cd, Cu, Cr (VI), Cr (III) Hg, Ni, Se, Va, Zn, Boron, TPH /PAHs.	Direct Contact with occupants of the proposed development	Occupants of the development / building fabric	• Skin Contact with Dust	• Yes	As above	Potential risk	TBA	TBA
Tannery				• Inhalation of Outdoor Dust	• Yes	As above	Potential risk	TBA	TBA
Garage				• Inhalation of Outdoor Vapours	• Yes	As above	Potential risk	TBA	TBA
Pumping Station				• Inhalation of Indoor Vapours	• Yes	As above	Potential risk	TBA	TBA
Residential Housing		Inhalation of fibres / vapours / gases by occupants of proposed development	Adjacent residents during construction	• Inhalation of ground gas	• Yes	As above	Potential risk	TBA	TBA
Railway Line				• Inhalation of radon gas	• No	Intermediate Probability Area	Potential risk	Basic radon protection measures	Low
		Permeation of water supply pipework		• Ingestion via permeated water supply pipework	• Yes	As above	Potential risk	TBA	TBA
		Leachate	Secondary Aquifers	• Direct contact with Secondary Aquifers in Superficial Deposits	• Yes	As above	Potential risk	TBA	TBA
			River Teifi	• In-direct contact with Secondary (B) Aquifer in bedrock	• Yes	As above	Potential risk	TBA	TBA

Table 1: Preliminary Conceptual Site Model

Direct contact with subsurface soil and/or groundwater during redevelopment works are not assessed as part of the CSM. It is considered that risks to workers will be managed as part of any the redevelopment works at the site through the application of health and safety procedures, where required.



4. CONCLUSIONS & RECOMMENDATIONS

4.1. Conclusions

The site occupies a broadly rectangular plot of land to the west side of the junction of the A482 & A485. A wooden post and rail fence appears to separate the pedestrian footpaths to the roads from the site. The site itself is a more or less flat field except for the northeastern corner adjacent to the road junction where a unpaved car park has been constructed from a capping or subbase material. The car park is accessed via a bell mouth on the A485 approximately 50m south the junction.

The earliest available historical mapping of 1887 and 1888 shows the site to be predominantly occupied by north-east to south-west orientated fields, although several residential-related buildings labelled 'Pen-y-bont' are present adjacent to the eastern boundary. By 1905, an additional building appears to have been constructed in the eastern area of the site. These buildings on-site appear to have been partially removed from-site after 1964, with all having disappeared by the mapping of 1992. By 1995, a rectangular structure (possibly an agricultural building) had been constructed near the centre of the site although (as of August 2024) this appears to be no longer present.

Published geological maps record that the site is predominantly underlain by superficial Alluvium deposits (a Secondary A Aquifer), although Till deposits (a Secondary Aquifer – Undifferentiated) are indicated to be present adjacent to the south and east of the study site. The bedrock geology is indicated to comprise mudstone, siltstone and sandstone of the Devil's Bridge Formation (a Secondary B Aquifer).

The site is located in an Intermediate Probability Radon Area as between 5% and 10% of properties are above the Action Level, therefore basic protective measures are necessary.

4.2. Recommendations

Environmental

The desk study has identified a number of on-site and off-site potential sources of contamination that would require further investigation. The following is recommended:

- Investigation of the lateral and vertical extent of any made ground/fill beneath the proposed store footprint.
- Collection of soil and groundwater samples from the areas identified above for contaminants of concern; and
- Ground gas monitoring.

In accordance with CIRIA C665 the monitoring period should comprise not less than four visits for a proposed commercial development and should cover the "worst case" scenario which would occur during falling atmospheric pressure and, in particular, weather conditions such as rainfall and frost.

Geotechnical

It is recommended that a ground investigation is undertaken to enable preliminary foundation design.



REFERENCES & GUIDANCE

- AGS, *Guidance on the Waste Classification for Soils – A Practitioners' Guide* 2019.
- Barnes, G. 2010, *Soil Mechanics Principles and Practice*. 3rd Edition.
- BGS Internal Report IR/04/064, *The geology of the area around Lampeter, Llanybi and Llanfair Clydogau*, 2004.
- BRE, *Special Digest 1:2005 (3rd Edition), Concrete in Aggressive Ground*. 2005.
- BR 211, *Guidance on protective measures for new buildings (including supplementary advice for extensions, conversions and refurbishment projects)*, 2023.
- BS 10175:2011+A1:2013, *Investigation of potentially contaminated sites: Code of practice*.
- BS 1377:1999. *Methods of test for soils for civil engineering purposes*.
- BS 5930:2015, *Code of practice for site investigations*.
- BS 8485:2015+A1 2019, *Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings*.
- BS 8576:2013, *Guidance on investigations for ground gas – Permanent gases and Volatile Organic Compounds (VOCs)*.
- BS EN ISO 22476-3:2005, *Geotechnical investigation and testing: Field testing - Standard penetration test*.
- CIRIA, C504, *Engineering in glacial tills*, 1999.
- CIRIA, C665, *Assessing risks posed by hazardous ground gases to buildings*, 2007.
- CIRIA, C682, *The VOCs Handbook: Investigating, assessing and managing risks from inhalation of VOCs at land affected by contamination*, 2009.
- CIRIA, C716, *Remediating and mitigating risks from volatile organic compound (VOC) vapours from land affected by contamination*, 2012.
- CIRIA C733, *Asbestos in Soil and Made Ground: A Guide to Understanding & Managing Risks*.
- CL:AIRE/EIC/AGS, *The Soil Generic Assessment Criteria for Human Health Risk Assessment*, 2009.
- CL:AIRE, SP1010, *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination –Final Project Report*. 2013.
- CL:AIRE, *The Definition of Waste: Development Industry Code of Practice Version 2*
- DEFRA, Circular 01/2006, *Contaminated Land Environmental Protection Act 1990, Part 2A*. 2006.
- DEFRA, SP1010, *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document*. March 2014.
- Environment Agency, *Verification of Remediation of Land Contamination Science Report – NC/00/38/SR*
- Environment Agency, *Waste Classification, Guidance on the classification and assessment of waste (1st Edition V1.2GB) Technical Guidance WM3*. October 2021.
- Health & Safety Executive, HSG 66, *Protection of Workers and the General Public During Redevelopment of Contaminated Land*. 1991.
- Highways Agency, IAN 73/06 Rev 1, *Design of Pavement Foundations*, 2009.
- Land Contamination Risk Management www.gov.uk 08.10.2020.
- LCM/CIEH, *The LQM/CIEH S4ULs for Human Health Risk Assessment*. Land Quality Press, S4UL3146, 2015.
- NHBC Standards, 2024.
- Tomlinson, M.J., 2001, *Foundation Design and Construction*, 7th Edition.
- The Water Framework Directive (Standards and Classification) Directions (England and Wales)* 2015



STUDY LIMITATIONS

IMPORTANT. This section should be read before reliance is placed on any of the information, opinions, advice, recommendations or conclusions contained in this report.

1. This report has been prepared by Remada, Ltd with all reasonable skill, care and diligence within the terms of the Appointment and with the resources and manpower agreed with (the 'Client'). Remada does not accept responsibility for any matters outside the agreed scope.

2. This report has been prepared for the sole benefit of the Client unless agreed otherwise in writing.

3. Unless stated otherwise, no consultations with authorities or funders or other interested third parties have been carried out. Remada is unable to give categorical assurance that the findings will be accepted by these third parties as such bodies may have published, more stringent objectives. Further work may be required by these parties.

4. All work carried out in preparing this report has used, and is based on, Remada's professional knowledge and understanding of current relevant legislation. Changes in legislation or regulatory guidance may cause the opinion or advice contained in this report to become inappropriate or incorrect. In giving opinions and advice pending changes in legislation, of which Remada is aware, have been considered. Following delivery of the report Remada has no obligation to advise the Client or any other party of such changes or their repercussions.

5. This report is only valid when used in its entirety. Any information or advice included in the report should not be relied upon until considered in the context of the whole report.

6. Whilst this report and the opinions made are to the best of Remada's belief, Remada cannot guarantee the accuracy or completeness of any information provided by third parties.

7. This report has been prepared based on the information reasonably available during the project programme. All information relevant to the scope may not have received.

8. This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of changes in the condition of the site since the time of the investigation.

9. The content of this report represents the professional opinion of experienced environmental consultants. Remada does not provide specialist legal or other professional advice. The advice of other professionals may be required.

10. Where intrusive investigation techniques have been employed they have been designed to provide a reasonable level of assurance on the conditions. Given the discrete nature of sampling, no investigation technique is capable of identifying all conditions present in all areas. In some cases the investigation is further limited by site operations, underground obstructions and above ground structures. Unless otherwise stated, areas beyond the boundary of the site have not been investigated.

11. If below ground intrusive investigations have been conducted as part of the scope, service tracing for safe location of exploratory holes has been carried out. The location of underground services shown on any drawing in this report has been determined by visual observations and electromagnetic techniques. No guarantee can be given that all services have been identified. Additional services, structures or other below ground obstructions, not indicated on the drawing, may be present on site.

12. Unless otherwise stated the report provides no comment on the nature of building materials, operational integrity of the facility or on any regulatory compliance issues.

13. Unless otherwise stated, samples from the site (soil, groundwater, building fabric or other samples) have NOT been analysed or assessed for waste classification purposes.



FIGURES

- | | |
|----------|---------------------------------|
| Figure 1 | Site Location Plan |
| Figure 2 | Existing Site Layout |
| Figure 3 | Proposed Indicative Site Layout |



Notes Promap LANDMARK INFORMATION Getmapping plc 2017. Plotted Scale - 1:1250. Paper Size - A4	Revision	Approved	Date	Project Title	Scale	Drawn	Size
				Lidl, Lampeter	as shown	LH	A4
				Drawing Title	Date	Job No.	Figure No.
				Existing Site Plan	15.08.24	1304.01	02
				Client	LIDL REMADA GEO CONSULTANTS		
				Lidl Great Britain Ltd			



SCHEDULE OF AREAS (TYPE 1300)	
SALES =	1334 m ²
WAREHOUSE=	410 m ²
ANCILLARY=	218 m ²
GIA=	1962 m ²
GEA (EX. CANOPY) =	2045 m ²
GEA (INC. CANOPY) =	2215 m ²



Legend

Notes

Proposed indicative site layout plan reproduced from HTC Architects' Proposed Setting Out Site Plan, drawing ref: 3384_F400 Rev B dated February 2024.

The proposed site layout plan presented here is indicative only and may be subject to change following publication of Remada's Phase 1 report.

Revision	Approved	Date

Project Title
Cymann, Lampeter

Drawing Title
Proposed Indicative Site Layout Plan

Client
Lidl Great Britain Ltd 

Scale as shown	Drawn PD	Size A4
Date 15.08.24	Job No. 1304	Figure No. 03





APPENDIX A

1:2500 & 1:10000 Scale Historical Mapping

Historical Mapping Legends

Ordnance Survey County Series 1:10,560

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

Ordnance Survey Plan 1:10,000

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

1:10,000 Raster Mapping

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

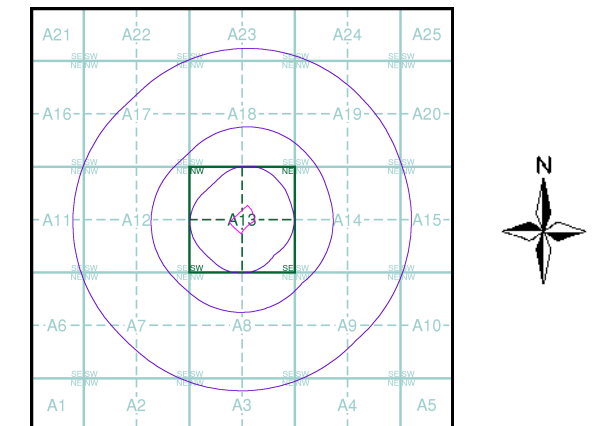
Envirocheck®

LANDMARK INFORMATION GROUP®

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Carmarthenshire	1:10,560	1887 - 1888	2
Cardiganshire	1:10,560	1906	3
Cardiganshire	1:10,560	1906	4
Cardiganshire	1:10,560	1938 - 1953	5
Cardiganshire	1:10,560	1953	6
Ordnance Survey Plan	1:10,000	1964	7
Ordnance Survey Plan	1:10,000	1974	8
10K Raster Mapping	1:10,000	2000	9
Street View	Variable		10

Historical Map - Slice A



Order Details

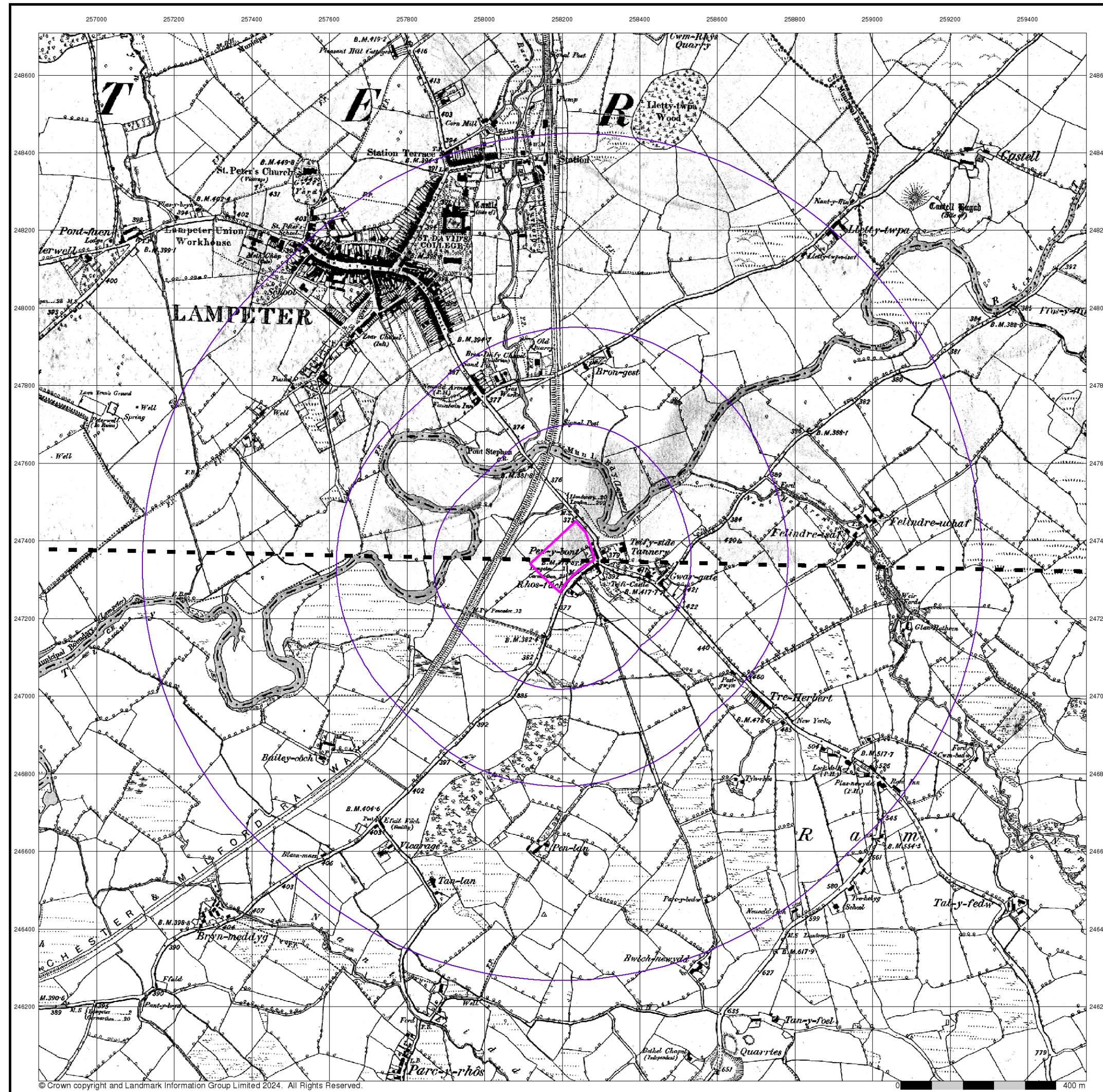
Order Number: 355487291_1_1
Customer Ref: 1304.01
National Grid Reference: 258210, 247360
Slice: A
Site Area (Ha): 1.49
Search Buffer (m): 1000

Site Details

Pen-y-Bont, Cwmann, LAMPETER

Landmark®
INFORMATION GROUP

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



© Crown copyright and Landmark Information Group Limited 2024. All Rights Reserved.

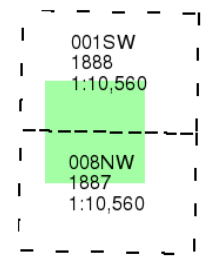
Carmarthenshire

Published 1887 - 1888

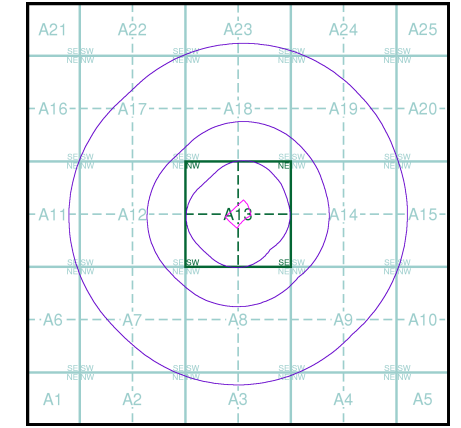
Source map scale - 1:10,560

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)



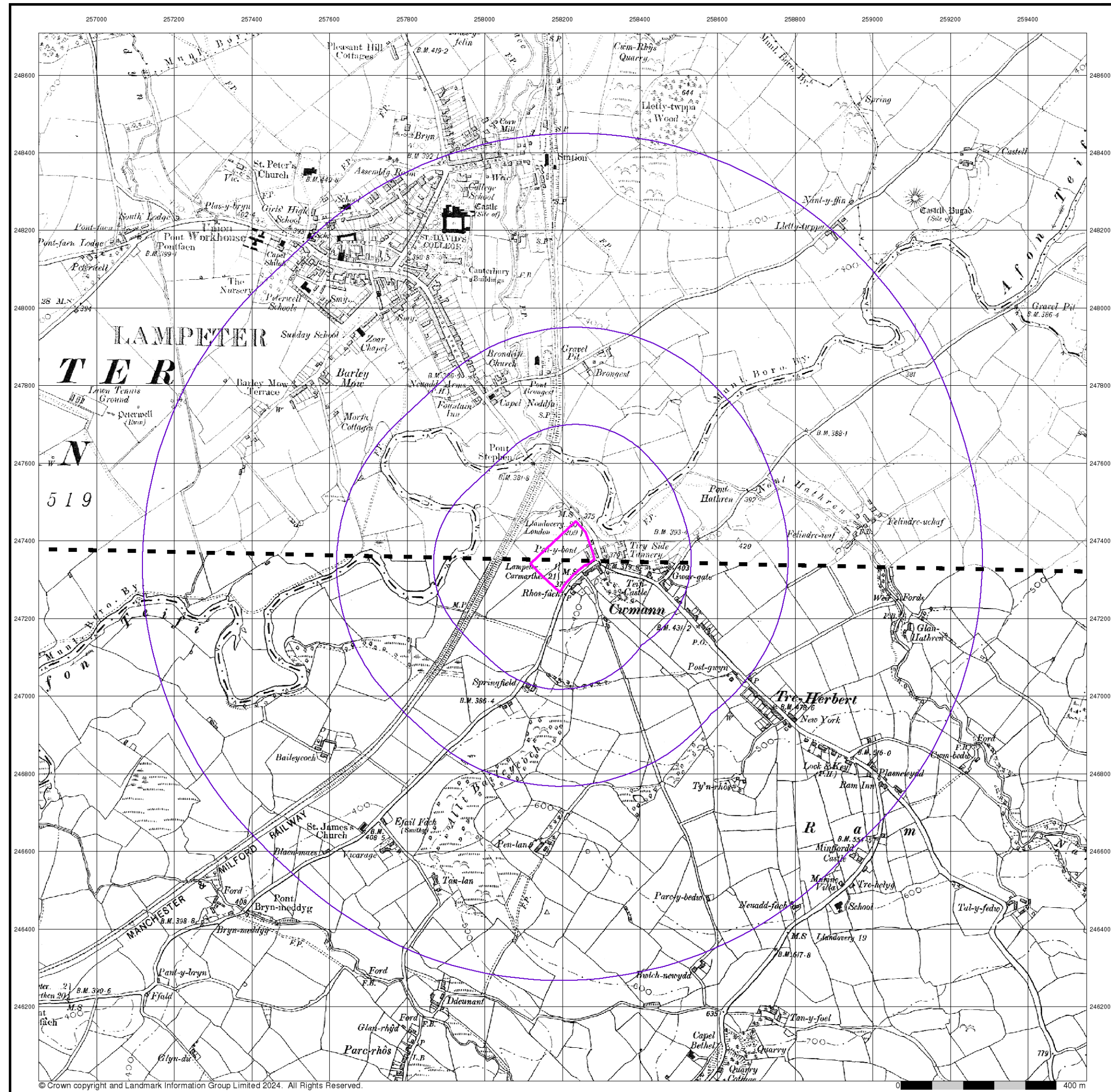
Historical Map - Slice A



Order Details	
Order Number:	355487291_1_1
Customer Ref:	1304.01
National Grid Reference:	258210, 247360
Slice:	A
Site Area (Ha):	1.49
Search Buffer (m):	1000

Site Details

Pen-y-Bont, Cwmann, LAMPETER



Envirocheck®

LANDMARK INFORMATION GROUP®

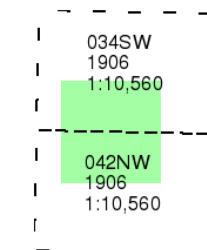
Cardiganshire

Published 1906

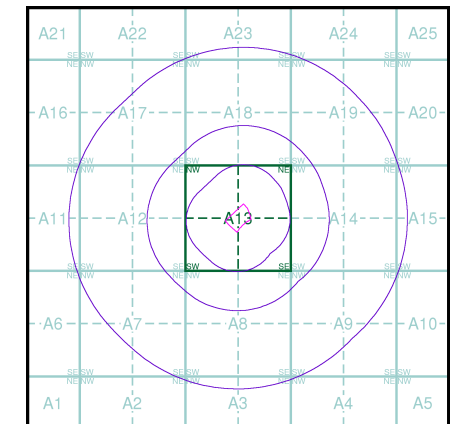
Source map scale - 1:10,560

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

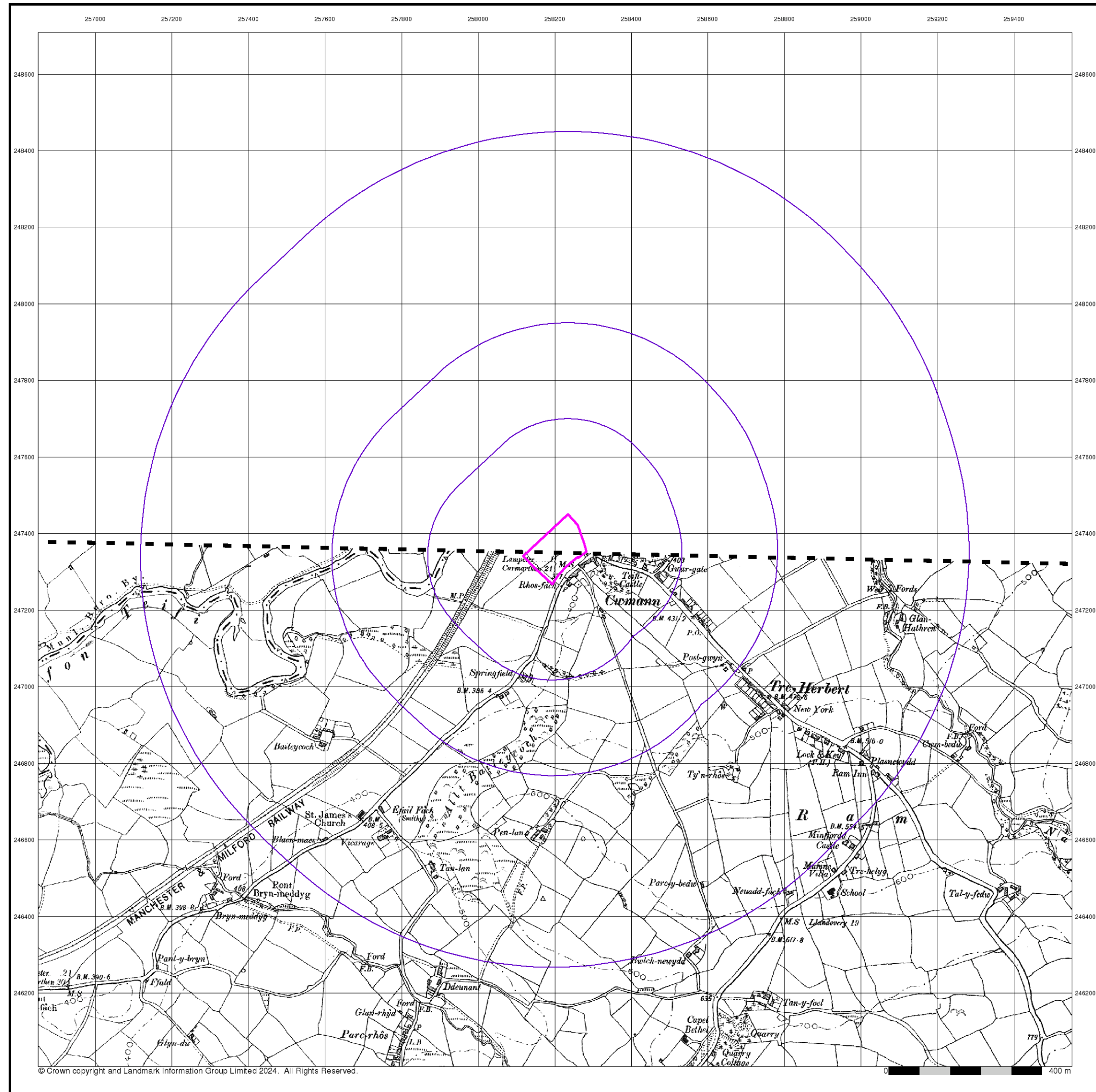
Order Number: 355487291_1_1
Customer Ref: 1304.01
National Grid Reference: 258210, 247360
Slice: A
Site Area (Ha): 1.49
Search Buffer (m): 1000

Site Details

Pen-y-Bont, Cwmann, LAMPETER

Landmark®
INFORMATION GROUP

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



Envirocheck®

LANDMARK INFORMATION GROUP®

Cardiganshire

Published 1906

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)

042NW

1906

1:10,560

Historical Map - Slice A

Order Details

Order Number:	355487291_1_1
Customer Ref:	1304.01
National Grid Reference:	258210, 247360
Slice:	A
Site Area (Ha):	1.49
Search Buffer (m):	1000

Site Details

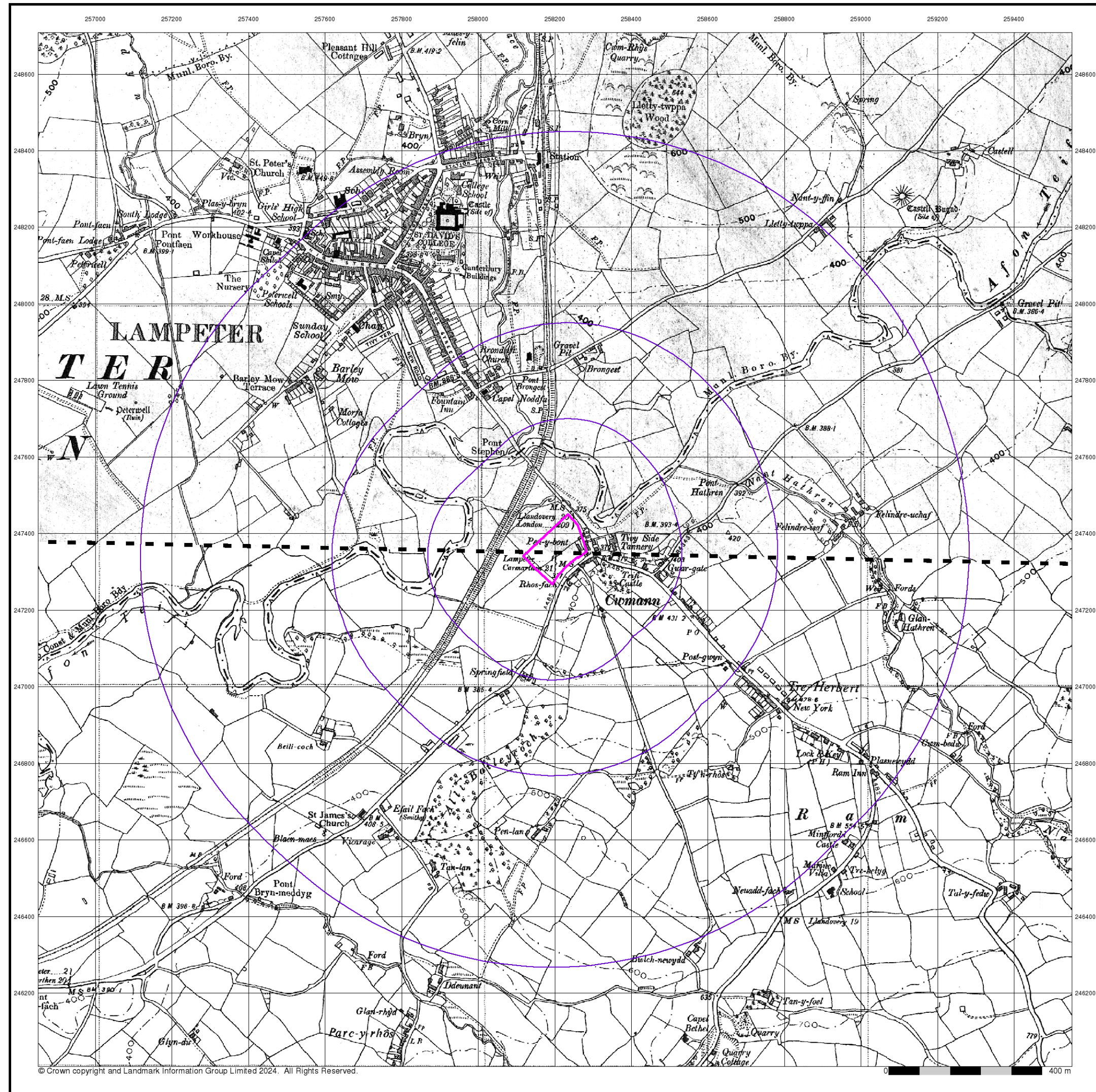
Pen-y-Bont, Cwmaman, LAMPETER

Landmark®

INFORMATION GROUP

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

A Landmark Information Group Service v50.0 13-Aug-2024 Page 4 of 10



Envirocheck®

LANDMARK INFORMATION GROUP®

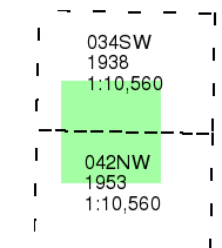
Cardiganshire

Published 1938 - 1953

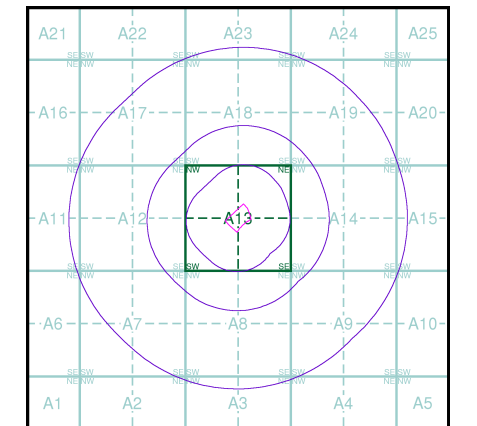
Source map scale - 1:10,560

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

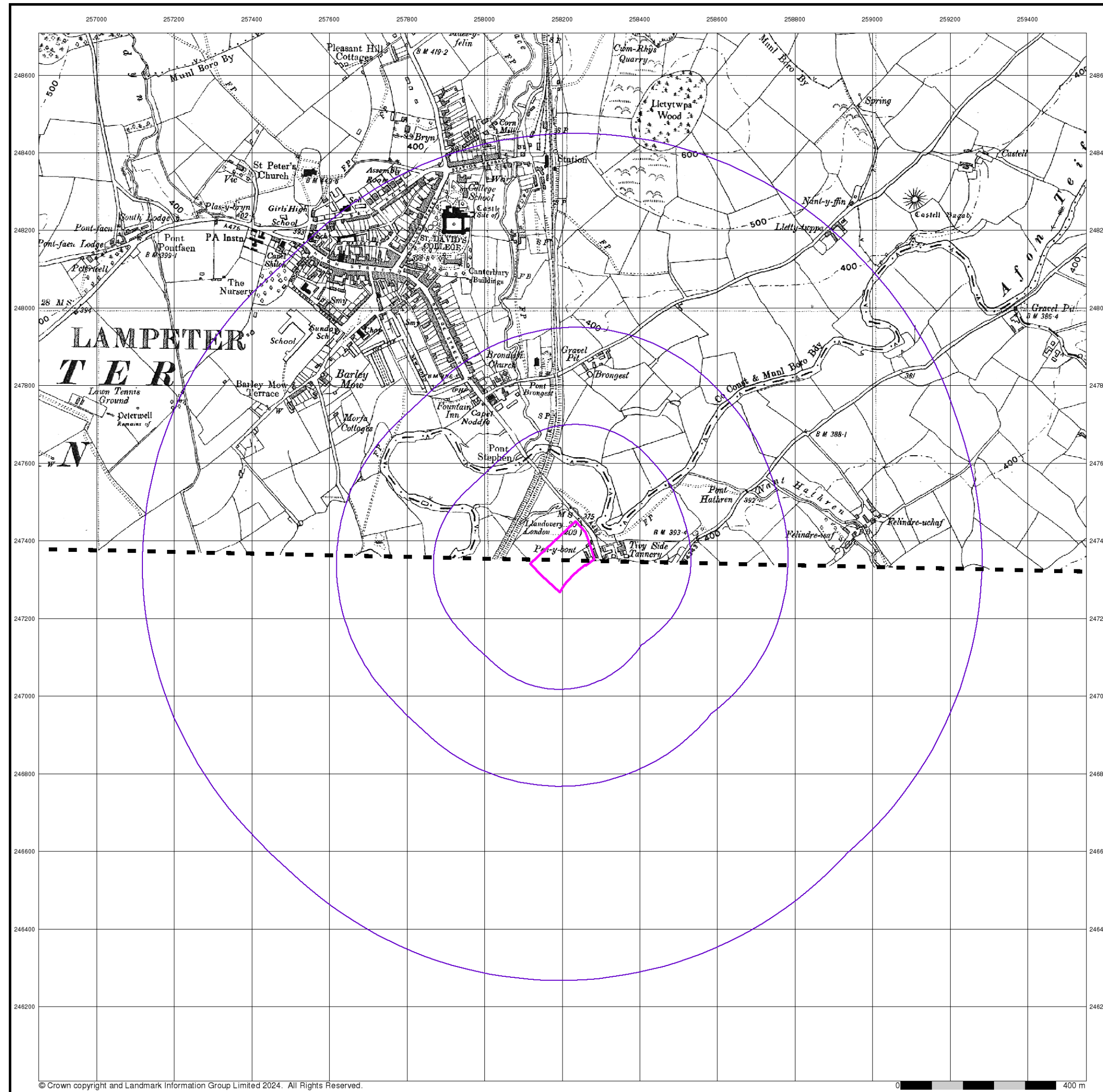
Order Number: 355487291_1_1
Customer Ref: 1304.01
National Grid Reference: 258210, 247360
Slice: A
Site Area (Ha): 1.49
Search Buffer (m): 1000

Site Details

Pen-y-Bont, Cwmann, LAMPETER

Landmark®
INFORMATION GROUP

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



© Crown copyright and Landmark Information Group Limited 2024. All Rights Reserved. 0 400 m

Envirocheck[®]

LANDMARK INFORMATION GROUP[®]

Cardiganshire

Published 1953

Source map scale - 1:10,560

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

Map Name(s) and Date(s)

034SW

1953

1:10,560

Historical Map - Slice A

A diagram showing a grid of 25 cells (A1 to A25) with a search buffer and site area. The grid is labeled A1 to A25. A large purple circle represents the search buffer, and a small pink-shaded area represents the site area. A north arrow is shown to the right of the grid.

Order Details

Order Number:	355487291_1_1
Customer Ref:	1304.01
National Grid Reference:	258210, 247360
Slice:	A
Site Area (Ha):	1.49
Search Buffer (m):	1000

Site Details

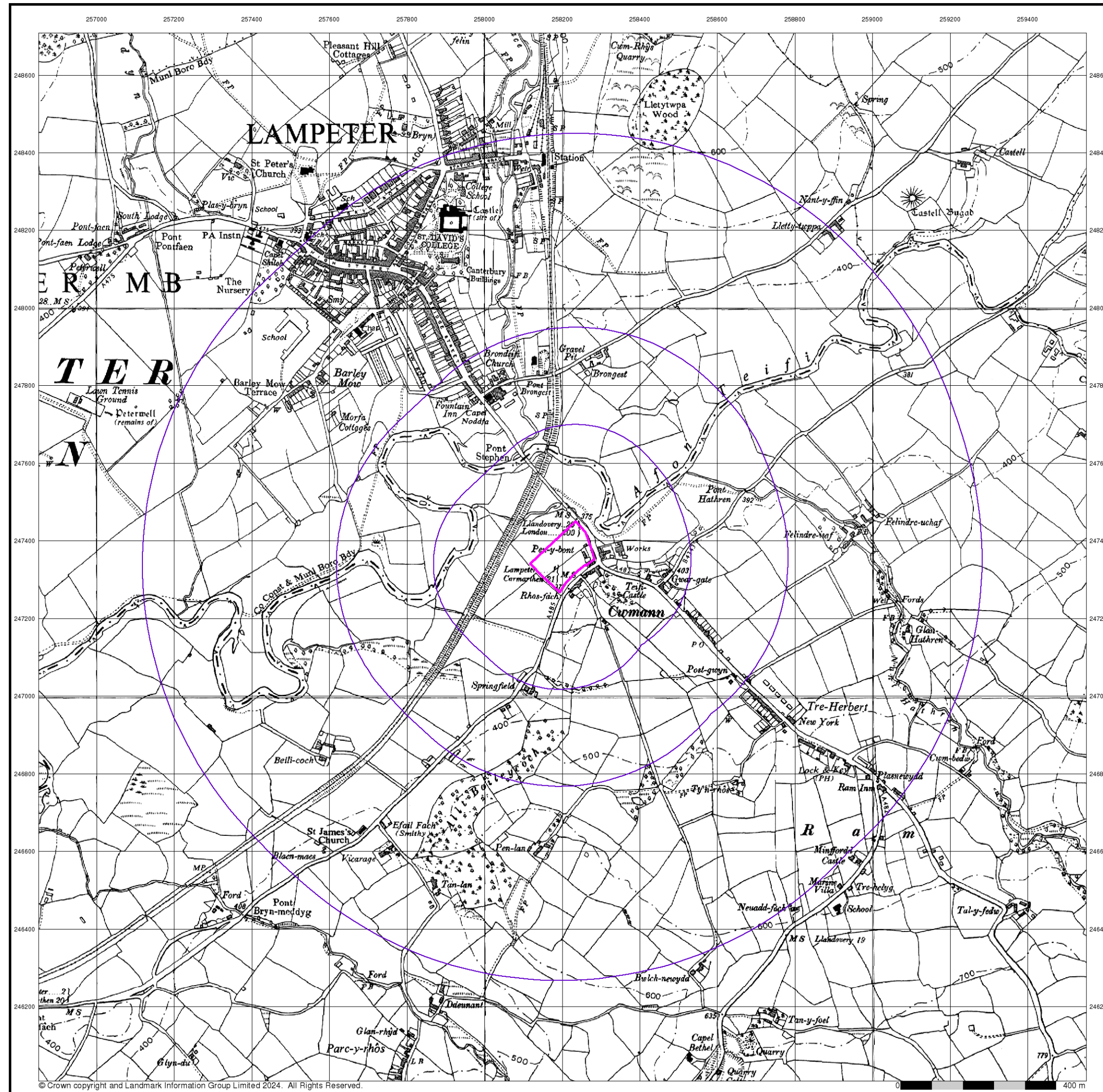
Pen-y-Bont, Cwmann, LAMPETER

Landmark[®]

INFORMATION GROUP

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

A Landmark Information Group Service v50.0 13-Aug-2024 Page 6 of 10



© Crown copyright and Landmark Information Group Limited 2024. All Rights Reserved.

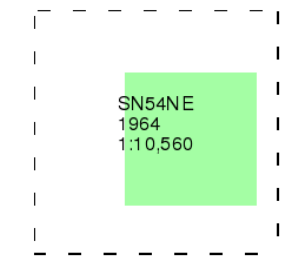
Ordnance Survey Plan

Published 1964

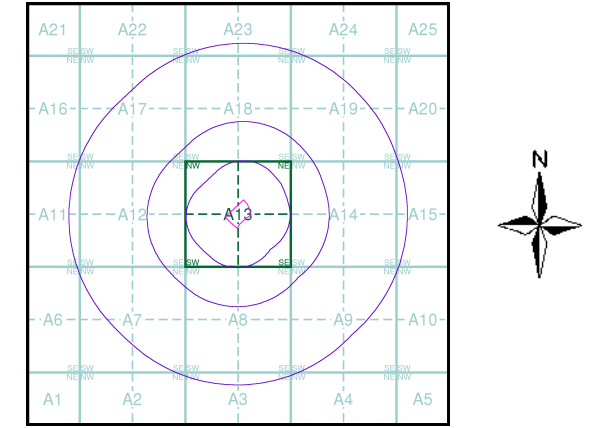
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



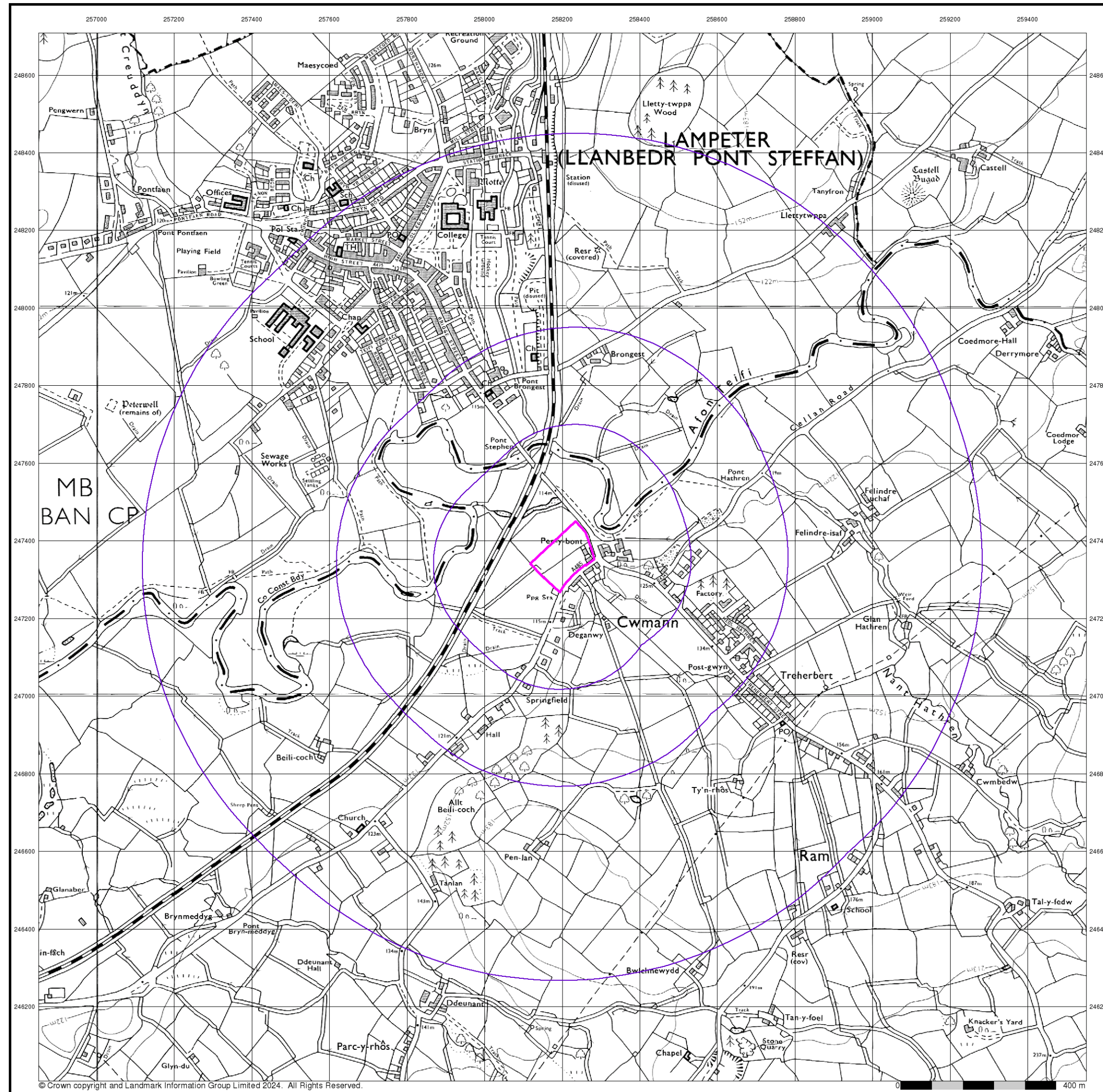
Historical Map - Slice A



Order Details	
Order Number:	355487291_1_1
Customer Ref:	1304.01
National Grid Reference:	258210, 247360
Slice:	A
Site Area (Ha):	1.49
Search Buffer (m):	1000

Site Details

Pen-y-Bont, Cwmaman, LAMPETER



© Crown copyright and Landmark Information Group Limited 2024. All Rights Reserved.

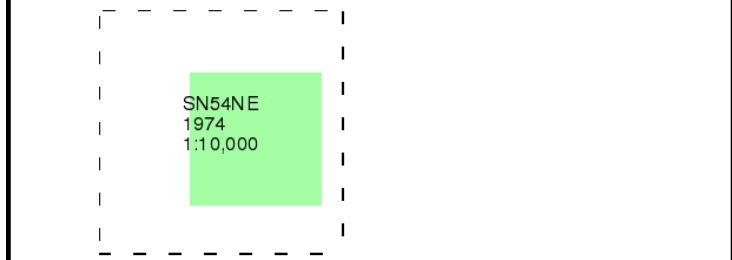
Ordnance Survey Plan

Published 1974

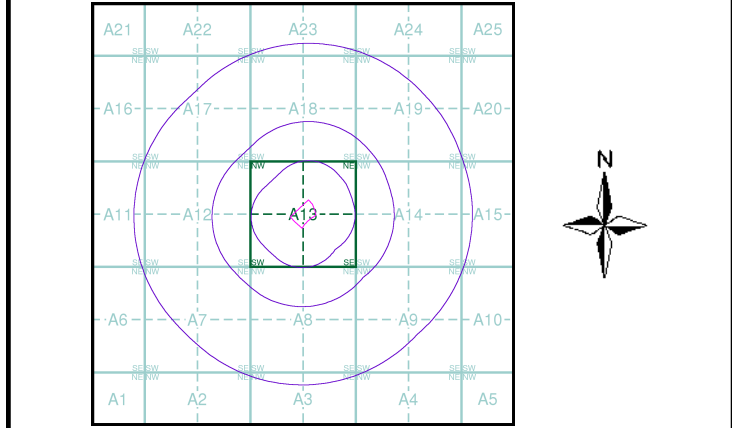
Source map scale - 1:10,000

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

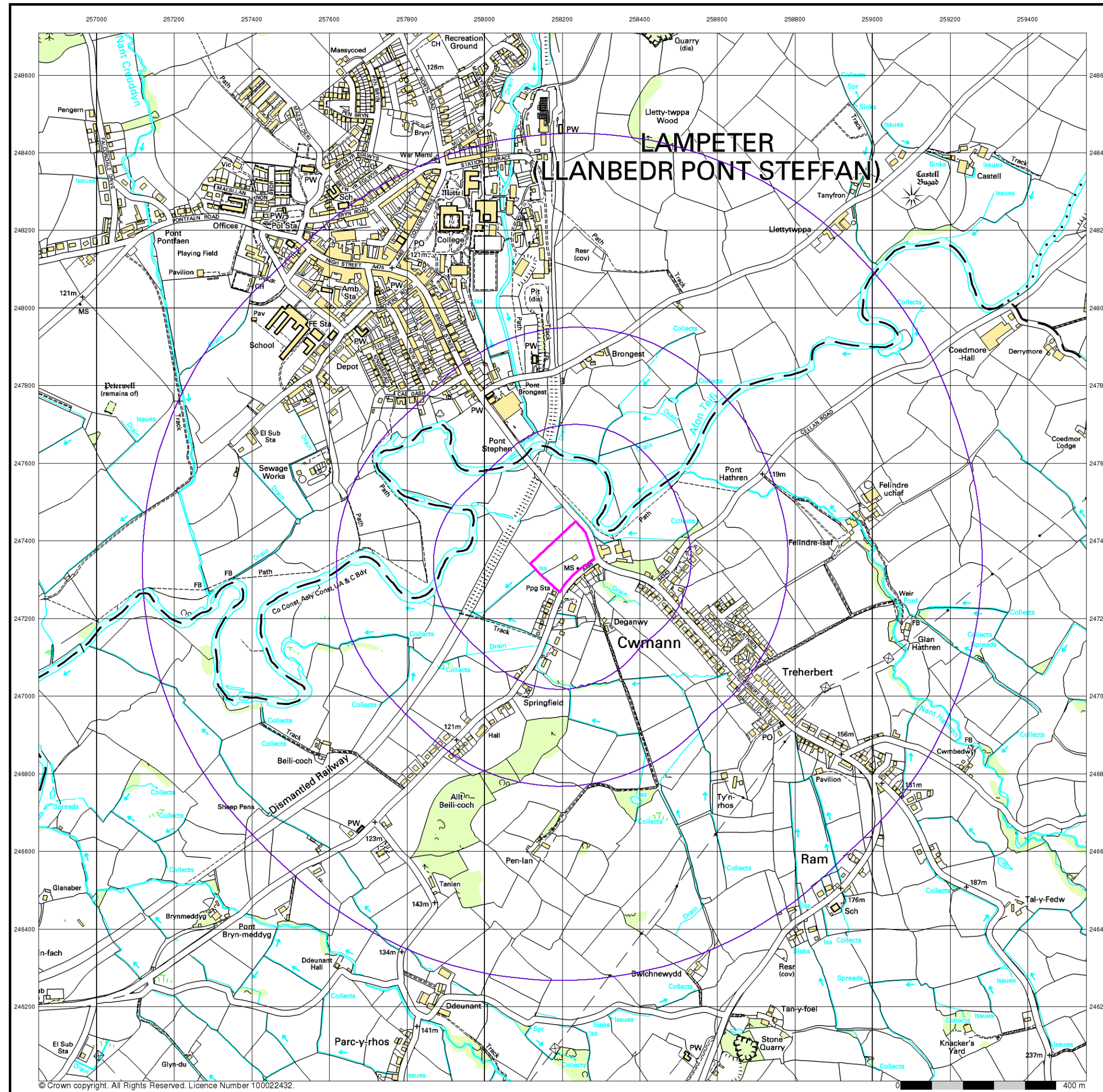


Order Details

Order Number: 355487291_1_1
Customer Ref: 1304.01
National Grid Reference: 258210, 247360
Slice: A
Site Area (Ha): 1.49
Search Buffer (m): 1000

Site Details

Pen-y-Bont, Cwmann, LAMPETER



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

Envirocheck®

LANDMARK INFORMATION GROUP®

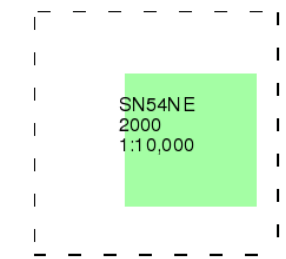
10k Raster Mapping

Published 2000

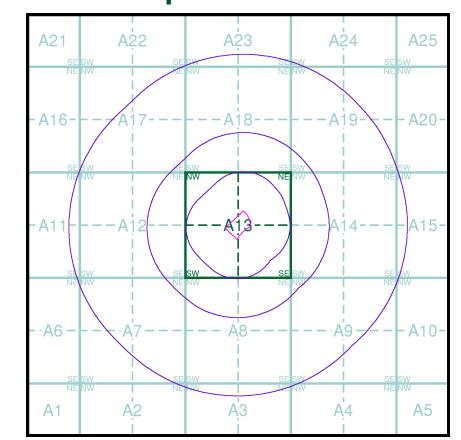
Source map scale - 1:10,000

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

Map Name(s) and Date(s)



Historical Map - Slice A



Order Details

Order Number: 355487291_1_1
Customer Ref: 1304.01
National Grid Reference: 258210, 247360
Slice: A
Site Area (Ha): 1.49
Search Buffer (m): 1000

Site Details

Pen-y-Bont, Cwmann, LAMPETER

Landmark®
INFORMATION GROUP

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

