

# *Archaeology Wales*

## **Haverfordwest Welsh Medium School, Withybush, Haverfordwest**

### Geophysical Survey



By Philip Poucher

Report No: 1492

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# *Archaeology Wales*

## **Haverfordwest Welsh Medium School, Withybush, Haverfordwest**

### **Geophysical Survey**

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By Philip Poucher

Report No. 1492

**August 2016**

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## Non-Technical Summary

*This report results from work carried out by Archaeology Wales Ltd (AW) for Pembrokeshire County Council (PCC). It draws on the results of a geophysical survey of land on the site of the proposed Haverfordwest Welsh Medium School in Withybush, Haverfordwest, Pembrokeshire, SM 962 174. The work was proposed by Dyfed Archaeological Trust Heritage Management in their capacity as archaeological advisors to PCC, following recommendations made in response to a previous desk based assessment of the site (Poucher 2016), which highlighted archaeological potential, specifically related to Bronze Age activity and 2nd World War temporary accommodation units.*

*The geophysical survey was undertaken with the aim of determining the nature and extent of any buried archaeological features within the proposed development area. The work was undertaken using a Bartington Grad601 gradiometer.*

*Although signals produced by the underlying rock formations had a potential to mask archaeological features, the survey is not thought likely to have missed evidence of significant archaeological remains. With the possible exception of feature 9, tentatively evidence for a large post or a pit, the geophysical survey did not identify any features that can be interpreted as prehistoric in origin. Two standing stone locations were identified, although the absence of associated features means that the interpretation of these (Poucher 2016) as either a cattle rubbing stones or earlier standing stones remains.*

*A number of linear features were identified, particularly in the southern half of the eastern field, which may relate to activities associated with the WWII accommodation units. The exception was a linear feature in the northwest, which corresponds to a field boundary identified on historic mapping (tithe, 1<sup>st</sup>/2<sup>nd</sup> ed OS).*

*The work was carried out to the Standard and Guidance set out by the Chartered Institute for Archaeologists for archaeological geophysical survey and completed in accordance with Geophysical Survey in Archaeological Field Evaluation (English Heritage 2008). The archiving of the geophysical data will follow guidance laid down in Geophysical Data in Archaeology: A Guide to Good Practice 2nd edition (Schmidt 2002).*

# **1 Introduction**

## **1.1 Location and scope of work**

- 1.1.1 In August 2016, Archaeology Wales Ltd (AW) carried out a geophysical survey on the site of the proposed Haverfordwest Welsh Medium School in Withybush, Haverfordwest, Pembrokeshire, centred at NGR SM 962 174 (Figs 1 & 2). The work was carried out at the request of Pembrokeshire County Council (henceforth PCC), to inform planning decisions relating to the proposed development, following a recommendation from Dyfed Archaeological Trust Heritage Management (DAT-HM), in their capacity as archaeological advisors to PCC. The proposed development is focused in the north-eastern part of the development site (Fig 3), although significant landscaping is likely elsewhere.
- 1.1.2 A previous Desk-based Assessment (Poucher 2016) was undertaken by AW to informing the planning decision. This report concluded that the proposed development will have no impact on the setting of any designated or recorded heritage assets. However, it highlighted a potential for the survival of buried remains within the development area, specifically related to Bronze Age activity and 2nd World War temporary accommodation units.
- 1.1.3 Subsequently, a Written Scheme of Investigations (WSI) was prepared by AW at the request of Pembrokeshire County Council. It provided information on the methodology to be employed by AW during a geophysical survey of the site. The WSI was submitted to, and approved by, DAT-HM on behalf of the planning authority prior to the survey being undertaken.
- 1.1.4 The work was managed by Phil Poucher, Project Manager, and the site work was undertaken by Andy Shobbrook and Tom Jamison. The AW Project Number is 2436 and the Site Code HWMS/16/GEO.

## **1.2 Site Description and Geology**

- 1.2.1 The development site is located on relatively level land that rises slightly to the south, from 32m OD to 37m OD. The site encompasses four fields bounded by straight-sided hedgerows. Withybush Road forms the

northeast boundary, beyond which lies the Withybush Industrial Estate and Haverfordwest Airport. To the south the site is bounded by the A40 (T), beyond which lies residential development of Prendergast on the northern side of Haverfordwest. To the north and east lies further agricultural land and the village of Crundale.

- 1.2.2 Haverfordwest lies on the Western Cleddau (circa 600m to the west of the proposed development site) in central Pembrokeshire. The site is located on the northern fringes of development around Haverfordwest; the town centre is some 1.7km to the south, on the western side of the river.
- 1.2.3 The underlying bedrock of the proposed development area comprises mudstones of the Slade and Redhill Formation, partly overlain to the east by sand and gravel glacio-fluvial deposits (BGS, 2016). The superficial geology of the development area are described as sands and gravels of the Devensian Glaciofluvial Deposits (British Geological Survey 2015).

### **1.3 Archaeological and Historical Background**

The following information is summarised from the AW Desk-based Assessment (Poucher 2016):

#### **1.3.1 *Previous Archaeological Investigations***

The site of the proposed development has not been subject to any previous known archaeological investigations. The only recorded archaeological investigation within a 1km search area around the site relates to Cadw grant-aided threat related assessment of 20th century military sites, specifically on airfields, which was undertaken in 2011-12 (Pyper & Page, 2012). The study on Haverfordwest Airfield identified numerous military buildings, some of which are located within the development site. These buildings are not specifically described within the report, but it does provide a brief history of the airfield and the historical context for these structures.

#### **1.3.2 *Prehistoric Period***

There is currently no recorded evidence of Palaeolithic or Mesolithic activity either within the 1km search area, or indeed the wider landscape.

Evidence of Neolithic activity can be seen in the pit circle at Cottessmore to the northwest and the Stone Park chambered tomb just to the north of Haverfordwest Airfield, but there are no recorded Neolithic sites within the 1km search area around the site.

The appearance of several monuments and earthworks in the wider area, dated to the Bronze Age, may suggest population levels were increasing during this period. Evidence of settlement sites are rare, although these have been recorded at Priory Farm Cave near Pembroke, and the former Esso refinery site further down the Cleddau. Within the surrounding landscape, burnt mounds and funerary monuments in the form of burial mounds have been recorded, such as the Leachpool Barrow to the northeast, and a possible round barrow 750m to the north of the proposed scheme (PRN 4539). Within the development site area lies a possible standing stone (PRN 13075) that may be Bronze Age in origin. A further possible standing stone is also recorded 550m to the south (PRN 13066). Such features are somewhat enigmatic, and may have been used as funerary and ritual markers during the Bronze Age. Few such sites have been excavated, but some of those that have, have recorded Bronze Age finds and occasional burials in association with the stones. Stone were however erected for a variety of reasons in many different periods, sometimes as boundary markers, sometimes as rubbing stones for cattle.

There are no recorded Iron Age sites within the 1km search area. However Crowhill Rath, an Iron Age promontory fort overlooking the Cleddau valley lies just over 1km to the west. In the wider landscape, Iron Age monuments are largely dominated by defensive sites (determined by local topography unlike that of the development site). However, undefended sites are also evident, such as the late Iron Age settlement recorded at nearby Shoals Hook, to the east of the proposed scheme.

#### 1.3.3 *Roman (AD 43 – c. AD 410) & Early Medieval (c. AD 410 – AD 1086)*

There are no recorded Roman sites within the 1km search area, however, the picture of activity in this area during the Roman period is a changing one. The recent discovery of a Roman Fort at Wiston (Meek & Wilson, 2013) to the east indicates an early military presence in the area. A Roman road runs westwards from this fort, but the line is soon lost and it is not clear where this route would have crossed the Cartlett Brook to the east of the development site. The undefended Iron Age enclosure at Shoals Hook also continued in occupation into the Roman period, and Roman era finds have been recorded within Haverfordwest to the south.

No early medieval sites are recorded within the 1km search area. A medieval chapel and cemetery at the Iron Age hillfort of Rudbaxton Rath (2.3km to the northeast) may have their origins in the early medieval period.

#### 1.3.4 *Medieval (1086 – 1536)*

The town of Haverfordwest was founded in the early twelfth century and by the fourteenth century had become one of the largest towns in Wales, with a thriving port that traded with England and the continent. In 1349 it was hit by the Black Death, which decimated the population, killing nearly half the inhabitants. There is no indication that medieval settlement extended into the proposed development area, indeed there are no recorded medieval sites within the 1km search area. It is possible, however, that the site lay within the agricultural hinterland surrounding the town. There is some suggestion that the field layout in this area may have medieval origins (Landmap description), although evidence of a potential medieval open-field system is better evidenced to the northeast around Crundale.

#### 1.3.5 *Post-Medieval (1536 – 1899) & Modern (1900 – present day) See Fig 4*

In the post-medieval period Haverfordwest attracted wealthy local landowners who built townhouses to complement their country estates. In the late 18th and early 19th century the town underwent an extensive programme of rebuilding and many of the Regency style buildings that still exist today date from that period. Industry grew up in the early nineteenth century and there were several mills and an iron forge in the town in the early 1800s, while new quays were added to the port to allow an expansion in trade. This, however, soon went into decline as new ports were established lower down the Cleddau, while the arrival of the railway in 1853 further reduced Haverfordwest as a centre for trade, commerce and industry. The settlement at Crundale appears largely to have been established in the later post-medieval period, and the recorded archaeological sites in the area include many 18th to 19th century houses (PRNs 17774, 24366 & 60000), farmsteads (PRN 44898 & NPRN 30233) and the early Victorian country house at Glanafon (PRN 20962/60001). By this period this area was firmly agricultural in character, and some of the field boundaries defining the site area may have been established during this period. Some small-scale industrial activity is also indicated by the presence of several small quarries recorded in the 19th century (PRNs 44908, 44909, 46911 & 46913).

The area around the proposed development site is likely to have changed little into the 20th century, until the advent of the Second World War. RAF Haverfordwest Airfield was established to the north of the development site. Construction initially began in 1941 but the airfield did not become



fully operational until 1943, when it then became home to No.3 (Coastal) Operations Training Unit, training in reconnaissance skills. In 1944 they were replaced by No.4 Refresher Flying Unit, delivering aircraft throughout the country. This unit was disbanded later the same year and replaced at the start of 1945 by No.8 Operations Training Unit who continued training in general reconnaissance. An RAF Aircrew Holding Unit was the last to be based at the airfield before it closed in November 1945. The airfield was reopened as a civilian airfield in 1952, and is still operational. The RAF airfield consisted of three runways, with bomb stores to the north, technical and training areas to the east, and accommodation to the south. One such accommodation block was established within the proposed development area, identified on air ministry plans as Site 11 (PRN 102563). This consisted of separate barrack blocks and latrines for airmen, sergeants and officers, along with a picket post or watch hut. Aerial photography from 2009 show that the picket post (PRN 28541) and sergeant's latrine (PRN 28542) survive as standing structures, with concrete footings of two of the sergeants and officers barracks surviving.

## **2 Aims and Objectives**

### **2.1 Geophysical Survey**

2.1.1 The geophysical survey was undertaken in order to:

- Locate any features of likely archaeological significance within the area of proposed development
- Provide sub-surface data to inform any future on-site works

## **3 Methodology**

### **3.1 Geophysical Survey**

3.1.1 A Bartington Grad601 gradiometer was used to undertake the survey. Previous research has shown that fired, or cut and backfilled archaeological features such as kilns and hearths, ditches and pits often have an anomalously higher magnetic susceptibility than the surrounding subsoil due to burning and biological processes. Differences in magnetic susceptibility within the subsoil and archaeological features can be detected as changing magnetic flux by an instrument such as a

gradiometer. Data from this may be mapped at closely spaced regular intervals, to produce an image that may be interpreted to locate buried archaeological features (Clark, 1997) (Aspinall *et al*, 2011).

- 3.1.2 Detailed survey was carried out in grids of 30m x 30m along parallel traverses spaced at 1m intervals, recording data points spaced at 0.25m intervals to a maximum instrument sensitivity of 0.1nT in accordance with English Heritage Guidelines. The survey mode was set to bi-directional (traverses walked alternately south-north/north-south). At regular intervals the data was downloaded in the field onto a laptop computer for storage and assessment. The location of the survey area was then surveyed using a Topcon GTS 725 total station.

### **3.2 Data Processing and Presentation**

- 3.2.1 Following the completion of the detailed survey, processing and analysis took place using the Geoplot software package. After downloading, the results were plotted in 2D. The most typical method of visualising the data is as a greyscale image. In a greyscale, each data point is represented as a shade of grey, from black to white at either extreme of the data range. A number of standard operations (including destriping and despiking) were carried out to process the data. The mean level of each traverse of data was reduced to zero and all grids matched so that there were no differences between background levels. The data was then analysed using a variety of parameters and styles and the most useful of these were saved as \*JPEG images and displayed using Adobe Illustrator software. The results of the survey were then overlaid onto a digital map of the study area. This was then used to produce interpretation figures.
- 3.2.2 All works were undertaken in accordance with the ClfA's Standards and Guidance for a geophysical survey (2014) and current Health and Safety legislation.

## **4 Geophysical Survey Results**

### **4.1 Ground Conditions**

- 4.1.1 The survey was undertaken after a period of persistent rain, although standing water was not present. The weather during the survey was largely dry with occasional showers and gusty wind.

## **4.2 Survey Location and Summary**

- 4.2.1 The development site comprises four fields, all laid to pasture and bounded by hedgerows. Following discussions with DAT-HM, only the three northern fields were surveyed (see Fig 4 and Appendix 1). Of these, only the eastern half of the westernmost field was included.
- 4.2.2 The western and central fields are subdivided by a low hedgerow that gives way to a ditch, with wetter ground to the north. The ground falls away slightly to the northwest. The main school building will sit within this area.
- 4.2.3 These fields are bounded to the west by the slightly elevated Withybush Road and a driveway to a private residence. Beyond this lies the Withybush trading estate. To the north lies agricultural land and a further industrial estate.
- 4.2.4 The eastern field is relatively level, but with a gradual slope towards the north; a small scrub-covered stream runs along the northern boundary. To the north lies further agricultural land, with another field bounding the field to the east, with mature trees along the hedgerow, beyond which lies the B4329 and further agricultural land.
- 4.2.5 The standing stone (PRN 13075) is located within this field, slightly to the east of the grid reference given in the HER, located at SM 96226 17457. It consists of an upright stone with a slight lean to the north-east. It stands 1.1m tall, the east and west faces are 0.9m wide at the base with a slightly rounded top. There is little evidence from the standing remains alone to closely date this feature. It is of a size, and in a location, that is compatible with a later cattle rubbing stone, but similarly the angular nature of the stone suggests it represents an earlier standing stone.

## **4.3 Results of the Survey (Figs 5 & 6)**

### **4.3.1 *General***

Background noise towards the northern end of the western field, and across the northern and eastern sides of the central field comes from the underlying geology.

The red circles represent standing stone locations (the NW one long since removed). There are no clear features in association with these locations, although there is a possible faint curvilinear feature to the NE of the

standing stone in the eastern field. This is very faint and could be geological.

#### 4.3.2 *The western field*

The data has been compressed and then clipped so that the range is -1.2 to 1.4 nT.

9: A strong, discrete, magnetically positive result.

8: Part of a strong, magnetically positive, linear feature.

7: A very strong, discrete, magnetically positive result.

##### *Interpretation:*

9 – A possible cut feature, for example a large pit. The feature is isolated and therefore hard to interpret further.

8 – Part of a field boundary identified on historic mapping (tithe, 1st/2nd ed OS).

7 – Part of a series of wire-fence enclosed borehole points.

#### 4.3.3 *The central field*

The data has been compressed and then clipped so that the range is -1.6 to 1.8 nT.

8: Part of a strong, magnetically positive, linear feature.

7: Two, very strong, discrete, magnetically positive results.

##### *Interpretation:*

8 – Part of a field boundary identified on historic mapping (tithe, 1st/2nd ed OS).

7 – Part of a series of wire-fence enclosed borehole points.

#### 4.3.4 *The eastern field*

The data has been compressed and then clipped so that the range is -1.4 to 1.8 nT. The grid was based on the southern edge of the field and was roughly 10m in from the boundary to avoid the gate and a metal feeder.

1 & 2 - Linear features with strong magnetically negative results.

3 - Very high dipolar result, possible ferrous object on the edge of the surveyed area.

4 - Slight linear feature.

5 - Strong magnetically positive linear feature. Appears to respect the field boundary, therefore presumably post-dating it.

6 - Strong magnetically positive linear feature.

7: A very strong, discrete, magnetically positive result.

*Interpretation:*

1 & 2 – The uniformity and alignment of these signals tentatively suggests they might represent modern features, possibly underground wiring associated with the WWII camp.

3 – The strength of this features indicates a likely modern date. It could also be associated with the WWII camp.

4 - Uncertain interpretation, but appears to respect the boundaries of the field, so may therefore be an internal boundary (not on historic mapping).

5 - It could also be modern, associated with the WWII camp. Although the fact that the readings change to the northeast suggests it may have been a field boundary, along with no.6. The readings would suggest a greater depth of soil in this area, masking the underlying geology more.

6 - Field boundary identified on historic mapping (tithe, 1<sup>st</sup>/2<sup>nd</sup> ed OS)

7 – Part of a series of wire-fence enclosed borehole points.

## **5 Interpretation and Discussion**

5.1.1 The complex geology of the immediate area is problematic, as underlying rocks have the potential to mask the presence of archaeological features. Strong geological interference is particularly evident in the central western part of the western field, the north and east of the central field, and the southern half of the eastern field. However, where more stable sub-strata has produced more regular survey results (for example, in the south-western part of the central field and the north-eastern part of the eastern field) no features were identified, which suggests that significant archaeological remains have not been missed.

5.1.2 With the possible exception of feature 9, tentatively interpreted as a pit or large post-pit, the geophysical survey did not identify any features of

possible prehistoric origin. The red circles represent standing stone locations (the NW one has been removed). However, with the exception of a very faint curvilinear signal to the NE of the standing stone in the eastern field, there are no clear features associated with these locations. Therefore, the interpretation of the standing stone (and by implication the other) presented in the Desk-based Assessment (Poucher 2016), as either a cattle rubbing stone or an earlier standing stone, remains.

- 5.1.3 A number of linear features were identified, particularly in the southern half of the eastern field, which may relate to activities associated with the WWII camp. The exception is feature 8, located in the northern parts of the central and western fields, which corresponds to a field boundary identified on historic mapping (tithe, 1<sup>st</sup>/2<sup>nd</sup> ed OS).

## **6 Acknowledgements**

- 6.1.1 Thanks are due to Richard Lawrence of Pembrokeshire County Council.

## **7 Bibliography and References**

- Aspinall, A, Gaffney, C & Schmidt, A. 2011, *Magnetometry for Archaeologists*. Altamira, London
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- Poucher, P. 2016, 'Haverfordwest Welsh Medium School, Withybush, Haverfordwest: Archaeological Desk-Based Assessment', AW Report 1478

### **Websites**

British Geological Society online map resource  
(<http://mapapps.bgs.ac.uk/geologyofbritain/home.html>)

# *Archaeology Wales*

## **Figures**



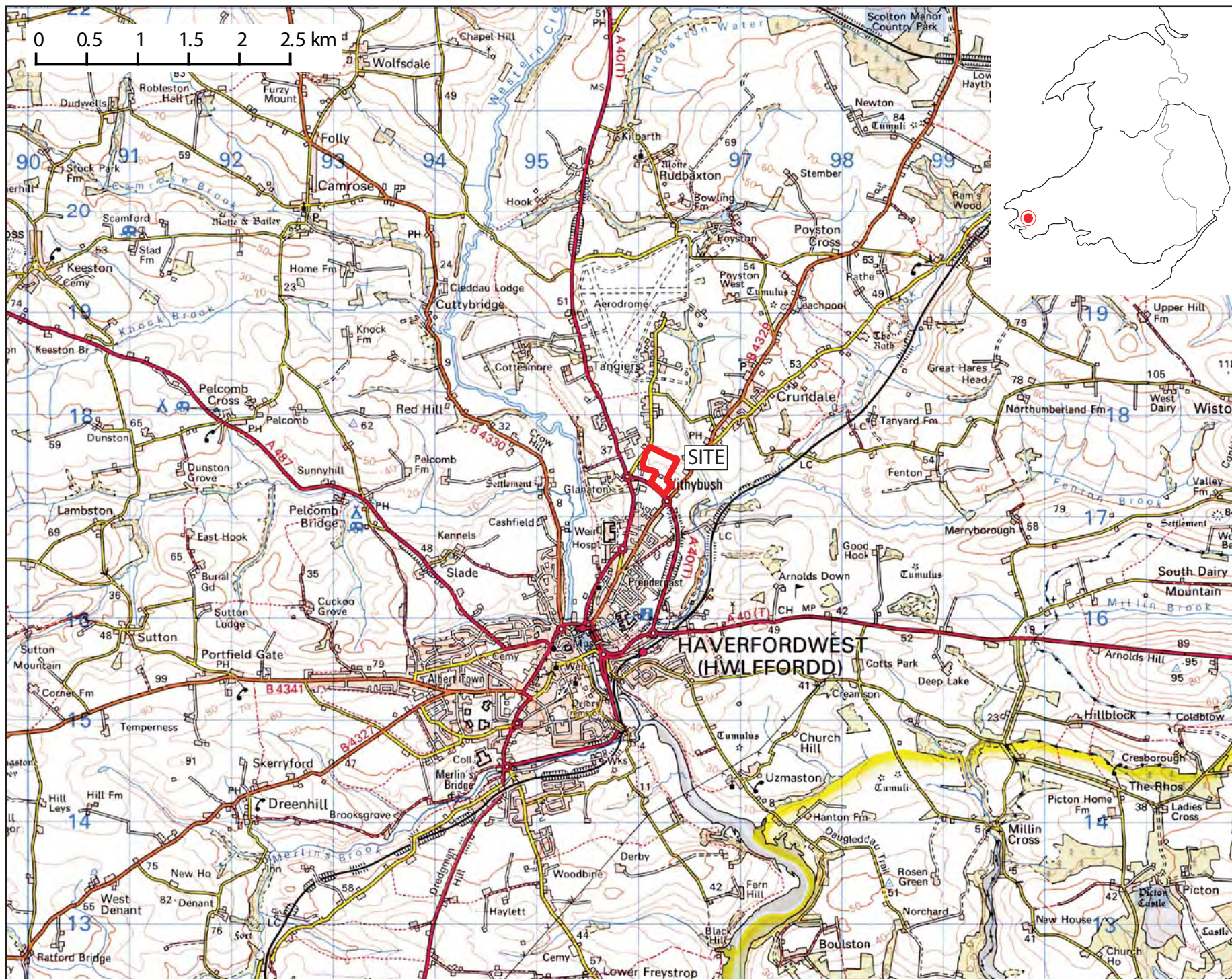


Figure 1: Location map,  
1:50,000 @ A4

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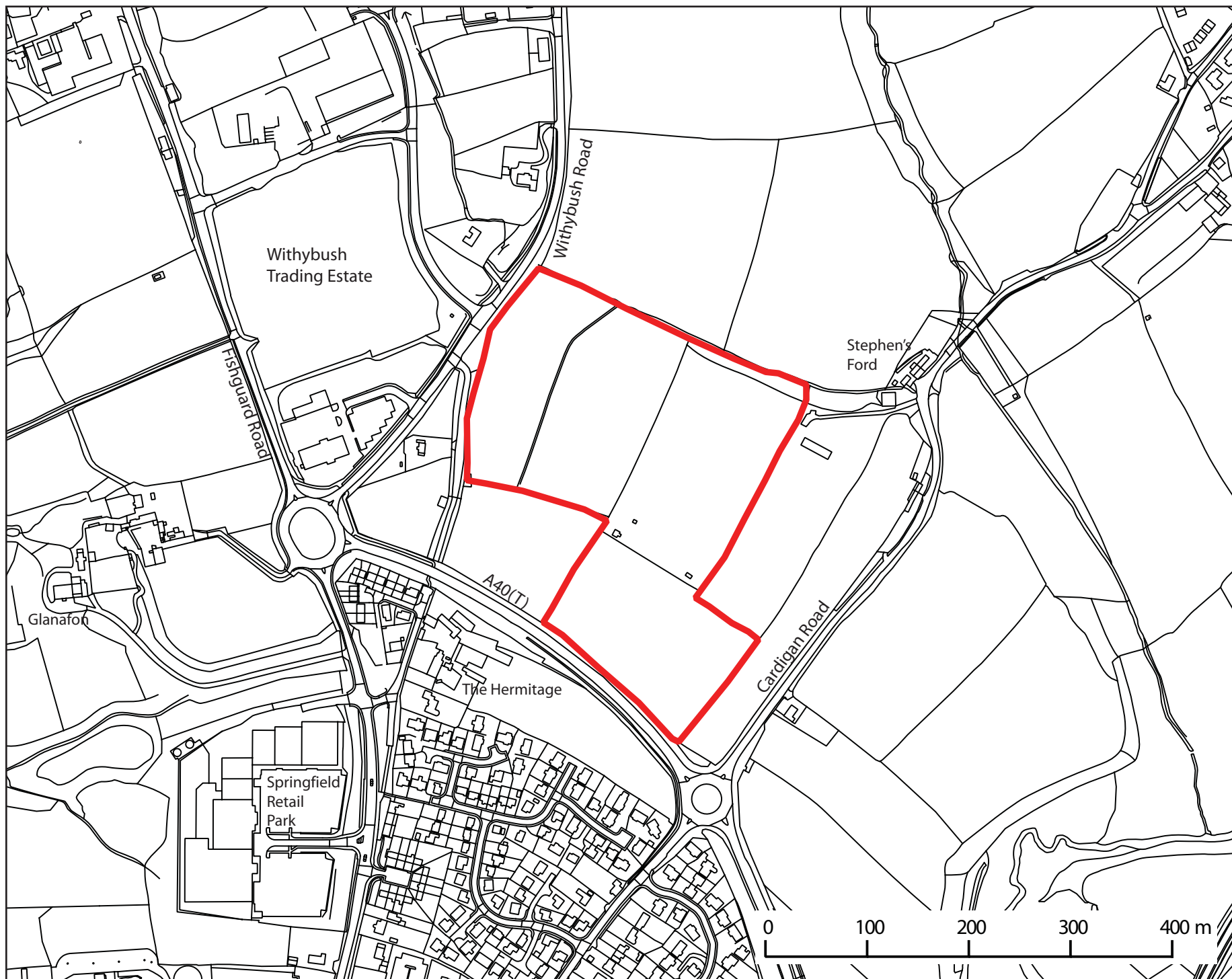
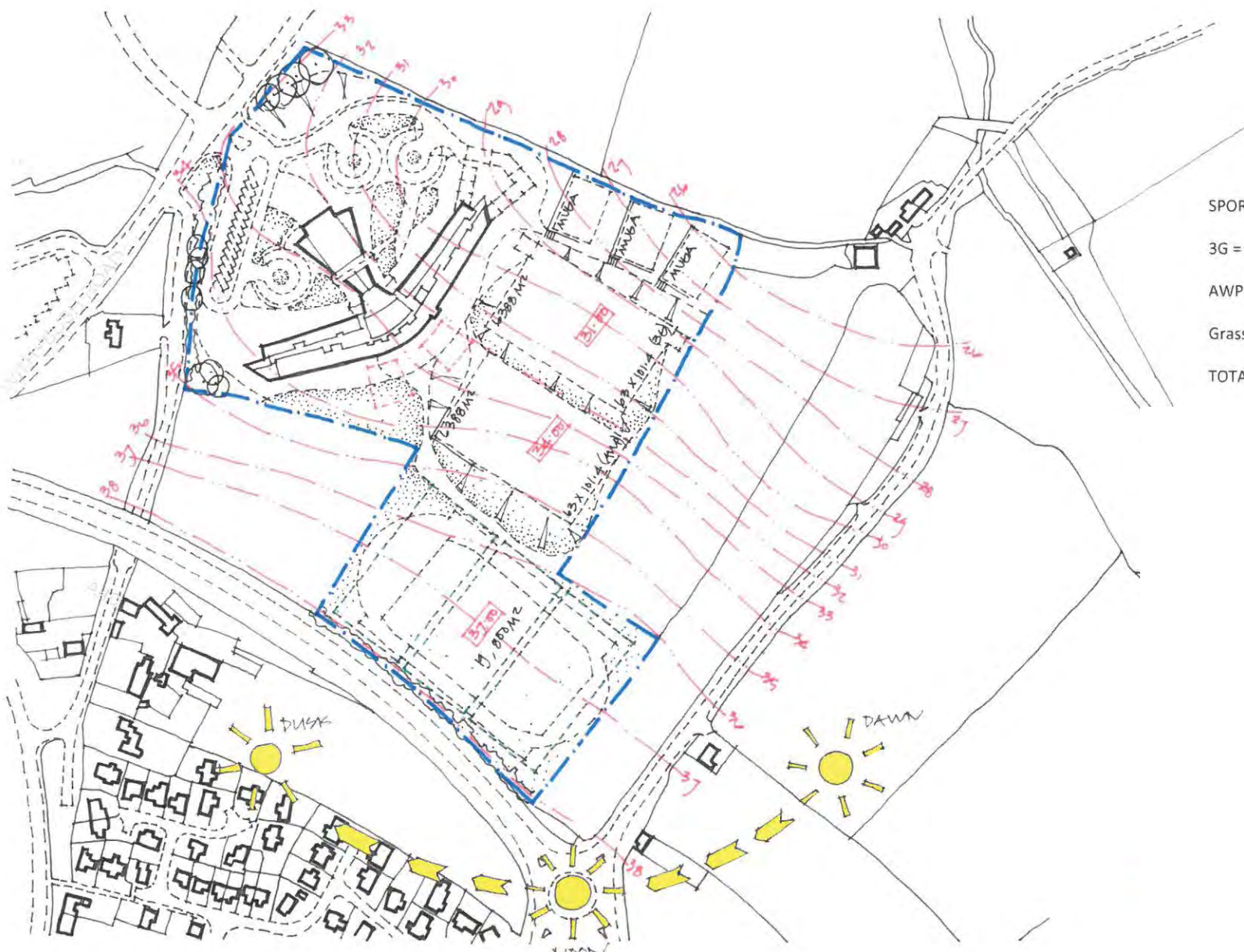


Figure 2: Site boundary plan,  
1:5000 @ A4

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# SKETCH SITE LAYOUT PLAN



## SPORTS PITCHES:

3G =  $6388 \times 2 = 12,776$

AWP =  $6388 \times 2 = 12,776$

Grass = 19,800

TOTAL: 45,352

Figure 3: Initial sketch plan of proposed development.  
Plan produced by  
Stride Treglown

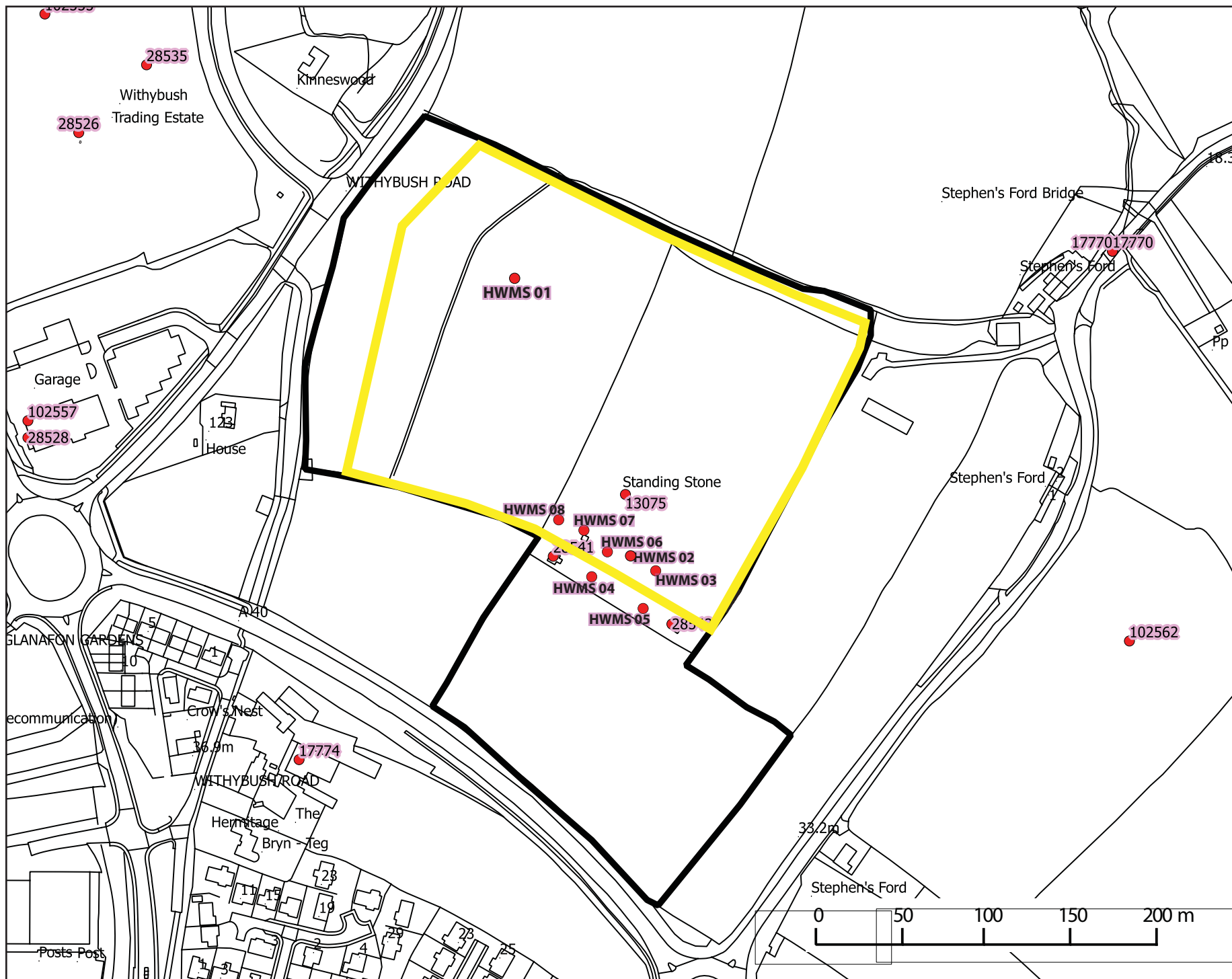


Figure 4: Area of proposed geophysical survey, outlined in yellow, overlaid on a plan of identified archaeological sites within the proposed development area. Sites labelled by references given in the desk based assessment.

1:3000 @ A4

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Figure 5:  
Geophysical  
survey results

1:2500 @ A4

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Figure 6:  
Geophysical  
survey interpretation

1:2500 @ A4

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# *Archaeology Wales*

## **Appendix I**

### **Written Scheme of Investigations**

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**Written Scheme of Investigation**  
**For a Geophysical Survey:**  
**Haverfordwest Welsh Medium School,**  
**Withybush, Haverfordwest**

**Prepared for:**  
**Pembrokeshire County Council**

Project No: 2436

27<sup>th</sup> July 2016

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## NON TECHNICAL SUMMARY

*This Written Scheme of Investigation (WSI) details the proposal for geophysical survey of land on the site of a proposed Haverfordwest Welsh Medium School in Withybush, Haverfordwest, Pembrokeshire. It has been prepared by Archaeology Wales Limited for Pembrokeshire County Council.*

### 1. Introduction

The proposed development comprises plans for the construction of a new Welsh Medium School on land near to the Withybush Industrial Estate in Haverfordwest, Pembrokeshire (henceforth – the site), centred on NGR SM 962 174 (Figure 1 and 2). The local planning authority is the Pembrokeshire County Council (henceforth – PCC).

The recommendations for a geophysical survey on the site have been proposed by Dyfed Archaeological Trust – Development Management (Henceforth – DAT-DM), in their capacity as archaeological advisors to PCC. These recommendations are stated in a letter to Pembrokeshire County Council, dated 18<sup>th</sup> July 2016. These recommendations are made in response to a desk based assessment of the site, which highlighted archaeological potential, specifically related to potential Bronze Age activity and 2<sup>nd</sup> World War temporary accommodation units. A suggested area of survey was drawn up in consultation with DAT-DM, largely comprising the three northern fields. However, should archaeological activity become apparent then it was also recommended that it may be necessary to extend the surveyed area into the remaining southernmost field.

This WSI has been prepared by Philip Poucher, Archaeology Wales Ltd (Henceforth - AW) at the request of Pembrokeshire County Council. It provides information on the methodology that will be employed by AW during a geophysical survey of the site. This WSI is to be approved by the DAT-DM, on behalf of the local planning authority, prior to the survey being undertaken.

All work will conform to the Standard and Guidance for Geophysical Survey (CIfA December 2014) and be undertaken by suitably qualified staff to the highest professional standards.

### 2 Site Description & Archaeological Background

The site as a whole covers an area of approximately 8.4 hectares of relatively level land, rising slightly to the south from 32m OD to 37m OD (Figure 2). The site is currently defined by four fields, defined by straight-sided hedgerow boundaries. The site is bounded by the Withybush Road to the northeast, beyond which lies the Withybush Industrial Estate and Haverfordwest Airport. To the south the site is bounded by the A40 (T) beyond which lies residential development of Prendergast on the northern side of Haverfordwest. To the north and east lies further agricultural land and the village of Crundale.

Haverfordwest lies on the Western Cleddau (which lies c.600m to the west of the proposed development site) in central Pembrokeshire. The site is located on the northern fringes of development around Haverfordwest, the town centre lies some 1.7km to the south, on the western side of the river.



The underlying bedrock of the proposed development area comprises mudstones of the Slade and Redhill Formation, partly overlain to the east by sand and gravel glacio-fluvial deposits (BGS 2016).

Development plans include the construction of the main school building, along with sports pitches, landscaping and associated infrastructure (Figure 3).

A desk based assessment has previously been undertaken by Archaeology Wales Ltd (Poucher 2016), which details the historical and archaeological background to the site. In summary, a number of specific archaeological sites have been identified within the proposed development area. These comprise a standing stone (PRN 13075) and the site of a second removed stone (HWMS 01). These features are potentially Bronze Age in origin, and highlight the potential for further, as yet unrecorded, prehistoric remains in their vicinity. Also included in this area are several structures that form a former accommodation area (PRN 102563) associated with the Second World War airfield to the north. Two buildings remains as standing structures, with the concrete footings of several other structures lying nearby and the site of more structures recorded on aerial photography.

### **3 Objectives**

The primary objective of the work will be locate and describe, by means of geophysical survey, archaeological features that may be present within the development area. The proposed archaeological work will attempt to elucidate the presence or absence of archaeological material that might be affected by the scheme, in particular its character, distribution, extent and relative significance.

A report will be produced that will provide information which is sufficiently detailed to allow informed planning decisions to be made that can safeguard the archaeological resource. The information could then be used to determine further archaeological investigation or appropriate mitigation strategies for any archaeological remains within the area to be implemented prior to or during the proposed development.

### **4 Methodology for geophysical survey**

Following discussions between the client (Pembrokeshire County Council) and DAT-DM, the area to be surveyed will include the northern fields, covering an area of approximately 5.25 hectares (see the attached plan, Figure 4). This includes both the area of greatest archaeological potential, as well as the area likely to be most affected by groundworks associated with the proposed development. The southern edge of this area, which contains some features associated with the Second World War accommodation blocks, is largely overgrown and unsuitable for surveying. However, should archaeological activity become apparent within the survey results that is likely to extend beyond these boundaries, then DAT-DM have recommended that the survey area should be extended into the final field to the south. Any requirement to extend the area of survey into this southern field will first be discussed and agreed with both PCC and DAT-DM.

The site will be located by GPS. All survey points will be located with a total station or similar survey equipment and plotted onto an O.S. base map.

The on-site survey will be undertaken in a single phase lasting approximately three days. This will be followed by report production.

The survey will be carried out using a Bartington Grad601 Magnetometer. Each survey area will be divided into 20m or 30m square grids along a common alignment.

Within each grid, parallel traverses 1m apart will be walked at rapid pace along the same orientation. Instrument readings will be logged at 0.25m intervals, with an average cycle of 4 using an ST1 internal sample trigger. Incomplete survey lines resulting from irregular area boundaries or obstacles will be completed using the "dummy log" key.

Further survey information will be completed on the relevant pro-forma sheet. All data will be downloaded in the field into a laptop computer. The location of the grid corners will be recorded using a total station or similar survey equipment so that results can be accurately placed onto an OS map.

A composite of each detailed survey area will be created and processed using the software package *Terrasurveyor v.3*. A variety of processing tools will be used to enhance any potential archaeology. The final results will be presented at an appropriate scale tied to the Ordnance Survey National Grid.

## 5 Monitoring

DAT-DM will be contacted approximately one week prior to the commencement of site works, and subsequently once the work is underway.

Any changes to this WSI that AW may wish to make after approval will be communicated to DAT-DM for approval on behalf of the Planning Authority.

DAT-DM will be given access to the site so that they can monitor the progress of the work, they will be kept regularly informed about developments, both during the site works and subsequently during the post-fieldwork programme.

## 6 Stage 4 - Archiving and Reporting

### ***Site archive***

An ordered and integrated project archive will be prepared in accordance with the National Monuments Record agreed structure and be deposited within an appropriate body upon completion of the work.

### ***Final reporting***

The client report will contain, as a minimum, the following elements:

- Concise non-technical summary of the results
- Detailed plans of the site and survey results
- Site illustrations, related to Ordnance Datum
- Written description
- Statement of local and regional context
- Conclusions as appropriate

- Bibliography
- A copy of the AW Specification

Copies of the report will be sent Pembrokeshire County Council, DAT-DM, and the regional Historic Environment Record. Digital copies will be provided in pdf format if required.

A summary report of the work will be submitted for publication to a national journal no later than one year after the completion of the work.

## 7 Resources and timetable

### Standards

The field evaluation will be undertaken by AW staff using current best practice.

AW is an CIfA Registered Archaeological Organisation and all work will be undertaken to the standards and guidelines of the CIfA.

### Staff

The project will be undertaken by suitably qualified AW staff, supervised by Andy Shobbrook. Overall management of the project will be undertaken by Philip Poucher.

### Equipment

The project will use a Bartington Grad601 set to standard specifications.

### Timetable of archaeological works

The work will be undertaken at the convenience of the client. No start date has yet been agreed. It is anticipated that the fieldwork element could take in the region of two days.

### Insurance

AW holds Public Liability Insurance through Aviva Insurance Ltd, with a £5,000,000 Limit of Indemnity (expires 05/12/16), Employers Liability Insurance through Aviva Insurance Ltd, with a £10,000,000 Limit of Indemnity (expires 05/12/16) and Professional Indemnity Insurance through Hiscox Insurance Company Ltd, with a £1,000,000 Limit of Indemnity (expires 05/12/16).

### Arbitration

In the event of any dispute arising out of this Agreement (including those considered as such by only one of the parties) either party may forthwith give to the other notice in writing of such a dispute or difference and the same shall be and is hereby referred **for decision in accordance with the Rules of the Chartered Institute of Arbitrators'** Arbitration scheme for the Institute for Archaeologists applying at the date of this Agreement.

### Health and safety

All members of staff will adhere to the requirements of the *Health & Safety at Work Act*, 1974, and the Health and Safety Policy Statement of AW.



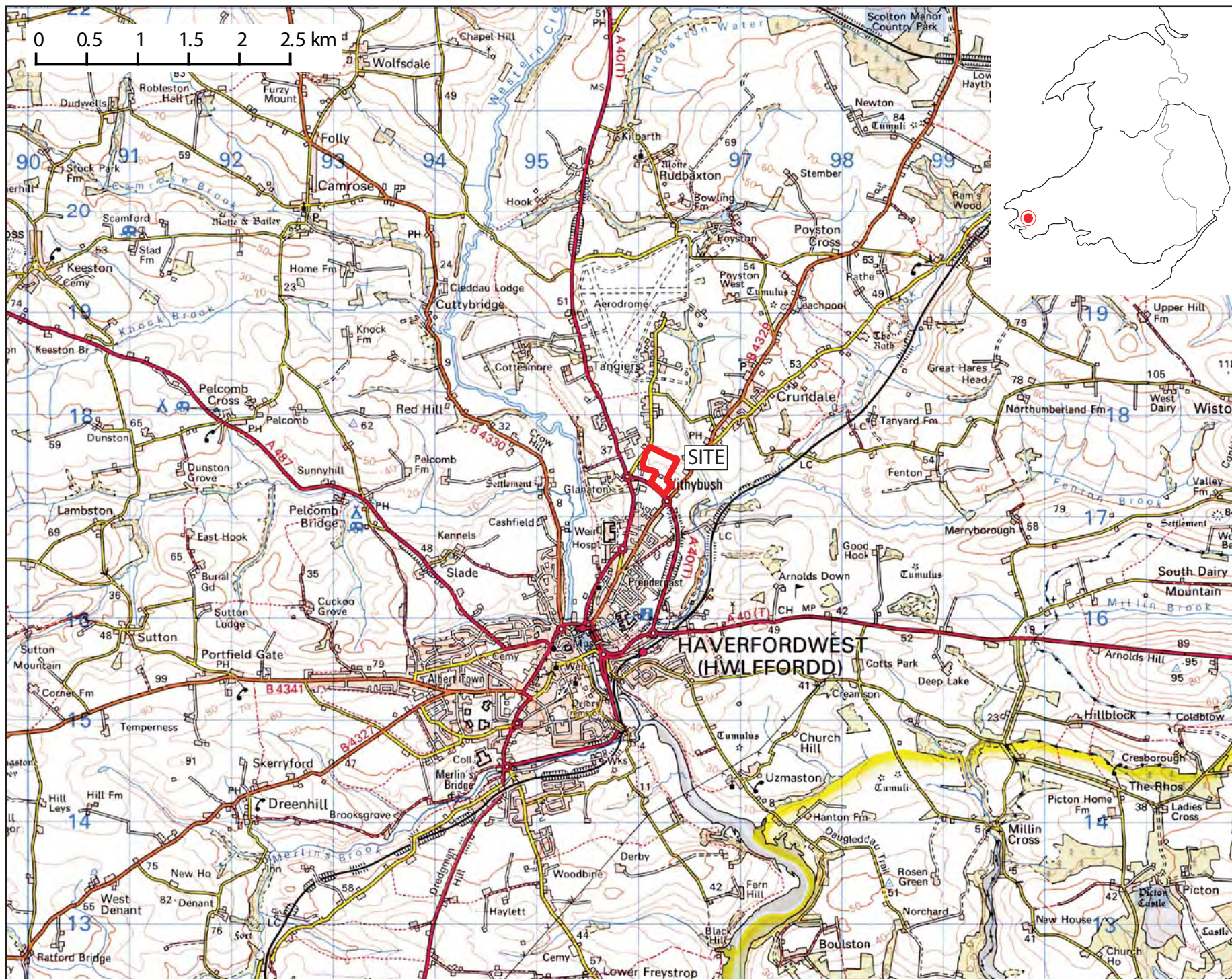


Figure 1: Location map,  
1:50,000 @ A4

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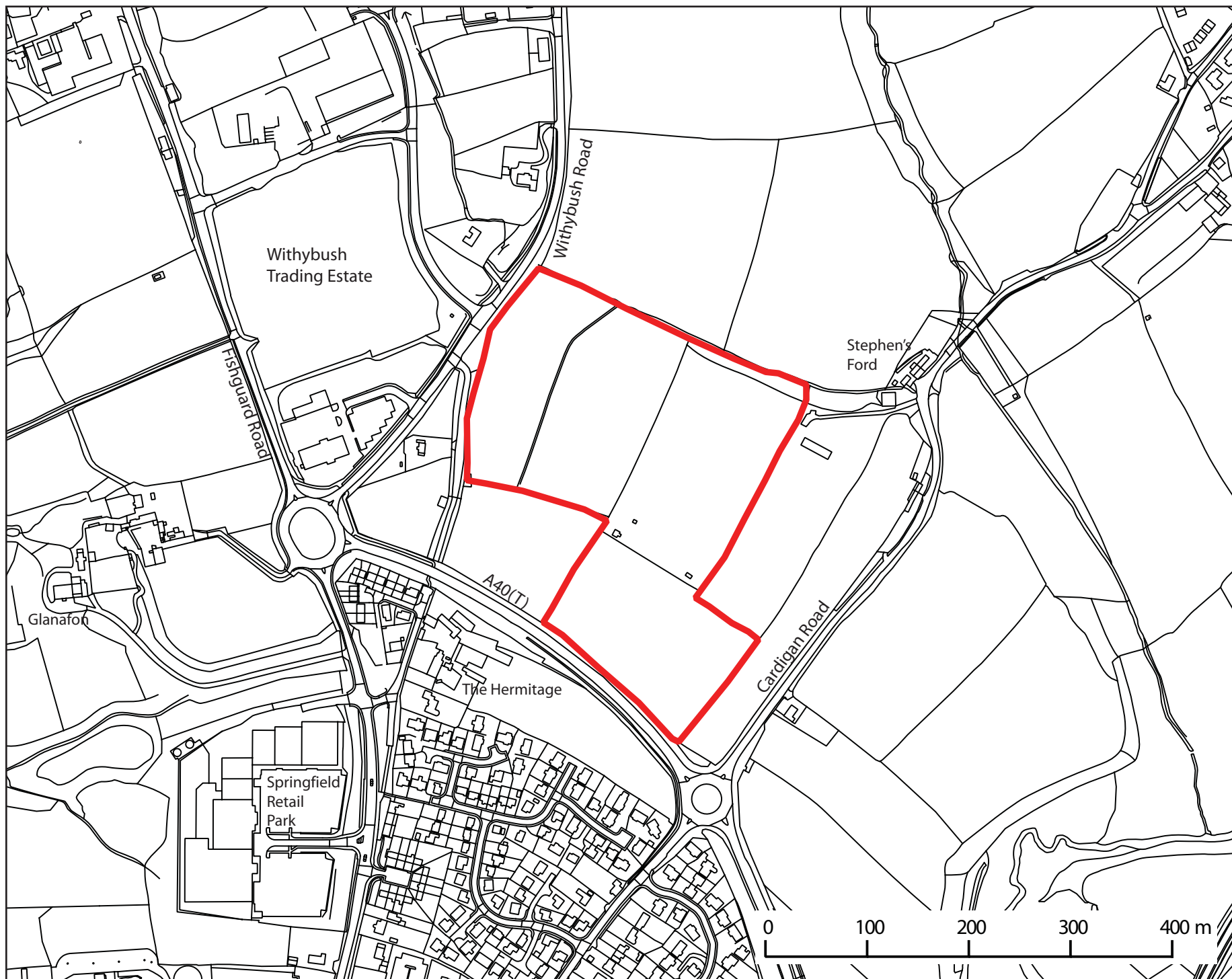
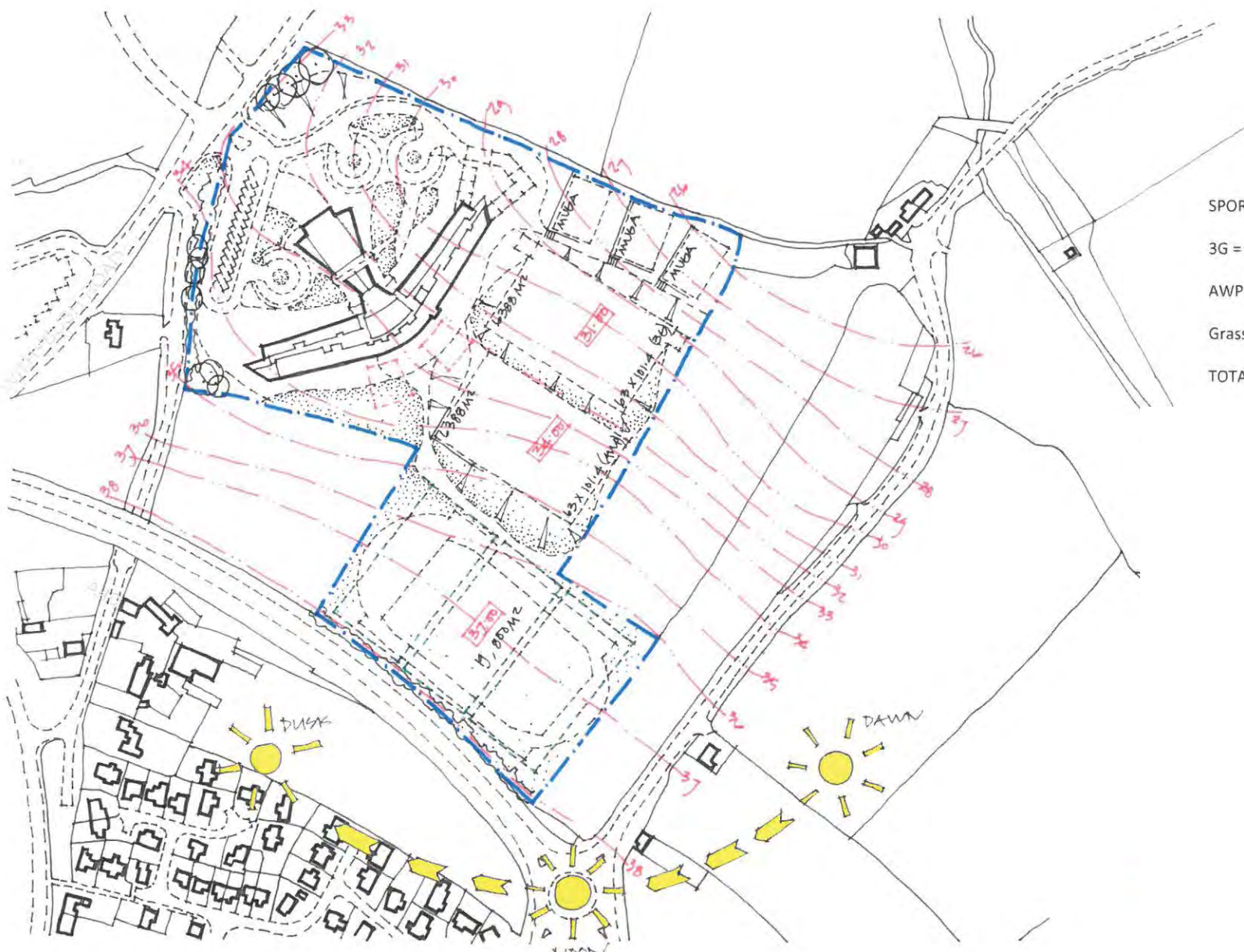


Figure 2: Site boundary plan,  
1:5000 @ A4

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# SKETCH SITE LAYOUT PLAN



## SPORTS PITCHES:

3G =  $6388 \times 2 = 12,776$

AWP =  $6388 \times 2 = 12,776$

Grass = 19,800

TOTAL: 45,352

Figure 3: Initial sketch plan of proposed development.  
Plan produced by  
Stride Treglown

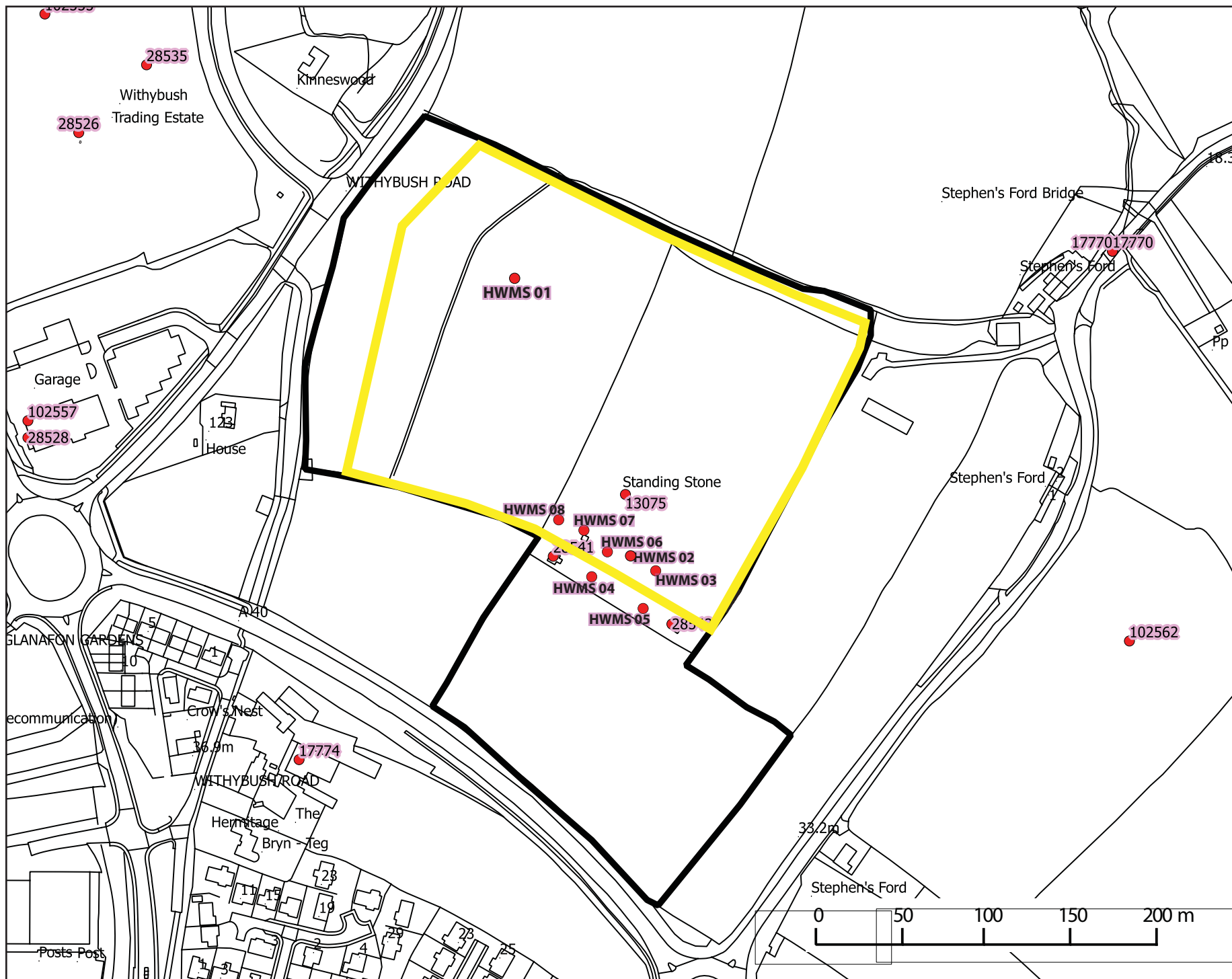


Figure 4: Area of proposed geophysical survey, outlined in yellow, overlaid on a plan of identified archaeological sites within the proposed development area. Sites labelled by references given in the desk based assessment.

1:3000 @ A4

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