



HERITAGE ASSESSMENT

LAND SOUTH OF HOLT ROAD WREXHAM

DECEMBER 2018

Planning Authority:
Wrexham County Borough
Council

Site centred at:
SJ 3619 5151

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Executive Summary

This Heritage Assessment considers 28.52ha of land proposed for residential development at land off Holt Road, Wrexham.

In accordance with government policy (PPW10), the assessment draws together the available archaeological, historic, topographic and land-use information in order to clarify the heritage significance and archaeological potential of the study site.

The assessment has established that there are no designated archaeological assets on the study site. The only designated assets within the surrounding 1km study area there are five Grade II Listed Buildings, all of which are screened from the study site by intervening topography, vegetation and buildings. Consequently, there will be no impact on the designated assets or their settings and significance.

The assessment has also established that there is one non-designated archaeological asset recorded in the HER within the study site boundary and one located on the north-west boundary, both dating to the Post-Medieval and Modern periods. These include a marl pit on the west side of the study site and a military aircraft crash site that may straddle the boundary of the study site. The crash site, under the Protection of Military Remains Act (PMRA) of 1986, cannot be excavated or remains removed without a license from the Central Casualty Section, a part of the Royal Air Force Personnel Management Agency (PMA). However, A geophysical survey of the crash site, undertaken as part of this assessment, did not identify any evidence for the presence of a crashed aircraft (Appendix 3). Both assets lie within areas that are not proposed for development according to the Illustrative Concept Layout (Randall Thorpe drawing ref 661B-04 A) and, therefore, will not be impacted by the development.

This assessment has also considered the potential for as-yet to be discovered archaeological assets within the site. It concludes that, on the basis of the archaeological evidence from the search area, the site has a low/negligible potential for significant remains of all periods. The assessment has therefore shown that there are no heritage or archaeological constraints to the deliverability of the study site.

In light of the above, it is recommended that an initial geophysical survey is undertaken to confirm the presence/absence of remains associated with the crash site and any other potential features of archaeological interest. This would inform the need for a scope of further archaeological work; this programme of iterative work can be secured by an appropriately worded planning condition.

1.0 INTRODUCTION AND SCOPE OF STUDY

- 1.1 This Heritage Assessment of land south of Holt Road, Wrexham has been researched and prepared by CgMs Heritage (Part of the RPS Group) on behalf of Barratt Homes and Bloor Homes North West.
- 1.2 The site, also referred to as the study site, comprises approximately 28.52ha of land proposed for residential development, centred at National Grid Reference SJ 3619 5151 (Figure 1). The site is located to the north-east of the town of Wrexham between the A534 Holt Road to the north and Bryn Estyn Road to the south. Modern residential development bounds the majority of the west side of the study site, with Tyn-twill Farm on the north-west side. To the east the study site is bound by Hanson Concrete works and fields.
- 1.3 This assessment has been prepared in compliance with Planning Policy Wales Edition 10 (PPW10) and the Technical Advice Note (TAN) 24, to identify and provide a description of the significance of heritage assets on the site and the likely effects of development on that significance.
- 1.4 The assessment incorporates published and unpublished material, and charts historic land-use through a map regression exercise. A site inspection was undertaken in October 2017. A geophysical survey of the site of a crashed WWII aircraft was also undertaken to inform this assessment.
- 1.5 As a result, the assessment enables relevant parties to assess the significance of heritage assets on and close to the site and to consider the potential for hitherto undiscovered archaeological assets, thus enabling potential impacts on assets to be identified along with the need for any design, civil engineering or archaeological solutions.

2.0 PLANNING BACKGROUND AND DEVELOPMENT PLAN FRAMEWORK

2.1 Statutory Framework

i) Ancient Monuments & Archaeological Areas Act 1979

The Ancient Monuments & Archaeological Areas Act 1979 (as amended) protects the fabric of Scheduled Monuments, but does not afford statutory protection to their settings. Relevant policies relating to the protection of the setting of scheduled monuments are contained within national and local development plan policy.

ii) Protection of Military Remains Act (PRMA) 1986

All crashed British aircraft in the UK or its coastal waters are deemed Crown property, all Luftwaffe crash sites are considered captured property surrendered to the Crown, and for US aircraft the MoD acts as the representative of the US Government. Under the PRMA anyone wishing to excavate or recover a military aircraft is first required to apply for a licence from the Joint Casualty and Compassionate Centre (JCCC). The aim is to protect potential excavators from the risks of possible surviving live ordnance, as well as the moral obligation to the families of the dead servicemen not able to be recovered at the time of the crash to protect their relatives' remain from disturbance.

iii) Well-being of Future Generations (Wales) Act 2015

This Act places duties on public bodies requiring them to act in accordance with the 'sustainable development principle'. The Act also establishes well-being goals which include achieving 'a Wales of vibrant culture and Welsh language', described as 'a society that promotes and protects culture, heritage and the Welsh language'. The Act lays down the principle that a properly protected, conserved and enhanced historic environment can improve the quality of life and well-being for everyone.

iv) Historic Environment (Wales) Act 2016

The Historic Environment (Wales) Act was given Royal Assent in March 2016. This Act provides the legislative framework for managing the historic environment in Wales. Accompanying the Act will be new policy and guidance in the form of a Technical Advice Note (TAN) specific to the Historic Environment (see below), and changes to PPW10 Chapter 6 – Distinctive and Natural Places. While the changes to PPW10 have been made, the new TAN 24 and other guidance is still the subject of consultation.

2.2 Planning Policy Wales

- 2.2.1 The Welsh Government has published Planning Policy Wales, currently updated to Edition 10 from December 2018. This sets out the land use planning policies of the

Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs). Procedural advice is given in circulars and policy clarification letters.

2.2.2 Chapter 6 of PPW10, entitled 'Distinctive and Natural Places', provides policy for planning authorities, property owners, developers and others on the conservation and investigation of heritage assets. Overall, the objectives of Chapter 6 in relation to archaeology can be summarised as seeking to:

- conserve and enhance the historic environment, which is a finite and non-renewable resource and a vital and integral part of the historical and cultural identity of Wales;
- recognise its contribution to economic vitality and culture, civic pride, local distinctiveness and the quality of Welsh life, and its importance as a resource to be maintained for future generations;
- base decisions on an understanding of the significance of Wales' historic assets;
- contribute to the knowledge and understanding of the past by making an appropriate record when parts of a historic asset are affected by a proposed change, and ensuring that this record or the results of any investigation are securely archived and made publicly available; and specifically to
- conserve archaeological remains, both for their own sake and for their role in education, leisure and the economy.

2.2.3 Chapter 6 of PPW10 describes the historic environment as being made up of individual historic features, archaeological sites, historic buildings and historic parks, gardens, townscapes and landscapes, collectively known as historic assets.

2.2.4 The historic environment is defined, in policy terms, in TAN 24 (at para. 1.7) as:

"All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and deliberately planted or managed."

2.2.5 Technical Advice Note (TAN) 24 was issued in May 2017. This TAN replaces Welsh Office Circulars 60/96, 61/96 and 1/98, which have now been cancelled. The purpose of TAN 24 is to provide guidance on how the planning system considers the historic environment during development plan preparation and decision making on planning and Listed Building (LBC) applications. TAN 24 provides specific guidance on how the following aspects of the historic environment should be considered:

- World Heritage Sites
- Scheduled Monuments
- Archaeological Remains

- Listed Buildings
- Conservation Areas
- Historic Parks and Gardens
- Historic Landscapes
- Historic Assets of Special Local Interest.

2.2.6 Welsh planning legislation and policy guidance outlines that the conservation of archaeological remains and their setting is a material consideration in the determination of a planning application (Planning Policy Wales 10, Chapter 6). In order to take into account archaeological considerations and deal with them from the beginning of the development control process, Local Planning Authorities in Wales need to be fully informed about the nature and importance of archaeological remains, and their setting, and the likely impact of any proposed development upon them.

2.2.7 Chapter 6 of PPW10 sets out the requirements to provide the relevant information needed to inform decisions. This means that Local Planning Authorities can request an applicant to provide further information on archaeological matters in the form of desk-based assessment, field evaluation, and detailed Written Schemes of Investigation to outline mitigation proposals as appropriate.

2.2.8 Chapter 6 also makes provision for archaeological work on a site to be carried out as part of a condition, as long as the work is carried out before development commences, and it is carried out to a project design agreed with the planning authority.

2.3 **Local Development Framework**

2.3.1 Wrexham County Borough Council is currently preparing a new Local Development Plan (LDP2) which will replace the current adopted Wrexham Unitary Development Plan (UDP). The LDP2 (Deposit Plan March 2018) is scheduled to be submitted to the National Assembly for Wales for Examination in November 2018 and until such time the current development plan policy framework is provided by the Wrexham Unitary Development Plan 1996-2011, adopted February 2005.

2.3.2 The Wrexham UDP 1996-2011 contains the following policies, which provide a framework for the consideration of development proposals affecting archaeological and heritage features:

POLICY EC9 [Listed buildings of Special Architectural or Historic Interest]

ALTERATIONS OR ADDITIONS TO, AND DEVELOPMENT OR REDEVELOPMENT WITHIN THE CURTILAGE OF, BUILDINGS OR STRUCTURES LISTED AS OF SPECIAL ARCHITECTURAL OR HISTORIC INTEREST MUST RESPECT THE SETTING AND CHARACTER OF THE LISTED BUILDINGS OR STRUCTURES.

POLICY EC11 [Archaeology]

DEVELOPMENT WHICH WOULD ADVERSELY AFFECT THE SITE OR SETTING OF A SCHEDULED ANCIENT MONUMENT OR ARCHAEOLOGICAL SITE OF NATIONAL SIGNIFICANCE WILL NOT BE PERMITTED. DEVELOPMENT THAT DIRECTLY AFFECTS NON-SCHEDULED SITES OF ARCHAEOLOGICAL IMPORTANCE WILL ONLY BE PERMITTED IF AN ARCHAEOLOGICAL INVESTIGATION HAS BEEN CARRIED OUT TO DETERMINE THE NATURE, EXTENT AND SIGNIFICANCE OF THE REMAINS, AND THIS INVESTIGATION INDICATES THAT IN-SITU PRESERVATION IS NOT JUSTIFIED, AND A PROGRAMME OF EXCAVATION AND RECORDING HAS BEEN AGREED. DEVELOPMENT WILL ALSO BE CAREFULLY CONTROLLED TO ENSURE THAT THE SETTING OF NON-SCHEDULED SITES OF ARCHAEOLOGICAL IMPORTANCE IS NOT HARMED WHERE APPROPRIATE

- 2.3.3 The Wrexham LDP2 2013-28 (March 2018) contains the following relevant proposed policy which, once adopted, will replace Policies EC9 and EC11 (above):

POLICY SP16: Historic and Cultural Environment

DEVELOPMENT WILL ONLY BE SUPPORTED WHERE IT CONSERVES, PROTECTS AND ENHANCES THE FOLLOWING CULTURAL AND HERITAGE ASSETS OF THE COUNTY BOROUGH AND, WHERE APPROPRIATE, THEIR SETTINGS:

- i. **LISTED BUILDINGS AND IN PARTICULAR THOSE ON THE BUILDINGS AT RISK REGISTER;**
- ii. **CONSERVATION AREAS;**
- iii. **PONTCYLLTE AQUEDUCT AND CANAL WORLD HERITAGE SITE;**
- iv. **REGISTERED HISTORIC PARKS, GARDENS AND LANDSCAPES; AND**
- v. **SCHEDULED ANCIENT MONUMENTS AND ARCHAEOLOGICAL REMAINS.**

2.4 Definitions and Guidance

- 2.4.1 The '*Conservation Principles, Policies and Guidance for the Sustainable Management of the Historic Environment in Wales*' published by Cadw in March 2011 provides the basic principles under which all subsequent guidance has evolved. The six principles expressed are:

- Historic assets will be managed to sustain their values.
- Understanding the significance of historic assets is vital.
- The historic environment is a shared resource.
- Everyone will be able to participate in sustaining the historic environment.
- Decisions about change must be reasonable, transparent and consistent.
- Documenting and learning from decisions is essential.

Definition of the historic environment

- 2.4.2 The historic environment is defined in TAN 24 (at para. 1.7) as:

"All aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and deliberately planted or managed."

Definition of Heritage assets

2.4.3 Heritage assets are defined by Cadw (March 2011) and TAN 24 (2017) as:

"An identifiable component of the historic environment. It may consist or be a combination of an archaeological site, an historic building or area, historic park and garden or a parcel of historic landscape. Nationally important historic assets will normally be designated."

2.4.4 A Designated Heritage Asset is considered to be a: World Heritage Site, Scheduled Monument, Listed Building, Protected Wreck Site, Registered Park and Garden, Registered Battlefield or Conservation Area. In Wales areas of landscape have been designated and included in the non-statutory Register of Landscapes of Historic Interest in Wales.

Significance

2.4.5 Significance in relation to heritage policy considerations is defined as:

- The sum of the cultural heritage values (Cadw 2011).

2.4.6 The 'Guide to Good Practice on Using the Register of Landscapes of Historic Interest in Wales in the Planning and Development Process, (Revised Edition 2007)' (Cadw/CCW 2007) outlines Categories A – U which are used to place historic environment assets in order of relative importance.

Setting

2.4.7 Welsh policy makes it clear that setting must be considered in any assessment of the historic environment (PPW10). The Welsh Government published 'Setting of Historic Assets in Wales' in 2017 and this provides guidance on what setting is, how it contributes to the significance of a historic asset and why it is important.

2.4.8 Setting of a historic asset is defined as 'the surroundings in which it is understood, experienced, and appreciated embracing present and past relationships to the surrounding landscape. Its extent is not fixed and may change as the asset and its surroundings evolve. Elements of a setting may make a positive or negative contribution to that significance or may be neutral. Setting is not a historic asset in its own right but has value derived from how different elements may contribute to the significance of a historic asset' (WG 2017).

2.4.9 TAN 24 also makes the point that setting always forms part of the aesthetic value of a historic asset and can contribute to the other heritage values, and that setting is primarily a visual amenity. Consideration needs to be given to how the proposed development will appear in views out of and looking towards the historic asset, and in views where the proposed development and the historic asset are juxtaposed (WG 2015).

2.4.10 *Setting of Historic Assets in Wales* sets out a four-stage process for assessing the impact of proposed developments within the settings of historic assets as follows:

Stage 1: Identify the historic assets that might be affected by a proposed change or development.

Stage 2: Define and analyse the settings to understand how they contribute to the significance of the historic assets and, in particular, the ways in which the assets are understood, appreciated and experienced.

Stage 3: Evaluate the potential impact of a proposed change or development on that significance.

Stage 4: If necessary, consider options to mitigate or improve the potential impact of a proposed change or development on that significance.

2.4.11 The final decision about the acceptability of proposals will depend on the range of circumstances that apply to a heritage asset and the relative sensitivity to change. Decisions are therefore made on a case by case basis, recognising that all heritage assets are not of equal importance and the contribution made by their setting to their significance also varies.

2.3.4 **General**

2.3.5 Therefore, in considering the archaeological implications of the proposed development, the local planning authority will be guided by the policy framework set by government (PPW10) and Policies EC9 and EC11 of the Wrexham UDP (2011).

3.0 GEOLOGY, TOPOGRAPHY AND SITE CONDITIONS

3.1 Geology

- 3.1.1 The underlying solid geology of the study site comprises mudstone, sandstone and conglomerate of the Salop Formation. This is overlain by Devensian Glaciofluvial sheet deposits (British Geological Survey 1993).

3.2 Site Conditions and Topography

- 3.2.1 The study site is located to the east of the town of Wrexham and to the south of the main A534 Holt Road (Plate 1). It comprises eight fields (Plates 2-5), the majority of which are arable, with the exception of a pasture field in the north-west corner (Plate 6) and an area of scrub alongside an access trackway on north-east side. Modern residential development bounds the west side of the study site, the south side is bound by Bryn Estyn Road (Plate 7) and Bryn Estyn Court (Plate 8), and the east is bound by agricultural fields and a concrete works.
- 3.2.2 The topography undulates over much of the study site, although it tends to flatten out along the south and south-east, and is at its highest at approximately 76m AOD. The fields are mainly bound by mature trees and hedgerows.
- 3.2.3 A small wooded area surrounds a depression relating to a marl pit (82623) recorded on the HER (Plates 9 and 10) within the west side of the study site. A line of trees marking the location of a former east/west aligned field boundary was also noted on the east side of the study site. However, no other earthworks of archaeological interest were observed within the study site boundary. No designated assets were visible from the study site.

4.0 ARCHAEOLOGICAL AND HISTORICAL BACKGROUND, INCLUDING ASSESSMENT OF SIGNIFICANCE

4.1 Timescales used in this report are as follows.

Prehistoric

Palaeolithic	450,000 BC	-	10,001 BC
Mesolithic	10,000 BC	-	4,001 BC
Neolithic	4,000 BC	-	1,801 BC
Bronze Age	1,800 BC	-	601 BC
Iron Age	600 BC	-	AD 42

Historic

Roman	AD 43	-	409 AD
Early Medieval	AD 410	-	1065 AD
Medieval	AD 1066	-	1485 AD
Post-Medieval	AD 1486	-	1799 AD
Modern	AD 1800	-	Present

4.2 Introduction

4.2.1 This chapter reviews existing archaeological evidence for the site and the archaeological/historical background of the general area based on a consideration of evidence in the Wrexham Historic Environment Record (HER) and the Wrexham Record Office, as well as that provided by Cadw, the National Monuments Record of Wales, the Environment Agency LiDAR and various on-line sources for the study site and a surrounding 1km search area (the study area).

4.2.2 A gazetteer of designated heritage assets, archaeological monuments and archaeological investigations and events is provided at Appendix 2. This chapter also considers the potential for currently unknown archaeological assets on the site, in accordance with the PPW10. Chapter 5 subsequently considers site conditions and whether any theoretical potential identified in this chapter is likely to survive.

4.2.3 It is not the purpose of this document to create a detailed archaeology or history of Wrexham, noting every sherd of pottery or lithic flake. Rather, it aims to provide an assessment of the study site's archaeological potential based on archaeological evidence in the study area.

4.3 Designated Heritage Assets

- 4.3.1 Data obtained from Wrexham HER confirms that there are no designated heritage assets (Listed Buildings, Scheduled Monuments, Conservation Areas, Registered Battlefields or Parks and Gardens) on the study site (Appendices 1 and 2).
- 4.3.2 Within the surrounding 1km study area, designated assets are limited to five Grade II Listed Buildings. The nearest is Cherry Hill on Borrass Park Road, Wrexham (32686, LB ref. 1747), located c. 700m to the north-east of the study site. The remaining four Listed Buildings, comprising Nos 93 and 95 Dean Road (32690, LB ref. 1751 and 42294, LB ref. 16471), Borrass Farm (36746, LB ref. 1564) and Erilas Hall (66309, LB ref. 84802), are located between c. 950m-1km from the study site. All of the Listed Buildings are screened from the study site by intervening topography, vegetation and development. Therefore, they are not sensitive to development on the study site and so will be given no further consideration within this report.
- 4.3.3 There are no Scheduled Monuments within the 1km study area. The closest is the Garden Village Section of Wat's Dyke located 2.65km to the west, on the west side of Wrexham town centre. The Scheduled Monument is screened from the study site by intervening topography, vegetation and development and is not considered sensitive to development on the site. Therefore it will be given no further consideration within this report.
- 4.3.4 There are no Conservation Areas within the 1km study area although there is a cluster within Wrexham Town Centre situated between c. 2.5km to 2.9km to the south-west of the study site. However, these are screened from the study site by intervening topography, vegetation and development and are considered not sensitive to development on the study site and so will be given no further consideration within this report.
- 4.3.5 There are no additional designated heritage assets within the search area. A gazetteer of the designated heritage assets is included at Appendix 2 and shown on plans in Appendix 1.

4.4 Non-Designated Heritage Assets and other archaeological monuments

- 4.4.1 There is one non-designated archaeological asset, a marl pit (82623), recorded within the study site. A WWII aircraft crash site (86023) is recorded on the north-west study site boundary, which is safeguarded under the Protection of Military Remains Act (1986).
- 4.4.2 There are a further 110 'Monuments' within the 1km search area. A gazetteer of HER records is included at Appendix 1.

4.5 **Previous Archaeological Investigations**

- 4.5.1 There are 25 archaeological events recorded within the 1km study area, most of which are associated with the Clwyd Powys Archaeological Trust's (CPAT) scheduling enhancement projects concerning rabbit warrens (132421-2), Medieval and Post-Medieval Industry (123124 and 141996), 20th century military airfields (120905-7) and their hinterlands (123960-2). One event is recorded within the study site (51982) although this relates to an Historic Environment Report of Tyn Twll Farm located immediately to the west of the study site undertaken as part of the Tir Gofal agri-environment scheme run by the Welsh Assembly Government in 2005. The scheme was aimed at promoting whole farm conservation and management, helping to protect both the archaeological heritage and natural environment.
- 4.5.2 Eight of the archaeological events (33196, 58489, 58490, 85402, 85403, 85405, 106558 and 113069) within the 1km study area relate to investigations at Borrass Quarry, approximately 500m to the north, including assessments, walkover surveys, watching briefs and excavations. This led to the discovery of mid or late Neolithic settlement activity, with a later phase during the Bronze Age.
- 4.5.3 A gazetteer of HER events is included at Appendix 1 and their locations are shown on plan in Appendix 2.
- 4.5.4 A geophysical survey of the recorded site of a WWII aircraft crash site was undertaken as part of this assessment. The survey did not identify any evidence for the presence of a crashed aircraft, and it is presumed the location was wrongly recorded or that the remains of the aircraft have been previously removed. The report detailing the results of the geophysical survey is contained in Appendix 3.

4.6 **Prehistoric**

- 4.6.1 There are no Prehistoric archaeological assets recorded within the study site.
- 4.6.2 Within the surrounding 1km study area there are no archaeological assets recorded on the HER. However, Neolithic and Bronze Age settlement activity is recorded c. 500m to the north as part of the Borrass Quarry investigations (see para 4.5.2, above).
- 4.6.3 In the wider landscape evidence of Prehistoric activity was also recorded during a watching brief of the Borrass Quarry extension, located c. 1.9km to the north of the study site. In close proximity to this, near to Borrass Farm and located between c. 1.1-1.2km to the north-west of the study site, Mesolithic flints were recorded (101653 and 101654) along with a Neolithic stone axe (101692). Just beyond the 1km study area to the west of the study site a Bronze Age hoard was recorded (100386) in 1875 comprising six bronze palstaves and one chisel.

4.6.4 Based on the above, there is evidence for Prehistoric activity in the surroundings of the study site, but this mainly comprises finds within the topsoil. Therefore, it is considered that there exists a low/nil potential for the presence of any significant Prehistoric remains within the study site.

4.7 **Roman**

4.7.1 There are no Roman archaeological assets recorded within the study site.

4.7.2 Within the surrounding 1km search area, evidence of Roman activity is limited to isolated finds of coins (54713 and 106386), spindle whorls (97014 and 97015) and a bow brooch (118460). The nearest known settlement to the study site during this period is a farmstead at Plas Coch on the west side of Wrexham, c. 3.2km from the site. A tile and pottery works is also known on the banks of the River Dee to the north of Holt, c. 5km to the north-east of the study site.

4.7.3 Apart from the potential discovery of an isolated find within the topsoil of the study site, it is considered that there is a low/nil potential for the discovery of any significant Roman remains.

4.8 **Medieval**

4.8.1 There are no recorded archaeological assets of Medieval date within the study site.

4.8.2 Within the 1km search area surrounding the study site there is evidence of Medieval activity comprising a buckle find (97017) and landscape features relating to: ridge and furrow at Hugmore House (128243) c. 740m to the east and at Erilas Hall (82617) c. 900m to the south-east; and a possible Medieval Holloway (82627) c. 430m to the south.

4.8.3 Within the wider landscape, Borrass Hall (113522) which is located 1.15km to the north-west of the study site is believed to be dated to c. 1300 from a seal of Madog (19377) found nearby.

4.8.4 During the Medieval period, the study site was located some distance outside of the historic core of Wrexham. The town is believed to be pre-Conquest in origin, although the first reference to a settlement is documented in 1161 as *Wristlesha'*, interpreted as a piece of enclosed land owned by Wryhtel.

4.8.5 Consequently, there is no evidence to suggest that the study site was occupied in this period, and the study site is considered to have been within the agricultural hinterland to the town of Wrexham. Therefore, the potential for significant non-agricultural archaeological remains of Medieval date to survive within the site is low/nil.

4.9 **Post-Medieval and Modern**

- 4.9.1 There is one archaeological asset of Post-Medieval date recorded in the HER within the study site comprising a marl pit (82623).
- 4.9.2 The HER also records a WWII aircraft crash site (86023) on the north-west perimeter of the study site, although no details are provided. Nevertheless, the crash site will be protected under the enforcement of the PMRA (1986). Most aircraft crash sites were visited almost immediately or soon after by recovery teams, to remove salvage, human remains, ordnance and, in the case of enemy aircraft, to examine the wreckage for intelligence purposes. The amount of recoverable material was influenced by the size of the aircraft, its speed and angle at impact, the surface into which it impacted, and its location. Once the crash site had been cleared and made safe the crater would be back-filled before the recovery crew moved on to their next task. As a result of contemporary recovery, even where archaeological traces remain, excavation of lowland World War II crash sites may yield on average only approximately 1 per cent (in weight) of the aircraft (English Heritage 2002). A geophysical survey of the crash site undertaken as part of this assessment, did not identify any evidence for the presence of a crashed aircraft (Appendix 3).
- 4.9.3 Also bounding the north-west side of the study site is Tyn Twll Farm (55135, Plate 12), and on the east side of the north perimeter of the study site are the locations of the Credington Arms building (55138) and well (55137), and Keeper's Cottage (82622) and well (86005). Only Tyn Twll Farm (55135) is extant.
- 4.9.4 Along Bryn Estyn Road, which bounds the south perimeter of the study site, the HER records a boundary stone (104464), although it no longer exists. Bryn Estyn House and Garden (86007) and associated well (86006), which also date to at least the early 19th century, are located on the south side of Bryn Estyn Road and to the south-east of the study site, bounding and revetting the north side of Bryn Estyn Road, is a limestone wall (82626, Plate 7).
- 4.9.5 Within the surrounding 1km study area the HER data for the Post-Medieval or modern period is characterised by archaeological assets related to buildings, monuments or artefacts of a well-defined extent: there are 101 archaeological assets of Post-Medieval or modern date, a large proportion of which relates to RAF Wrexham (Borras Airfield) dating to World War II that was located on the north side of the A534, Holt Road.
- 4.9.6 In this period, understanding of settlement, land-use and the utilisation of the landscape is enhanced by cartographic and documentary sources which can give additional detail to data contained within the HER.

- 4.9.7 The earliest available detailed map of the study site is the 1838 Flint Tithe map (Figure 2). The study site comprises approximately 16 fields (numbers 56, 60, 95-103, 115-119) used as arable. Tyn Twll Farm (55135) can be seen to the north-west (Plot 105) and the Credington Arms (55138) can be seen to the north-east (Plot 61). The marl pit (82623) is also marked as a feature but is not labelled as such.
- 4.9.8 The Ordnance Survey map of 1879 (Figure 3) shows that generally there is no change to the study site since the Tithe map of 1838 (Figure 2), with the exception of a small number of field boundaries having been removed in the north-west area and south side of the study site and a second pit or pond is shown to the south of the marl pit recorded on the HER (82623).
- 4.9.9 The 1900 Ordnance Survey map (Figure 4) again shows relatively little change to the study site, with only an additional field boundary added in the very north-west field. Keeper's Cottage (82622), to the north of the site on Holt Road has been built.
- 4.9.10 There is no change to the study site seen on the Ordnance Survey map of 1914-5 (Figure 5), apart from the field boundary in the very north-west field has been removed. To the south, Bryn Estyn Court has been built together with Bryn Estyn House (86007) in its present form.
- 4.9.11 There are no changes to the study site until the Ordnance Survey map of 1968 (Figure 6) when the field boundaries that had previously divided plots 100-103 on the Tithe map of 1938 are re-established. In the centre of these fields, the marl pit (82623) contains a small pond and appears to have been fenced off. To the north of these fields a drain is shown, which is still extant and in the south-west area of the study site a field boundary has been removed. The Credington Arms (55138) has been demolished to the north-east and a quarry is shown bounding the east side of the study site. The World War II Borrass Airfield for RAF Wrexham is shown to the north of the study site, although is marked as disused.
- 4.9.12 The study site remains unchanged until the 1990-2 Ordnance Survey map (Figure 7) when a number of field boundaries have been removed and that around the marl pit reconfigured. This arrangement remains through to the present day (Figure 1), with evidence of the former east/west field boundary on the east side of the study site marked by mature trees (Plate 11).
- 4.9.13 The study site remained as agricultural land throughout the Post-Medieval period until the present day, as demonstrated in the mapping evidence. Apart from the marl pit (82623), that was identified during the site visit within the study site (Plates 9 and 10), no other features of archaeological potential were noted. The marl pit has limited archaeological interest and therefore it is considered that there is low/nil potential for

sub-surface remains surviving below ground, depending on the precise location and possible spread of the WWII aircraft crash site (86023). A geophysical survey of the crash location, undertaken as part of this assessment, did not identify any evidence for the presence of a crashed aircraft in that location (Appendix 3).

4.10 **Assessment of Significance**

- 4.10.1 Understanding significance is a key principle for managing change to heritage assets, and is embedded within current government policy. Assessing significance requires a combination of comparative analysis, an understanding of the heritage asset's development and the wider context.
- 4.10.2 Within the study site there is one non-designated asset of Post-Medieval and Modern date recorded in the HER comprising a marl pit. Its significance is of low or local archaeological interest, which would be derived from its relatively limited evidential value and historical value associated with the development and use of a Post-Medieval agricultural landscape.
- 4.10.3 At the north-west side of the study site a WWII aircraft crash site is recorded which is considered to be of local/regional importance. There is no detail recorded on the HER regarding the aircraft or the circumstances surrounding the crash. In addition, a geophysical survey of the crash location, undertaken as part of this assessment, did not identify any evidence for the presence of a crashed aircraft (Appendix 3). However, it is possible there may be some potential for smaller parts of the aircraft not recovered immediately following the crash on the boundary and possibly within the study site, which provide evidential, along with historical, value to its significance.
- 4.10.4 This assessment has considered the potential for as yet to be discovered archaeological assets within the site and there is considered to be a low/nil potential for evidence for all archaeological periods. Any currently unknown archaeological remains present within the site would be significant for their evidential value and their potential to contribute to local and regional research agendas.

5.0 THE PROPOSED DEVELOPMENT & IMPACT ON HERITAGE ASSETS

5.1 The Proposed Development

5.1.1 The study site is being proposed for residential development.

5.2 Impact on Heritage Assets

5.2.1 There are no designated assets on the study site.

5.2.2 The assessment has established that there will be no impact on any designated assets or their settings within the surroundings of the study site as they are screened from the development by intervening buildings, topography or vegetation. Cadw have confirmed that they do not consider there to be a risk of impacts to the setting of any designated assets (Nichola Davies, pers. Comm. 12.09.18)

5.2.3 The assessment has also considered the potential for currently unknown archaeological evidence within the study site and, based on the available evidence, it has concluded that there is a low/negligible potential for sub-surface remains of all archaeological periods.

5.2.4 There is a marl pit recorded on the HER (82623) within the study site (Appendix 2) that is included for retention within the Illustrative Concept Layout (Randall Thorp drawing ref 661B-04 A) and will, therefore, not be impacted by the proposed development.

5.2.5 A geophysical survey of the WWII aircraft crash site (86023), undertaken as part of this assessment, did not identify any evidence for the presence of a crashed aircraft (Appendix 3). However, some small aircraft parts may remain scattered across the study site.

6.0 CONCLUSIONS

- 6.1 This Heritage Assessment draws together the available archaeological, historic, topographic and land-use information in order to clarify the significance of heritage assets on and near the study site and the archaeological potential of land at Holt Road, Wrexham. The Illustrative Concept Layout (Randall Thorp drawing ref 661B-04 A) for the proposed development has been used in the assessment of impact.
- 6.2 The assessment has established that there are no designated archaeological assets on the study site. Within the surrounding 1km study area there are five Grade II Listed Buildings, all of which are screened from the study site by intervening topography, vegetation and buildings. Consequently, there will be no impact on the designated assets or their settings and significance within the surroundings of the study site.
- 6.3 The assessment has also established that there is one non-designated archaeological asset recorded in the HER within the study site boundary and one located on the north-west boundary, both dating to the Post-Medieval and Modern periods and considered to be of local/regional interest. These include a marl pit on the west side of the study site, which will be retained within the proposed development, and a military aircraft crash site that may straddle the boundary of the study site. The crash site, under the Protection of Military Remains Act (PMRA) of 1986, cannot be excavated or remains removed without a license from the Joint Casualty and Compassionate Centre (JCCC). However, if human remains are suspected then it would be classed as a War Grave and an exclusion zone would be required in any proposed development. The archaeological asset is outside of the proposed development layout but associated ancillary earth moving works may impact on any surviving sub-surface remains. However, A geophysical survey of the crash site, undertaken as part of this assessment, did not identify any evidence for the presence of a crashed aircraft (Appendix 3).
- 6.4 This assessment has also considered the potential for as-yet to be discovered archaeological assets within the site. It concludes that, on the basis of the archaeological evidence from the search area, the site has a low/negligible potential for significant remains of all periods.
- 6.5 The assessment has shown that there are no heritage or archaeological constraints to the deliverability of the study site.
- 6.6 In light of the above, it is recommended that an initial geophysical survey is undertaken to confirm the presence/absence of remains associated with the crash site and any other potential features of archaeological interest. This would inform the need for a scope of

further archaeological work; this programme of iterative work can be secured by an appropriately worded planning condition.

SOURCES CONSULTED

General

Wrexham Record Office

Wrexham Historic Environment Record (HER)

National Monuments Record of Wales

Bibliographic

British Geological Survey, 1993, *Geology, 1:50,000 Maps, Sheet 121, Wrexham*.

CPAT, 2004. *Wrexham Industrial Estate Access Roads. Stage II archaeological study*.

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CPAT, 2009b. *Excavations at Borras Quarry, Wrexham, 2009. Interim report*.

CPAT HLC: the Historic Landscape Characterisation work of the Clwyd-Powys Archaeological Trust. (published on-line – accessed October 2018).

English Heritage, 2002. *Military Aircraft Crash Sites. Archaeological guidance on their significance and future management*.

Cartographic

1611 Speed's County Map of Wales

1740 William's New Map of the Counties of Denbigh and Flint

1838 Wrexham Tithe Map

Ordnance Survey 1:10,000

1879, 1881, 1899-1900, 1900, 1914-15, 1938-54, 1954, 1964, 1968, 1974, 1981-3, 1988, 1990-2, 1992, 2000, 2006, 2017

Ordnance Survey 1:2,500

1881, 1899, 1911, 1959, 1960-2, 1984, 1987, 1988, 1990, 1992

Website

Archaeological Data Service - ads.ahds.ac.uk

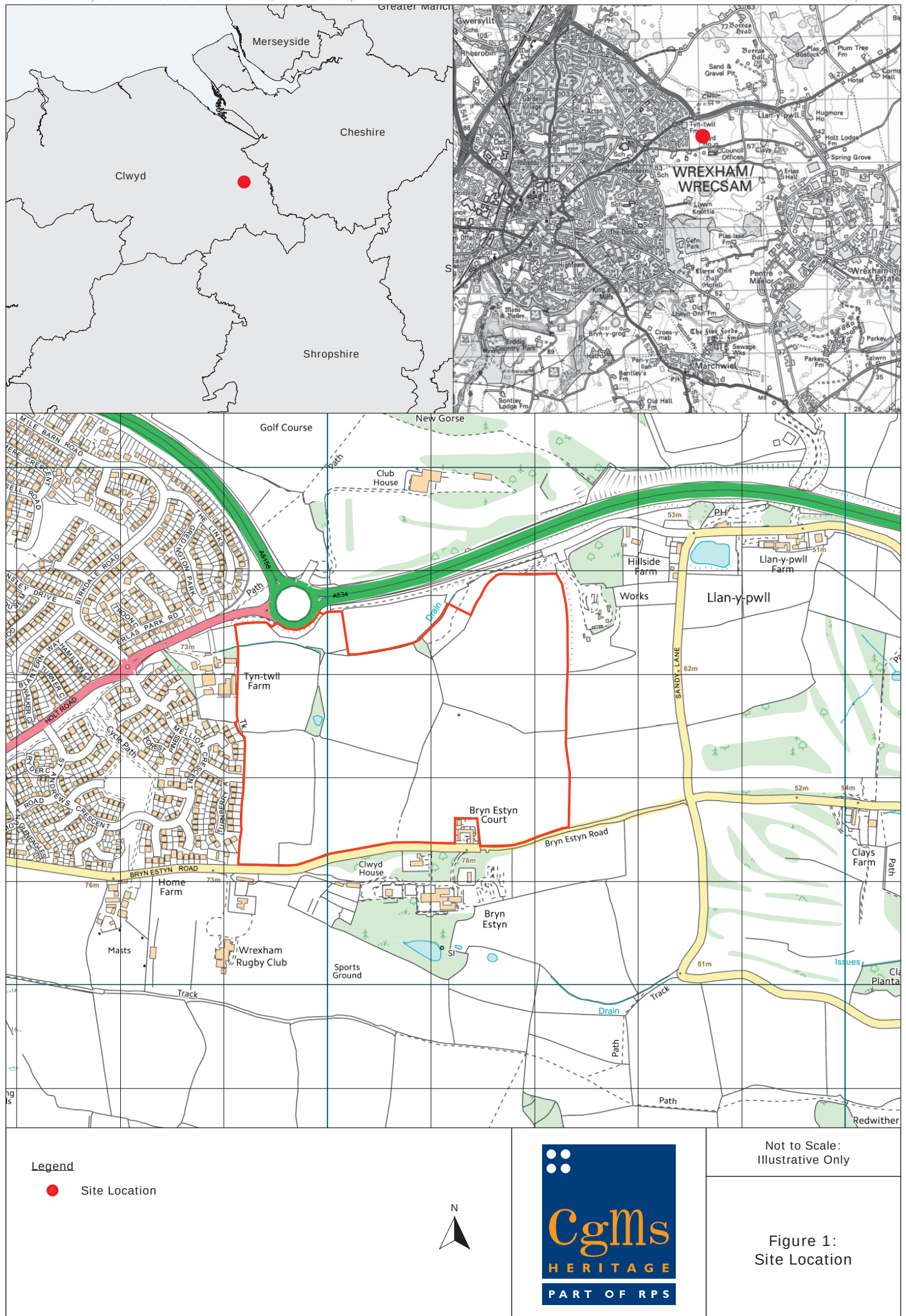
British Geological Survey – bgs.ac.uk

Clwyd Powys Archaeological Trust – cpat.org.uk

Historic Wales – historicwales.gov.uk

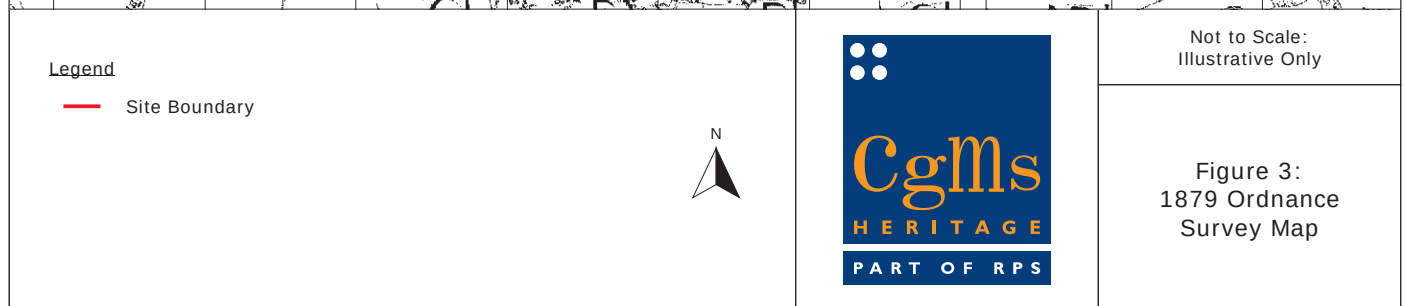
National Library of Wales - journals.library.wales and places.library.wales

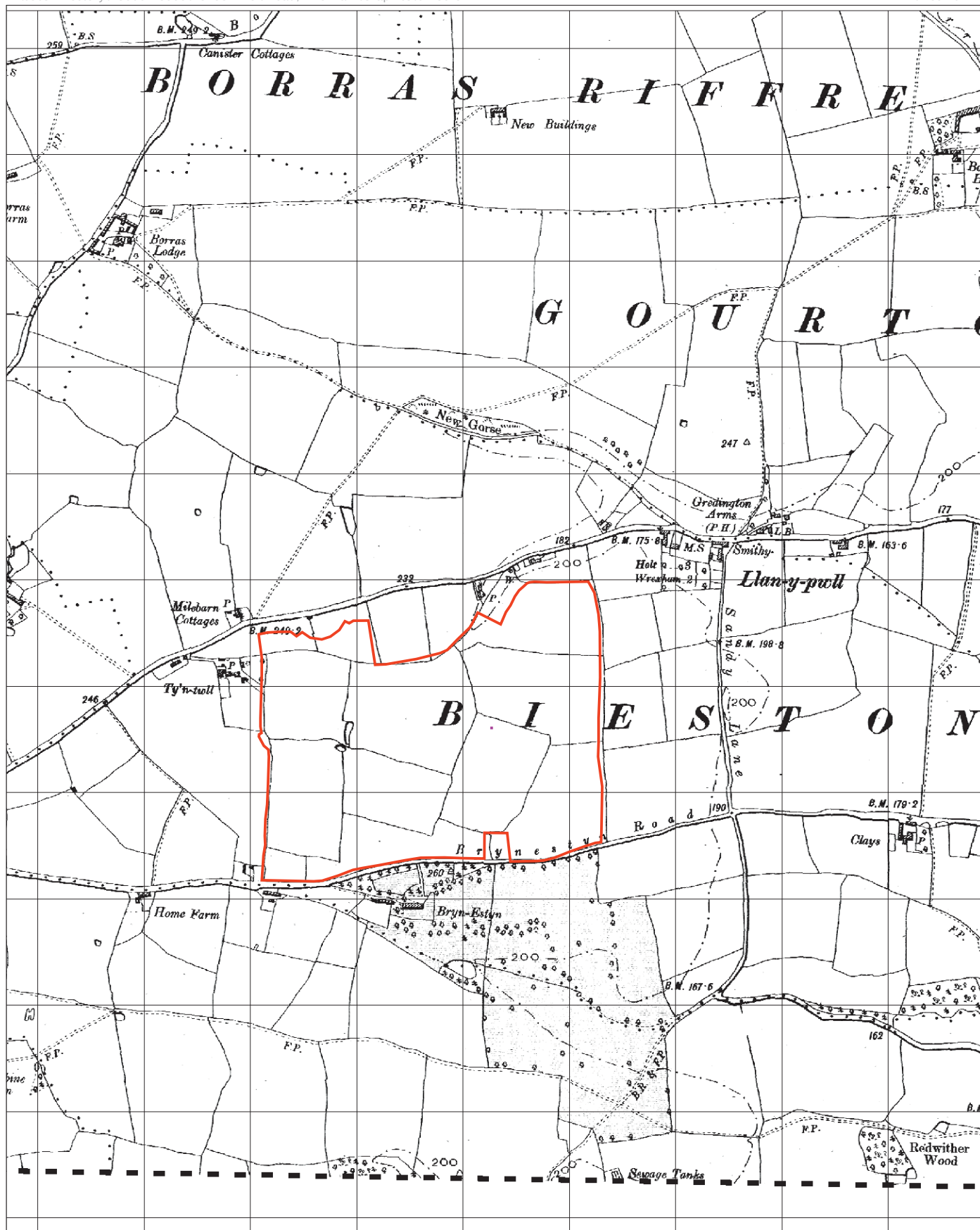
National Monuments Record of Wales (NMRW) database - coflein.gov.uk





Legend — Site Boundary N	Cgms HERITAGE PART OF RPS	Not to Scale: Illustrative Only Figure 2: 1838 Wrexham Tithe Map
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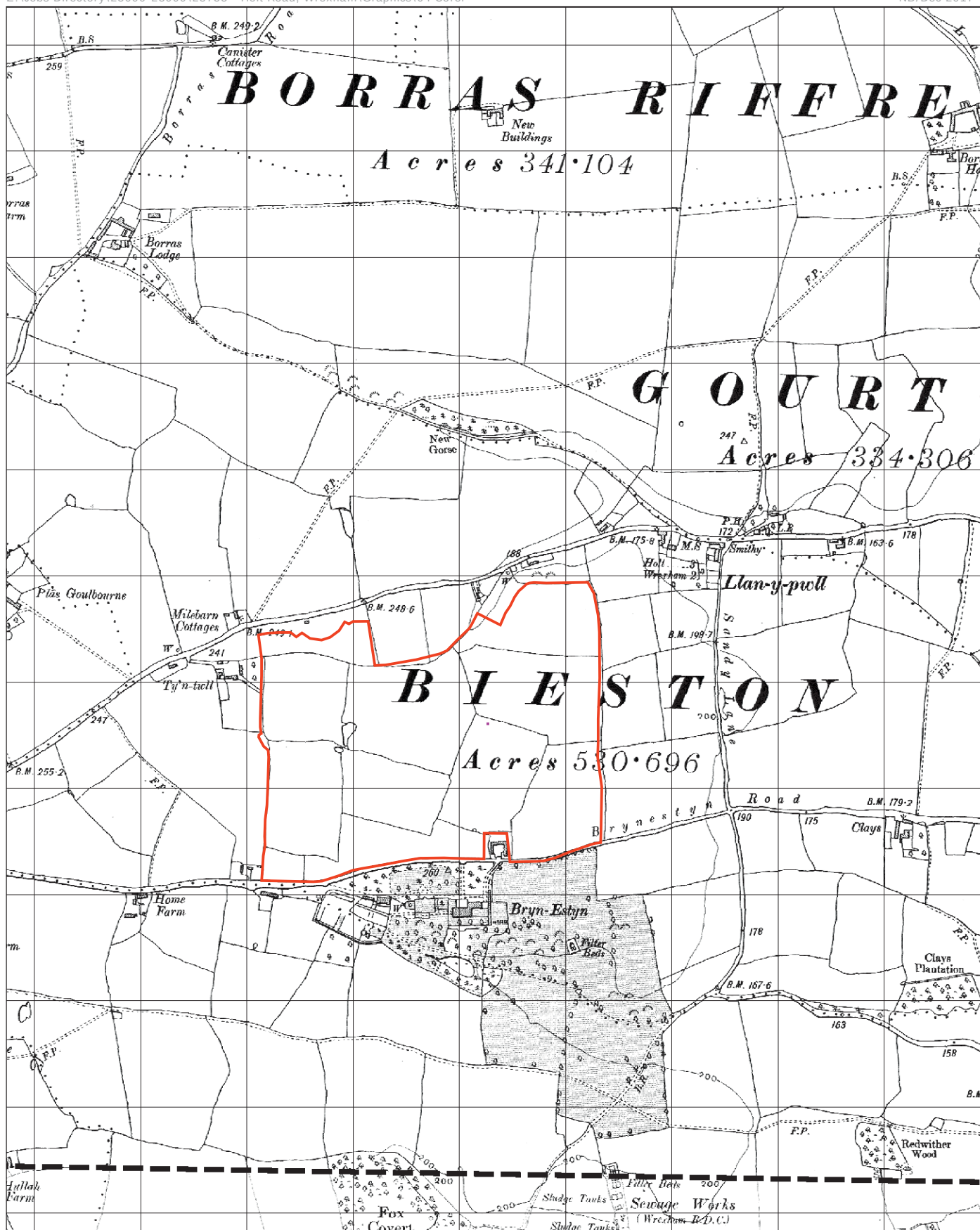
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— Site Boundary



Not to Scale:
Illustrative Only

Figure 4:
1900 Ordnance
Survey Map



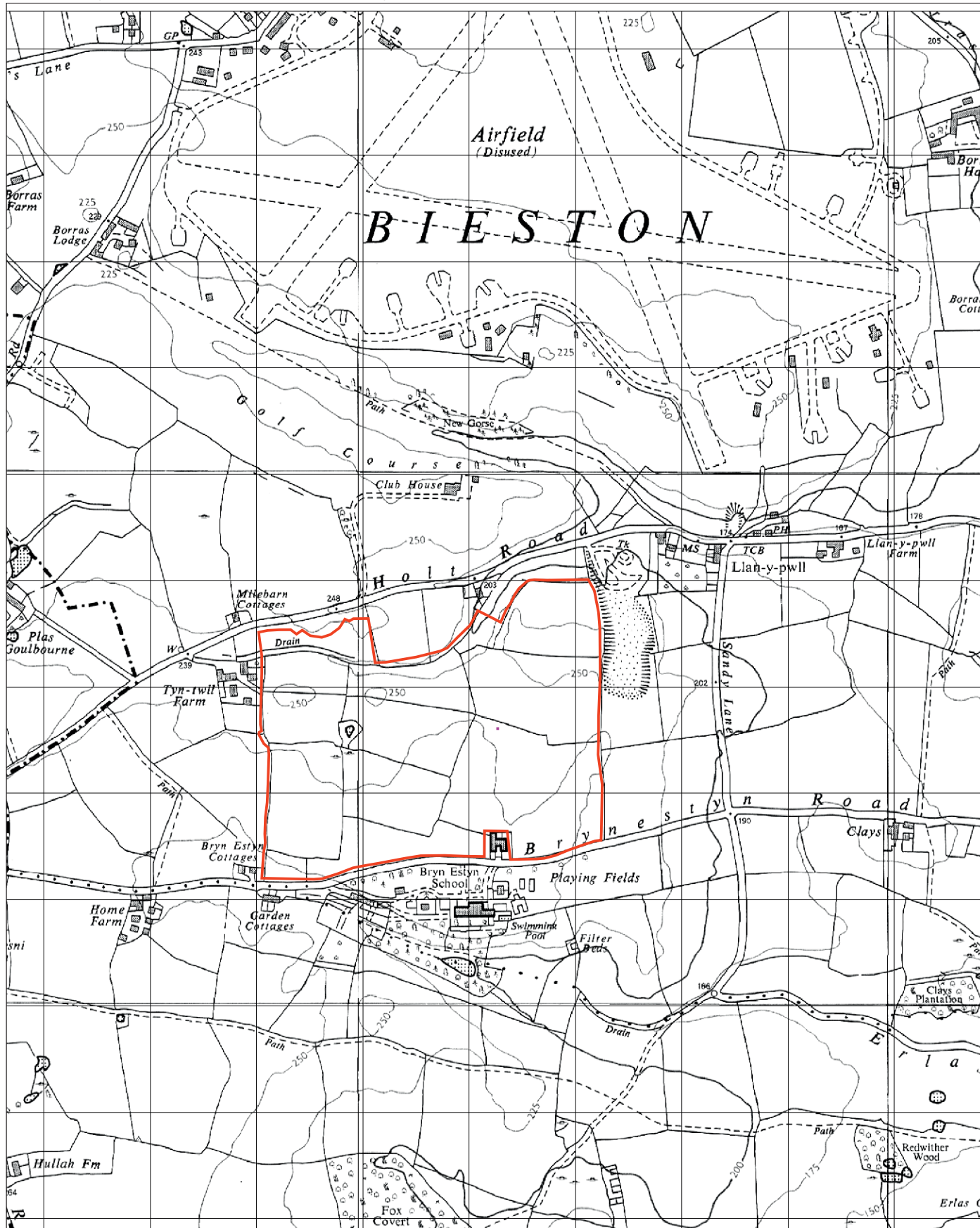
Legend

— Site Boundary



Not to Scale:
Illustrative Only

Figure 5:
1914-1915 Ordnance
Survey Map



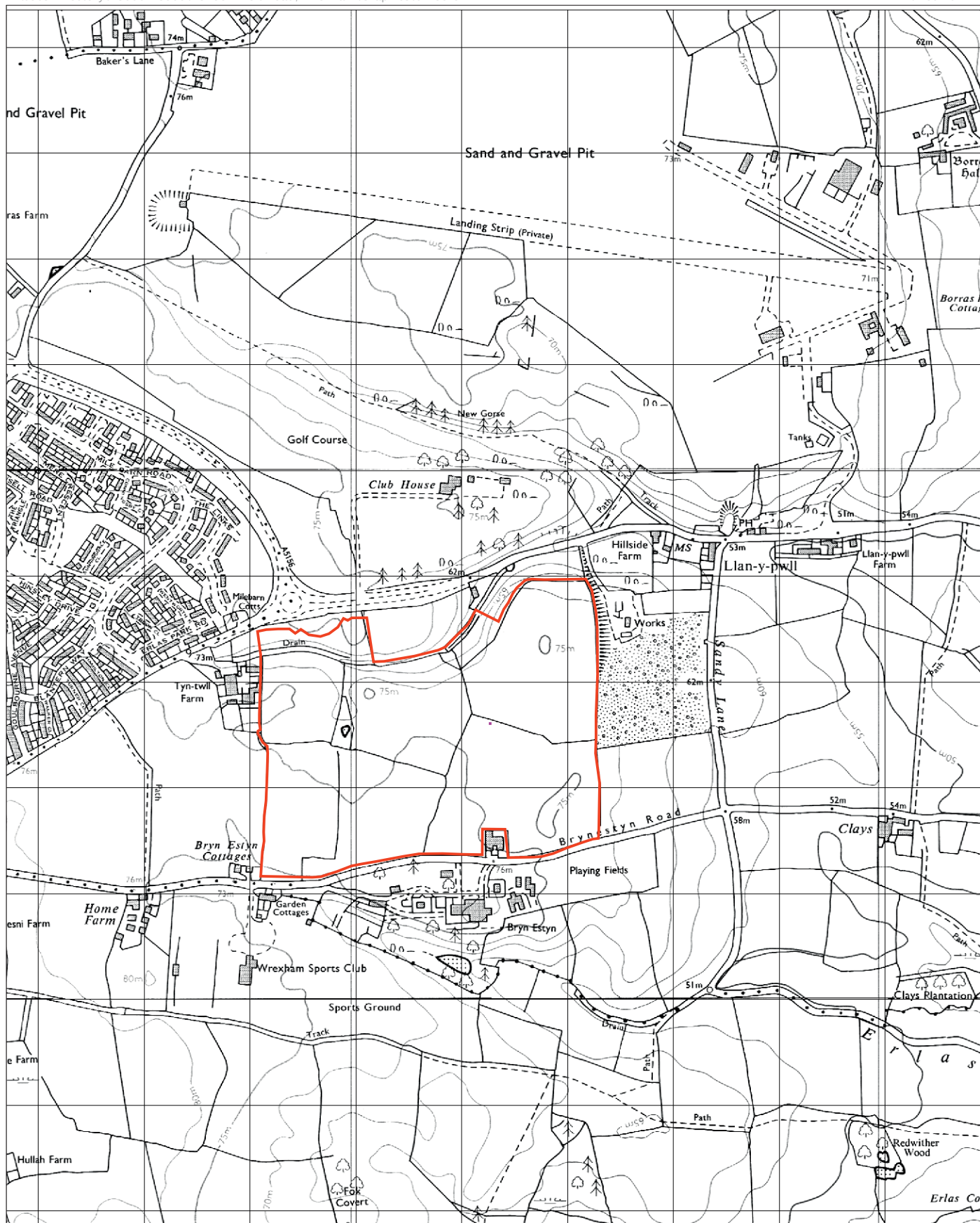
Legend

— Site Boundary



Not to Scale:
Illustrative Only

Figure 6:
1968 Ordnance
Survey Map



Legend

— Site Boundary



Not to Scale:
Illustrative Only

Figure 7:
1990-1992 Ordnance
Survey Map



Plate 1: West facing view from the north perimeter of the study site along Holt Road (A534)



Plate 2: South facing view along the west side of the study site, towards Bryn Estyn Court in the distance



Plate 3: West facing view across the north of the study site



Plate 4: South-west facing view from the east side of the study site



Plate 5: South facing view from the west side of Bryn Estyn Court



Plate 6: East facing view across the pasture field to the south of the roundabout on the A534



Plate 7: East facing view along Bryn Estyn Road. The revetting wall (82626) can be seen on the left side



Plate 8: West facing view of Bryn Estyn Court from the eastern perimeter of the study site



Plate 9: South-west facing view towards the small woodland area surrounding the marl pit (82623)



Plate 10: View of the marl pit (82623)



Plate 11: View eastwards along the line of trees remaining of a relict field boundary on the east side of the study site



Plate 12: View of Tyn-twill Farm (55135) from the north-west corner of the study site

APPENDIX 1: DESIGNATED AND NON-DESIGNATED ASSETS DATA PLOTS

APPENDIX 2: GAZETTEER OF DESIGNATED AND NON-DESIGNATED HERITAGE ASSETS

Ref Number	Name & Description	Location	Date
Grade II Listed Building			
32686, LB ref. 1747	Wrexham, Borrass Park Road 'Cherry Hill' Built as a private house in 1936, and designed by Edgar Beresford (of the Baillie Scott and Beresford Partnership), for C.L Thomas. In use as a children's home since 1971	SJ 35254 52131	Modern
32690, LB ref. 1751	No 93, Dean Road (W SIDE) Pair of cottages, dated 1875 and built as part of the Acton Park estate	SJ 34861 51550	Post-Medieval
36746, LB ref. 1564	Borrass Farm Recorded as having been built 1706-7. C19 remodelling and two phases of enlargement. Historic associations with Jeffreys family	SJ 35256 52506	Post-Medieval
42294, LB ref. 16471	No 95, Dean Road Pair of cottages, dated 1875 and built as part of the Acton Park estate	SJ 34860 51550	Post-Medieval
66309, LB ref. 84802	Erlas Hall Country House marked on 1st edition 1881 and 1968 6 inch OS map, dating from late 16 th century	SJ 37290 50764	Post-Medieval
CPAT HER Monuments			
19232	Borrass Quarry Modern quarry. Assessment (PRN 85405) carried out in 2000 to assess the archaeological impact of extending the depth of sand and gravel workings. In the mid-1970s quarrying operations began and by 1977 Borrass Quarry was the largest sand and gravel pit in the former county of Clwyd, accounting for almost one third of the county's total sand and gravel production	SJ 365 525	Modern
26205	Croes Yorkin, Hugmore Lane Exact location of house unknown	SJ 3751	Post-Medieval
44422	RAF Wrexham (Borrass Airfield) Opened in June 1941 and closed 1945. Used initially by an Anti-Aircraft Cooperation Flight and then a fighter squadron. Flying Training Command took over the airfield in May 1943 and it served as a satellite station for RAF Calveley. Little now remains. By early 1940 fields at Borrass were being utilised for training flights. Several hedges were removed and limited levelling provided three grass runways of some 550-600 yards. Accommodation was originally tented, then replaced by timber huts alongside Borrass Head Farm (PRN 102854). A 'Bellman' hangar (PRN 85407) was erected in the NE corner of the landing ground to replace or supplement the First World War 'Bessoneau' hangar that had been erected alongside New Buildings. The main period of construction was between December 1940 and June 1941. Early example of the use of concrete for runways. Perimeter defences were built on an ad hoc basis and eventually consisted of three 'defended localities' incorporating camouflaged and concealed pill-boxes, 'mushroom' pill boxes, 'seagull' trenches, 'retractable forts', light anti-aircraft guns and searchlights. The airfield was built primarily to accommodate a night-fighter squadron for the air defence of Liverpool and Manchester. The plan of the airfield consisted of three runways (PRNs 85408, 85409 & 85410) with a perimeter track (PRN 85412), around which the various buildings were arranged. The control tower (PRN 85413) was located on the NW side of the airfield, beyond which numerous buildings formed the Instructional and Technical Site (PRN 85414). The 'Bellman' hangar was relocated to the NE side of the site in 1942, at the end of a long taxiway (PRN 85415). Underground fuel tanks were located at the rear of Borrass Hall (PRN 102853). Three dispersal areas (PRNs 85416, 85417 & 85418) were located on the S and NE sides of the perimeter track. Subject of an assessment (PRN 85405) comprising desktop study and field survey (PRNs 85402, 85403) in 2000. Only the far eastern portion of the airfield now survives due to quarrying operations. In 1940-41 the land was requisitioned as an emergency Relief Landing Ground (RLG) for use by units from RAF Sealand and RAF Hawarden. Domestic quarters at S of airfield used to accommodate displaced persons in the post-war years. Airfield used for the storage and refurbishment of military vehicles. 'Palatial' terminal building associated with use by quarry company in 1970s and 1980s remains. The first RAF unit to use the airfield was 57 OTU, which formed at the site on 3rd March 1941 (before construction was finished)	SJ 3623 5270	Modern
54701	Abenbury, Buckle	SJ 354 506	Post-Medieval

	Elaborate double loop buckle in copper alloy, mid-17 th century shoe or spur buckle (PAS Database, 2011).		
54713	Abenbury, Coin Copper alloy Roman Sestertius coin of Marcus Aurelius (AD139 - 180) (PAS Database, 2011)	SJ 3565 5085	Roman
55135	Tyn-twill farmstead Farmstead likely to contain traditional farm buildings as those depicted on 1st edition (1881) OS map corresponding with buildings on the modern digital mapping	SJ 35771 51610	Post-Medieval
55136	Tyn-Twill marl pit Pond shown on 1881 6 inch OS maps. This is one of many ponds in this area, and may have originally been a clay or marl pit for building material or fertiliser	SJ 35821 51997	Post-Medieval
55137	Credington Arms well Well depicted on 1st edition (1881) OS map	SJ 36290 51807	Post-Medieval
55138	Credington Arms Building depicted on 1st edition (1881) OS map	SJ 36339 51825	Post-Medieval
55139	Bryn-Estyn sand pit Sand pit depicted on 1st edition (1881) OS map	SJ 36693 51367	Post-Medieval
66310	Warn House House site with associated small rectangular enclosure to the East, marked on 1st edition (1881) 6 inch OS map.	SJ 36350 50584	Post-Medieval
66311	Fox Covert, Sewage Tanks Rectangular structures marked on 1968 6 inch OS map. Purpose unknown. Sewage tanks depicted on OS 25" 1899	SJ 36494 50645	Post-Medieval
66312	Erlas Hall trackway Trackway marked on 1st edition 1881 and 1968 6 inch OS maps.	SJ 36765 50765	Post-Medieval
66313	Erlas Hall pond I Pond marked on 1st edition 1881 and 1968 6 inch OS maps	SJ 37232 50901	Post-Medieval
66314	Erlas Hall pond II Pond Marked on marked on 1968 6 inch OS map	SJ 37260 50888	Post-Medieval
66316	Erlas Hall pond IV Pond marked on 1st edition 1881 6 inch OS map	SJ 37289 50745	Post-Medieval
66318	Erlas Hall pond VI Pond marked on 1st edition 1881 and 1968 6 inch OS maps	SJ 37101 50778	Post-Medieval
66319	Erlas Hall pond VII Pond marked on 1st edition 1881 and 1968 6 inch OS maps	SJ 37086 50822	Unknown
66320	Erlas Hall pond VIII Pond marked on 1st edition 1881 and 1968 6 inch OS maps	SJ 37040 50684	Unknown
66321	Erlas Hall pond IX Pond marked on 1st edition 1881 and 1968 6 inch OS maps	SJ 37009 50678	Post-Medieval
66322	Erlas Hall pond X Pond marked on 1968 6 inch OS map	SJ 37003 50706	Unknown
82616	Erlas Hall marl pit I Water-filled marl pits, surrounded by vegetation and within a wood	SJ 3700 5084	Post-Medieval
82617	Erlas Hall ridge and furrow I Several furlongs of ridge and furrow in excellent condition, with headlands visible. Ridges up to 6m wide and 0.4m high. Aerial photographs clearly show some but not all of these extant earthworks	SJ 3714 5068	Medieval
82620	Llan-y-pwll farm earthwork A slightly sinuous earthwork, about 5m wide and 0.3m high, crosses the field from east to west. It is perhaps no more than relict field bank but looks more like a causeway.	SJ 37068 51809	Unknown
82622	Keeper's Cottage Keeper's Cottage looks to be an estate cottage, not earlier than 19 th century	SJ 36233 51772	Post-Medieval
82623	Bryn Estyn marl pit I Water-filled marl pit	SJ 35981 51509	Post-Medieval
82626	Bryn Estyn revetment wall The northern roadside edge has been revetted by a well-built stone wall (?limestone), still largely intact	SJ 36512 51313	Post-Medieval
82627	Bryn Estyn Holloway A hollow way appears on a 1993 vertical aerial photograph and shows as a footpath on modern Ordnance Survey maps. It is an extension of an existing unnamed lane a little to the north-east.	SJ 3653 5089	Medieval/Post-Medieval
82628	Bryn Estyn Earthworks Several contiguous fields of pasture land with earthworks visible including a Holloway (HER82627)	SJ 3645 5094	Unknown
85404	Borras, Borras Lodge, landing ground	SJ 3557 5245	Modern

	Fields at Borrass Lodge were used between 1917 and 1920 by Nos 4 and 51 Training Squadrons/Schools of the RFC/RAF based at RFC Shotwick (late RAF Sealand) (PRN 44420) and Hooton Park for 'circuits and bumps', and to practise emergency landings etc. The same fields were also used for regular flying by both the Lancashire Aero Club and the Liverpool and District Aero Club, and for a series of air displays during the 1930s		
85406	Borrass, New Buildings Three tied cottages built some time after the Tithe Survey demolished by the time the airfield was built in the early 1940s	SJ 3624 5268	Post-Medieval
85408	RAF Wrexham, runway 04/22 Location of runway at RAF Wrexham (Borrass Airfield) aligned SW-NE, constructed between December 1940 and June 1941. Since destroyed by quarrying operations	SJ 3610 5266	Modern
85409	RAF Wrexham, runway 10/28 Runway at RAF Wrexham (Borrass Airfield) aligned approximately W-E, constructed between December 1940 and June 1941. Only the eastern half now survives	SJ 3630 5246	Modern
85410	RAF Wrexham, runway 16/34 Runway at RAF Wrexham (Borrass Airfield) aligned approximately NW-SE, constructed between December 1940 and June 1941. Only a short section now survives, the rest having been quarried away	SJ 3644 5263	Modern
85411	RAF Wrexham, building I Concrete- rendered brick building with asbestos roof. Intact, 9.5m x 6.5m including buttresses. Original use unknown but now a store	SJ 3675 5212	Modern
85412	RAF Wrexham (Borrass Airfield), perimeter track Concrete perimeter track at RAF Wrexham (Borrass Airfield), constructed between December 1940 and June 1941. Allowed aircraft access to the runways and general access around the airfield. The airfield buildings were also arranged around it. Only the eastern portion now survives	SJ 3667 5257	Modern
85416	RAF Wrexham, southern dispersal area Aircraft dispersal area at RAF Wrexham (Borrass Airfield). Comprised four 'Over Blister' hangars (PRNs 85424, 85425, 85426 and 85427), buildings and double dispersal pens (PRNs 85428, 85429 & 85430). Also incorporated its own 'defended locality' comprising pillboxes, searchlights and gun positions. Destroyed by quarrying operations	SJ 3605 5235	Modern
85417	RAF Wrexham (Borrass Airfield), south-eastern dispersal area Aircraft dispersal area at RAF Wrexham (Borrass Airfield). Comprised two 'Over Blister' hangars (PRNs 85431 & 85432), buildings (PRNs 85441-5) and double dispersal pens (PRNs 85433-5). Also incorporated its own 'defended locality' comprising pillboxes, searchlights and gun positions. Now only some of the buildings survive	SJ 3692 5225	Modern
85418	RAF Wrexham (Borrass Airfield), north-eastern dispersal area Aircraft dispersal area at RAF Wrexham (Borrass Airfield). Comprised five 'Over Blister' hangars (PRNs 85436-85440), buildings (including PRN 85446) and dispersal pens. Also incorporated its own 'defended locality' comprising pillboxes, searchlights and gun positions. Mostly destroyed by quarrying operations	SJ 3670 5262	Modern
85422	RAF Wrexham, D/F hut I D/F hut (Direction Finding) for RAF Wrexham (Borrass Airfield), outside airfield perimeter. Not visible	SJ 3572 5233	Modern
85423	RAF Wrexham, D/F hut II D/F hut (Direction Finding) for RAF Wrexham (Borrass Airfield), outside airfield perimeter. The building could not be approached closely but it appears to survive intact in a coniferous copse within the golf course. Not possible to say whether the interior retains any original	SJ 3633 5221	Modern
85424	RAF Wrexham, 'Over Blister' hangar A Site of hangar, of curved sheet metal type, now destroyed by quarrying	SJ 3567 5244	Modern
85425	RAF Wrexham, 'Over Blister' hangar B Site of hangar, of curved sheet metal type, now destroyed by quarrying	SJ 3599 5239	Modern
85426	RAF Wrexham, 'Over Blister' hangar C Site of hangar, of curved sheet metal type, now destroyed by quarrying	SJ 3607 5232	Modern
85427	RAF Wrexham, 'Over Blister' hangar D Site of hangar, of curved sheet metal type, now destroyed by quarrying	SJ 3622 5227	Modern
85428	RAF Wrexham, dispersal pen I Site of double dispersal pen (also known as a blast pen) for protecting aircraft on the ground, originally consisting of a concrete base with surrounding protective earth blast walls, now destroyed by quarrying	SJ 3596 5228	Modern

85429	RAF Wrexham, dispersal pen II Site of double dispersal pen (also known as a blast pen) for protecting aircraft on the ground, originally consisting of a concrete base with surrounding protective earth blast walls, now destroyed by quarrying	SJ 3615 5236	Modern
85430	RAF Wrexham, dispersal pen III Site of double dispersal pen (also known as a blast pen) for protecting aircraft on the ground, originally consisting of a concrete base with surrounding protective earth blast walls, now destroyed by quarrying	SJ 3625 5233	Modern
85431	RAF Wrexham (Borras Airfield), 'Over Blister' hangar E Site of hangar, of curved sheet metal type, probably destroyed	SJ 3700 5218	Modern
85432	RAF Wrexham (Borras Airfield), 'Over Blister' hangar F Site of hangar, of curved sheet metal type, probably destroyed	SJ 3707 5213	Modern
85433	RAF Wrexham, dispersal pen IV Site of double dispersal pen (also known as a blast pen) for protecting aircraft on the ground, originally consisting of a concrete base with surrounding protective earth blast walls, probably destroyed	SJ 3676 5216	Modern
85434	RAF Wrexham, dispersal pen V Site of double dispersal pen (also known as a blast pen) for protecting aircraft on the ground, originally consisting of a concrete base with surrounding protective earth blast walls, probably destroyed (Jones, N W, 2000j).	SJ 3687 5207	Modern
85435	RAF Wrexham (Borras Airfield), dispersal pen VI Site of double dispersal pen (also known as a blast pen) for protecting aircraft on the ground, originally consisting of a concrete base with surrounding protective earth blast walls, probably destroyed	SJ 3692 5222	Modern
85436	RAF Wrexham (Borras Airfield), 'Over Blister' hangar G Site of hangar, of curved sheet metal type, probably destroyed	SJ 3700 5244	Modern
85437	RAF Wrexham (Borras Airfield), 'Over Blister' hangar H Site of hangar, of curved sheet metal type, probably destroyed	SJ 3690 5250	Modern
85438	RAF Wrexham (Borras Airfield), 'Over Blister' hangar I Site of hangar, of curved sheet metal type, now destroyed	SJ 3695 5258	Modern
85439	RAF Wrexham (Borras Airfield), 'Over Blister' hangar J Site of hangar, of curved sheet metal type, probably destroyed	SJ 3674 5258	Modern
85442	RAF Wrexham (Borras Airfield), building II, station workshops? Concrete-rendered brick building with asbestos roof. Has later additions. Irregular cruciform plan. Intact. Original building c.31m NS x at least 16m EW. Formerly quarry offices, now derelict, original use unknown (Jones, N W, 2000j, pp6). Possibly the station workshop buildings (Buchan Innes, G, 1995, pp58).	SJ 3698 5226	Modern
85443	RAF Wrexham (Borras Airfield), building III, sleeping shelter Brick building with a flat concrete slab roof and metal ventilation grills at the bases of the walls. Blast door and wall survive on the north end, but have been removed from the south end. Originally a sleeping shelter, now used as a cow shed. Overall 14m by 3.6m.	SJ 37080 52200	Modern
85444	RAF Wrexham, building IV Brick building rendered with concrete, and an asbestos roof. Dimensions 18.6m x 6.6m overall including buttresses. Now used as a classroom	SJ 3688 5217	Modern
85445	RAF Wrexham, building V Brick building rendered with concrete. It has a new sheet metal roof and modern additions to the W side. Original dimensions 18.7m x 6.6m. Original use unknown	SJ 3682 5221	Modern
85446	RAF Wrexham (Borras Airfield), aircraft gunnery butts Open-ended brick structure, originally filled with sand. Used for testing and aligning aircraft weaponry. Modern additions have been made. Now used as a maintenance shed	SJ 3680 5259	Modern
86003	Holt Road Smithy Well Well depicted on OS 25" 1887	SJ 36661 51817	Post-Medieval
86005	Holt Road Well Well depicted on OS 25" 1887	SJ 36295 51817	Post-Medieval
86006	Bryn Estyn Well Well depicted on OS 25" 1912	SJ 36075 51180	Post-Medieval
86007	Bryn Estyn house and garden Bryn Estyn house and parkland. Series of buildings within wooded parkland with drives, pools, well etc. depicted on OS 25" 1912 Denb 29.5. Subsequently a childrens' home	SJ 36182 51186	Post-Medieval
86022	Hawker Hurricane I L1989 Aircraft wreck crashed on 25/7/1940. The Belgian pilot, Sgt De Clerk, survived the crash. The aircraft was removed from the site	SJ 36626 50916	Modern

86023	Tyn-twll Farm air crash site Aircraft wreck	SJ 35820 51678	Modern
86024	Gourton Hall air crash site Aircraft wreck	SJ 37238 51691	Modern
86031	RAF Wrexham, air crash site I Aircraft wreck	SJ 35758 52197	Modern
86032	RAF Wrexham, air crash site II Aircraft wreck	SJ 35826 52278	Modern
86034	Clays buildings Two adjacent buildings shown on Gourton Tithe Map 1838. The area is now a golf course	SJ 3728 5135	Post-Medieval
86035	Redwither building I Two buildings shown on the Tithe map for Erilas Township, Gresford, 1842. No upstanding remains although there is a dense patch of nettles against E side of hedge, c. 30m N-S x 12m E-W, which may indicate site of buildings. Site Visit Record Form contains all the above text, but features Gourton rather than Gresford as the location	SJ 36395 50838	Post-Medieval
86036	Redwither building II Two buildings shown on the Tithe map for Erilas Township, Gresford, 1842. No trace of buildings. The area is sloping down to a flat and boggy area in valley bottom. Dense nettles on slope below edge of wood. Site Visit Record Form contains all the above text, but features Gourton rather than Gresford as the location. No upstanding remains of either building	SJ 36320 50554	Modern
97014	Abenbury, Spindlewhorl Decorated lead spindle whorl of bi-conical form, diameter c.29mm with a central hole of diameter c.9mm (PAS Database, 2011).	SJ 3560 5080	Roman
97015	Abenbury, Spindlewhorl Lead spindle whorl of diameter c.28mm, bi-conical in section, with a central hole c.10mm in diameter. (PAS Database, 2011)	SJ 3552 5054	Roman
97016	Abenbury, Buckle A copper-alloy double-loop buckle (PAS Database, 2011)	SJ 3540 5090	Post-Medieval
97017	Abenbury, Buckle A rectangular or trapezium-shaped copper-alloy buckle (PAS Database, 2011)	SJ 3580 5070	Medieval
97020	Abenbury, Buckle A copper-alloy double-loop spur buckle of 17 th century date (PAS Database, 2011)	SJ 3625 5040	Post-Medieval
100386	Acton Nursery Bronze Age hoard Hoard of six bronze unlooped palstaves and one chisel(?) found c1875 in the garden of Acton Nursery. Also reported are 1 extra palstave, 3 chisels & 1 dagger; the latter now untraceable.	SJ 348 518	Bronze Age
101542	Park and Parkiau fieldnames Four fields in Bieston Township in Norden's 1620 survey 'Parke Y Conynge' signify the site of a rabbit warren. This area is now built over	SJ 357 515	Post-Medieval
104463	Bryn Estyn Road brickworks No sign of a brickworks in fields of pasture	SJ 372 513	Post-Medieval
104464	Bryn Estyn Boundary Stone No Trace of Boundary Stone	SJ 3593 5122	Unknown
104467	Holt Road Smithy Smithy building much altered and renovated	SJ 3668 5183	Post-Medieval
104513	Cefn Road Boundary Stone Boundary stone, missing	SJ 3526 5092	Post-Medieval
106386	Llwyn Knottia Roman Coin Very worn Bronze Coin of Hadrian found north of Llwyn Knottia Farm sometime before 1990	SJ 357 507	Roman
118433	Borras, Coin One silver 2nd issue Elizabeth I groat found at a depth of 2" whilst metal detecting. It dates to 1560-1561	SJ 37111 52469	Post-Medieval
118459	Holt, sixpence of Elizabeth I Silver sixpence of Elizabeth I, dated 1576	SJ 37142 52418	Post-Medieval
118460	Holt, bow brooch Trumpet-type bow brooch fragment	SJ 37125 52405	Roman
121029	RAF Wrexham (Borras Airfield), building VI Small brick building rendered with concrete, sheet asbestos roof. Original use unknown	SJ 36984 52226	Modern
121042	RAF Wrexham, dispersed site I Group of dispersed buildings for RAF Wrexham, visible on a 1942 AP (No 1 PRU NLA/53 No 1019) of the airfield. This is the 'Main Communal Site' on the plan of RAF and WAAF communal sites at the back of Pratt and Grant	SJ 3519 5192	Modern

	2002. No surviving remains, subsumed within a group of modern housing developments		
121043	RAF Wrexham, dispersed site II Group of dispersed buildings for RAF Wrexham, visible on a 1942 AP (No 1 PRU NLA/53 No 1019) of the airfield. This is RAF Site No 4 on the plan of RAF and WAAF communal sites at the back of Pratt and Grant 2002. No surviving remains, subsumed within a group of modern housing developments	SJ 3542 5218	Modern
121044	RAF Wrexham dispersed site III Group of dispersed buildings for RAF Wrexham, visible on a 1942 AP (No 1 PRU NLA/53 No 1019) of the airfield. This is WAAF Site No 1/Communal Site on the plan of RAF and WAAF communal sites at the back of Pratt and Grant 2002. No surviving remains, subsumed within a group of modern housing developments	SJ 3494 5214	Modern
121159	RAF Wrexham, dispersed site IV Group of dispersed buildings for RAF Wrexham, visible on a 1942 AP (No 1 PRU NLA/53 No 1019) of the airfield. This is RAF Site No 1 on the plan of RAF and WAAF communal sites at the back of Pratt and Grant 2002. No surviving remains, subsumed within a group of modern housing developments	SJ 3500 5165	Modern
121160	RAF Wrexham, dispersed site V Group of dispersed buildings for RAF Wrexham, visible on a 1942 AP (No 1 PRU NLA/53 No 1019) of the airfield. This is RAF Site No 2 on the plan of RAF and WAAF communal sites at the back of Pratt and Grant 2002. No surviving remains, subsumed within a group of modern housing developments	SJ 3556 5189	Modern
121161	RAF Wrexham dispersed site VI Group of dispersed buildings for RAF Wrexham, visible on a 1942 AP (No 1 PRU NLA/53 No 1019) of the airfield. This is RAF Site No 3 on the plan of RAF and WAAF communal sites at the back of Pratt and Grant 2002. No surviving remains, subsumed within a group of modern housing developments	SJ 3492 5191	Modern
121164	RAF Wrexham, Anti aircraft gun emplacement III Anti-aircraft gun battery. No visible remains	SJ 3577 5234	Modern
121173	RAF Wrexham, pillbox V Pill box depicted. No visible remains	SJ 3561 5238	Modern
121174	RAF Wrexham, pillbox VI Pill box	SJ 3570 5238	Modern
121179	RAF Wrexham, Mushroom pillbox II 'Mushroom' pill box. No visible remains	SJ 3587 5222	Modern
121180	RAF Wrexham, Mushroom pillbox III 'Mushroom' pill box. No visible remains at this site, which is on the golf course	SJ 3657 5205	Modern
121182	RAF Wrexham, Seagull trench II Seagull trench. No visible remains, possibly buried beneath a large spoil heap on the edge of the quarry	SJ 3560 5250	Modern
121183	RAF Wrexham, Seagull trench III Seagull trench. No visible remains at this location	SJ 3625 5220	Modern
121184	RAF Wrexham, Seagull trench IV Seagull trench. No visible remains	SJ 3711 5210	Modern
121185	RAF Wrexham, Seagull trench V Seagull trench effectively intact and lies on the edge of the quarry a short distance to the north of the quarry office building. It is W-shaped, brick and concrete built, and sunken into the ground by about 1.5m. The roof is a reinforced concrete slab with a tarred felt cover. A number of weapon mountings are visible in the interior, all seemingly intact. The entrance seems to have been a sunken well with steps, centrally located on the east side. The site is overgrown but not directly threatened by quarrying activities at present. The only minor damage is a chip broken from the north-east corner of the roof	SJ 36633 52677	Modern
121186	RAF Wrexham, Pickett-Hamilton retractable fort I Pickett-Hamilton retractable fort. The area has been quarried away	SJ 3581 5246	Modern
121190	RAF Wrexham, SANDRA light I SANDRA light (searchlights used as beacons for aircraft in distress). No visible remains	SJ 3669 5213	Modern
123768	Borras Relief Landing Ground, Bessoneau hangar Approximate site of a First World War vintage 'Bessoneau' hangar erected alongside New Buildings (Jones, N W, 2000).	SJ 3629 5267	Modern

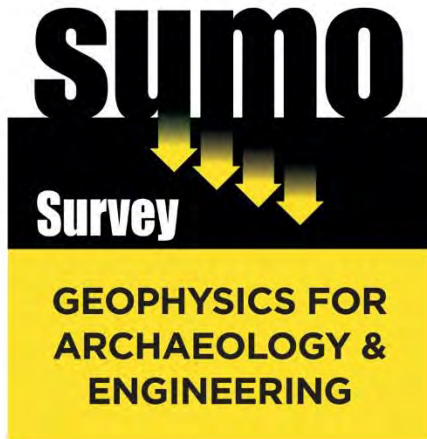
128243	Hugmore House, ridge and furrow II Area of R&F captured from LiDAR	SJ 37150 51501	Medieval
130409	MILES MASTER III W8640 The aircraft crashed at Tyn-twll Farm, Holt Road, Wrexham, after its wings came off in a dive on 28/3/1942. The crew of two were killed. (Pratt and Grant 2005, 143)	SJ 357 516	Modern
142280	Bryn Estyn Filter Beds Filter beds depicted on OS 25" 1912 Denb.29.5 Not visited nd	SJ 36444 51134	Post-Medieval
CPAT HER Events			
33196	Borras Quarry, assessment Modern quarry (Silvester, R J & Brassil, K S 1991, 14).	SJ 365 525	1995
51638	Erlas Hall, Tir Gofal HE1 assessment Historic environment HE1 assessment for Tir Gofal carried out by CPAT (CPAT, Tir Gofal HE1, 2003)	SJ 3696 5077	2003
51982	Tyn Twll, Tir Gofal HE1 assessment Historic environment HE1 assessment for Tir Gofal carried out by CPAT (CPAT, Tir Gofal HE1, 2005)	SJ 363 515	2005
58489	Borras Quarry, desktop study Modern quarry (Silvester, R J & Brassil, K S 1991, 14).	SJ 365 525	1995
58490	Borras Quarry, walk-over survey, modern quarry (Silvester, R J & Brassil, K S 1991, 14).	SJ 365 525	1995
85402	Borras Quarry, land at Borras Airfield and Borras Hall Farm, desktop study A desktop study that along with a field survey (PRN 85403) formed an archaeological assessment of land at Borras Airfield (PRN 44422) and Borras Hall Farm (PRN 102853). All readily available primary and secondary records relating to the site, including documentary, cartographic and aerial photographic sources were examined, at all of the appropriate archives and repositories. A search of the SMR revealed that there were no recorded archaeological sites within the study area, although a number were recorded close to the perimeter, these comprised three prehistoric sites and two of medieval date. There were also numerous post-medieval sites within the immediate area. The study demonstrated that the modern history of the site and the general area was dominated by the development of the airfield. Much of the study area became a sand and gravel quarry in the 1970s (Jones, N W, 2000j).	SJ 36230 52700	2000
85403	Borras Quarry, land at Borras Airfield and Borras Hall Farm, walkover survey 2000 A field survey that along with a desktop study (PRN 85402) formed an archaeological assessment of land at Borras Airfield (PRN 44422) and Borras Hall Farm (PRN 102853). Undertaken on 17th January 2000, the entire area that had not been subject to extraction or storage of spoil was investigated in detail. It was discovered that very little of the site had survived undisturbed. Large areas had been disturbed by quarrying, and some had subsequently been reinstated. Those areas not subject to extraction had often undergone landscaping either by the removal or deposition of material. Surviving airfield remains were limited and restricted to areas around the SE perimeter. It was considered possible that further structures might survive beneath redeposited material within the potentially undisturbed areas. Sections of two runways (PRNs 85409 & 85410) and the perimeter track (PRN 85412) were found to survive, along with six buildings (PRNs 85407 & 85441-5) and the gunnery butts (PRN 85446) all presumed to date from 1941. A written and photographic record was made for each feature. Each site was classified according to its perceived significance, however, this was difficult as their context had been largely removed. As the only remaining evidence of the former airfield all remains were classified Category C, sites of district or local importance. The role of RAF Wrexham in the defence strategy for Liverpool and Manchester, and the early use of concrete for the runways were noted as having considerable regional historical importance (Jones, N W, 2000j, pp5-6).	SJ 3670 5240	2000
85405	Borras Quarry, land at Borras Airfield and Borras Hall Farm, assessment Archaeological assessment undertaken by CPAT on behalf of Tarmac in early 2000 to investigate the archaeological potential of land at Borras Airfield (PRN 44422) and Borras Hall Farm (PRN 102853), and to assess the archaeological impact of extending the depth of sand and gravel workings. The assessment consisted of a desktop study (PRN 85402) and a field survey (PRN 85403). The results demonstrated that there were only limited surviving remains of the former airfield, all of which were within the relatively undisturbed areas in the SE and E of the site. The study	SJ 36230 52700	2000

	identified no surviving surface features from any period other than the Second World War airfield. A series of mitigation measures were recommended as proposed works were likely to lead to the loss or damage of the surviving airfield structures and any subsurface features which may survive in the undisturbed areas. These comprised a detailed drawn and photographic record of upstanding structures, and a watching brief over the removal of topsoil and modern overburden and recording of any archaeologically significant features revealed (Jones, N W, 2000j).		
106558	Borras Quarry, assessment project Assessment project carried out by CPAT in 2003	SJ 36299 52551	2003
113069	Borras Quarry, mitigation project Assessment project carried out by CPAT from 2005.	SJ 36299 52551	2005
118084	Wrexham Industrial Estate Access Roads. Stage II Archaeological Study. Archaeological Assessment Supplementary Statement In October 2004 CPAT was asked to examine the archaeological implications of one further option for the northern route of the access roads to Wrexham Industrial Estate. No new desk-top analysis or fieldwork was required because of the proximity of the new route to the original ones. The potential impacts on archaeological sites and areas along the route were defined. Mitigation strategies and recommendations for further work on the archaeology and buildings were made (Silvester, R J, 2004).	SJ 3671 5186	2004
120905	Twentieth Century Military Airfields. Scheduling Enhancement Programme A Scheduling Enhancement Project looking at the remains of the 3 military airfields in the Clwyd-Powys region, all in Wrexham and Flintshire. Desk based assessment (PRN120906) was followed by site visits and rapid recording (PRN120907) of the surviving buildings and structures. Using the results of this work, recommendations were made to Cadw for the designation of specific elements of the airfields		2012
120906	Twentieth Century Military Airfields. Scheduling Enhancement Programme, desk based assessment Desk based assessment, which along with site visits and rapid recording (PRN120907) of the surviving buildings and structures formed part of a Scheduling Enhancement Project (PRN120905) focussing on the 3 military airfields in the Clwyd-Powys region, all of which are in Wrexham and Flintshire		2012
120907	Twentieth Century Military Airfields. Scheduling Enhancement Programme, field survey Site visits and rapid recording of the surviving buildings and structures at the 3 military airfields in the Clwyd-Powys region. Along with desk based assessment (PRN120906) they formed part of a Scheduling Enhancement Project (PRN120905). All of the airfields are in Wrexham and Flintshire		2012
123124	Medieval and Post-Medieval Industry, assessment project Assessment project carried out for Cadw by Clwyd-Powys Archaeological Trust in 2011-12. Consisted of desk-based assessment and limited fieldwork of medieval and early post-medieval industrial sites in east and north-east Wales		2011-2
123960	Twentieth Century Military Airfield Hinterlands. Scheduling Enhancement Programme A Scheduling Enhancement Project looking at the associated remains within 5km of the 3 military airfields in the Clwyd-Powys region, all in Wrexham and Flintshire. Desk based assessment (PRN123961) was followed by site visits and rapid recording (PRN123962) of the surviving buildings and structures. Using the results of this work, recommendations were made to Cadw for the designation of specific elements of the airfields		2013
123961	Twentieth Century Military Airfield Hinterlands. Scheduling Enhancement Programme, desk based assessment Desk based assessment, which along with site visits and rapid recording (PRN123962) of the surviving buildings and structures formed part of a Scheduling Enhancement Project (PRN123960) focussing on associated remains within 5km of the 3 military airfields in the Clwyd-Powys region, all of which are in Wrexham and Flintshire		2013
123962	Twentieth Century Military Airfield Hinterlands. Scheduling Enhancement Programme, field survey Programme, field survey, site visits and rapid recording of the surviving associated buildings and structures within 5km of the 3 military airfields in the Clwyd-Powys region. Along with desk based assessment (PRN123961) they formed part of a Scheduling Enhancement Project (PRN123960). All of the airfields are in Wrexham and Flintshire		2013
129203	Wrexham, Holt Road, Tyn Twll Farm	SJ 35744 51615	2008

	Photographic survey undertaken in 2008 ahead of development (Andy Evans, 2013)		
130972	First World War Commemoration project, Scoping Study Scoping study (desk based assessment) forming the first part of the Cadw-funded First World War Commemoration project (PRN130971). The aim of the scoping study was to identify the physical traces of the First World War period in mid and north-east Wales (eastern Conwy, Denbighshire, Flintshire, Wrexham and Powys)		2013
132130	Military Aircraft Crash Sites. Scheduling Enhancement Programme, Thematic study of military aircraft crash sites in east and north-east Wales carried out by CPAT and funded through grant-aid from Cadw as part of a pan-Wales project. The work comprised an initial desk-top study (PRN132131), followed by field visits to sites (PRN132132)		2013-14
132131	Military Aircraft Crash Sites. Scheduling Enhancement Programme, desk based assessment Desk based assessment, part of a Scheduling Enhancement Programme looking at aircraft crash sites in east and north-east Wales. Work commenced in August 2013 with a desk-top assessment. Based on a pan-Wales database of crash sites both on land and at sea, identified (largely from secondary sources) by Deanna Groom at RCAHMW and enhanced by Nina Steele of GAT. Information was then added to the dataset from the NMR, and cross-checked against the HER to ensure completeness. The final phase of the desk-top work involved the examination of primary and secondary sources		2013-14
132421	Rabbit Warrens. Scheduling Enhancement Programme A thematic study of rabbit warrens in the medieval and early post-medieval periods in east and north-east Wales in order to identify sites with the potential for scheduling and to enhance the Historic Environment Record. The work comprised an initial desk-top study of relevant sources (PRN132422), followed by field visits to selected sites during March 2014 (PRN132423).		2013-14
132422	Rabbit Warrens. Scheduling Enhancement Programme, desk based assessment An initial desk-top study of relevant sources undertaken as part of a thematic study of rabbit warrens in the medieval and early post-medieval periods in east and north-east Wales. Followed by field visits to selected sites during March 2014 (PRN132423).		2013-14
141996	Medieval and Post-Medieval Industry, desk-based assessment Cadw-funded scheduling enhancement project: Clwyd-Powys Archaeological Trust carried out a desk-based assessment of medieval and early post-medieval industrial sites in east and north-east Wales in order to enhance the Historic Environment Record and to identify sites of sufficient value to merit their proposal for designation as Scheduled Monuments. Over 600 previously recorded and new sites were identified.		2011-12

APPENDIX 3: GEOPHYSICAL SURVEY REPORT

GEOPHYSICAL SURVEY REPORT



**Land South of Holt Road,
Wrexham**

Client
CgMs Heritage (part of RPS)

Survey Report
13685

Date
October 2018

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GEOPHYSICAL SURVEY REPORT

Project name:
Land South of Holt Road, Wrexham

SUMO Job reference:
13685

Client:
CgMs Heritage (part of RPS)

Survey date:
2 October 2018

Report date:
24 October 2018

Field co-ordinator:
Andrew Bateman BA

Field Team:
Simon Lobel BSc

Report written by:
Rebecca Davies BSc

CAD illustrations by:
Rebecca Davies BSc

Project Manager:
Simon Haddrell BEng AMBCS PCIfA

Report approved by:
Dr John Gater BSc DSc(Hon) MCIfA FSA

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1 SUMMARY OF RESULTS

A detailed magnetometer survey was conducted over approximately 1 ha to the north-east of Wrexham. No definite archaeological anomalies have been identified. A band of magnetic disturbance including linear and discrete anomalies has been recorded but its exact origin remains unclear; it could be modern or natural. A modern pipe or cable, along with evidence of ploughing are also visible in the data.

2 INTRODUCTION

2.1 Background synopsis

SUMO Geophysics Ltd were commissioned to undertake a geophysical survey of an area outlined for development. This survey forms part of an archaeological investigation being undertaken by **CgMs Heritage (part of RPS)**.

2.2 Site details

NGR / Postcode	SJ 361 519 / LL13 9SB
Location	The site is located north-east of Wrexham, immediately to the south of the roundabout at the junction of the A534, A5156 and Stryt Holt.
HER/SMR	Wrexham
District	Wrexham
Parish	Holt
Topography	Undulating
Current Land Use	Pasture
Geology	Solid: Salop Formation - mudstone, sandstone and conglomerate. Superficial: Glaciofluvial Sheet Deposits, Devensian - sand and gravel (BGS 2018).
Soils	Unsurveyed, mainly urban and industrial areas (SSEW 1983).
Archaeology	A desk-based assessment of the site has determined that there are no designated heritage assets within the site, and that there is one non-designated archaeological asset which is located at the north-west boundary; a military aircraft crash site. To the south of the area, a marl pit is also recorded, though this does not extend into the site itself (CgMs 2018).
Survey Methods	Magnetometer survey (fluxgate gradiometer)
Study Area	c. 1 ha

2.3 Aims and Objectives

To locate and characterise any anomalies of possible archaeological interest within the study area, in particular to identify any remains associated with a military aircraft crash site.

3 METHODS, PROCESSING & PRESENTATION

3.1 Standards & Guidance

This report and all fieldwork have been conducted in accordance with the latest guidance documents issued by Historic England (EH 2008) (then English Heritage), the Chartered Institute for Archaeologists (CIfA 2014) and the European Archaeological Council (EAC 2016).

3.2 Survey methods

Detailed magnetic survey was chosen as an efficient and effective method of locating archaeological anomalies.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1.0m	0.25m

More information regarding this technique is included in Appendices A and B.

3.3 Data Processing

The following basic processing steps have been carried out on the data used in this report:
De-stripe; de-stagger; interpolate.

3.4 Presentation of results and interpretation

The presentation of the results includes a 'minimally processed data' and a 'processed data' greyscale plot. Magnetic anomalies are identified, interpreted and plotted onto the 'Interpretation' drawings.

When interpreting the results, several factors are taken into consideration, including the nature of archaeological features being investigated and the local conditions at the site (geology, pedology, topography etc.). Anomalies are categorised by their potential origin. Where responses can be related to other existing evidence, the anomalies will be given specific categories, such as: *Abbey Wall* or *Roman Road*. Where the interpretation is based largely on the geophysical data, levels of confidence are implied, for example: *Probable*, or *Possible Archaeology*. The former is used for a confident interpretation, based on anomaly definition and/or other corroborative data such as cropmarks. Poor anomaly definition, a lack of clear patterns to the responses and an absence of other supporting data reduces confidence, hence the classification *Possible*.

4 RESULTS

4.1 *Probable / Possible Archaeology*

- 4.1.1 No magnetic responses have been recorded that could be interpreted as being of archaeological interest.

4.2 *Uncertain*

- 4.2.1 Areas of strong magnetic disturbance and other discrete anomalies are visible along the eastern edge of the site and are of uncertain origin. The southern-most area of disturbance is similar to the magnetic response associated with an infilled pond, though no such feature is visible in this location on available historic OS maps. Given the known location of a marl pit to the south (CgMs 2018), it is possible that the response could relate to a former pit or quarry.

- 4.2.2 The linear band of anomalies could be of natural origin, however their alignment with present-day field boundaries suggests that they are modern.

4.3 *Agricultural – Ploughing*

- 4.3.1 Straight, closely spaced, parallel linear anomalies in the southern area are a result of agricultural activity, such as ploughing.

4.4 *Ferrous / Magnetic Disturbance*

- 4.4.1 A high amplitude linear anomaly in the west of the site is related to an underground service, such as a pipe or cable.
- 4.4.2 Ferrous responses close to boundaries are due to adjacent fences and gates. Smaller scale ferrous anomalies ("iron spikes") are present throughout the data and are characteristic of small pieces of ferrous debris (or brick / tile) in the topsoil; they are commonly assigned a modern origin. Only the most prominent of these are highlighted on the interpretation diagram.

5 DATA APPRAISAL & CONFIDENCE ASSESSMENT

- 5.1 Historic England guidelines (EH 2008) Table 4 states that the average magnetic response on mudstone, sandstone and conglomerate can vary. The results from this survey indicate the presence of plough lines and anomalies of uncertain origin. As a consequence, the technique is likely to have detected any archaeological features, if present.

6 CONCLUSION

- 6.1 The survey at Wrexham has not revealed any anomalies of definite archaeological origin. A band of strong magnetic disturbance is of uncertain provenance and could be natural or modern. Evidence of ploughing is visible in the southern area, while a pipe or cable has been mapped in the west.

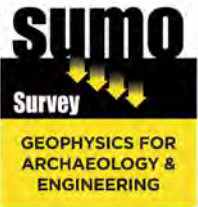
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Site Location

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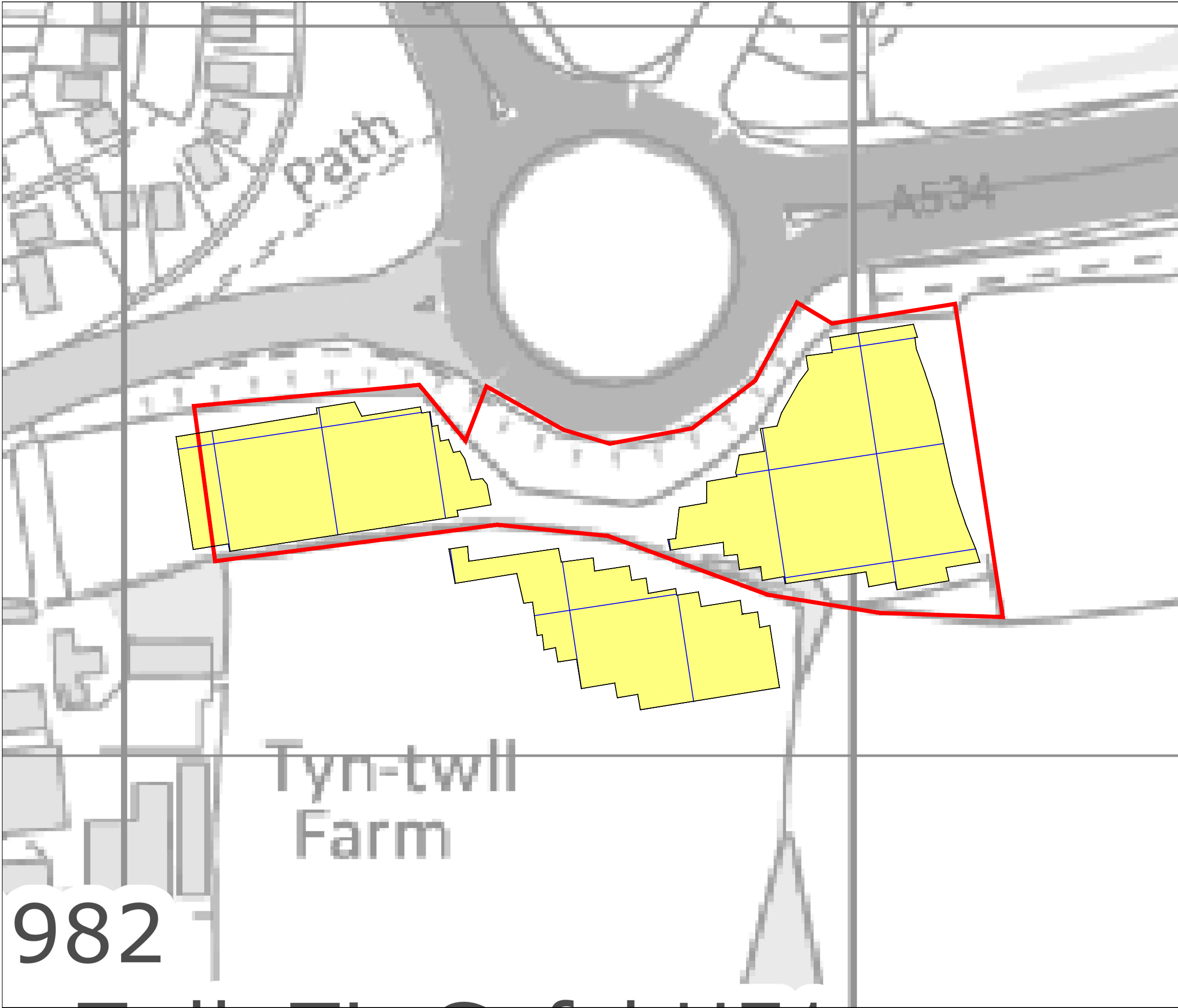
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Site Location Diagram

Client:
CgMs Heritage (part of RPS)

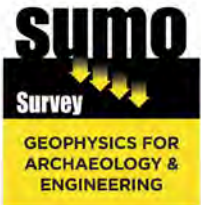
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13685 - Land South of Holt Road, Wrexham

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Fig No:
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Survey Areas - showing 30m grid



Title:
Location of Survey Areas

Client:
CgMs Heritage (part of RPS)

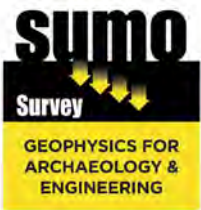
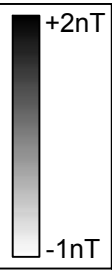
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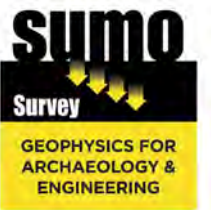
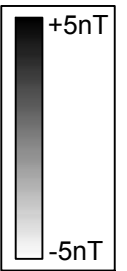
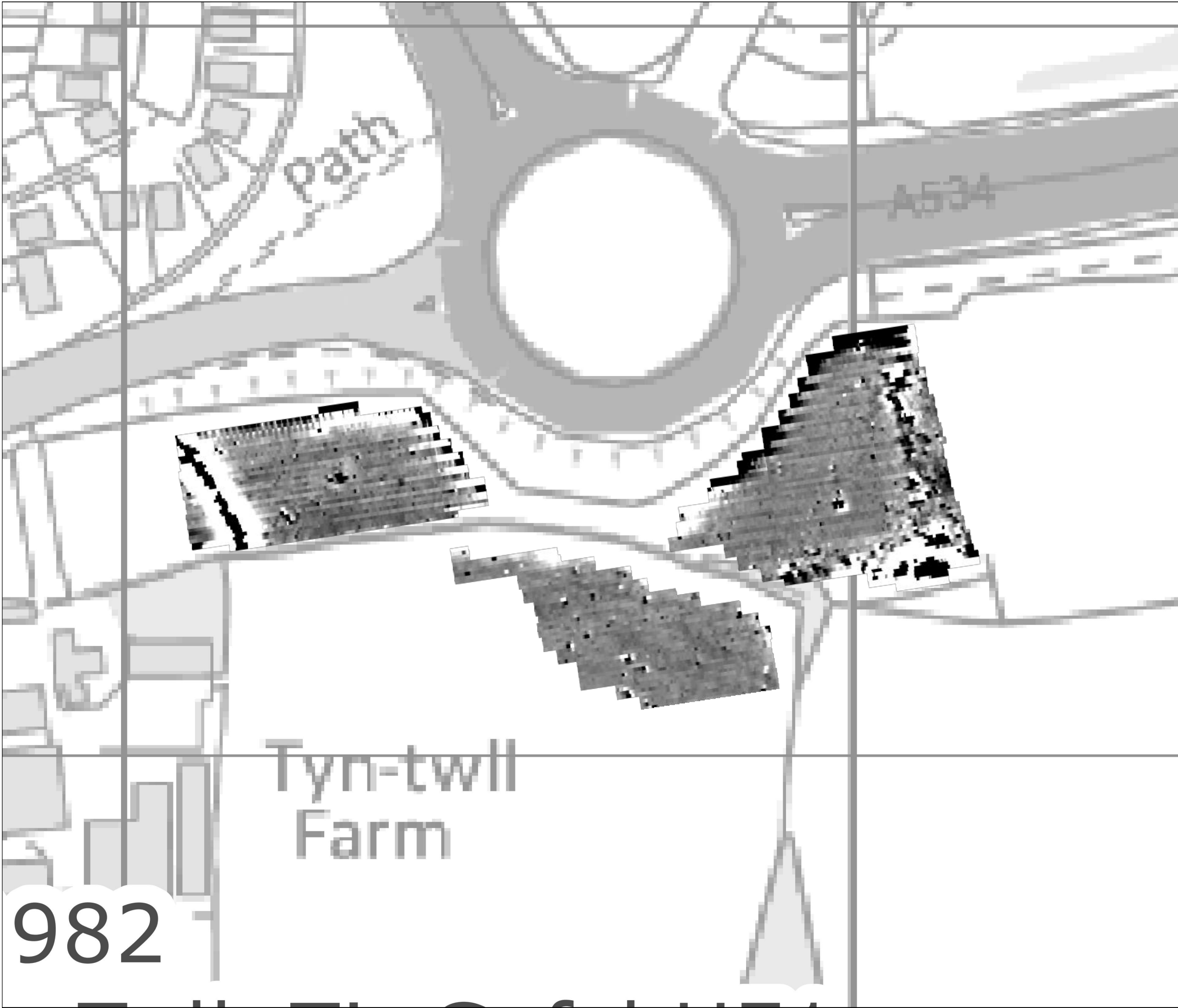
Fig No:
02



	Uncertain Origin (discrete anomaly / increased response)
	Service
	Ferrous



Title: Magnetometer Survey - Greyscale Plots & Interpretation	
Client: CgMs Heritage (part of RPS)	
Project: 13685 - Land South of Holt Road, Wrexham	
Scale: 0 50 metres 1:1000 @ A3	Fig No: 03



Title:
Minimally Processed Data - Greyscale Plots

Client:
CgMs Heritage (part of RPS)

Project:
13685 - Land South of Holt Road, Wrexham

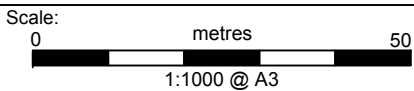


Fig No:
04

Appendix A - Technical Information: Magnetometer Survey Method

Grid Positioning

For hand held gradiometers the location of the survey grids has been plotted together with the referencing information. Grids were set out using a Trimble R8 Real Time Kinematic (RTK) VRS Now GNSS GPS system.

An RTK GPS (Real-time Kinematic Global Positioning System) can locate a point on the ground to a far greater accuracy than a standard GPS unit. A standard GPS suffers from errors created by satellite orbit errors, clock errors and atmospheric interference, resulting in an accuracy of 5m-10m. An RTK system uses a single base station receiver and a number of mobile units. The base station re-broadcasts the phase of the carrier it measured, and the mobile units compare their own phase measurements with those they received from the base station. This results in an accuracy of around 0.01m.

Technique	Instrument	Traverse Interval	Sample Interval
Magnetometer	Bartington Grad 601-2	1m	0.25m

Instrumentation: **Bartington Grad 601-2**

Bartington instruments operate in a gradiometer configuration which comprises fluxgate sensors mounted vertically, set 1.0m apart. The fluxgate gradiometer suppresses any diurnal or regional effects. The instruments are carried, or cart mounted, with the bottom sensor approximately 0.1-0.3m from the ground surface. At each survey station, the difference in the magnetic field between the two fluxgates is measured in nanoTesla (nT). The sensitivity of the instrument can be adjusted; for most archaeological surveys the most sensitive range (0.1nT) is used. Generally, features up to 1m deep may be detected by this method, though strongly magnetic objects may be visible at greater depths. The Bartington instrument can collect two lines of data per traverse with gradiometer units mounted laterally with a separation of 1.0m. The readings are logged consecutively into the data logger which in turn is daily down-loaded into a portable computer whilst on site. At the end of each site survey, data is transferred to the office for processing and presentation.

Data Processing

Zero Mean	This process sets the background mean of each traverse within each grid to zero.
Traverse	The operation removes striping effects and edge discontinuities over the whole of the data set.
Step Correction (De-stagger)	When gradiometer data are collected in 'zig-zag' fashion, stepping errors can sometimes arise. These occur because of a slight difference in the speed of walking on the forward and reverse traverses. The result is a staggered effect in the data, which is particularly noticeable on linear anomalies. This process corrects these errors.

Display

Greyscale/ Colourscale Plot	This format divides a given range of readings into a set number of classes. Each class is represented by a specific shade of grey, the intensity increasing with value. All values above the given range are allocated the same shade (maximum intensity); similarly, all values below the given range are represented by the minimum intensity shade. Similar plots can be produced in colour, either using a wide range of colours or by selecting two or three colours to represent positive and negative values. The assigned range (plotting levels) can be adjusted to emphasise different anomalies in the data-set.
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Interpretation Categories

In certain circumstances (usually when there is corroborative evidence from desk-based or excavation data) very specific interpretations can be assigned to magnetic anomalies (for example, *Roman Road, Wall, etc.*) and where appropriate, such interpretations will be applied. The list below outlines the generic categories commonly used in the interpretation of the results.

<i>Archaeology / Probable Archaeology</i>	This term is used when the form, nature and pattern of the responses are clearly or very probably archaeological and /or if corroborative evidence is available. These anomalies, whilst considered anthropogenic, could be of any age.
<i>Possible Archaeology</i>	These anomalies exhibit either weak signal strength and / or poor definition, or form incomplete archaeological patterns, thereby reducing the level of confidence in the interpretation. Although the archaeological interpretation is favoured, they may be the result of variable soil depth, plough damage or even aliasing as a result of data collection orientation.
<i>Industrial / Burnt-Fired</i>	Strong magnetic anomalies that, due to their shape and form or the context in which they are found, suggest the presence of kilns, ovens, corn dryers, metal-working areas or hearths. It should be noted that in many instances modern ferrous material can produce similar magnetic anomalies.
<i>Former Field Boundary (probable & possible)</i>	Anomalies that correspond to former boundaries indicated on historic mapping, or which are clearly a continuation of existing land divisions. Possible denotes less confidence where the anomaly may not be shown on historic mapping but nevertheless the anomaly displays all the characteristics of a field boundary.
<i>Ridge & Furrow</i>	Parallel linear anomalies whose broad spacing suggests ridge and furrow cultivation. In some cases, the response may be the result of more recent agricultural activity.
<i>Agriculture (ploughing)</i>	Parallel linear anomalies or trends with a narrower spacing, sometimes aligned with existing boundaries, indicating more recent cultivation regimes.
<i>Land Drain</i>	Weakly magnetic linear anomalies, quite often appearing in series forming parallel and herringbone patterns. Smaller drains may lead and empty into larger diameter pipes, which in turn usually lead to local streams and ponds. These are indicative of clay fired land drains.
<i>Natural</i>	These responses form clear patterns in geographical zones where natural variations are known to produce significant magnetic distortions.
<i>Magnetic Disturbance</i>	Broad zones of strong dipolar anomalies, commonly found in places where modern ferrous or fired materials (e.g. brick rubble) are present. They are presumed to be modern.
<i>Service</i>	Magnetically strong anomalies, usually forming linear features are indicative of ferrous pipes/cables. Sometimes other materials (e.g. pvc) or the fill of the trench can cause weaker magnetic responses which can be identified from their uniform linearity.
<i>Ferrous</i>	This type of response is associated with ferrous material and may result from small items in the topsoil, larger buried objects such as pipes, or above ground features such as fence lines or pylons. Ferrous responses are usually regarded as modern. Individual burnt stones, fired bricks or igneous rocks can produce responses similar to ferrous material.
<i>Uncertain Origin</i>	Anomalies which stand out from the background magnetic variation, yet whose form and lack of patterning gives little clue as to their origin. Often the characteristics and distribution of the responses straddle the categories of <i>Possible Archaeology / Natural</i> or (in the case of linear responses) <i>Possible Archaeology / Agriculture</i> ; occasionally they are simply of an unusual form.

Where appropriate some anomalies will be further classified according to their form (positive or negative) and relative strength and coherence (trend: weak and poorly defined).

Appendix B - Technical Information: Magnetic Theory

Detailed magnetic survey can be used to effectively define areas of past human activity by mapping spatial variation and contrast in the magnetic properties of soil, subsoil and bedrock. Although the changes in the magnetic field resulting from differing features in the soil are usually weak, changes as small as 0.1 nanoTeslas (nT) in an overall field strength of 48,000 (nT), can be accurately detected.

Weakly magnetic iron minerals are always present within the soil and areas of enhancement relate to increases in *magnetic susceptibility* and permanently magnetised *thermoremanent* material.

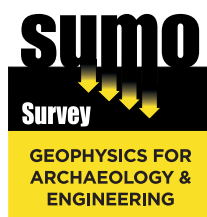
Magnetic susceptibility relates to the induced magnetism of a material when in the presence of a magnetic field. This magnetism can be considered as effectively permanent as it exists within the Earth's magnetic field. Magnetic susceptibility can become enhanced due to burning and complex biological or fermentation processes.

Thermoremanence is a permanent magnetism acquired by iron minerals that, after heating to a specific temperature known as the Curie Point, are effectively demagnetised followed by re-magnetisation by the Earth's magnetic field on cooling. Thermoremanent archaeological features can include hearths and kilns; material such as brick and tile may be magnetised through the same process.

Silting and deliberate infilling of ditches and pits with magnetically enhanced soil creates a relative contrast against the much lower levels of magnetism within the subsoil into which the feature is cut. Systematic mapping of magnetic anomalies will produce linear and discrete areas of enhancement allowing assessment and characterisation of subsurface features. Material such as subsoil and non-magnetic bedrock used to create former earthworks and walls may be mapped as areas of lower enhancement compared to surrounding soils.

Magnetic survey is carried out using a fluxgate gradiometer which is a passive instrument consisting of two sensors mounted vertically 1m apart. The instrument is carried about 30cm above the ground surface and the top sensor measures the Earth's magnetic field whilst the lower sensor measures the same field but is also more affected by any localised buried feature. The difference between the two sensors will relate to the strength of a magnetic field created by this feature, if no field is present the difference will be close to zero as the magnetic field measured by both sensors will be the same.

Factors affecting the magnetic survey may include soil type, local geology, previous human activity and disturbance from modern services.



- Archaeological
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