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C17

Pineapple Farm
Congresbury

OS 1811

Heritage Statement
November 2020

OASIS ID: andrewjo1-409961

E:mail andyjosephs@hotmail.com • Telephone 07990 571908

www.andyjosephs.co.uk

Waltham House, Stowmarket, IP14 1AS

Andrew Josephs Ltd. Registered Office, Antrobus House, 18 College St, Petersfield, GU31 4AD. Registration no. 4547366

Contents

1. Introduction

1.1 SCOPE OF THIS REPORT

1.1.1 Description of the proposed development

This report[1], commissioned by M7 Planning Ltd, presents the findings of a cultural heritage assessment for proposed residential development on land to the north of Pineapple Farm, Congresbury, North Somerset (**Figure 1**). The extent of the Proposed Development Area (PDA) is shown on **Figure 2** and encompasses approximately 3.3ha, including access. The centre of the PDA is at ST 44278 63148.

The full description of the proposed scheme, comprising an outline planning application for the erection of up to 90 dwellings with all matters reserved except for access, is set out in the Planning Application documents.

The development framework plan is shown on **Figure 3.**

1.1.2 Scope of cultural heritage

Cultural heritage is represented by a wide range of assets that result from past human use of the landscape. These include historic structures, many still in use, above ground and buried archaeological monuments and remains of all periods, artefacts of anthropological origin and evidence that can help reconstruct past human environments. In its broadest form cultural heritage is represented by the landscape and townscape itself.

Assessment should consider both direct and indirect effects upon cultural heritage. Indirect effects can occur as a result of significant changes to the setting of a landscape or asset, whether permanent or temporary. This is particularly relevant to designated cultural heritage assets, such as Scheduled Monuments, Listed Buildings, Conservation Areas and Registered Parks and Gardens.

This assessment has considered direct effects within the PDA and indirect effects upon the setting of heritage assets.

1.1.3 Setting and geology

The modern civil parish, which straddles the River Yeo, is of c.3,000 acres. The ancient ecclesiastical parish was larger, but c.1,000 acres of its western part was later split off to form the civil parish of Puxton. The greater part of Congresbury is low-lying, with the western half of the parish extending onto the Somerset Levels and the village at just 8m AOD on a low spur of Higher Estuarine Alluvium. South of the village the ground rises a little onto low hills and gently undulating landscape of Brinsea, while to the north the land rises more steeply through Kingswood towards the limestone plateau of Broadfield Down.

Geology and hydrology are summarised below, with information drawn from the British Geological Survey and mapping.

[1] OASIS ID: andrewjo1-409961

Soilscapes Classification	Slowly permeable seasonally wet slightly acid but base-rich loamy and clayey soils (18) Loamy and clayey floodplain soils with naturally high groundwater to north-east (20)
Superficial 1:50000 BGS	Tidal Flat Deposits, 1 - Clay and Silt (TFD1)
Bedrock 1:50000 BGS	Mercia Mudstone Group - Mudstone And Halite-stone (MMG)
Hydrology	Impeded drainage
Current Land Use	Agricultural - Pasture
Historic Land Use	Agricultural

1.1.4 Consultations

The scope of the project was discussed with Cat Lodge, County Archaeologist, North Somerset Council (**Appendix A**). Her advice is gratefully acknowledged.

1.2 DESK-BASED RESEARCH

In order to assess the effects of the potential scheme, cultural heritage information within and up to 1km from the PDA was examined.

A variety of sources were consulted including the North Somerset Historic Environment Record, the National Monuments Record, Defra Magic, Historic England Archive, maps and readily available local history materials. A site walkover was undertaken in October 2020.

The work was undertaken by Andrew Josephs, Ian Meadows and Paul Stamper of AJA.

1.3 FIELD-BASED RESEARCH

A geophysical survey of the entire site was undertaken by Tigergeo in November 2020.

1.4 AUTHORSHIP

Andrew Josephs (BA Hons Archaeology and Environmental Studies) is Managing Director of Andrew Josephs Associates, a consultancy specialising in cultural heritage founded in 2002. Andrew has extensive experience of all periods and facets of cultural heritage. He is involved primarily in planning applications, EIA and the design of mitigation strategies on developments with heritage constraints. Currently Andrew is heritage consultant to over 100 companies across Europe.

He has undertaken in excess of 1000 cultural heritage assessments since becoming one of the UK's first archaeological consultants in 1992. He was previously Principal Consultant (Director of Archaeology) at Entec (now Wood) and Wardell Armstrong. Prior to 1992, he worked as a field-based archaeologist and researcher for universities and units in the UK, Europe and the USA.

He has lectured widely and was visiting lecturer in Environmental Impact Assessment at the University of Nottingham.

Ian Meadows (BA Archaeology and Geology, Dip.Mus) is an archaeologist with over 30 years' experience in a variety of professional areas. He was Senior Project Officer with

Northamptonshire Archaeology (now MOLA) from 1992 until 2014 when he joined AJA. Ian is highly experienced project manager of large landscape projects such as long running quarries. Ian has a particular interest in the Roman period and is currently Director of the excavations at Irchester Roman town.

In addition to his fieldwork he is engaged in regular outreach sessions to both professional and amateur groups as part of his role dealing with both adults and children. He has been teaching archaeology and landscape history to adults and children since the late 1980s, previously being engaged as a tutor by Cambridge University, Anglia Ruskin University, Bath University and the WEA and feels it is important to disseminate the information derived from projects to a wider audience.

Dr Paul Stamper FSA left Historic England in 2016 after 20 years in a variety of roles. Latterly one of his principal responsibilities as Senior Adviser was overseeing production of Historic England's 43 Selection Guides, covering designation standards for listed buildings, scheduled monuments, registered parks and gardens, registered battlefields and protected shipwrecks. Paul has wide practical experience of designation, having undertaken numerous assessments, notably of buildings and of designed landscapes.

His private research interests have focused principally on the development of the post-Roman English countryside. He has published extensively through monographs, articles and book reviews, and jointly edited the standard work on medieval settlement, *Medieval Rural Settlement: Britain and Ireland AD 800-1600* (Oxford 2012). He served terms as Vice-President for the Society for Medieval Archaeology and for the Royal Archaeological Institute, and is a Past President of the Medieval Settlement Research Group. His teaching links with several universities includes a course on Medieval settlement at the University of Cambridge.

1.5 RELEVANT LEGISLATION, POLICY AND GUIDANCE

The importance of cultural heritage is clearly recognised at both national and local levels. Certain features that are deemed to be of particular importance are given legal protection through the *Ancient Monuments and Archaeological Areas Act 1979* (Scheduled Monuments), the *Town and Country Planning Act 1990* (Listed Buildings and Conservation Areas) and the *Hedgerows Regulations 1997* (Hedgerows of Historic Importance).

1.5.1 National Policy and Guidance

In accordance with best practice the significance of an effect should be identified as part of this assessment. This is achieved using a combination of the following published guidance and professional judgement.

- National Planning Policy Framework, updated 2019. Department for Communities and Local Government.
- Planning Practice Guidance: *Conserving and Enhancing the Historic Environment* http://planningguidance.planningportal.gov.uk
- Historic England[2] 2008. *Conservation Principles: Policies and Guidance for the Sustainable Management of the Historic Environment.*

[2] Historic England includes its former name English Heritage

- Historic England 2017. *The Setting of Heritage Assets (GPA3)*

1.5.2 National Planning Policy Framework

National planning policy on how cultural heritage should be assessed is given in the National Planning Policy Framework, updated in 2019. This covers all aspects of heritage and the historic environment, including listed buildings, conservation areas, registered parks and gardens, battlefields and archaeology.

Of particular relevance to this application are:

189. In determining applications, local planning authorities should require an applicant to describe the significance of any heritage assets affected, including any contribution made by their setting. The level of detail should be proportionate to the assets' importance and no more than is sufficient to understand the potential impact of the proposal on their significance. As a minimum the relevant historic environment record should have been consulted and the heritage assets assessed using appropriate expertise where necessary. Where a site on which development is proposed includes, or has the potential to include, heritage assets with archaeological interest, local planning authorities should require developers to submit an appropriate desk-based assessment and, where necessary, a field evaluation.

190. Local planning authorities should identify and assess the particular significance of any heritage asset that may be affected by a proposal (including by development affecting the setting of a heritage asset) taking account of the available evidence and any necessary expertise. They should take this into account when considering the impact of a proposal on a heritage asset, to avoid or minimise any conflict between the heritage asset's conservation and any aspect of the proposal.

<u>Considering potential impacts</u>

193. When considering the impact of a proposed development on the significance of a designated heritage asset, great weight should be given to the asset's conservation (and the more important the asset, the greater the weight should be). This is irrespective of whether any potential harm amounts to substantial harm, total loss or less than substantial harm to its significance.

194. Any harm to, or loss of, the significance of a designated heritage asset (from its alteration or destruction, or from development within its setting), should require clear and convincing justification. Substantial harm to or loss of:

a) grade II listed buildings, or grade II registered parks or gardens, should be exceptional;

b) assets of the highest significance, notably scheduled monuments, protected wreck sites, registered battlefields, grade I and II listed buildings, grade I and II* registered parks and gardens, and World Heritage Sites, should be wholly exceptional*

195. Where a proposed development will lead to substantial harm to (or total loss of significance of) a designated heritage asset, local planning authorities should refuse consent, unless it can be demonstrated that the substantial harm or total loss is necessary to achieve substantial public benefits that outweigh that harm or loss, or all of the following apply:

a) the nature of the heritage asset prevents all reasonable uses of the site; and
b) no viable use of the heritage asset itself can be found in the medium term through appropriate marketing that will enable its conservation; and
c) conservation by grant-funding or some form of not for profit, charitable or public ownership is demonstrably not possible; and
d) the harm or loss is outweighed by the benefit of bringing the site back into use.

196. Where a development proposal will lead to less than substantial harm to the significance of a designated heritage asset, this harm should be weighed against the public benefits of the proposal including, where appropriate, securing its optimum viable use.

197. The effect of an application on the significance of a non-designated heritage asset should be taken into account in determining the application. In weighing applications that directly or indirectly affect non-designated heritage assets, a balanced judgement will be required having regard to the scale of any harm or loss and the significance of the heritage asset.

198. Local planning authorities should not permit the loss of the whole or part of a heritage asset without taking all reasonable steps to ensure the new development will proceed after the loss has occurred.

199. Local planning authorities should require developers to record and advance understanding of the significance of any heritage assets to be lost (wholly or in part) in a manner proportionate to their importance and the impact, and to make this evidence (and any archive generated) publicly accessible.
However, the ability to record evidence of our past should not be a factor in deciding whether such loss should be permitted.

1.5.3 Planning Practice Guidance (PPG) Conserving and Enhancing the Historic Environment

Planning Practice Guidance (PPG) Conserving and Enhancing the Historic Environment was published in April 2014 as a companion to the NPPF, replacing previous Circulars and other supplementary guidance. In respect of heritage decision-making, the PPG stresses the importance of determining applications on the basis of significance, and explains how the tests of harm and impact within the NPPF are to be interpreted.

In particular, the PPG includes the following in relation to the evaluation of significance and harm:

"*Heritage assets may be affected by direct physical change or by change in their setting. Being able to properly assess the nature, extent and importance of the significance of a heritage asset, and the contribution of its setting, is very important to understanding the potential impact and acceptability of development proposals.*

Whether a proposal causes substantial harm will be a judgment for the decision taker, having regard to the circumstances of the case and the policy in the National Planning Policy Framework. In general terms, substantial harm is a high test, so it may not arise in many cases. For example, in determining whether works to a listed building constitute substantial harm, an important consideration would be whether the adverse impact seriously affects a key element of its special architectural or historic interest. It is the degree of harm to the asset's significance rather than the scale of the development that is to be assessed. The harm may arise from works to the asset or from development within its setting.

While the impact of total destruction is obvious, partial destruction is likely to have a considerable impact but, depending on the circumstances, it may still be less than substantial harm or conceivably not harmful at all, for example, when removing later inappropriate additions to historic buildings which harm their significance. Similarly, works that are moderate or minor in scale are likely to cause less than substantial harm or no harm at all. However, even minor works have the potential to cause substantial harm."

1.5.4 Historic England: The Setting of Heritage Assets (GPA3)

This Good Practice Advice Note published in 2017 observes that amongst the Government's planning objectives for the historic environment is that conservation decisions are based on the nature, extent and level of a heritage asset's significance and are investigated to a proportionate degree. Historic England recommends the following broad approach to assessment, undertaken as a series of steps that apply proportionately to complex or more straightforward cases:

- Step 1: identify which heritage assets and their settings are affected;
- Step 2: assess whether, how and to what degree these settings make a contribution to the significance of the heritage asset(s);
- Step 3: assess the effects of the proposed development, whether beneficial or harmful, on that significance;
- Step 4: explore the way to maximise enhancement and avoid or minimise harm;
- Step 5: make and document the decision and monitor outcomes.

These steps have been followed in the assessment below.

1.5.5 Local Policy

The North Somerset Core Strategy was adopted by the Council in 2017. It sets out key planning policies for the District. The following policy relates to cultural heritage.

North Somerset Council **Core Strategy** January 2017

Living within environmental limits

CS5: Landscape and the historic environment

Landscape

The character, distinctiveness, diversity and quality of North Somerset's landscape and townscape will be protected and enhanced by the careful, sensitive management and design of development. Close regard will be paid to the character of National Character Areas in North Somerset and particularly that of the 11 landscape types and 31 landscape character areas identified in the North Somerset Landscape Character Assessment.

The Mendip Hills Area of Outstanding Natural Beauty (AONB) will be protected by ensuring that development proposals conserve and enhance its natural beauty and respect its character, taking into account the economic and social well-being of the area.

Historic environment

The council will conserve the historic environment of North Somerset, having regard to the significance of heritage assets such as conservation areas, listed buildings, buildings of local significance, scheduled monuments, other archaeological sites, registered and other historic parks and gardens.

Particular attention will be given to aspects of the historic environment which contribute to the distinctive character of North Somerset, such as the Victorian townscapes and sea-fronts in Weston and Clevedon.

1.6 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

In accordance with best practice the significance of an effect should be identified as part of this assessment. Four criteria have been considered in evaluating the significance of the residual effects of the proposed development, taking into account any proposed mitigation measures.

1.6.1 Type of Impact

Impacts may be beneficial, adverse, neutral (i.e. no discernible effect) or none. They may be permanent or temporary, of long, medium or short duration, direct or indirect. They may also be cumulative or combined with other effects occurring in the vicinity.

Direct impacts have a physical effect upon an archaeological site, structure or cultural heritage asset. This may lead to the partial or total destruction of that asset.

Indirect impacts of development upon scheduled monuments, listed buildings, parks and gardens and other designated assets of the cultural heritage landscape are more difficult to assess. Consideration should include the context (or setting) of a cultural heritage asset (or place) and how we should assess its significance. Contextual relationships may be visual, but can also be, for example, functional, historical or intellectual.

1.6.2 Likelihood of the impact occurring

An assessment is made as to the likelihood of the identified impact occurring. Probability is considered as certain, likely, unlikely or not known.

1.6.3 Sensitivity

Five categories of sensitivity are identified. These are expanded upon in **Table 1**, below.

Table 1 Definitions of sensitivity

Value (Sensitivity) of receptor/resource	Definition
Very high	Sites and settings of *international importance*, for example World Heritage Sites.
High	Sites and settings of *national importance*. Scheduled Monuments. Registered Battlefields. Grade I and Grade II* Listed Buildings and Registered Historic Parks and Gardens. Sites may also be discovered as a result of new research that are also of national importance and are candidates for scheduling.
Medium	Sites and settings of *regional importance*. Archaeological sites and features that are not considered sufficiently important or well-preserved to be protected as Scheduled Monuments. Grade II Listed Buildings and Grade II Registered Historic Parks and Gardens. Conservation Areas.
Low	Archaeological sites and structures, and other components of the historic environment that contribute to the local landscape. Locally designated assets.
Negligible	Archaeological sites and structures, and other components of the historic environment of very low importance.

1.6.4 Magnitude

The magnitude of change to a cultural heritage asset or landscape is considered in terms of its vulnerability, its current condition and the nature of the impact upon it. With respect to sub-surface archaeology, there may be a degree of uncertainty of the magnitude of change, and where this is the case it is noted. Magnitude is assessed as major, moderate, minor, negligible or none and the criteria used in this assessment are set out in **Table 2**, below.

Table 2 Criteria for Assessing Magnitude of Change[3]

Magnitude of impact (change)		Typical description
Major	Adverse	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.
	Beneficial	Large scale or major improvement of resource quality; extensive restoration; major improvement of attribute quality.
Moderate	Adverse	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.
	Beneficial	Benefit to, or addition of, key characteristics, features or elements; improvement of attribute quality.
Minor	Adverse	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to, one (maybe more) key characteristics, features or elements.
	Beneficial	Minor benefit to, or addition of, one (maybe more) key characteristics, features or elements; some beneficial impact on attribute or a reduced risk of negative impact occurring.
Negligible	Adverse	Very minor loss or detrimental alteration to one or more characteristics, features or elements.
	Beneficial	Very minor benefit to or positive addition of one or more characteristics, features or elements.
No change		No loss or alteration of characteristics, features or elements; no observable impact in either direction.

1.6.5 Assessing significance

The four criteria are considered together to reach a conclusion upon the significance of residual effects taking into account any mitigation measures. They may be beneficial or adverse or neutral (i.e. no change to the existing situation. In some cases it may not be possible to quantify the significance of an effect, for example due to a gap in information, and this is noted.

Table 3 presents a matrix of the inter-relationship of environmental value (sensitivity) with magnitude that leads to a conclusion on the significance of an effect.

[3] Source: Design Manual for Roads and Bridges, 2020, LA104 *Environmental Assessment and Modelling,* page 14

Table 3 Inter-relationship of sensitivity with magnitude[4]

	Magnitude of impact (degree of change)					
		No change	**Negligible**	**Minor**	**Moderate**	**Major**
Environmental value (sensitivity)	**Very high**	Neutral	Slight	Moderate or large	Large or very large	Very large
	High	Neutral	Slight	Slight or moderate	Moderate or large	Large or very large
	Medium	Neutral	Neutral or slight	Slight	Moderate	Moderate or large
	Low	Neutral	Neutral or slight	Neutral or slight	Slight	Slight or moderate
	Negligi-ble	Neutral	Neutral	Neutral or slight	Neutral or slight	Slight

Finally, the suggested relevance of the significance of an effect in relation to decision making is presented in **Table 4.**

Table 4 Significance categories and decision making

Significance category	Typical description
Very large	Effects at this level are material in the decision-making process.
Large	Effects at this level are likely to be material in the decision-making process.
Moderate	Effects at this level can be considered to be material decision-making factors.
Slight	Effects at this level are not material in the decision-making process.
Neutral	No effects or those that are beneath levels of perception, within normal bounds of variation or within the margin of forecasting error.

[4] Source: Design Manual for Roads and Bridges, 2020, LA104 *Environmental Assessment and Modelling,* page 15

2. Desk-Based Assessment

The North Somerset Historic Environment Record (NSHER) was consulted for a record of sites, monuments and investigations up to 1km from the PDA. The assistance of Daniel Smith is gratefully acknowledged.

The Historic England Archive was consulted to verify the locations and status of designated heritage assets. The study area was set at 1km for scheduled monuments, Grade I and II* assets and 500m for all other designated assets. This was considered an appropriate study area based upon topography, and intervening development and vegetation. Locations are shown on **Figure 4**.

2.1 DESIGNATED ASSETS

No designated assets of cultural heritage importance lie within the boundary of the proposed development.

2.1.1 Scheduled Monuments

Two scheduled monuments sit within 1km of the PDA. These are:

- Congresbury village cross (Reference 1 on Figure 4). Dating from the 15th century it stands at the crossroads leading to Bristol, Weston-super-Mare, Paul's Causeway and Churchill, 730m north-west of the PDA. The cross is also a Grade II* listed structure, and;
- A 14th century stone cross in St Andrew's churchyard (Reference 2), 750m north-west of the PDA.

There is no intervisibility with the PDA due to intervening development.

2.1.2 Listed Buildings

Two Grade I and one Grade II* listed structures lie within 1km of the PDA. Ten Grade II structures are situated within 500m, **Table 5**. Locations are shown on Figure 4.

Table 5 Listed Buildings within 1km of the PDA

Asset	Ref on Fig 4	Grade	Description	Distance from PDA
St Andrews Church	3	I	Parish church. C13 origin remodelled in C15 with restorations in 1825, 1856 and 1950-2. Coursed and squared rubble with flush rusticated dressed stone quoins, stone copings and ashlar dressings, copper roof to nave, slates to chancel. Nave, chancel, west tower, north and south aisles, south porch.	800m NW

The Refectory	4	I	Vicarage and former Priest's House, now used for parish functions. Early C19 Vicarage to left-hand, c.1446 former Priest's House to right hand. Vicarage of limewashed render with stone plinth and parapet, ashlar to porch and hipped double Roman tile roof. Rectangular block of 2 storeys, 3 bays. All windows are 12- pane sashes. West entrance front with recessed central section and Greek Doric distyle porch in antis with fluted columns and triglyph frieze. 2-leaf small pane glazed doors. Refectory of limewashed render and dressed stone to buttresses and south-east porch gable face.	800m NW
Urchinwood Manor	5	II*	Manor house. Dated 1620 (on porch) with mid C17 addition and C20 restoration. Colourwashed roughcast with stone openings, copings and double Roman tile roof to main range, pantiles to rear wings. U-shaped plan formed by 1620 L-shaped house with mid C17 south-west rear addition.	480m NE
Park Farmhouse	6	II	Farmhouse. Probably C16, remodelled in late C17/early C18 and in Cl9. Painted stone rubble, rendered west front. Pantile roofs, (Bridgewater tiles at front), with gabled ends and hipped over rear block (see Section 4.2 for further details).	35m N
Collins Bridge	7	II	Bridge spanning the River Yeo to the east of Congresbury. Probably late-C18 or early-C19. Local stone cut and squared.	140m NE
Bridge over River Yeo	8	II	Bridge across the River Yeo at Congresbury. c.1800. Dressed Pennant stone, rubble infill. A single span arch	280m E
Pineapple Farm and walls	9	II	Farmhouse. Late C18. Coursed rubble with stone copings and pantile roof. 2-storey, 3-window south front.	125m S
Yeoman's Orchard	10	II	Formerly 2 cottages, now detached house. C17 with C19 alterations and thorough C20 restoration. Colourwashed render with C20 thatched roof	150m S
Silver Street House	11	II	Detached house. C17 in origin with C19 alterations and additions. Colourwashed render with wooden lintels and pantile roofs. U-shaped plan with north entrance front of 2 storeys.	400m SW
The Birches	12	II	Detached house in 3 separate ownerships. Mid C18. Rendered rubble with slate roofs. 3-storey, 5-window south front.	360m NW
Barn at Urchinwood Manor	13	II	Barn. Probably C17. Colourwashed rubble with some render to midstrey and north gable end, pantile roof with stone tile eaves course to left hand.	480m NE

2.1.3 Conservation Area

A conservation area, centred on the historic core of Congresbury, lies 325m north of the PDA at its nearest point. There is no intervisibility with the PDA.

2.1.4 Other Designated Cultural Heritage Sites

There are no World Heritage Sites, Registered Battlefields or Historic Parks and Gardens within 1km of the PDA.

2.2 ARCHAEOLOGICAL BACKGROUND

2.2.1 Search results

The search produced 35 records. These are summarised by period below and the locations are shown on **Figures 5A-B.**

2.2.2 Prehistoric

The prehistoric evidence within the search area was surprisingly limited given the proximity to several large later prehistoric monuments, including Cadbury Hill to the north, although the topography of this lower lying area may suggest it was a marginal location for settlement. A late Neolithic flint core-trimming flake (MNS 1689) was recovered from the garden of the Stycks to the south of the PDA but other prehistoric material is confined to the Iron Age. A pottery scatter to the north of Park Farm included some sherds of Iron Age date (MNS 393) and further middle to late Iron Age pottery was recovered during trial trench excavation at Brinsea Road (MNS 8966) to the south of the PDA.

2.2.3 Roman

The Roman period is represented by a scatter of finds spots within the village perhaps reflecting the fact it was attractive to settlement then as now. A single fourth century coin of Constantine I was recovered in 1958 (MNS 397) but as coins of this period are frequently associated with manuring spreads its significance should not be overstated. The majority of the records for this period relate to the recovery of variable amounts of Roman pottery sherds: five of just Roman pottery and a further three where the Roman pottery was associated with material of other dates. They came generally from the northern or the south-eastern part of the village.

Four locations in the north of the village produced Roman pottery (MNS 1000, 1983, 5201 and 393) and slightly further south at Rookery Farm pottery was recovered from a bank (MNS 1972). Of these scatters, one near the recreation ground (MNS 1983) comprised about 100 sherds of third and fourth century date which were found during construction of facilities, however no features were identified.

The three locations to the southeast of the village are all located immediately south of the PDA. One (MNS 5205) relates to a historic 1964 record of a scatter of pottery and a second is material recovered from the garden of the Stycks (MNAS 1689). Pottery, including waster material of Congresbury Ware was recovered from an evaluation (MNS 8966) and two further Roman ditches (and presumably pottery) were recorded by Avon Archaeology Unit (MNS 8133/ENS 378) during the evaluation of land to the rear of Pineapple Farm in 1992.

2.2.4 Medieval

A number of the entries relate to the recovery of pottery scatters, including one from Rookery Farm and one to the north of Venus Street (MNS 1890, 1959 & 5202) and others which are scatters of a broader date range that include some medieval sherds (MNS 393 & 1689). The find spots are widely spread and do not form any pattern. Two entries relate to the site of buildings, a watermill (MNS 1557) that is visible on a eighteenth century mapping, but whose location in the medieval period is unclear, and the site of medieval Stonewell Farm (MNS 3682) and a lodge at Park Farm (MNS 1955). Within Park Farm a barn appears to have been adapted from a medieval building (MNS 1956) and may be the remains of the capital messuage mentioned in the sixteenth century.

At Rookery Farm, where a medieval pottery scatter was recorded, observations of a pipeline across the garden recovered over 80 pieces of pottery from the eleventh to fourteenth centuries along with stone foundations (MNS 1971). At the northern limit of the search area, a series of large stones in a drain (MNS 1957) may mark the site of a medieval fishpond, a linear pond is depicted on the 1895 Ordnance Survey mapping and a clear diversion of the river is apparent.

The area around Pineapple Farm, to the southeast of the PDA, has been subject to archaeological evaluation including a geophysical survey with negative results[5]. Trenching in 1992 revealed medieval features (MNS 8134) and a watching brief carried out by AC Archaeology between 2016 and 2017 on land off Venus Street produced evidence for '*a small number of medieval/Saxo-Norman features consisting of a boundary ditch, drainage ditch and pit. A small assemblage of domestic waste material recovered from the features suggests the site had an agricultural use situated on the periphery of settlement of this date*.'[6]

2.2.5 Post-medieval

Several records within the HER reflect activity of post-medieval date, with many entries for buildings, both extant and the site of (MNS 1556, 2082, 3592, 3489, 4314, 6678, 6721 and 7798). Part of a cobbled coaching road (MNS 1958) lay to the southeast of the PDA and at the extreme north of the village was the site of the World War II air raid siren (MNS 8829).

2.2.6 The Parish Survey

The parish of Congresbury was one of a small number of places that benefitted in the 1980s to a landscape-wide survey programme. The work of the initial survey was continued by members of the Congresbury Local History Society. Because Congresbury is largely a pastoral landscape, recovery of artefact scatters by systematic fieldwalking was not possible across the whole parish, but was focused on the handful of arable fields and examination of gardens. The published studies provide an overview of the parish through time[7].

There is little evidence for the Neolithic with only a single field on the very eastern margins of the parish singled out as having '*vague concentration of flint artefacts'*. Similarly, the evidence for Bronze Age activity is limited to '*concentrations of surface artefacts'* with only one site where '*the distribution (was) of a character and localisation sufficient to suggest heightened activity'*.

By the Iron Age the region was dominated by several hillforts, including Cadbury Hill, 1.6km north of the PDA, where occupation appears to commence around 650BC. Extensive occupation in the region is likely, being required to construct and service the forts.

Roman period activity is more apparent and probably reflects extensive agricultural activity, as well as industrial pottery production from the third century. Excavation has suggested kilns operated seasonally. Two were found off Venus Street in the 1960s, 150m south of the PDA, and recently a further example was excavated by Wessex Archaeology in advance of the

[5] Russett, V. (ed.), 2012. *Gradiometery Survey of Mrs Meaker's Paddock, Venus Street, Congresbury*. Unpublished YCCART report, ref. 2012/Y4.

[6] Cooke, P and Brooke, K, 2019 Land off Venus Street, Congresbury, North Somerset. Report ACD 1382/3/0

[7] http://www.ycccart.co.uk/index_htm_files/Congresbury%20Parish%20Survey.pdf

construction of Bristol Water's Southern Strategic Support Main to the north east of the PDA, producing 400kg of Congresbury grey ware sherds. In recent years a project by the Yatton, Congresbury, Claverham and Cleeve Archaeology Research Team (YCCCART) has also surveyed several fields to the east of Congresbury and around Iwood in search of further kilns[8].

Although Post-Roman activity is well attested at Cadbury Hill, elsewhere it can only be surmised to have been present, as in so many regions of the country. Documentary sources (such as a now lost charter of King Ine) reference land in Congresbury to a total of twenty hides, the same area as was referred to in the Domesday Book for Congresbury in 1066.

[8] http://www.ycccart.co.uk/site%20reports.htm

3. Historic Landscape Assessment

3.1 THE PARKS OF CONGRESBURY

A 1567 manorial survey of Congresbury indicates extensive open field land around the village, as well as other resources such as meadows and woodland, but these have not been mapped. The parish was enclosed in 1814, and much of the modern landscape – the straight-edged fields – dates from that time, although south of Venus Street the field pattern is suggestive of earlier post-medieval piecemeal enclosure. The Historic Landscape Characterisation classes the PDA as '*Post-medieval fields created from enclosure of medieval parkland*'.

Two parks were created in the manor in the Middle Ages. The earlier, in the extreme north of the parish (see 'Park' on **Figure 6**), was apparently formed after disafforestation of the manor – that is its release from Forest Law – in 1227. Following that the Bishop of Bath and Wells was allowed to '*enclose, make parks and assarts - that is to clear woodland - and take wood in the manor at will*.' That park seems to have been relatively short-lived, as in 1330 it was noted that 'f*rom the pasture which is called the Le Park nothing [no profit] because it is at farm with beans and oats.*'

The second park was centred on the freehold estate later known as Park Farm and is the subject of this assessment. The Parish Survey (*op cit*) claims it was created in 1314 with a grant of two carucates of land and rent to Richard de Rodeneye and Lucy his wife, but offers no direct evidence to associate this grant with the park. However, if an assumption, it may be correct, as in 1567 George Rodney – presumably a descendant of Richard de Rodeneye - held '*one capital messuage and certain lands called Parcke Feelde besides other lands by Olde More called Twenty Acres*.' This suggests that by that date the deer park had been enclosed (that is subdivided into fields) and turned over to agriculture.

The parish survey mapped the likely bounds – the pale - of the later medieval park following curvilinear field boundaries, with Park Farm, presumably the 'capital messuage' of 1567 and it can reasonably be assumed on the site of the parker's lodge, to the centre. We concur with this mapping, other than to the east where we suggest the pale may have followed a more curving line, now lost (**Figure 7**).

A site visit confirms that the line of the park boundary along the south of the PDA is marked by a hedge (**Figure 8)**. There is no sign of a bank-and-ditch pale earthwork.

In 1811, when first mapped in detail, the village of Congresbury extended for roughly a kilometre south from a Y-splay of roads to the north (with St Andrew's church standing off the spur to the north-west), through the central village core, and onward down the Brinsea Road. Roughly 600m south of the village core an east-west road crossed the Brinsea Road; the section to the east had a number of properties clustered along it in a grouping called Venus Street. Evidence of Saxo-Norman occupation was found in 2017 in an archaeological evaluation in advance of the construction of Potters View (noted below) on the north side of Venus Street[9].

[9] AC Archaeology, 'Land off Venus street, Congresbury, North Somerset (Feb 2019)

There had been little or no change to the settlement pattern by c.1900 (**Figure 9**), and nor indeed until the 1960s (**Figure 10**), although Congresbury's population grew by just over 450 people between 1900 and 1961. Up until the 1950s agriculture and its support services provided the principal employment in the village. Then, between 1961 and 1971, as people began to commute to work in Bristol and Weston-super-Mare, Congresbury's population more than doubled to 3,397. Large numbers of new houses were constructed north of the river including the Southlands council estate, Cobthorn, Verlands, Weetwood and Wrington Mead, along with estates south of the historic village core in Park Road, Stonewell, Silverstone Way, Yew Tree Park, and Silver Street. A new shopping precinct and two new schools were provided for the new residents.

3.2 THE PARK: RARITY AND SURVIVAL

Medieval deer parks have been much studied since the 1960s, and are well understood. While 'hays', enclosures for the management of deer, were in existence in late Saxon England, deer parks as such were a Norman introduction. Large numbers were licensed by the Crown in the 13th and 14th centuries via a grant to impark; some had long histories, others were short lived or indeed a grant of permission may not have been acted upon.

Oliver Rackham estimated that there may have been as many as 3,200 parks, licensed or otherwise, by the early 14th century. Even though some were soon enclosed and turned over to farmland, parks continued to be created after the economic and social calamities of the mid-14th century, and later sources suggest even higher numbers than Rackham proposed. A Venetian visitor to England in the 1490s put park numbers at '4,000. All enclosed with timber fences', while in the early 16th century Polydore Vergil reckoned a third of England was uncultivated with much land being given over to parks, so that 'allmoste everie where a man may se clausures and parckes paled and enclosed' (to paraphrase, 'almost everywhere a man may see enclosed land and parks surrounded with pales'). While the accuracy of these numbers may be questioned, the point remains: deer parks were a commonplace feature of the English landscape in the Middle Ages. For the most part they were a specialised type of livestock farm, not aristocratic designed landscapes. They can be set alongside other types of dedicated livestock enterprises such as horse studs, vaccaries (cattle farms), and upland sheep farms.

A few medieval deer parks survive today little changed. Others were incorporated in post-medieval landscape parks, and sometimes elements of their landscapes survive there in fossilized form. Even where – as in the great majority of cases - medieval parks were enclosed, divided into fields and became farmland, physical evidence of them can survive, notably the lodge site, and remains of the pale.

The lodge was the home of the parker, a role that combined game manager with security guard. Typically sited on an elevated site towards the centre of the park, as a structure it was normally comparable with a farmhouse, although sometimes with a first-floor room where hunters might take refreshment and overlook the park. Many had a surrounding moat to offer a degree of security from poaching gangs. When parks were enclosed, the lodge typically became the farmhouse, and it can be confidently suggested that this was what happened at Park Farm. However, the present building (largely of 17th- and 18th-century date) is unlikely to retain any fabric from the period when the surrounding land was a park.

It was essential that deer parks were securely enclosed within a tall perimeter to prevent the deer escaping. Some parks, where stone was plentiful, were walled, but more typically they

were surrounded by a pale. This was a tall wooden fence of cleft oak pales (as in the modern word 'paling'), perhaps 2.5m high. This was a costly up-front investment, and needed maintenance and periodic renewal. More expensive still was setting the fence on a bank with a broad internal ditch, intended to make 'leaping the pale' by the captive deer even more difficult. Earthworks of such banks and ditches are relatively common, but their frequent absence, even where the line of the deer park's boundary is accurately known from cartographic sources, shows how frequently the investment in such was avoided or thought unnecessary. That seems to have been the case here, as while in places, notably along the south boundary of the PDA, the line of the pale is followed by a hedge, there is no sign of a bank-and-ditch earthwork.

To summarise, deer parks such as that which existed at Congresbury were commonplace across England throughout the Middle Ages. Survivals of park landscapes, lodges (or more frequently moats marking their sites), and pale earthworks are relatively plentiful.

These points are picked up in Historic England's selection guide on Rural Landscapes, which sets out the criteria which would have to be met were a medieval deer park to be added to the Register of Historic Parks and Gardens, a component of the National Heritage List. Specifically, the selection guide states:

'*Deer parks established in the medieval to early modern periods may be eligible for inclusion of the Register of Parks and Gardens; fundamental will be the survival of the park interior, or a large part of it, unenclosed for agriculture and with its woods, trees and grassland intact, and with its perimeter clearly defined by banks, walls or hedges. The presence of structures such as lodges and deer shelters, especially where listed, will generally add to a park's interest. So, too, will be the survival of the principal house with which the park was associated, especially where there is a visual relationship between the two.'*

What survives of the park at Congresbury - the farmhouse built over the site of the lodge, and the line of the park boundary, or pale, partially preserved in modern hedge lines – falls far short of these criteria, and cannot reasonably be said to have more than local interest.

4. Site Visit

4.1. INTRODUCTION

A site visit was carried out by Dr Paul Stamper of AJA in October 2020.

The PDA itself is a roughly square field of permanent pasture, bordered by houses to the south and west. Mature hedges run around all four sides, although sometimes pierced to the west at the end of the houses' gardens. The field slopes gently towards its north-east corner, and has a drainage ditch along its east side which continues onwards to drain into the River Yeo.

The visit focussed upon verifying, where possible, the boundaries of the park and pale that helped inform the historical landscape assessment (**Section 3**), and the setting of designated assets (**Section 6**).

4.2 PARK FARMHOUSE

The PDA lies south of the Grade II-listed Park Farmhouse (**Figure 11**), argued above to stand on the site of a medieval park lodge. The listing decription summarises the house:

> *Farmhouse. Probably C16, remodelled in late C17/early C18 and in Cl9. Painted stone rubble, rendered west front. Pantile roofs, (Bridgewater tiles at front), with gabled ends and hipped over rear block. Gable end stacks with rebuilt brick shafts and stone stack at rear heightened in brick. Plan: 4-cell front (west) range with gable end stacks, the 2 smaller centre cells are unheated, that on the right contains the staircase. Behind the centre room a cross-passage and a room in a short wing with a large stack; either side of the wing a later outshut; the large outshut on the right is on the back of the front range. Exterior: 2 storeys. Asymmetrical 2:2 window west front, the 2 right hand bays slightly higher and set back. 12-pane sashes. C20 porch in angle at centre with old plank inner door. Rear (east) elevation has wing with circa early C16 stone windows on first floor with hollow-chamfered 4-centred arch lights, hood mould and wrought-iron bars. Outshuts on either side of wing with pantile lean-to roofs.*

Low, single-storey, ancillary agricultural buildings to the east of the farmhouse form curtilage structures, although not listed (**Figure 12**). These (now Blackberry Barn and Fig Tree Barn) were converted for domestic occupation probably within the last 20 years.

The converted barns stand close to the PDA's northern boundary with clear intervisibility. Park Farmhouse however, despite proximity to the PDA (approximately 35m), is orientated east-west, and whilst there may glimpsed views of the PDA at ground level through a dense hedge, the only direct views would be from a single, small window in the southern elevation of the house (**Figure 13)**.

4.3 COLLINS BRIDGE

Grade II-listed asset, Collins Bridge, stands c.200m north-east of the north-east corner of the PDA. This was added to the List in 2007. The entry reads:

> *Bridge spanning the River Yeo to the east of Congresbury. Probably late-C18 or early-C19. Local stone cut and squared. It has a single span arch of approximately 7m consisting of a single row of voussoirs on either side. There is no parapet: whether one existed is unclear.*

The bridge is situated on a footpath that crosses the River Yeo. It is one of three small-scale bridges located in close proximity to each other which span the river to the east and south east of the village. Collins Bridge is shown on the 1885 Ordnance Survey map and was probably constructed in the late- 18th or early 19th century.

Views from the bridge itself towards the PDA are very limited due to intervening hedging and small trees (**Figure 14**). From a few metres north of the bridge, there are middle-distance clear views of the PDA, although the proposed housing would be in front of existing development, in essence replicating the current view, albeit bringing it nearer to the bridge (**Figure 15**).

4.4 OTHER ASSETS

The Grade II* listed Urchinwood Manor stands c.480m north-east of the PDA. The house is orientated south and there is no view from the front of the house of the PDA due to intervening development and vegetation. Due to Covid 19, and the house being a private property, the view towards the PDA was observed from approximately 100m east of the house (**Figure 16**).

A further Grade II-listed bridge across the Yeo lies c.280m to the south-east. This is concealed within trees. Pineapple Farm, listed at Grade II with its garden walls, stands on Venus Street, 150m due south of the PDA beyond an extensive block of modern housing. There is no visual connection with PDA due to intervening development, as is the case with all other designated heritage assets (see **Figure 17**).

5. Geophysical Survey

5.1 INTRODUCTION

Detailed geophysical survey, using an array of caesium vapour magnetometers to prospect for buried features possibly of archaeological interest, was undertaken by Tigergeo in November 2020. The report is appended (**Appendix A**).

Interpretation is shown on **Figure 18** with the full set of drawings contained within Appendix A. Numbers in [n] below refer to labels on Figure 17.

5.2 DATA

Data quality is overall high though there is some slight distortion close to the houses and gardens due to the fences, ferrous debris and structures. The data has a strong stippled-like texture typical of small magnetic objects, probably natural material within the superficial geology and ferrous debris, the solid geology being unlikely to contribute suitably magnetised material. Contrast is muted and reduced intensity anomalies are dominant, associated mostly with drainage features.

5.3 GEOLOGICAL INFLUENCES

The soil iron content is less than 3% in an area roughly coincident to the distribution of Tidal Flat Deposits which extend far enough east here to underlay the site. Beneath this is the Mercia Mudstone (here a mixture of mudstone and halite) and where seen elsewhere this seems to produce soils with low magnetic susceptibility, leading to generally muted contrast with respect to features of archaeological interest.

However, the contrast evident between the broad natural ridges between the drainage ditches and the base of the ditches themselves would suggest that there is a reasonable level of background susceptibility locally. It is unclear why these ditch fills should be significantly less magnetic than the ground each side, however this may reflect the natural difference between subsoil and topsoil plus there could be a degree of leaching out of iron.

5.4 LAND USE

The dominant land use character within the data is the set of drainage ditches [1] that drain northwards into a ditch near the northern edge of the field, an area separately associated with land drains, e.g. [3]. A short linear anomaly [2] typical of a ferrous source may be a pipe inserted into this set of drainage-related earthworks.

Whether this field has always been pasture or has had arable use in uncertain, however, the probable former field boundary [4] has a lynchet character typical of cultivated soils and hence it is tempting to associate the drainage features with an arable use. This feature extends eastwards into the next field where its line is now perpetuated by a ditch but might once have existed, just to the south of this, as another earthwork.

At [5] a patch of more variable data is thought to be due to modern debris, not seen, but presumably within the grass and soil beneath.

5.5 ARCHAEOLOGY

As would be expected there is nothing in the data that would confirm the presence of the deer park and there is no magnetic evidence within the field for the park pale. There is also no evidence for activity that might pre-date this, although the uncertain date of former boundary [4] and the possible arable use of the land associated with this is of interest in the context of the deerpark. There is no evidence of any areas of intensive magnetic response that could indicate the presence of kilns.

There is no evidence of prehistoric use of the land within the PDA.

5.6 CONCLUSION

The site overall appears to have always had an agricultural use, within the small deer park of the medieval period and later subsumed into the field system of the developing settlement of Congresbury, maybe as piecemeal enclosure. There is no evidence for structures or features of archaeological interest. The use here of caesium vapour instrumentation in a non-gradiometric configuration has allowed maximum scope for detection of features against the low background magnetic contrast.

6. Impacts, Mitigation and Residual Effects

6.1 DIRECT IMPACTS AND MITIGATION

Based upon our knowledge of archaeology within the vicinity of the PDA there is a moderate potential for archaeology, in particular of Roman and Anglo-Norman date. However, the geophysical survey has identified no archaeological anomalies.

Based upon mitigation employed on other developments in the area, it is anticipated that a programme of trial-trenching would be required prior to construction (subject to planning consent) and this would in turn inform whether any further mitigation, such as archaeological excavation, is required.

6.2 INDIRECT IMPACTS

6.2.1 Introduction

Indirect impacts are those that do not physically affect a cultural heritage asset or landscape, but that potentially alter the context or setting.

As described in **Section 1.5** Historic England's GPA3, The Setting of Heritage Assets**,** recommends a broad approach to assessment of setting, undertaken as a series of steps that apply proportionately to complex or more straightforward cases.

Setting is defined in the National Planning Policy Framework (NPPF) as:

"*The surroundings in which a heritage asset is experienced. 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 the significance of the asset, may affect the ability to appreciate that significance or may be neutral.*"

GPA3 states that:

"*The setting itself is not designated. Every heritage asset, whether designated or not has a setting. Its importance, and therefore the degree of protection it is offered in planning decisions, depends entirely on the contribution it makes to the significance of the heritage asset or its appreciation."*

6.2.2 Identify which heritage assets and their settings are potentially affected

Based upon a site visit, consideration of historical context and an assessment of screening by vegetation and development, it is considered that only one designated asset would experience an adverse effect of any magnitude upon its setting – Park Farmhouse. This is discussed in Section 4.2.3.

The rationale is set out below in **Table 6** and reference should be made to **Figure 17**.

Table 6 Potential effects upon setting of listed buildings

Asset	Ref on Fig 4	Grade	Effect of development upon setting
Town Cross	1	SM	None. Intervening urban development.
Churchyard Cross	2	SM/II*	None. Intervening urban development
St Andrews Church	3	I	None. Intervening urban development
The Refectory	4	I	None. Intervening urban development
Urchinwood Manor	5	II*	None. Intervening barn type development and trees
Park Farmhouse	6	II	See below, section 4.2.3
Collins Bridge	7	II	Negligible Adverse due to proximity
Bridge over River Yeo	8	II	None. Intervening hedges and trees
Pineapple Farm and walls	9	II	None. Intervening urban development
Yeoman's Orchard	10	II	None. Intervening urban development
Silver Street House	11	II	None. Intervening urban development
The Birches	12	II	None. Intervening urban development
Barn at Urchinwood Manor	13	II	None. Intervening barn type development and trees

6.2.3 Assessment of effects on the setting of Park Farmhouse

Looked at in isolation, and in particular due to its proximity, one would expect there to be a significant effect upon the setting of Park Farmhouse. However, careful assessment concludes that the significance of the effect is mitigated due to the following existing circumstances:

- Currently there is at most glimpsed intervisibility at ground level, with the only window orientated towards the PDA being small and to the first floor.
- A tall hedge separates the farmhouse and its curtilage from the PDA
- The former farmyard setting to the house to the south and east has been changed by the conversion of outbuildings to residential use.
- The land to the west of the farmhouse was developed in the 1970s and 80s.
- Although there would be some noise from construction, the house already sits within a built environment.

6.2.4 Assessment of effects on the former Park

The assessment has concluded that:

- The formerly open, rural, character of the Park with the farmhouse at its centre changed in the later 20th century with the development of houses, including substantial development to the west on former Park land
- Recent housing to the south has created an enclosed space to two sides
- One of the last remaining Park boundaries – the southern boundary of the PDA, marked by a hedge – will be retained within the scheme
- Enclosure of the Park in the early 19th century removed much of its legibility

6.2.5 Explore ways to maximise enhancement and avoid or minimise harm

The location of the housing within the development should stand-off the boundary with Park Farmhouse, leaving a green buffer. The southern boundary equally should retain a green corridor of open space or gardens to retain the historical alignment of the former Park's southern boundary in the modern landscape.

These recommendations have been incorporated into the development framework.

6.3 ASSESSMENT OF RESIDUAL EFFECTS

In accordance with best practice the significance of an effect should be identified. This is achieved using the methodology set out in **Section 1.6**, above, and equates to Step 5 of the Historic England process. The results of the evaluation of significance are drawn together in **Table 7**, below, together with the rationale behind the evaluation.

Table 7 Evaluation of residual effects

Direct / Indirect Effect	Asset	Type of Effect	Probability of Effect Occurring	Sensitivity	Magnitude	Significance of Effect	Rationale
Direct effects Statutorily Protected Heritage Assets	Listed buildings	None	Certain	High	No change	Neutral	There are no listed buildings within the PDA.
	Scheduled Monuments	None	Certain	High	No change	Neutral	There are no scheduled monuments within the PDA.
Archaeology	The Park	Adverse	Certain	Low	Minor	Slight	The medieval Park appears not to have had any surrounding earthworks and enclosure of the Park in the early 19th century removed much of its legibility. Today it has lost its open, rural, character with the development of houses, including on its western area. One of the last remaining Park boundaries – the southern boundary of the PDA, marked by a hedge – will be retained within the scheme. There is no evidence of any archaeology related to the Park, or indeed any other period, from the geophysical survey, although the PDA lies within an area of moderate potential for archaeology, in particular of Roman and Anglo-Norman date.
Indirect effects upon setting of designated assets	Scheduled Monuments	None	Certain	High	No change	Neutral	There is no intervisibility with any SMs due to intervening urban development
	Park Farmhouse	Adverse	Certain	Medium	Minor	Slight	Despite proximity, the immediate setting of the house has already been compromised by housing development on its land and through conversion of its farmbuildings. The house is orientated away from the PDA with only one small first floor window having views of the proposed development.
	Collins Bridge	Adverse	Likely	Medium	Negligible	Negligible	Largely screened from the PDA by vegetation, its setting is the River Yeo that it

							crosses and this will be unaffected.
	Other Listed Buildings	None	Certain	High/Medium	No change	Neutral	Screened from the PDA by development or vegetation, there will be no intervisibility and no effects on historical context.

7. Summary

7.1 DIRECT EFFECTS AND MITIGATION

There will be no direct effects upon statutorily designated heritage assets.

Based upon our knowledge of archaeology within the vicinity of the PDA there is a moderate potential for archaeology, in particular of Roman and Anglo-Norman date. However, a sitewide geophysical survey revealed no anomalies of archaeological interest.

A medieval park was centred on what is now Park Farm that was probably built over the medieval lodge. The Park was most likely fenced with a pale, but there is no sign of a bank-and-ditch earthwork. The line of the Park boundary along the south of the PDA is marked by a hedge and this would be retained in the proposed development. The enclosure of the Park in the early 19th century removed much of its legibility. Today it has lost its open, rural, character with the development of houses, including substantial development on its western area.

Based upon mitigation employed on other developments in the area, it is anticipated that a programme of trial-trenching would be required prior to construction (subject to planning consent) and this would in turn inform whether any further mitigation, such as archaeological excavation, is required.

A detailed Project Design (Written Scheme of Investigation) would be submitted to North Somerset Council and the works would be secured by a planning condition requiring its implementation prior to development.

7.2 INDIRECT EFFECTS AND MITIGATION

Indirect effects are those that do not physically impact upon a cultural heritage asset or landscape, but that alter the context or setting.

Of the thirteen designated heritage assets that sit within 1km of the PDA only two are predicted to experience any adverse effects. This is because the other assets have no intervisibility due to intervening development and vegetation.

Park Farmhouse, a Grade II listed building, sits 35m north of the PDA boundary. Despite proximity, there is at most glimpsed intervisibility at ground level, with the only window orientated towards the PDA being small and to the first floor. A tall hedge separates the farmhouse and its curtilage from the PDA. The former farmyard setting to the house to the south and east has been changed by the conversion of outbuildings to residential use and the land to the west of the farmhouse was developed in the 1970s and 80s.

This assessment concludes that there will be a minor adverse effect of slight significance upon its setting.

Collins Bridge is a Grade II Bridge spanning the River Yeo of late 18th/early 19th century date, 140m north east of the PDA. It will be largely screened from the PDA by vegetation and its setting - the River Yeo that it crosses - will be unaffected. There will be a negligible adverse effect of negligible significance upon its setting.

The location of the housing within the development should stand-off the boundary with Park Farmhouse, leaving a green buffer. The southern boundary equally should retain a green corridor of open space or gardens to retain the historical alignment of the former Park's southern boundary in the modern landscape.

These recommendations have been incorporated into the development framework.

No mitigation additional to that proposed is required in relation to the effects upon the setting of designated heritage assets.

7.3 CONCLUSION

Having regard to the baseline conditions, and the scope of the proposed development as currently envisaged, the project fully accords with both local and national cultural heritage policy. With mitigation in place there are no predicted effects that are material in the decision-making process.

Figures

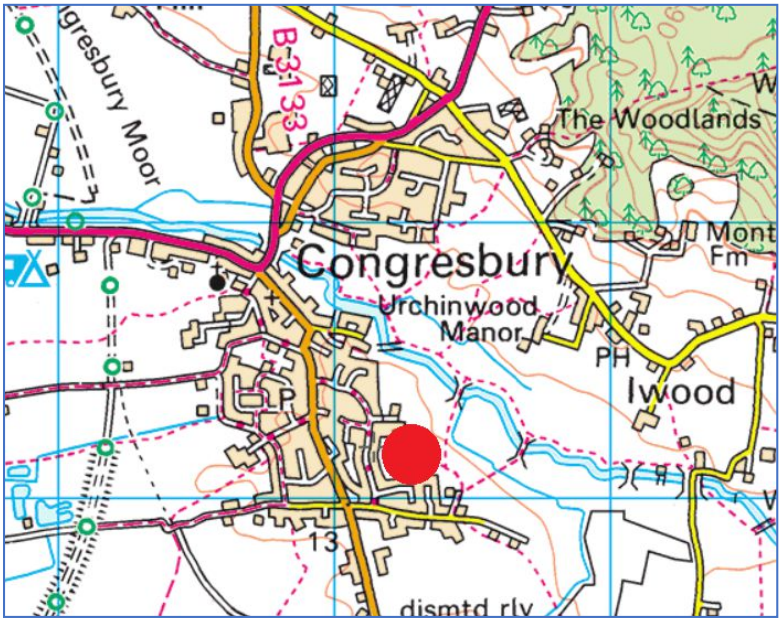

Figure 1 Location of Proposed Development Area (PDA)

Figure 2 Proposed Development Area (PDA)

Figure 3 Development Framework plan

Figure 4 Designated Heritage Assets (refer to section 2**)**
© Google base photo

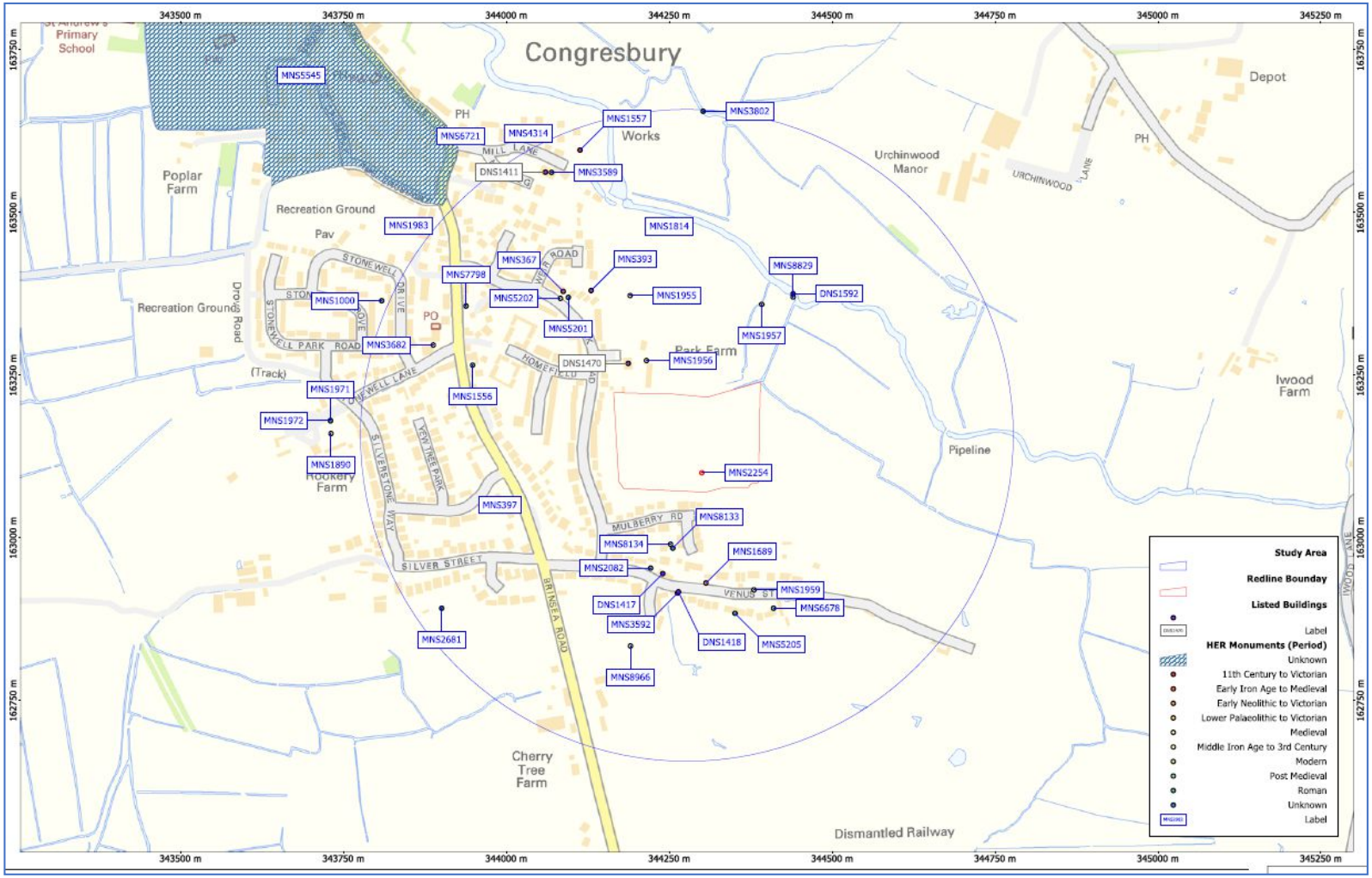

Figure 5A North Somerset HER Monuments within 1km of the PDA

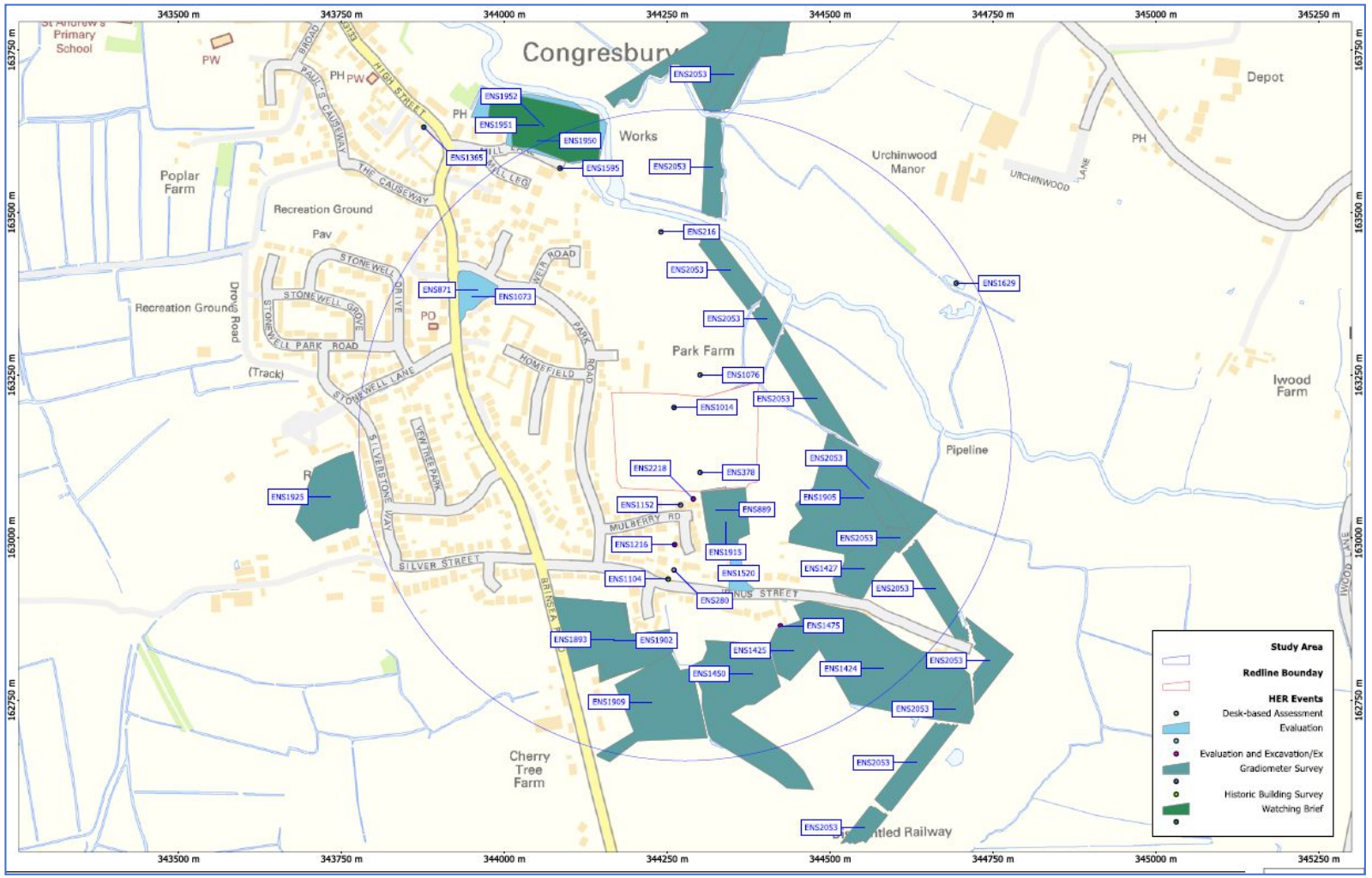

Figure 5B North Somerset HER Events within 1km of the PDA

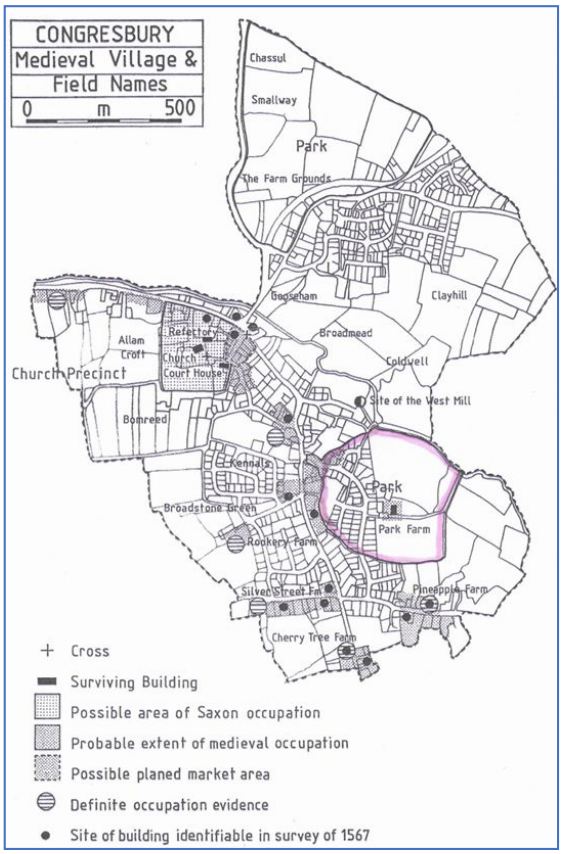

Figure 6 Extent of medieval park (from Congresbury Parish Survey)

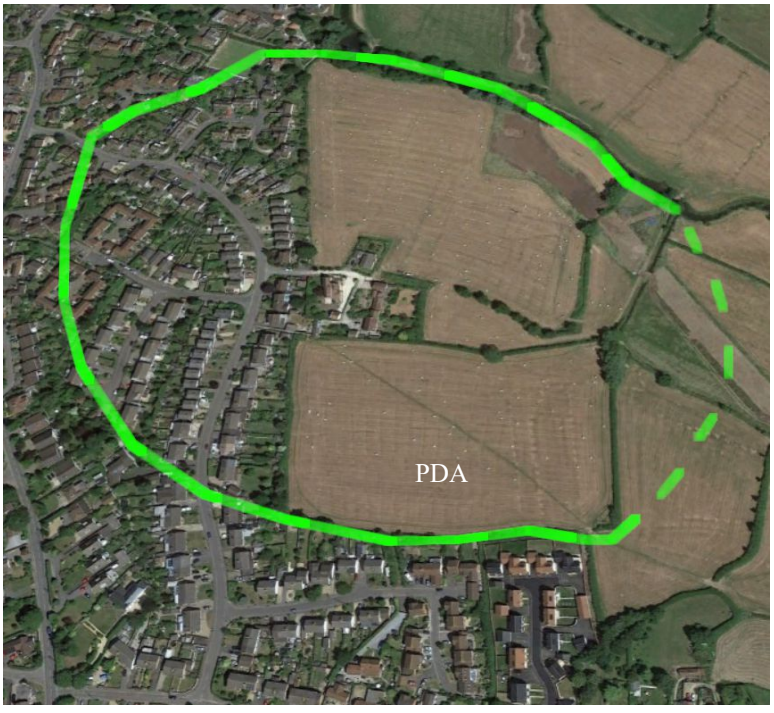

Figure 7 Suggested former extent of medieval park with realigned eastern boundary
© Google base photo

Figure 8 View west along the line of the park boundary, marked by the hedge on PDA's southern boundary. There is no evidence of a bank-and-ditch pale earthwork.

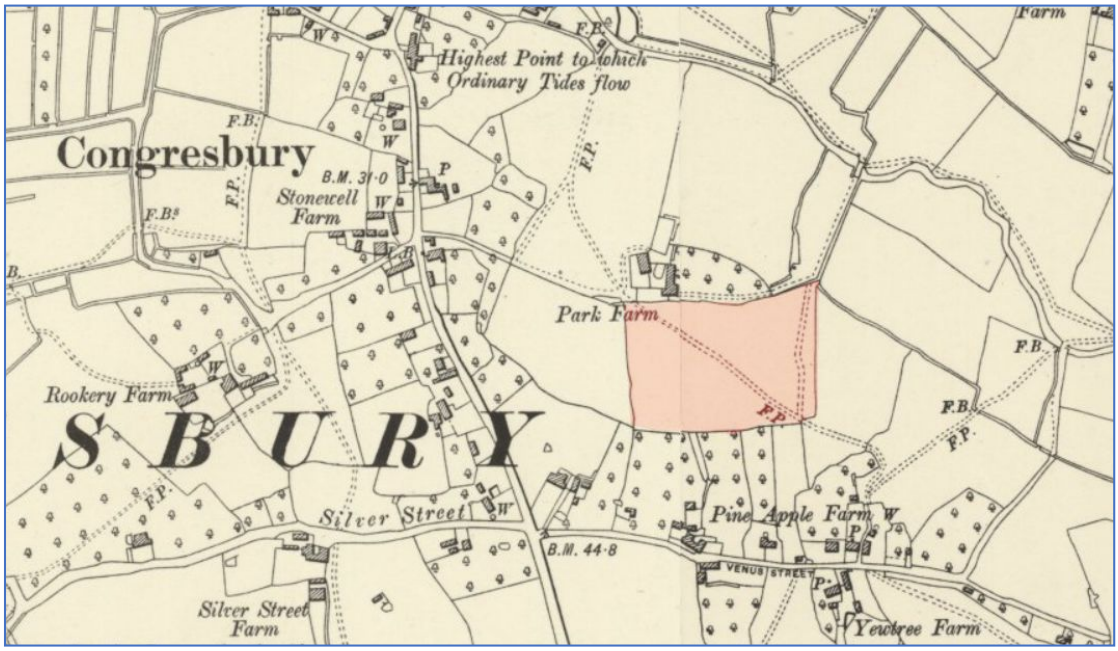

Figure 9 Ordnance Survey 1900

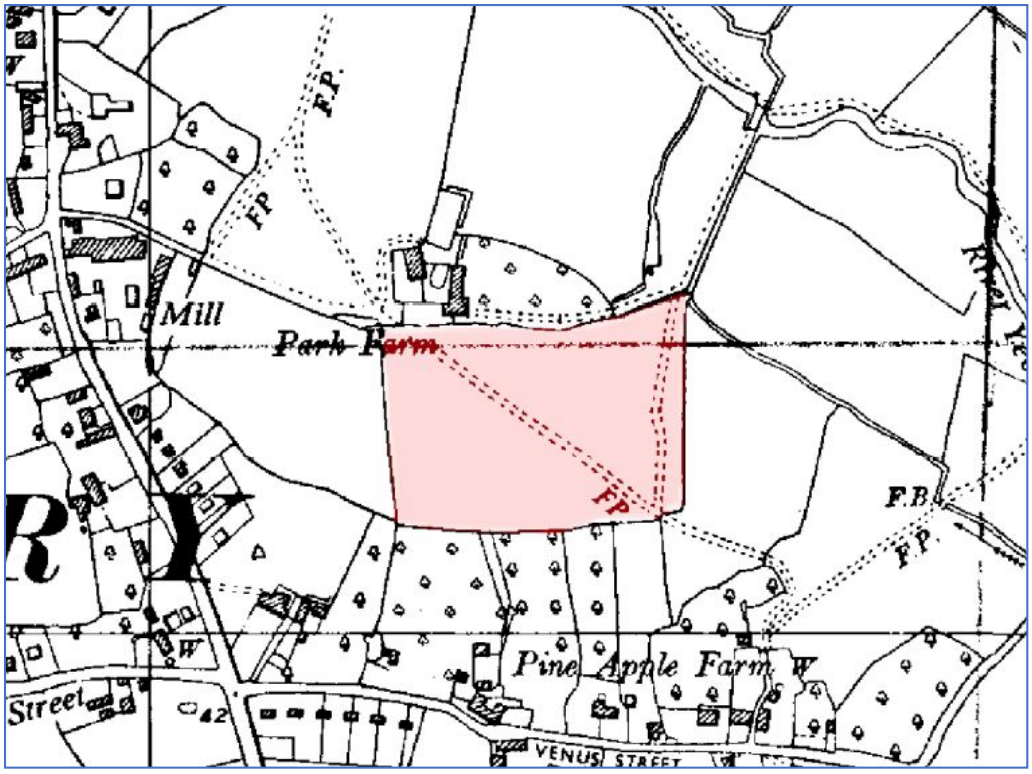

Figure 10 Ordnance Survey 1960

Figure 11 Park Farmhouse, from the west

Figure 12 Former agricultural buildings associated with Park Farmhouse, now converted to dwellings, from the northern boundary of the PDA

Figure 13 Sole window facing the PDA (arrowed) on first floor of Park Farmhouse, from approximate northern limit of built development. Shows enclosure of Farmhouse by existing development.

Figure 14 Collins Bridge, looking in direction of PDA (not visible)

Figure 15 Looking in direction of PDA from 25m north of Collins Bridge. Boundary of PDA highlighted red.

Figure 16 **From 100m east of Urchinwood Manor, looking in direction of PDA (not visible)**

Figure 17 Context of Designated Assets and PDA.
Hedges and tree belts highlighted green. Urban development shaded brown.

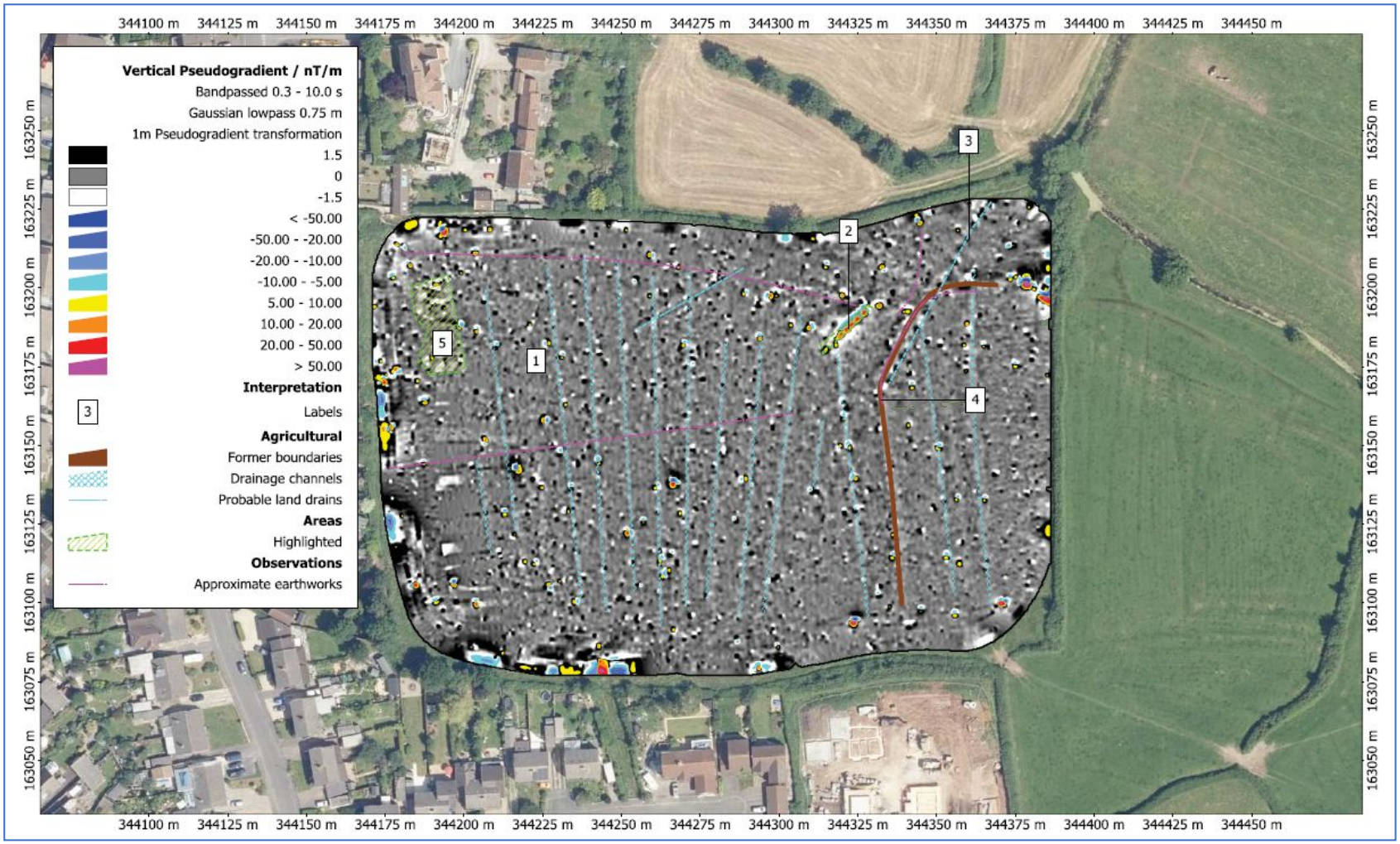

Figure 18 Geophysical Survey Interpretation

© Tigergeo

Appendix A: Consultations

From: Cat Lodge
Sent: 26 October 2020 14:25
To: Andrew Josephs
Subject: RE: Pineapple Farm, Congresbury

Hi Andy

Thanks for the update.

Best wishes
Cat

Cat Lodge
Senior Archaeologist
Development & Environment
North Somerset Council

> **From:** Andrew Josephs
> **Sent:** Monday, October 26, 2020 10:31 AM
> **To:** Cat Lodge
> **Subject:** Re: Pineapple Farm, Congresbury
>
> Hi Cat
>
> Just to let you know that I have appointed Tigergeo to carry out a 100% survey of the site and that will take place in the next fortnight.
>
> Kind regards
> Andy
>
> andrew josephs associates
> **consultancy | project management | expert witness**
> **Specialists in Archaeology and Cultural Heritage**
>
>

> **From:** Cat Lodge
> **Sent:** 05 October 2020 12:52
> **To:** Andrew Josephs **Subject:** RE: Pineapple Farm, Congresbury
>
> Hi Andy
>
> Please find attached.

You'll see that only 2 parts of the field were surveyed in 1999, so I'd be asking for a 100% mag survey of the field so we have as up to date a picture as possible if a planning application were to come forward.

Best wishes
Cat

Cat Lodge
Senior Archaeologist
Development & Environment
North Somerset Council

From: Andrew Josephs
Sent: Monday, October 5, 2020 12:57 PM
To: Cat Lodge
Subject: Re: Pineapple Farm, Congresbury

Hi Cat

That's a great help. Thanks.

I have also seen a reference to a geophysical survey on part of the site back in the late 90s by GSB when Bryant Homes were proposing it. But I cannot find any report online. Does the HER hold a copy?

Kind regards
Andy

andrew josephs associates
consultancy | project management | expert witness
Specialists in Archaeology and Cultural Heritage

From: Cat Lodge
Sent: 05 October 2020 11:15
To: Andrew Josephs
Subject: RE: Pineapple Farm, Congresbury

Hi Andy

Yes thanks, hope all is well with you too.

Thanks for the heads up on this. I did see your request this morning for information from the HER – Daniel will pick this up tomorrow when he is back in the office and will get the information to you by the end of the week.

There is no requirement for a museum accession number for a DBA.

It might be worth noting that the Bristol Water Southern Strategic Support main passed close to the proposed development site, which revealed extensive activity relatively to Romano-British pottery production: https://www.wessexarch.co.uk/news/congresbury-kiln. The post-excavation is still under way, so I don't have a final report, but it would be worth contacting Bruce Eaton at Wessex Archaeology who managed the project as he will be able to provide you with an update on the findings along the route.

There is also a report for a watching brief at the new development at Venus Street/Potters View. It's not yet in the HER so I have attached it for your information.

Also, YCCCART (the local community archaeology group) have undertaken geophysical surveys of most of the fields surrounding the village and you can find digital copies here: http://www.ycccart.co.uk/site%20reports.htm

I hope that's of help, but please don't hesitate to ask if you have any further questions.

Best wishes
Cat

Cat Lodge
Senior Archaeologist
Development & Environment
North Somerset Council

From: Andrew Josephs
Sent: Monday, October 5, 2020 11:24 AM
To: Cat Lodge
Subject: Pineapple Farm, Congresbury

Dear Cat

I hope you are well.

We have been instructed to provide archaeology and heritage advice in relation to a potential residential development within a parcel of land to the north of Pineapple Farm, Congresbury (attached). This is confidential for the time being, but I expect a formal pre-app will be submitted in the next few weeks.

Initially we have been asked to prepare a DBA.

I have consulted the HER and will obtain an Oasis number. Do I need a museums accession number for a DBA?

Kind regards
Andy

Appendix B: Geophysical Survey Report

TIGERGEO

Pineapple Lar Mulbe y
Road Cong esbu y

Geophysical Su vey Report
(Caesium aw u Magnetic – A chaew gy)
e sion 1.0

Pro ject code: PFC201

Pro duced for

Andrew J sewhs Associates

ead Author
MJ R seveave, Seniw Gew hysicist
BSc(Hons) MSc MEAGE FGS MCIfA

13th Nove be 2020

Envi onmental Geophysics – Sur ey Research and Consultancy

Pineapple LarL MulbeL y RoadLCongLesbuLyL

Digital dataL

IteL and veLsionL	Sent toL	Sent dateL
CAD –wectw Elements 1.0w	Andvew Jwsewhsw	13thwNwvembew2020w

AuditL

VeLsionL	AuthoL	CheckedL	DateL
Intewimw			
1.0w	MJ R seveawew	ACK R seveawew	13thwN vembew2020w

PrbjectL etadataL

PLoject CodeL	PFC201w
ClientL	Andvew J sewhs Asswciatesw
ieldwoLk DatesL	5thwN vembew2020w
ield PeLsonnelL	ACK Rwseveavve, MJ Rwseveawew
Data PLocessing PeLsonnelL	ACK Rwseveawew
RepoLting PeLsonnelL	MJ R seveavve, D Lewisw
RepoLt DateL	13th N vembew2020w
RepoLt VeLsionL	1.0w

TigeLGeo LiL itedL

TIGERGEO

Non-Technical SuL aLyL

A surveyw aswc mmissionedwbywAndrewJ sewhswAsswciateswtw s ectwlandwatwPineaw le Farm,wMulbew yw R ad,wC ngvesbuwyfw burviedwstructuresw f archaewl gicalwintevest.wSurveyw aswundertakenwusingwanwATw-w tw edwandwGNSS-tvackedwn n-gvadiowmetwic a ayw f caesiumwvaw u magnetwmetews n a n n-magneticw latfwrm.w

The surveyvevealed n thingw f archaewlogical intervest althwugh did c nfirm thew resencew f a systemw f landw d ainagevbased uw n regulawditches,w luswthewremainsw fw hatvaw eawst anveavie ,w erhaws medieval,wfieldw system.w

TIGERGEO

Table of ContentsL

DLawingL	TitleL
DWG 01w	Site L catiow
DWG 02w	T tal Magnetic Intensityw
DWG 03w	1mwertical Pseudwg adientw
DWG 04w	Intewwetatiow

1 L IntLoductionL

TigerwGew aswc mmissionedwbywAndrewJ sewhswAsswciateswtw undertakewa gew hysicalwsurveyw f landwatw Pineaw le Farm,wMulbewy R ad,wC ngresbury.wSurveyw aswundertakenwusingwanwa ayw f caesiumwvaw uw magnetwmetewstw s ect fw buried featuresw ssiblyw f archaewlogical interest.w

CountLyL	Englandw
CountyL	Swmersetw
NearLest SettleL entL	Cwngresbuwyw
TopographyL	Gently slowing dw n twnwrth and east, undulating east -w estw
CentLal Co-oLdinatesL	344276, 163159w

2 L ContextL

2.1 L EnviLonmentL

Thewbelow infwrmationw iswtakenwf m thewBritishwGewlogicalwSurveyw(BGS),whistw ic maw ingwandwaerialw imagewyandw vides a basic summawywf the surwvey a ea.w

SoilscapesClassificationL	Slowlyw ermeablewseaswnallyw etwslightlywacidwbutwbase-wichwloamywandw clayey swils (18)w L amy and clayey flowd lain s ilsw ith natuwallywhigh g undwatewt n rth-w east (20)w
SupeLficial 1:50000 BGSL	Tidal Flat Dew sits, 1 - Clay And Silt (TFD1)w
BedrLock 1:50000 BGSL	Mewcia Mudstwne Gw uw - Mudstwne And Halite-stwne (MMG)w
HydrLologyL	Imweded d ainagew
CurLent Land UseL	Agwicultuwal - Pastuwew
HistoLic Land UseL	Agwicultuwal - Pastuwew
Vegetation CoveL	Unimw ved g asslandw

2.2 L ALchaeology L

ThewHewitagewStatementw(AJA,wf rthcwming)w e aredwfw thewsitewsummawiseswthewknw n andw tentialw archaewlogical weswurce in the immediate enviw nswf thew sed develowment area (PDA).w

Whilewtheweare nw reviouslywecwrdedwfeaturesw findswf archaewl gicalwinterestw ithinwthewPDA,wtheweiswevidencewfw activitywf mw rehistw ic e iod n ard inwthew idewenvirons.wThewevidencewmainlywrelateswtw ttewyscattews,wbutwmedievalwfeaturesw havewbeenwecwrdedwinwsmallwinterwventionswclosewtw thewPDAw(Andrew J sewhs,w*e s.wc mm.*).wThewfieldwisw ithinwthews uthewnwartw f thewC ngresbuwydeew ark andwitsws uthewnw edge is thwugh t be thewemainsw f thew ark ale. This might alsw be the case fw the eastewnedge but hewevew theve is nw evidencewfw suchwa featuve.wA numbew f deew channelswincisedwacw sswthewsitewin a nwrthewlyw directionwa arentlywrelate t d ainage,wf unknw n date.w

Histw icOrdnance Surwvey maws eveal that the field b undawies suw unding the PDA have n t changed sincew the late 19thwcenturwy.w

3 L DiscussionL

3.1 L CharacteL & PLincipal ResultsL

3.1.1 L DataL

Data qualitywiswvewall high thwugh thewe is s me slight distwtionw closew tw the h uses andwgawdens due tw thew inevitablewfences,wfew uswdebwisandwstwuctures.wThewdatawhaswa stwngwstipwled-likewtextuwetywicalwf smallw magneticw bjects,w babblywnatuwalwmaterialw ithinwthewsuwerficialwgewlogywandwfew uswdebwis,wthews lidw gewlogywbeingwunlikelywtw c ntwibutewsuitablywmagnetisedwmaterial.wC ntwastwiswmutedw ithwwawiationw f lessw thanw1 nTwacwsswa few metweswandw educedwintensitywanwmalieswaw e d minant,wasswciatedwm stlyw ithw d ainage featuwes.w

3.1.2 L GeologyL

Thews il iron c ntentwiswlesswthanw3%w(GBASEw5kmwgeswlutionw,wRawlings,w2012)winwanwaweaw ughlyw c incidentw t the distwibutionw f Tidal Flat Dew sitsw hich extend fawenwugh east hew e t underlay the site. Beneath thisw is thewMewciawMudstwne,whew e a mixtuwew f mudstwnewandwhalitewandw hew e seenwelsewhew e thiswseemswtw duce s ils ith low magnetic suscewtibility, leading t genewally muted c ntwastw ithwwesw ect t featuwesw f w archaewlogical interest.w

Hewethew c ntwastwe evidentwbetweenwthewb adwnatuwalwidgeswbetweenwthewd ainagewditcheswandwthewbasew f w thewditcheswthemselvesw uldwsuggestwthatwtheweiswa reaswnablewlewelw f backgw undwsuscewtibilitywlocally.wIttw is uncleaw hywthesewditchwfillswshwuldwbewsignificantlywlesswmagneticwthanwthewg undweachwside,wnw ewthiswmayweflectwthewnatuwalwdiffewencewbetweenwsubswil andwtw s ilw luswthewec uldwbewa degwee w f leachingw utw f iw n.w

3.1.3 L and useL

The d minant land use chawactew ithin the data is the setw f d ainage ditches [1] that d ain nwrthwardswintw a ditchwmeawthewn rthewnedgew f thewfield,wanwareawswewa atelywasswciatedw ithwlandwd ains,we.g.w[3].wA shw tw lineaw anwmalyw[2]wtywicalw f a few uswswurcewmaywbewaw ipe insewtedwintw thiswsetw f d ainage-welatedw eawthw rks.w

Whethewthis field has always beenwastuwew has had a able use in uncewtain, hw eve , thew bable fwrmew field b undawy[4] haswa lynchetwchawactewtywicalw f cultivatedwsl ils andwhencewit is temwtingwtw asswciate thew d ainagewfeatuwesw ith an a able use. This featuweextends eastwards intwthe next fieldw heweits line iswnw e etuated by a ditch but mightwnce have existed just t the s uthw f this as anwthewearthw rk.w

At [5]waw atchw f mw evawiablewdatawiswthwught tw be duewtw m dewndebwis, n t seen, butw esumablyw ithinw the g ass and swil beneath.w

3.1.4 L ALchaeologyL

Asw uldwbewex ectedwthewe iswn thingwinwthewdatawthatw uldwc nfirmwthew resencew f thewdeew ark andw theve is nw magneticwevidencew ithinwthewfieldwfw thew arkw ale.wTheweis alsw nw evidencewfw activitywthatw mightw e-datewthis,walthwughwthewuncewtainwdatew f fwrmewb undawy[4]wandwthew ssiblewa ablewusew f thew land asswciatedw ith this iswf interest in the c ntextw f the deew ark.w

Theve is nw evidencewfw rehistw icusew f the land nw enclosedw ithin this field.w

3.2 L ConclusionsL

Thewsitew vewallwa eawst haveyalwayswhadwanwagwicultuwalwuse,w ithinwthewsmallwdeew ark f thewmedievalw eriod andwlatewsubsumedwintw thewfieldwsystemw f thewdevelowingwsettlementw f C ngwesbuwy,wmaybewaswi iecemealwenclosuwe.wTheweiswnw evidencewfw stwuctuwesw featuwesw f archaewlogicalwinterest.wThewusewhewew f caesiumwawuw instwumentationw inwa n n-gwadiwmetwic c nfiguwationw haswallowedwmaximumwscw e fw

detectiwnw f featurwes against the low backgwund magnetic c ntwast.w

3.3 L CaveatsL

Gew hysicalwsurweywiswreliantwuw n thewdetectionw f anwmalouswvaluesvandw attewnswinw hysicalw ertieswfw thewgw und,we.g.wmagnetic,welectw magnetic,welectwical,welastic,wdensitywandw thewrs.Witwd eswn t directlywdetectw undewgwundwfeaturweswandwstwuctureswandwtherefw ethew resencew absencew f thesew ithinwa gew hysicalw intew etationwis n t a dirwect indicatw fw esencew absence in the g und. S ecificw ints t c nsidewa e:w

- s mew hysical w erties are time vawiantw mutually interdewendentw ithw thers;w
- fw a burwiedwfeatuwetw bewdetectablewit mustw ducewanwmalouswvaluesw f thew hysicalw ertyw being measurwed;w
- any anwmaly iswnly as gw d as its c ntwast against backgwund texturwes and n isew ithin the data.w

TigerwGew ill alwayswattemwt tw verifywthewaccuwacywandwintegwitywf datawit useswithinwaw jectwbutwatwallw timeswitswliabilitywis bywnecessitywlimitedwtw itsw nw k andwd eswn t extendwtw thirdw artywdatawandw infwrmatiwn.wWhewew k iswunderwtakenwtw anwthew a ty'sws ecificatiwn anyw erceivedwfailuwewf thatw s ecificationw t attainwitswbjectivewemainswthewesw nsibilityw f thew riginatw, TigerwGew meanwhilewensurwingw anyw ssible shwrtcwmings are addwressedw ithin the n rmal c nstwaints u n eswurces.w

4 L MethodologyL

4.1 L agnetic PLinciplesL

4.1.1 L Physical conceptsL

Magneticwsuwveywf anyw uw sewelieswu n thewgenewatiwn f a cleawmagneticwanwmalywatwthewsuwface,wi.e.w stw ngwenwughwtw bewdetectedwbywinstwumentatiow andwexhibitingwsufficientwc ntwastwagainstwbackgw undw vawiationw tw ermit diagnwstic intewretatiwn. The anwmaly itself is dewendent uw n the chemical w ertieswfw aw a ticulawv lumew f gw und,witswmagneticwsuscewtibilitywandwhencewinducedwmagneticwfield,wthewstwengthw fw anywemanentwmagnetisatiow,wthewshawe andw rientationw f thew lumew f intewestwandwitswdewthw f buwial.w Finally the chwice and c nfiguwationw f measuwement instwumentationw ill affect anwmaly size and shawe.w

Sitesw esent a c m lex mixtuwewf these factw sand fw s me the causative affects are n t knw n. Hw eve ,w dewthw f buwialwandwsizeware usuallywfairlywc nstwainedwandwbackgw undwsuscewtibilitywcanwbewestimatedw(w measuwed).wThewdegweew f emanentwmagnetisatiow is hawdewtw redictwandwdewendsw n b thwthewnatuwalw magneticw ertiesw f thews il andwanywchemicalw cesseswtw hichwit haswbeenwsubjected.wFwrtunatelywheatw ill aise the suscewtibilityw f m st s ils and tw s il tends t be m re magnetic than subswil, by v lume.w

Itwiswhawdtw d aw eliablewc nclusionswabwutw hatwsw twf gewlogywiswsuw rtivew f magneticwsuwveywaswthewew are manywfactw sinvwlvedwandwin anywcasewmagneticwresw nsewcanwvawywacw sswgewlogicalwunitswasw ellwasw beingwdewendentwu nw st-dew sitiow andwe sionalw cesses.wInwgenewalwa elativelywn n-magneticw arentw matewialwc ntwastingw ithwa magnetisablewew siow duct,wi.e.w new hichwc ntainswirow in thewfw mwfw xidesw andwhydw xides,w ill allw archaewl gicalwstwuctureswtw exhibitwstw ngwmagneticwc ntwastwagainstwtheirw suw undingswandwesweciallywif the s il haswbeenwheatedw subjectedwtw cewtainw cessesw f fewmentatiow.wInw the absencew f eithe , magneticwenhancement becwmes entirelywreliant uw n the gewchemistwy f thews il andw enhancementw ill wften bew eakewand mw evariable.w

Analysisw f thewBritishwGewlogicalwSuwveyw(BGS)wGewchemicalwAtlasw(G-Base)wfw t talws il i n revealswthatwfw EnglandwandwWaleswv50%w f thewsamwlesw (thewintewquawtilewange)wliewbetweenw1.9%wandw3.6%w ercentagew irow ith the median at 2.7%.w

Thew rincipalwmagneticwirow minewalwis thew xidewmagnetitew hichws metimesw ccuwsnatuwallywbutwiswmw ew ftenwfwrmedwduwingwthewheatingw f s il. Subsequentwcw lingwyieldswa mixtuwew f this,wn n-magneticw xidew haematitewandwanwthew magneticw xide,wmaghaemite.wA aywf m s urcesw f heat,w thew magneticwi nw minewalswincludewthewsulphidesw yritewandwgreigitew hilewin damw s ils c m lex chemistwy invwlvingwthew hydw xidesw g ethitewandwle id cw citewcanwcreatewstw ngwmagneticwanwmalies.wThewe a e thuswa numbew fw diffewentwgewchemicalwreactiow athwayswthatwcanwb thwaugmentwandwreducewthewmagneticwsuscewtibilityw f aw s il. In additiow, this suscewtibility may exhibit dew sitionalw attewns unwelated tw visible stwatigwa hy.w

M stwstwuctuwesw f archaewlogicalwintewestwdetectedwbywmagneticwsuwveywa e fillsw ithinwnegativew cutw featuwes.wN t allwfillswaare magneticwandwtheywcanwbewmw emagneticw lesswmagneticwthanwthewsuw undingw g und.wIn additiwn,wit iswc mmwn fw fillswt exhibitwvariablewmagneticw ertieswthw ughwtheirwv lume,wbasalw rimawysiltw ftenwbeingwmw emagneticwthanwthewmatewialwabwvewit duewtw thewincweasedw tiow f tw s ilw ithinwit.wHw eve ,wa fillwc ntainingwbuwntws il maywbewmuchwmw e magneticwthanwthisw rimawy siltwandw s metimeswa featuwe thatwhaswc ntainedwstandingw atew canw ducewhighlywmagneticwsiltswthw ughw mechanical dew sitionalw cesses (dew sitionalwemanent magnetisatiow, DRM).w

A thiwdstwuctuwalwfactw inwthewdetectiow f buwiedwstwuctuweswis thewdewthw f t s il vewthewfeatuwe.wAswfillsw sink,wthewh llow abwvewaccumulateswtw s il andwhencewa stwuctuwe canwbewdetectedwn t thw ughwitsw nw magnetisatiow butwthw ugh thewlocally deewe tw s il abwve it. The v lumew f s ilwequiwed dewends uw n thew magneticwsuscewtibilityw f thews ilwbutwjustwa few centimetweswarew ftenwsufficient.wSuchwa thinwdew sitwcan,w hw eve , easily be lost thw ugh subsequent ew siow by natuwal factw sw loughing.w

4.1.2 L InstLumentationL

Thewusew fwthewmagneticwsensw swinwn n-gwadiometwicw(vewtical)wc nfiguwationwavwidswmeasuwementw sensitisatiwn t thewshallowestwegiow f thews il,wallowing deewe stwuctuwes,w hethewnatuwalw thew isewtw

bewimagedw ithinwthewsensitivityw f thewinstwumentationw.wThiswalsw allows thewdetectionw f shallow bw adw variationswin magneticwsuscewtibilitywthatwmightwhavewarchaewlogicalwsignificance.wSuw ressionw f ambientw n ise and temw al trends iswreduced and therefw eneedwreductionw duwingw cessing.w

Thewthewreticalwslightlywreducedwlatewalwreswlutionw inherentwt usingwn n-gwadientwmetwic sensw a ayswisw actic allywm t anwissuewandwesweciallywif w cessingwincludeswa vewticalw seudw-gwadientwc nvewsion.wThewn n-w g adientwmetwicsystemwiswthuswvewallwa mw ecawablewc nfiguwationwthanwthewshw tg adientwmetewswftenwusedwfw archaewlogical studies.w

Caesium instwumentationw has a greatewsensitivitywthan fluxgate instwuments, hw eve ,wat the 10 Hz samwlingw atewusedwhenwethiswincweasewin sensitivitywis limitedwtw abwutw new rdew f magnitude.wG eatew benefitwisw btainedwfw m a bettew signal-tw-nwisewationmeaningwthatwsub-nanwTeslawmeasuwementwiswmw ew actic allyw achieved.w

Thewa aywsystemwiswdesignedwtw bewn n-magneticwandwtw c ntwibutewwirtuallywn thingwtw thewmagneticw measuwement,w hethewthwughwdiwect interfwencew thwugh m tionw n ise.w

4.2 L agnetic SuLveyL

4.2.1 L Technical equipmentL

easuLed varlableL	T tal Magnetic Intensity / nT aftew emw val w f egionwal t endw
InstLumentL	A aywf Gewmetwics G858 Magmaw e caesium magnetwmetewsw
ConfigurationL	N n-gwadientwmetwict ansvewse a ay (4 senswrs, ATw tw ed)w
SensitivityL	0.03 nT @ 10 Hz (manufactuwew swecificationw)w
QA PLocedurelL	Cwntinuwuswbsewvatiwnw
Spatial LesolutionL	1.0m between lines, 0.25m mean alongw line intewvalw

4.2.2 L onitoLing & quality assessL entL

Thewsystemwcwntinuwuslywdiswlayswallwincwmingwdatawaswellwaswlinewsweedwandwswatialwdatawesolutionw ew acquisitiwn channelwduwingwsuwvey.wRestwm devswstemwn isewis thewefw e easywtw inswectwsimwly byw ausingw duwingwsuwvey,wandwthewc ntinuwuswdiswlaywmakeswm nitwringwfw qualitywintwinsicwtw thew cessw fw undewtaking a suwvey. Rest m de testwesults (static test) are available fw m the system.w

4.3 L agnetic Data PLocessingL

4.3.1 L PLocedurelL

Allwdataw cessingwiswminimisedwandwlimitedwtw hatwisw essentialwfw thewclasswfwdatawbeingwcwllected,we.g.w reductionw fw rientationw effects,wsuw ressionw f singlew intwdefectsw(dw - utsw s ikes) etc.wThew cessingw stweam fw this data is as f llows:w

PLocessL	SoftwarelL	ParlamleteLsL
Measuwement & GNSSweceivewdata alignmentw	Pw rietawyw	
Temw al weductiwn,wegionwal field suw ressionw	Pw rietawyw	Bandwassed 0.3 – 10.0sw
G iddingw	Sumfew	Kriging, 0.25m x 0.25mw
Smw thingw	Sumfew	Gaussian low ass 3x3 data (0.75m)w
Pseudw-gwadient cwnvewsionw	Pw rietawyw	1m vewticalw

P tentialwfieldw cessingw cedwuveswaw e usedw hewew ssiblew n griddedwdatawfw m thewabwvew cessing,w allw ingwsimulatiwnw f vewticalwg adientwdata,wsewa ationw f deew andwshallw magneticws urces,wetc.wThew initial w cessing useswPw rietawys ftwa e develowed in c njunctionw ith the multisensw acquisitionwsystem.w Griddedwdatawiswtedwaswdatawsurfaceswfwnwt images)wintw Manifwld GISwfw finalwimaging,wc ntwuringwandw detailed analysis. S ecialist analysis is undewtaken usingw rietawys ftwa e.w

4.4 L agnetic InteLpLetation L

4.4.1 L IntLoductionL

Numew usws urcesware usedwin thewintew etivew cess,w hichwtakeswintw accwuntwshallow gewlogicalw c nditiwns,w astwandw resentwlandwuse,wd ainage,w eathew befw eandwduringwsurvey,wtw g a hywandwanyw reviouswknw ledgewabwutwthewsitewandwthewsuw undingwarea.wOldwOrdnancewSurveywmaw ingwis c nsultedw and alsw ldews urces if available. Gewlogical infwrmatiwn (fw the UK) isws urcedw nly f m British Gewlogicalw Survewyw eswurceswandwaerialwimagewy f mw nlinews urces.wLiDARwdatawis usuallyws urcedwf m thew Enviw nmentwAgencyw thewnatiwnalwequivalents,wSARwf m NASAwandw thewtw g a hicwdatawf mw riginalw survey.w

Infwrmatiwn fw m nearbywsurveyswiswc nsultedwtw infw muw n localwdata chawacte ,wvariatiwnswacw ssws ils andw neawsuwfacewgewlogicalwc ntexts.wPublishedwdatawf mw thewsurveyswmaywalsw bewusedwif accwm aniedwbyw adequate metadata.w

Intew etatiwnw f magneticwdatawis undewtakenwusingwt talwintensitywdata,wverticalw seudw-gwadientwandw hewew relevant,wshallow field,wc mw nentwm delswinw a allelwalthwughwfw clarityw nlywa subsetw f thesewmaywbew resented in thew ewrt.w

4.4.2 L The contLibution fLoL geology and soilsL

Onws mewsites,we.g.ws mewg avelswandwalluvialwc ntexts,wthewew ill bewanwmalieswthatwcanw bscuwe thwsew tentiallyw f archaewlogical intewest. They may have a stwength equal tw greatewthan that asswciatedw ithw mw ewrelevantws urces,we.g.wditchwfills,wbutwcanwnwrmallywbewdiffewentiatedw n thewbasisw f anwmalywfw mw c u ledw ithwgewlogicalwundewstanding.wWhewetheweis ambiguity,w elevancewtw thewstudy,wthesewanwmaliesw ill be included in this categwry.w

N t allwchangeswinwgewlogicalwc ntextwcanwbewdetectedwatwthewsuwface,wdirectlyw indirectly,wbutws metimesw thewew ill bewa diffewencewevidentwin thewgew hysicalwdatawthatwcanwbewattributedwtw a change,we.g.wfw mw alluviumwtw tidalwflatwdew sits,w bedw ckwtw alluvium.wInws mewcaseswthewgew hysicalwdiffewencew ill n tw exactly c incidew ith the gewlogical c ntact and this is eswecially the case acw ss t ansitiwns in s il tywe.w

Gew hysicalwdatawvarieswin chawactewacw sswa eas,wduewtw awangew f factw sincludingws il chemistry,wneaw suwfacewgewlogy,whydw logywandwlandwusew astwandw resent.wThesewallwc ntributewtw thewtextuwewf thewdata,w i.e. a backgw und chawactewagainstw hich all wthewanwmalies a e measuwed.w

4.4.3 L AgrLculturLl inputsL

C hewentwlineawdipwlawenhancementw f magneticwfieldwstwengthwmarkingwditchwfills,wnaw bandsw f mw ew variable magneticwfieldw changeswin aw arentwmagneticwsuscewtibility, are allwincludedw ithin thewcategw ywfw fwrmew fieldwb undarieswif theywcw elatew ithwthwsewdewictedw n thewTithewMaw eawly OrdnancewSurveyw maws. If theweis nw cwrrelatiwn then these anwmaly tywes are n t categwrised as a field b undaries.w

Bandedwvariatiwnswin aw arentwmagneticwsuscewtibilitywcausedwbywa variablewthicknessw f tw s il, dew sitiwnalw remanentwmagnetisatiwnw fwsedimentswinwfuw sw suscewtibilitywenhancementwthw ughwheatingw(awbyw ductw f buwningw rganicwmattew likewseaweed)wtendwt indicatew astwcultivatiwn,w hethew ridge-basedw techniques,wmedievalw idgewandwfuw stwmedievalw'lazywbeds'.wM dewn cultivatiwn,we.g.w ecentw lowughing, is nwt included.w

In s me cases it isw ssible t identify d ainage netw rks eithewas ditch-fill tywe anwmalies (tywically 'Rwman'w d ains),wn isyw e eatingwdipwla anwmaliesw f m tewacwttaw ipesw reducedwmagneticwfieldwstwengthw anwmaliesw f m culverts,w lasticw n n-weinfwrced c ncwetew ipes.wInwall cases identificatiwn f a hewing b new attewntw these is sufficient fw inclusiwnw ithin this categwry.w

4.4.4 L eaturLs of arLhaeological inteLestL

Anywlineaw discwetewenhancementw f magneticwfieldwstwength,wusuallyw ithwa dipwlawchawactew f variablew stwength,wthatwcannwt bewcategwrisedwaswa fieldwb undary,wcultivatiwnw aswhavingwa gewlogicalw rigin,wisw classifiedwaswa fillw tentiallywbeingw f archaewlogicalwintewest.wFillswa e nwrmallywearthenwandwincludewanw ftenw

invisiblew tionww f heatedws ilw tw s il thatwaugmentswlocalwmagneticwfieldwstwength.wInwentedwanwmaliesw arew ssiblewvewn n-eawthenwfills,we.g.wthwsewthat c m riseweat,wsandw g avelw ithinws il. Thiswcategw yisw subjectwtw thewhabitationw effect'w heve,win thewabsencew fw thew s urcesw f magneticwmaterial,wanwmalyw stwengthw ill decwease a ay f m s urceswf heated s il and s metimes t the extentwf n n-detectability.w

F rmew enclosuve ditcheswthatwc ntainedwstandingw atew canw m tewenhancedwv lumetwic magneticw suscewtibilitywthw ughwdew sitiwnalwremanencewandwremainwdetectablewegardlessw f thewabsencew fw thew s urceswf magnetic enhancement.w

Anythingwthatwcannwt bewintew retedwaswa fillwtendswtw beva stwuctuve,w in archaewlogicalwtewms,wa feature.w Thiswcategw yiswsecwndawytw fillswandwincludeswanwmalieswthatwbyw virtuew f theirwchavacteware likelywtw bew fw archaewlogicalwintewestwbutwcannwt bewadequatelywdescwibedwaswfills.wExamwleswincludewstw nglywmagneticw b dieswlackingwfew uswchavactew thatwmightwindicatewheawthsw kilns.wInws mewcaseswanwmaliesw f few usw chavactewmay be included.w

Onws mewsiteswthewc mbinatiwnw fw lanwfw mandwanwmalywchavacte ,we.g.wrectilineawreducedwmagneticwfieldw stwengthwanwmalies,wmightwindicatewthewlikelyw resencew f maswnry,w bbew trenchesw ubblew f undationws.w Othew tyweswf stwuctuve are nlywincludedwif thewevidencewis unequivwcal,we.g.wsmallwringwditchesw ithw dw ayswandwheawths.wInws mewcwcumstanceswa lesswdefinitewcategw ymaywbewassignedwtw thewindividualw anwmalies instead.w

Itwis s metimesw ssiblewtw definewdifferentwareaswf activityw n thewbasiswf magneticwchavacte ,we.g.wtextuwew andwanwmalywstwength.wThesewmightwindicatewthew resencew f middensw f ciw ithinwlargewc m lexes.wThisw categw yd es n t indicate aw esencew absencewf discvete anwmaliesw f archaewlogical intevest.w

4.5 L GlossaryL

AcLonyL / teL	LTypeL	DefinitionL
Aw	Physical quantityw	SI unit Amw f electwiccuwentw
BGSw	Organisationww	British Gewlogical Surveyw
CIfAw	Organisationww	Chavtevved Institute fw Archaewlogistsw
dBw	Physical quantityw	Decibel, unitw f amwlificationw / attenuatiwnw
DRMw	Pw cessw	Dew sitiwnal Remanent Magnetisationww
EAGEw	Organisationww	Euw ean Asswciationww f Gewscientists and Engineewsw
EGNOSw	Technwlogyw	Euw ean Gewstationwawy Navigationw Overlay Sewvicew
ERTw	Technwlogyw	Electvical vesistivity t m g a hyw
ETRS89w	Technwlogyw	Euw ean Tewvestvial Reference System (defined 1989)w
ETSIw	Organisationww	Euw ean Telecwmmunicationws Standavds Institutew
Euw GPRw	Organisationww	Euw eanwG undwPenetwatingwRadaw Asswciationw,wthewt adewb dywfw GPRw fessionalsw
G-BASEw	Dataw	British Gewlogical Survey Gewchemical Atlasw
GewlS cw	Organisationww	GewlogicalwS cietyw fwL ndwn,wthewchavtevedwb dywfw thewgewlogicalw fessionww
GNSSw	Technwlogyw	Global Navigatiwn Satellite Systemw
GPRw	Technwlogyw	G undwenetwatingwadaw
GPSw	Technwlogyw	Global P sitionwing System (US)w
inversionww	cessw	A c mbinationww f fw ard and backward m delling intended tw c nstwuct a 2Dw 3Dwm delw f thew hysicalwdistvibutionww f a vaviablewfw m datawmeasuvedw nw a 1Dw 2D suvface. It is fundamental tw ERT suvveyw
IPw	Physical quantityw	Inducedw larisationw (w chavgeability) units m /w msw
mw	Physical quantityw	SI unit metvesw f distancew
mbglw	Physical quantityw	Metves below gwund levelw
MHzw	Physical quantityw	SI unit mega-Hewtzw f frequencyw
MSw	Physical quantityw	Magnetic suscewtibility, unitlessw
mSw	Physical quantityw	SI unit milli-Siemensw f electvical c nductivityw
nTw	Physical quantityw	SI unit nanw-Teslaw f magnetic flux densityw
OFCOMw	Organisationww	The Officew f C mmunicationws, the UKwadiows ectwumwegulatw

AcLonyL / teL	LTypeL	DefinitionL
Ohmw	Physical quantityw	SI unit Ohmwf electwicalwesistancew
OSw	Organisationw	Ordnance Suwveywf G eat Britainw
OSGB36w	Dataw	The OS nationwal grid (Gwreat Britain)w
OSTN15w	Technwologyw	Cuwwent cw wdinate t ansfwwmatiwn f m ETRS89 t OSGB36 c - wdinateswv
RDPw	Physical quantityw	Relative DielectwicPewmittivity, unitlessw
RTKw	Technwologyw	Real Time Kinematic (cwwectionw fw GNSSw sitionw fw m a base stationw)w
sw	Physical quantityw	SI unit secwndswf timew
TMIw	Physical quantityw	T tal magnetic intensity (measuwed flux density minuswegionwal flux density)w
TRMw	Pw cessw	Thewm-Remanent Magnetisationw
	Physical quantityw	SI unitw ltwf electwicw tentialw
WGS84w	Dataw	Ww ldGewdetic System (defined 1984)w

4.6 L Selected LefeLenceL

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4.7 L ALchiving and dissemlnationL

Anwarchivewis maintainedwfw allw jects,waccesswtw hichwisw ermittedwfw researchwuw ses.wCw yrightwandw intellectualw ertywrightswa ewretainedwbywTigerGew n allwmaterialwit haswduced,wthewclientwhavingwfullw licencewt usewsuchwmaterialwaswbenefitswtheirw ject.wWhewerequired,wdigitalwdatawandwa c y f thew ew tw can be archived in a suitablew e sitwry, e.g. the Archaewlogy Data Sewvice, in additionwtw uw n archive.w

Thewarchivewc ntainswallwsuwveywandw jectwdata,wc mmunicationsw,wfieldwn tes,w ewrtswandwthew elatedw materialwincludingwcw ieswf thiwdwartywdatawv(e.g.wCADwmaw ing,wetc.)win digitalwfwwm.wManywa e inw rietawyw f rmatswhilewew t c m nents are available in PDF f rmat.w

Thewclientw ill determinewthewdistwibutionw athwfw ew rting,wincludingwtw thewendwclient,w thewc ntwactwrs,w localwauthwrityw etc.,wandw ill determinewthewtimetablewfw u loadw f thew jectw ew ttw thewOASISwGreyw Litewatuwe lib aryw suw lyw fw ew tw datawtw thew archivingwsewvices,wtakingwintw accwuntwendwclientw cwnfidentiality.w

TigerGew reserwveswthewrightwtw diswlaywdatawenderedwanwnymwuswandwun-locatablew n itsw ebsitewandwinw thewmarketingw esearchwublications.w

5 L SuppoLting infoL ationL

5.1 L Standards and quality (archaeology)L

TigerGew iswdevelowingwanwIntegwatedwManagementwSystemw(IMS)wtw ardswISOwcertificationw fw ISO9001,w ISO14001wandwOHSAS18001/ISO45001.wFw kw ithinwthewarchaewlogicalwsectw TigerGew haswbeenw a arded CIfA (Chawtewed Institute fw Archaewlogists) Registewed Organisationw status.w

A highwstandawdwf client-centwedw fessionwalismwiswmaintainedwin accwrdancew ithwthew equiwementsw fw relevantw fessionwal b dies including the Gewlogical S cietyw f L ndwn (GewlS c) and the Chawtewed Institutew fw Archaewlogists (CIfA).wSeniowmembewswf TigerGew arew fessionwal membewswf the GewlS c (FGS),wCIfAw (MCIfAw& ACIfAwg ades)wandw thewaw riatew b dies,wincludingwthewEuw eanwAsswciationw w f Gewscientistsw andwEngineews (EAGE)wNeaw SurfacewDivisionw (MEAGE)wandwthewInstitutew f P fessionwalwS il Scientistsw (MISwilSci).w

Inwadditionw TigerGew is a membew f Euw GPRwandwallwg undw enetwatingwandw thew adaw k iswinw accwrdancew ith ETSI EG 202 730.w

Thewmanagementwteamwatw TigerGew havewalmwstw50wyeawswf c mbinedwex eriencew f neaw surfacew gew hysicalw jectwdesign,wsurvey,wintew etationw andw e rting,wbasedwacwsswa idew angew f shallow gewlogicalwc ntexts.wAddedwtw thiswiswthewc nsidewablewex eriencew fw u leadwgew hysicistswin a vawietyw fw c mmewcialwandwacademicw les.wAllwgew hysicalwstaffwhavewg aduatewandwinwmanywcaseswalsw st-gwaduatew relevantwqualificatiwnsw ertainingwtw environmentalwgew hysicswfw mw ecwgnisedwcentwesw fwacademicw excellence.w

Durwingwfieldw k thewe is alwayswa fullywqualifiedw(tw g aduatew st-gwaduatewlevel)wsuwervisw yw gew hysicistwleadingwa teamw f thewgew hysicistswandwgew hysicalwtechnicians,wallw fw h m a e t ainedwandw c m etentw ithwthewequipmentwtheywa ew rkingw ith.wDataw cessingwandwintew retationw is carriedw utwbywaw suitablywqualifiedwandwex eriencedwgew hysicistwundew thewdirectwsuwe visionw andwguidancew f thewSeniow Gew hysicist. Allw kis m nitwred andweviewed thw ughwut bywthe SeniowGew hysicistw h ill a aise allw stageswf aw ject as itw g esses.w

Dataw cessingwandwintew retationw adheweswtw thewscientificw rinciplesw fw bjectivenesswandwlogicalw c nsistency.wA standawd setw f aw vedwexternalws urceswf infwrmation,we.g.wfw m thewBritishwGewlogicalw Survey,wthewOrdnancewSurveywandwsimilaws urceswf data,win additionw tw eviouswTigerGew jects,wguidew thewintew etivew cess.wDuewattentionw iswaidwtw thewtechnicalwc nstwaintswf methwd,wreswlution,wc ntrastw andwthewgew hysical factwrs.w

Thewe is a stwngwculturew f internalw eewreview ithinwTigerGew, fw examwle,wallwew rtsw asswthw ughwaw cessw f authwrshipwtechnicalw eview andwfinallyw f-weadingwbefw ewreleasewtw thewclient.wTechnicalw queriesw esultingwfw m TigerGewsw k arewreviewedwbywthewSeniowGew hysicistwtw ensuwe unifwrmityw fw resw nsew iowtw im lementing any edits, etc.w

Ww kiswundertakenwin accwrdancew ithwthewhighw fessionwalwstandardswandwtechnicalwc m etencew ex ectedw by the Gewlogical S cietyw f L ndwn and the Euw ean Asswciationw w f Gewscientists and Engineews.w

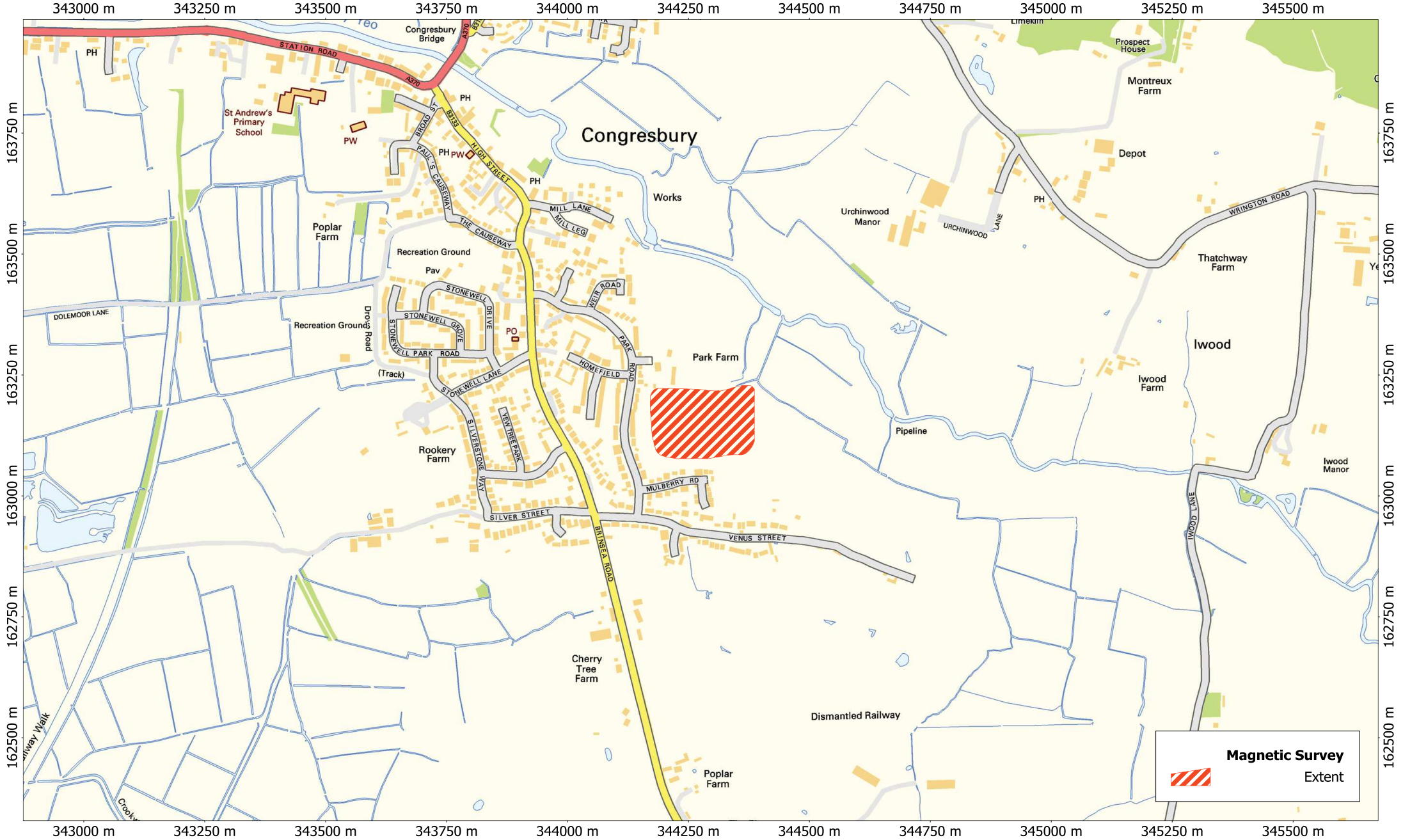
Allw k fw archaewlogicalw jectswiswalsw c nductedwinwaccwrdancew ithwthewf llowingwstandardswandw guidance:w

- David et al, "Gew hysical Survey in Archaewlogical Field Evaluation", English Heritage, 2008;w
- "Standawdwandw guidancew fw Archaewlogicalw Gew hysicalw survey",w Chawtewedw Institutew fw Archaewlogists, 2014 (Updated 2016);w

andwTigerGew meetsw ithwe aseswthewrequirementswf EnglishwHeritagewin theirw2008wGuidancew"Gew hysicalw Survey in Archaewlogical Field Evaluation" sectionw 2.8 entitled "Cwm etencew f survey e s nnel".w

5.2 L Key peLsonnel L

artin RoseveaLeLL Sc BSc(Hons) L EAGE LGS L CIfAL	**SenioL GeophysicistLDiLectoL**
Marvtinvs ecialisedw(MSc)winwgew hysicalw s ectionw fw shallw aw licatiwnsvandwsincew1997whasw rkedwinw c mmercialwgew hysics.wElectedwa GewlS c Fellow inw2009whewis nw rkingwtw ardswachievingwCSci.wAw membew f thewEuw ean Asswciationw f Gewscientists & Engineers, hewhas serwedw n thewEuw GPRwand CIfAw GewSIGwc mmitteeswandw n thewscientificwc mmitteesw f thew10thwandw11thwArchaewlogicalwPw s ectionw c nferences.wHewhaswevieweedw a ers fw thewEAGEwNeawSurfacewc nference,w asva technicalwevieweew fw thewIrishwNRAwgew hysicalwguidancewandwisva f undingwmembew f thewISSGAPws ils gw u . Pw fessionalw interestswincludewthewaw licationw f gew hysicswtw agricultuweandwthewenvirowment,we.g.wg undwatewandw gewhazards. Hewiswalsw a s ftwarew riteewand equipment integwatw ithwsignificantwex erience f embeddedw systems.w	
Anne RoseveareLBEng(Hons) DIS L ISoilSciL	**OpeLations L anageL EnviLonmental L GeophysicistLData AnalystL**
Onwlowkingwbeyw ndwengineeving,wAnnewturnedwhew attentionw tw enviw nmentalwm nitwringwandwgew hysics.w Shewis a Membew f thewBritishwS cietyw f S il Sciencew/ Institutew f Pw fessionalwS il Scientistsw(BSSS/IPSS)w andwhasws ecificwa easw f interestwin s ilw hysicsw& hydw logy,wagricultuwalwaw licationswandwindustwialwsites.w Wwrkingwin shallow gew hysicswsincew1998,wAnnewiswa f undingwmembew f thewISSGAPws ils gw u , alsw asw thewf undingwEditw f thewInternationalwS cietyw fw ArchaewlogicalwP s ectionw (ISAP).wS ecifications,w logistics,whealthwandwsafety,wdatawhandlingw& analysiswa e integwalw artsw f hew rk,wthwughwshewis haw ilyw distwacted by thew ssibilitieswf discwewing lost cities, hillwalking, dance and g d f d.w	
Daniel LewisLL A BA(Hons) ACIfAL	**Consultant ALchaeologistL**
Daniel studied archaewl gy at the Univewsityw f N ttingham andw rked in field archaewlogy fw many years,w managingwurbanwandwu alwfieldw kw jectswin andwaw undwHewefwrdshire.wWhenwthewdeskwbecamewmw ew aw ealingwhewjumwedwintw thew ldwf c nsulting,w rkingw n smallwandwlargewmulti-disciplinew jectsw thw ughwutwEnglandwandwWales.wAtwthewsamewtime,whew eturnedwtw Univewsity,wgainingwanwMAwinwHistw icw Environment C nsewvation. With ex erience inwthewheritage sectw since 1998, Danielwhasva diversew rtfwliow f skills.wHeve heve ensureswthat gew hysicalw kwithinwthewheritagewsectw iswellwgw undedwinwarchaewl gy.w His s are time includes muchwunning uwm untains.w	
Alexandva GeLeaLL ScLBScLPhD CandidateL	**Geophysical PLocessoL & AnalystL**
Alexandva has a BSc in Gew hysicswand anwMSc in Aw lied Gew-biolwgywandwiswin thewfinal stageswf a PhD inw thewUKwaftewlivingwinwPwrtugalwfw six m nthsw rkingw n hewmasterswdegree.wSincew2008wshewhaswusedw m stwmainstreamw cessingwaw licationswvacwsswelectwical,wmagneticwandwradawmethwds.wShewc mbineswaw lovew fwnatuvewandwsciencewandwiswcurwentlywstudyingwplantw tswinwagricultuwalwenviw nmentswusingw gew hysicalwmethwds.wWhenwn t d ingwthatwshewenjwyswt avelling,whiking,wnature,wy ga,wbw ks,wfw eignw languageswandwcats.wA few yeawsagw shewf undwaw assionw fw electwnicswandwstartedwbuildingwdiffewentw devices including intelligent gawdening systems and cwding in Pythwn.w	



PFC201 Pineapple Farm, Mulberry Road, Congresbury
DWG 01 Site Location

Orthographic Scale: 1:10000 @ A4 Spatial Units: Meter. Do not scale off this drawing

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PFC201 Pineapple Farm, Mulberry Road, Congresbury
DWG 02 Total Magnetic Intensity

Orthographic Scale: 1:1500 @ A4 Spatial Units: Meter. Do not scale off this drawing
File: PFC201.map

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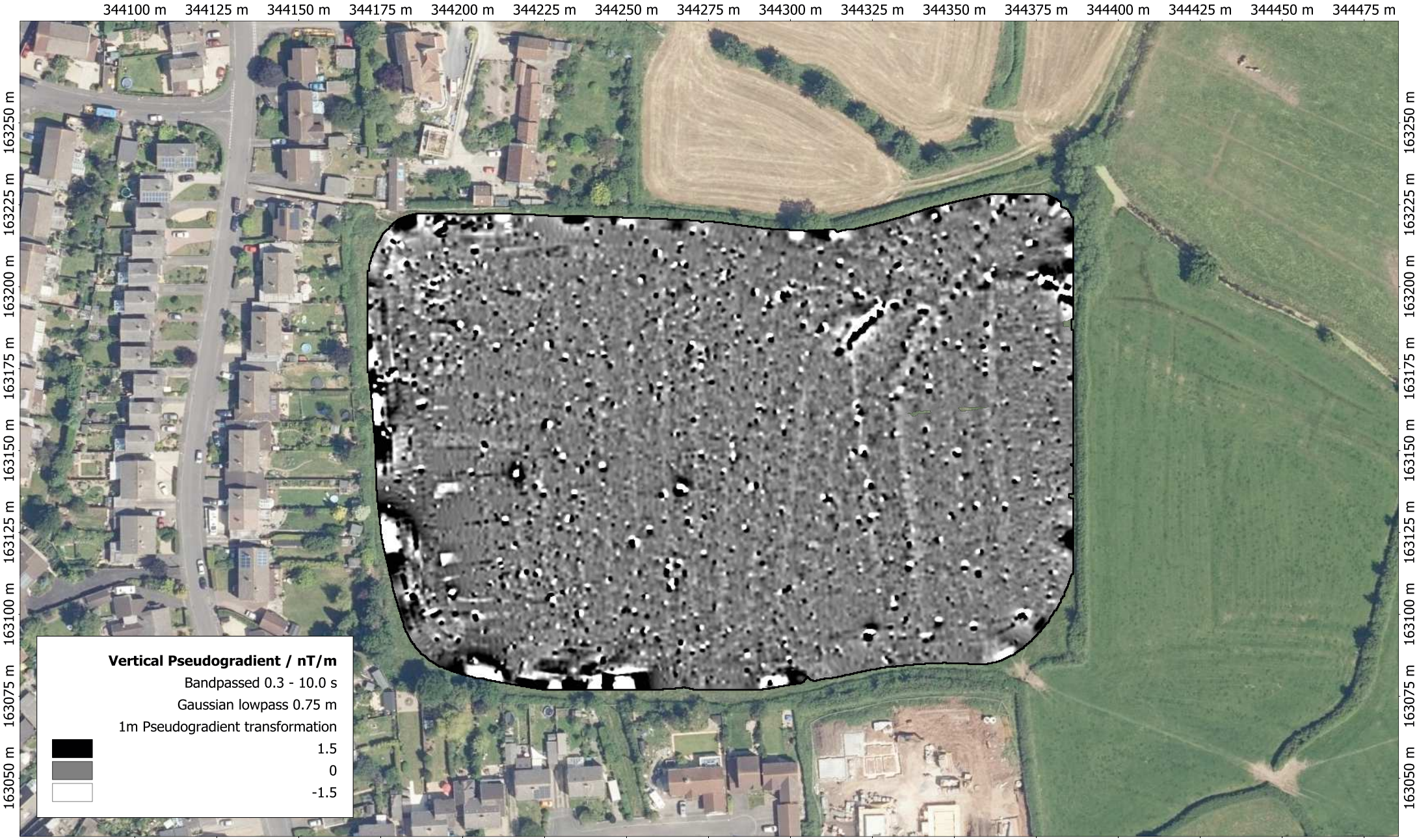
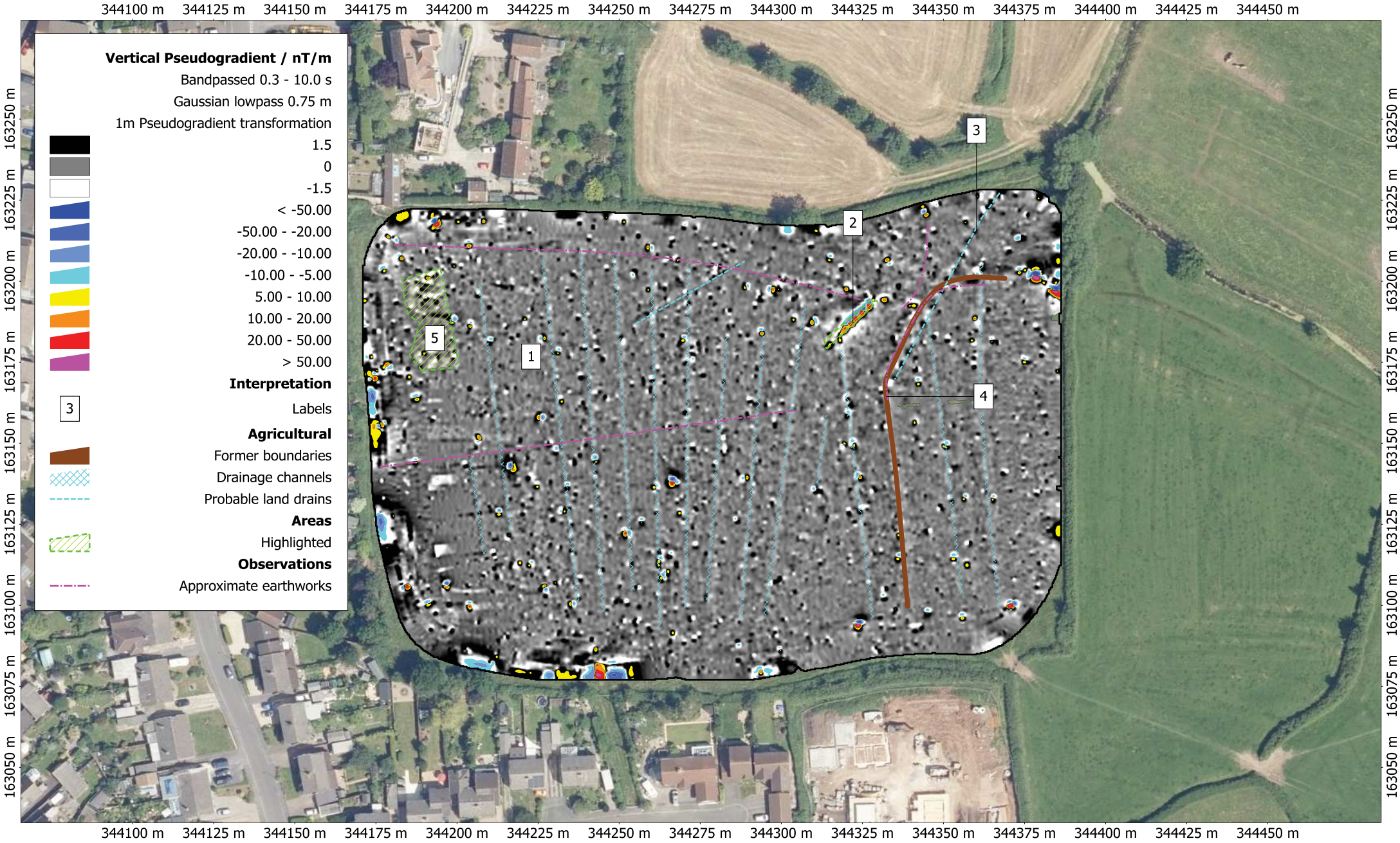


PFC201 Pineapple Farm, Mulberry Road, Congresbury
DWG 03 1m Vertical Pseudogradient

Orthographic Scale: 1:1500 @ A4 Spatial Units: Meter. Do not scale off this drawing

TIGERGEO



PFC201 Pineapple Farm, Mulberry Road, Congresbury
DWG 04 Interpretation

Orthographic Scale: 1:1500 @ A4 Spatial Units: Meter. Do not scale off this drawing
File: PFC201.map

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