

LAND AT EXETER AIRPORT BUSINESS PARK CLYST HONITON & AYLESBEARE DEVON

Results of Archaeological Monitoring & Evaluation



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Land at Exeter Airport Business Park, Clyst Honiton & Aylesbeare, Devon

Results of Archaeological Monitoring and Evaluation

For

Dean Smith of WT Partnership

On behalf of

Flybe

By



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September 2010

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Summary

Following work conducted in 2008 (a desk-based assessment and geophysical survey) SWARCH was asked to supervise the excavation of a series of evaluation trenches across two fields on the eastern edge of Exeter Airport Business Park. This sampling investigated both the geophysical anomalies identified previously and a representative sample of the remainder of the site.

With a single exception, the features encountered were modern in date (ceramic land drains and a probable water main). The sole ancient feature [410] consisted of the partial remains of a heavily truncated Middle Bronze Age ring ditch in the western field. Only approximately 30% of the circumference of the feature survived, and this contained three fills. The middle fill, context (411), contained a mass of fire-shattered rock and charcoal, a deposit similar to those associated with the contemporary but enigmatic burnt mounds.

A small amount of lithic material and 18th century pottery and a rather greater amount of 19th century ceramics was recovered during fieldwalking, supporting the suggestion that these fields were enclosed at a relatively late date.

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1.0 Introduction

Location:	Land at Exeter Airport Business Park
Parish:	Clyst Honiton & Aylesbeare
District:	East Devon
County:	Devon
NGR:	SY0096093134
Planning App. No:	Pre-application
HES ref:	Arch/dc/ed/13824
OS Map Copying Licence No:	100044808
Oasis ID:	southwes1-82429

1.1 Background

South West Archaeology (SWARCH) undertook an archaeological evaluation at the request of Flybe (the Client) prior to the development of land at Exeter Airport Business Park. Prior to this, in 2008 a desk-based assessment of the site was produced (SWARCH Report No. 081014), including the results of a fieldwalking exercise on the site. A geophysical survey (magnetometer) was also undertaken (SWARCH Report No. 081013).

The land, an area of *c.*6.4 hectares, lies within two fields immediately to the east of Exeter Airport Business Park, straddling the parish boundary between Clyst Honiton and Aylesbeare. A dual carriageway (the A30) lies immediately to the south, on an embankment raised some 6m above the level of the fields. This land had been under intensive arable cultivation, and an inspection of available aerial photography indicated the presence of modern systematic land drainage.

The land is almost level, falling from a height of *c.*33m in the west, to *c.*29m at the parish boundary. The bedrock, exposed along the western half of the western field consists of mudstones of the Permian Aylesbeare Group, encountered as a highly to completely weathered mudstone (BGS 1995). For the rest of the site the bedrock is concealed beneath a variable depth (*c.*0.5-1.5m) of Quaternary head deposits of poorly sorted cobbles/gravels in a grey clayey matrix. This forms part of a larger deposit approximately 1×0.5km in extent. The soils of this area are recorded as belonging to the Whimble 3 Association, fine reddish loamy soils overlying slowly permeable subsoils (Soil Survey of England and Wales 1983).

1.2 Archaeological Background

During the 1990s the upgrading of the A30 trunk road was preceded by archaeological investigations along the route, leading, *inter alia*, to the extensive excavation of an Iron Age settlement at Black Horse to the west of Clyst Honiton (Fitzpatrick *et al.* 1999, 160-192). In addition, proposals for mineral extraction at Hayes Farm, some 1.5km to the north west of the area under consideration, occasioned excavation by Cotswold Archaeology which revealed evidence of Neolithic and Bronze Age settlement (Barber 1999). Two kilometres to the north of the present site, land at or near South Whimble Farm and adjacent to the line of the Roman road running east from Exeter has produced evidence of Romano-British settlement (Fitzpatrick *et al.* 1999, 224: map). These recent findings indicate that this general area has been the scene of human activity, settlement and land-use over several millennia.

In the 1930s land to the north west was identified as a suitable site for a new municipal aerodrome and was compulsorily purchased in 1937. The new aerodrome was given over to military use during the Second World War and numerous ancillary buildings were constructed on the area to the west of the current site, although the site itself remained in agricultural use.

The number of military sites (pillboxes, etc) recorded in the general vicinity of the site attest to the scale of wartime activity.

The work undertaken by SWARCH identified the potential for the survival of remains and deposits associated with prehistoric activity at the site. An assemblage of worked prehistoric flint, including a chert handaxe of probable middle to upper Palaeolithic date, was recovered during the fieldwalking exercise (see Appendices 5 & 6).

1.3 Methodology

The results of several phases of fieldwork are presented or summarised here.

On the 9th October 2008, 13 geotechnical pits were excavated by a mechanical excavator using a toothed bucket to a depth of 3m+ below ground level. This work was monitored, but with the exception of a single (working) ceramic land drain, no features were encountered. This work was carried out by M. Gillard and B. Morris.

Fieldwalking was undertaken on the same day. The fields had been ploughed and harrowed and the geophysical survey had already divided the fields into a grid of 30m squares (see Figure 8). The eastern field was subject to preliminary inspection along the grid lines demonstrating that most of the finds were very modern, and suggesting the topsoil had been imported to the site from elsewhere. Further systematic fieldwalking was not undertaken, but additional material observed during the geophysical survey was collected. Based on a preliminary inspection of the western field, the surface was traversed systematically and finds collected and bagged by grid square. The southernmost line of grid squares was not walked because of vehicle activity in this area. This work was carried out by B. Morris and D. Laing-Trengove.

Between the 1st and the 12th of October 2009, 24 evaluation trenches were opened, assessed and backfilled. This took place according to the specification set out in the Written Scheme of Investigation (see Figure 3 & Figure 4, and Appendix 2). The trenches were opened by a tracked mechanical excavator using a 1.8m wide toothless grading bucket, and the work was carried out under strict archaeological supervision. The trenches and features were laid out and recorded using a Leica 900 GPS unit. This work was carried out by B. Morris and M. Tingle. Only one of the features identified in the geophysical survey proved to be of any antiquity (remnant curving ring ditch), and the area around this feature was stripped and fully investigated.

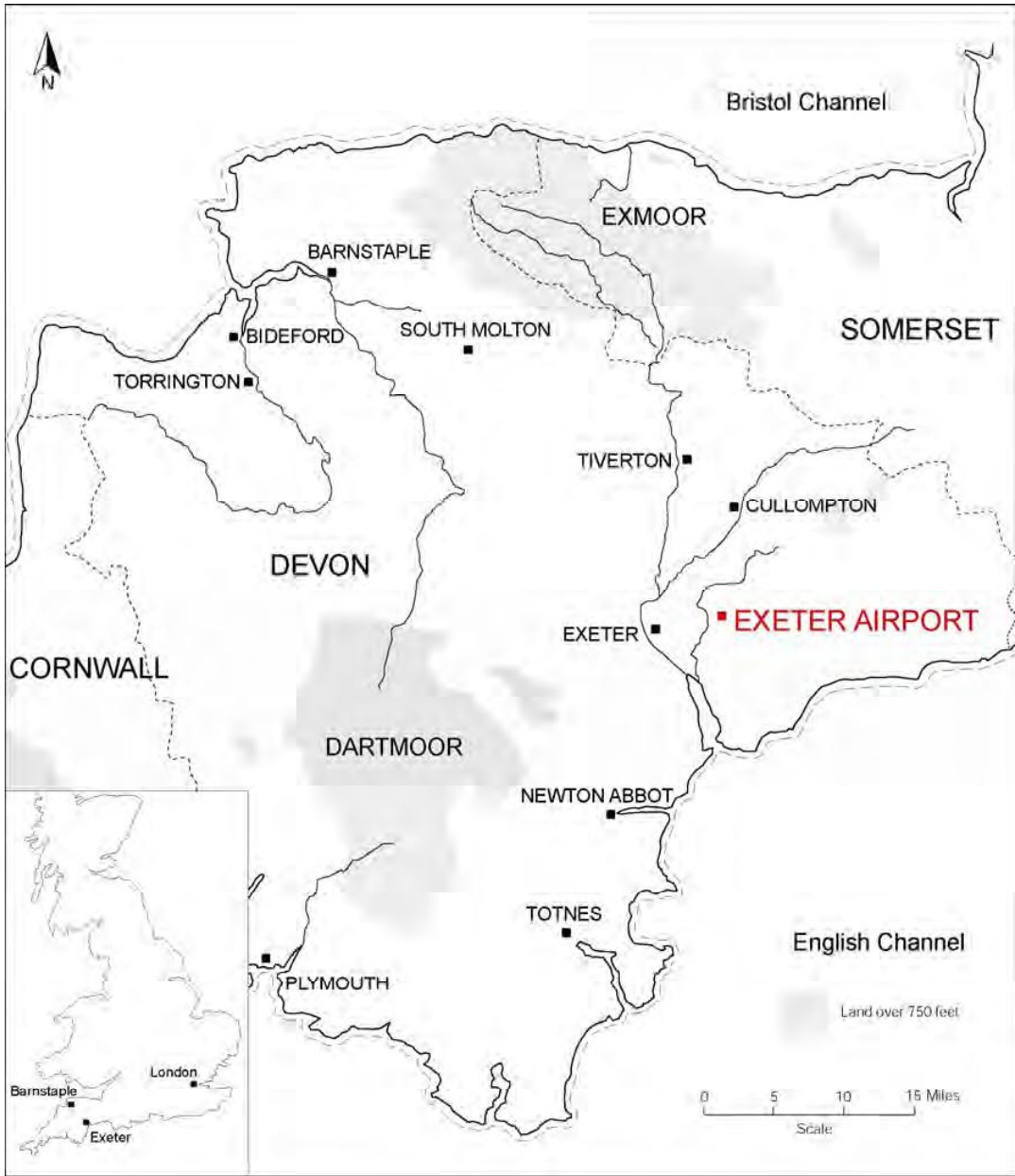


Figure 1: Regional Location.

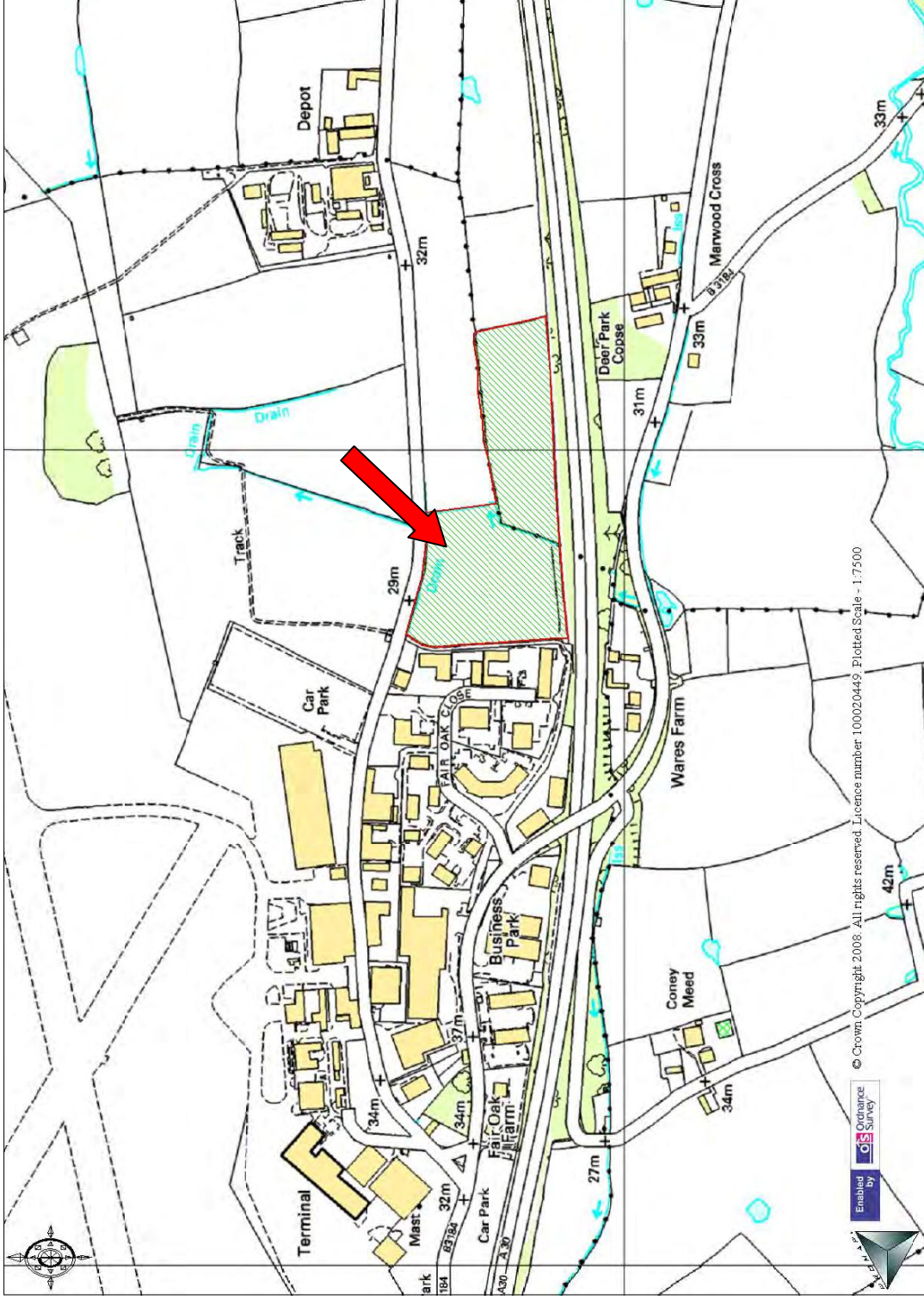


Figure 2: Site location (the site is indicated).

2.0 Results of the Archaeological Evaluation

2.1 Summary

A total of 24 trenches were opened across the site area (see Figure 3 & Figure 4). Trenches 4, 5, 7, 12, 13, 18 and 23 were laid out to investigate magnetic anomalies identified in the geophysical survey. The remaining trenches were laid out to sample the intervening area, in and around the footprint of the proposed structures and access.

The topsoil varied across the site. The reddish-brown silty clay loam topsoil of the western field graded to greyish-brown silt clay in the base of the shallow valley, where the ground was noticeably wetter. The topsoil of the eastern field was a dark, humic greyish-brown silty clay, some of which may have been imported to the site.

The evaluation trenches were excavated down to the level of the natural, undisturbed subsoil, which was encountered at a depth of between *c.*0.3m and *c.*0.4m. Over most of the site this consisted of head deposits of firm-to-stiff grey gravelly clay with rounded cobbles, 0.3-0.9m thick. On the rising ground in the south west corner of the western field the subsoil was composed of firm-to-stiff reddish-brown gravelly silty-clay with lithorelicts derived from the underlying parent rock.

With a single exception (see 2.2 below), all of the features identified by the magnetometer survey were either natural or of recent in date, being related to modern drainage features or services. Both fields were criss-crossed by recent ceramic land drains (150mm diameter), which sat in narrow vertical cuts *c.*0.3m wide and up to 1m deep. These drains emptied into larger land drains (200mm diameter) that sat in cuts up to 1m wide. A single large linear feature *c.*1.5-2m wide ran across the western field from the north-western corner to the south-eastern corner and was probably the cut for a water main that ran to the disused pumping station beyond the site boundary to the north-west.

2.2 The Curving Ring Ditch [410]

The single archaeological feature identified was the curving ditch in the centre of the western field (see Figure 5 & Figure 7), corresponding to the feature identified at Location 1 in SWARCH report No. 081013. As agreed in the WSI, Trench 4 was extended to fully expose this feature which was sectioned and then almost fully excavated. It comprised a single incomplete section of curving ditch *c.*15m long (context [410]); the ploughed-out remnant of a probable circular feature with a diameter of *c.*14m. The ditch was between 1.5m and 2.5m in width, had a shallow sloping profile and a maximum depth of *c.*0.4m. There was no trace of the internal negative anomaly identified in the geophysical survey (at Location 1).

The curving ditch [410] contained three fills (see Figure 5 & Figure 6). The lowest (413) was a firm mid-brown silty-clay that contained some charcoal flecks. Above this was context (411), a compact layer of mid greyish-brown silty-clay that contained frequent shattered sub-angular and sub-rounded stones up to 100mm in diameter, as well as frequent charcoal fragments. These stones strongly resembled the coarse components of the head deposits noted lower down the slope. The uppermost fill, context (412), was a sticky mid yellowish-brown clayey-silt that contained no inclusions and was severely truncated.

A bulk sample of context (411) was taken for the purposes of charcoal identification (Appendix 7) and radiocarbon dating (Appendix 8). A fragment of charcoal (alder) was dated to the late Bronze Age, 1270-1020 calBC (95.4%) (SUERC-30660).

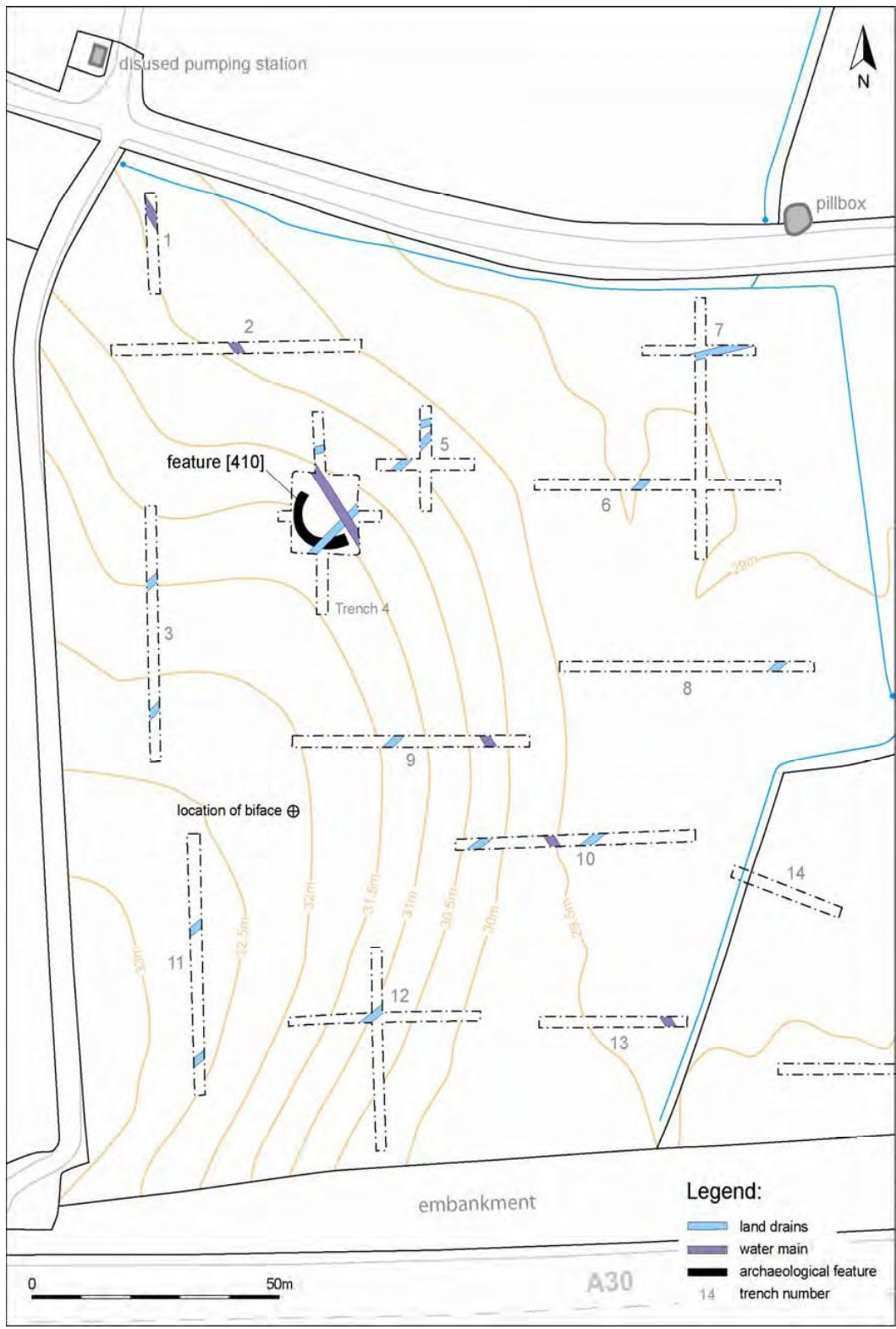


Figure 3: Plan of the evaluation trenches in the western field.

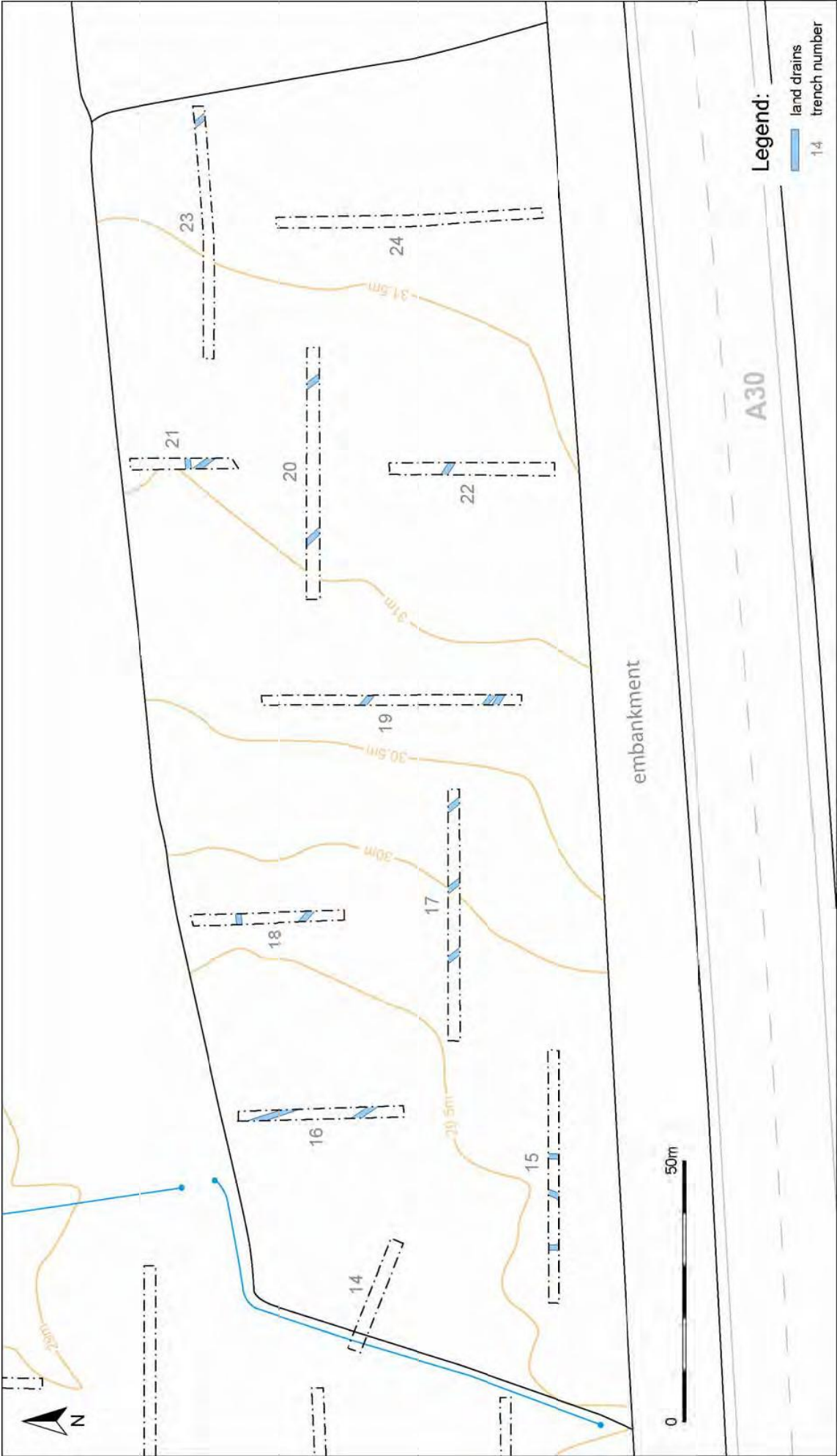


Figure 4: Plan of the evaluation trenches in the eastern field

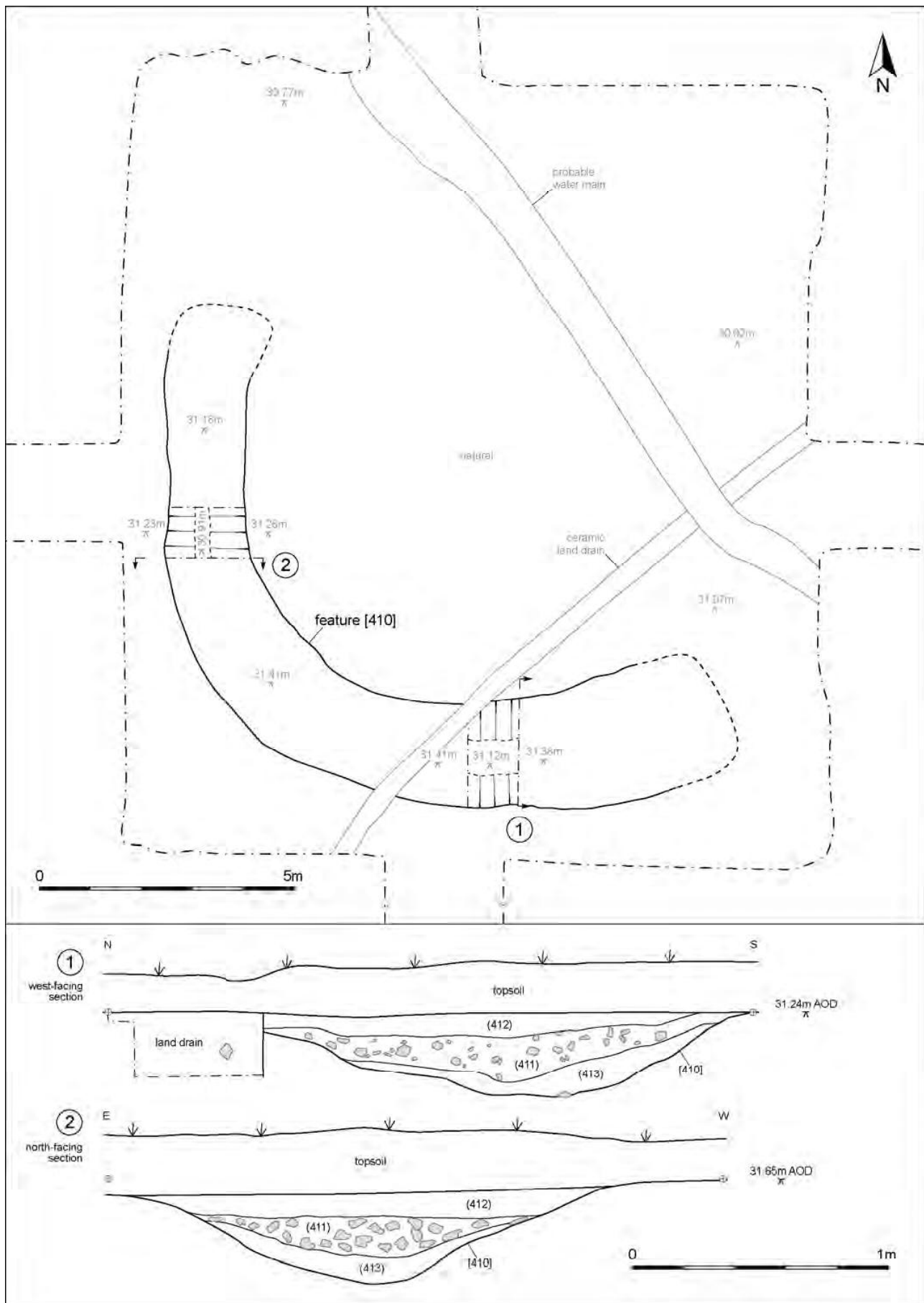


Figure 5: Plan and sections of the curving ring ditch [410].



Figure 6: West-facing profile of section #1 (scale 2m).



Figure 7: General area shot of Trench #4, viewed from the south east looking north west (scale 2m).

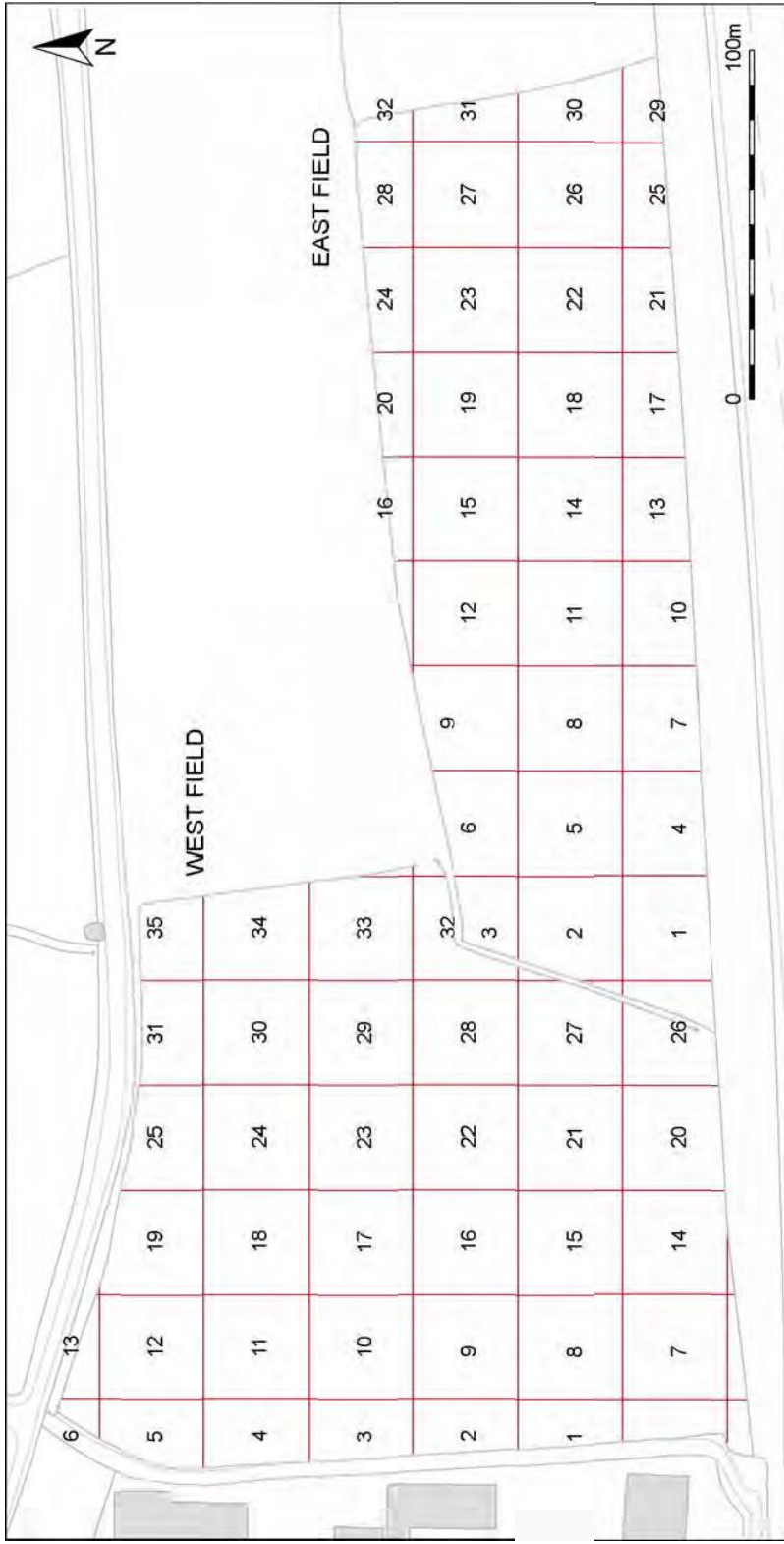


Figure 8: Plan of the fieldwalking grid (see finds concordance Appendix 3).

3.0 Discussion and Conclusion

The fairly small amount of lithic material recovered during fieldwalking was indicative of activity rather than settlement. A reasonable proportion of the flint had been burnt, and thus could be associated with feature [410] (below). The discovery of the biface is rather more significant, as these artefacts are rarely encountered during fieldwalking exercises, and are rare generally west of the Axe valley; it is at least 60,000 years old.

Much of the rest of the recovered material was recent or modern in date. With the exception of a single sherd of Raeren stoneware (15th-16th century), the pottery mainly comprised 18th and 19th century South Somerset coarsewares, probably reflecting the enclosure history of this area.

With the exception of a single heavily plough-damaged Bronze Age curving ditch [410], the evaluation trenching revealed only recent drainage and service features.

Feature [410], is situated on a north east facing slope, *c.*2m above the spring line. It seems likely that it is a heavily damaged ring-ditch, with most of the feature having been ploughed away. Following this interpretation, the feature should be associated with a funerary monument, but the mass of fire-shattered rock with charcoal in context (411) could suggest an association with burnt mounds.

Burnt mounds consist of heaps of heat-affected rock with charcoal and wood ash associated with timber-lined troughs and interpreted as features associated with cooking/feasting, brewing and/or saunas (Barfield & Hodder 1987; Pitts 2010). They are typically Bronze Age in date, rarely produce artefactual evidence and can be crescentic in shape. Normally they are located adjacent to a water source, but are sometimes found on slightly raised areas near lower, boggy, ground.

Feature [410] is late Bronze Age in date, produced only a single, tiny scrap of prehistoric pottery and is crescentic in shape. It lies in a slightly elevated position in relation to the extensive head deposits to the east; land that would probably have been seasonally waterlogged. This is implied by the extensive modern land drainage observed during excavation and the repetition of *moor* field names in the tithe apportionments, for which reason it seems to have been enclosed at a relatively late, post-medieval date.

Of course, feature [410] is demonstrably *not* a mound, and there is no sign of the associated pit or trough, although this may have been destroyed when the water main was installed. The fact that (411) is the second of three fills indicates [410] was not initially created with disposal in mind, rather, it seems to have trapped material which was perhaps derived from a burnt mound now long since destroyed. If this were the case it would be only the second site in Devon to produce evidence for a burnt mound, with the only other, and rather better, example being Burtlescombe in East Devon (Gent 2007; Best & Gent 2007).

In the final analysis it is, however, very difficult to draw any firm conclusions on the basis of the observed and excavated evidence, and associations with a burnt mound, or even a funerary monument, remain uncertain.

4.0 Bibliography and References

Published Sources:

Barfield, L. & Hodder, M. 1987: 'Burnt Mounds as saunas, and the prehistory of bathing', *Antiquity* vol.61, pp.370-9.

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South West Archaeology 2008a: *Land at Exeter Airport Business Park, Clyst Honiton & Aylesbeare, East Devon NGR SY00799312, Results of an Archaeological Magnetometer Survey.* Report No. 081013

South West Archaeology 2008b: *Land at Exeter Airport Business Park, Clyst Honiton & Aylesbeare, East Devon: A Pre-planning Archaeological Assessment,* South West Archaeology Ltd. Report No. 081014

Appendix 1

BRIEF FOR ARCHAEOLOGICAL EVALUATION

Location: Land at Exeter Airport Business Park
Parish: Clyst Honiton and Aylesbeare
District: East Devon
County: Devon
NGR: SY 0087 9314
Planning Application no: Pre-application
Proposal: Flybe Academy/Hotel
Historic Environment Service ref: Arch/dc/ed/13824

1. INTRODUCTION AND ARCHAEOLOGICAL BACKGROUND

- 1.1 This brief has been prepared by the Devon County Council Historic Environment Service (HES), at the request of Ross Dean, of Southwest Archaeology, with regard to the archaeological works required to provide information in support of a proposed planning application.
- 1.2 The principal objective of the programme shall be to evaluate the survival of below-ground archaeological deposits across the proposed development site. The results will determine the nature, extent, and date of any surviving archaeological deposits within the application area. These results will inform decisions relating to any associated planning application, and, should consent be granted, inform as to the requirement for any further investigations that may be deemed necessary as mitigation for the impact of the proposed development.
- 1.3 A desk-based assessment of the site has been produced by Southwest Archaeology (Report No. 081014). This report includes the results of a fieldwalking exercise at the site, and is supported by the results of a geophysical survey, also undertaken by Southwest Archaeology (Report No. 081013). This work indicates the prevalence of known archaeological sites of prehistoric to modern date in the vicinity, and has identified the potential for the survival of remains and deposits associated with prehistoric activity at the site. An assemblage of worked prehistoric flint, including a chert handaxe of probable middle to upper Palaeolithic date, was recovered from the site.
- 1.4 This Brief covers the application area as defined in the plans submitted by Southwest Archaeology.

2. WRITTEN SCHEME OF INVESTIGATION

- 2.1 A Written Scheme of Investigation/Method Statement will be produced in consultation with the HES. This document will set out the scope of the works required to record the extent and character of any surviving archaeological deposits within the application area.

3. CONTENT OF PROGRAMME

- 3.1 A series of trenches will be excavated across the proposed development area, and should be positioned to investigate:
 - potential archaeological sites 1-7 and their environs, listed in Southwest Archaeology geophysical report No. 081013;
 - the field boundary between the two enclosures; and
 - an adequate representative sample of the areas in which geophysical features appear to be absent.
- 3.2 Details of the strategy for positioning trenches should be agreed with the HES. Trenches should be excavated by a 360° tracked or JCB-type machine - fitted with a toothless grading bucket - to the surface of archaeological deposits or *in situ* natural ground - whichever is highest in the stratigraphic sequence. Exposed archaeological features and deposits will be cleaned and excavated by hand and fully recorded by context as per the Institute of Field Archaeologists' *Standards and Guidance for an Archaeological Watching Brief* (1994 - revised 2001). All features should be recorded in plan and section at scales of 1:10, 1:20 or 1:50. All scale drawing should be drawn at a scale appropriate to the complexity of the deposit/feature and to allow accurate depiction and interpretation.
- 3.3 All archaeological features should be investigated and as a minimum:
 - i) small discrete features will be fully excavated;
 - ii) larger discrete features will be half-sectioned (50% excavated); and
 - iii) long linear features will be sample excavated along their length - with investigative excavations distributed along the exposed length of any such feature.
 - iv) one long face of each trench will be cleaned by hand to allow the site stratigraphy to be understood and for the identification of archaeological features.Should the above percentage excavation not yield sufficient information to allow the form and function of archaeological features/deposits to be determined full excavation of such features/deposits will be required. Additional excavation may also be required for the taking of palaeoenvironmental samples and recovery of artefacts
Any variation of the above should be undertaken in agreement with the HES.
- 3.4 The full depth of archaeological deposits must be assessed. This need not require excavation to natural deposits if it is clear that complex and deep stratigraphy will be encountered.
- 3.5 Should deposits be exposed that contain palaeoenvironmental or datable elements appropriate sampling and post-excavation analysis strategies will be initiated. The project will be organised so that specialist consultants

- who might be required to conserve or report on finds or advise or report on other aspects of the investigation (e.g. palaeoenvironmental analysis) can be called upon and undertake assessment and analysis of such deposits - if required.
- 3.6 The photographic record shall be made in B/W print supplemented by digital or colour transparency. If digital imagery is to be the sole photographic record then suitably archivable prints must be made of the digital images by a photographic laboratory. Laser or inkjet prints of digital images, while acceptable for inclusion in the report, are not an acceptable medium for archives. The drawn and written record will be on an appropriately archivable medium.
- 3.7 Human remains must initially be left in-situ, covered and protected. Removal can only take place under appropriate Ministry of Justice and environmental health regulations. Such removal must be in compliance with the relevant primary legislation.
- 3.8 Should any finds identified as treasure or potential treasure, including precious metals, groups of coins or prehistoric metalwork, be exposed, these will be removed to a safe place and reported to the local coroner according to the procedures relating to the Treasure Act 1996 Code of Practice (2nd Revision). Where removal cannot be effected on the same working day as the discovery suitable security measures will be taken to protect the finds from theft.
- 4. MONITORING**
- 4.1 The archaeological consultant should agree monitoring arrangements with the County Historic Environment Service and give two weeks notice, unless a shorter period is agreed with the HES, of commencement of the fieldwork. Details will be agreed of any monitoring points where decisions on options within the programme are to be made.
- 4.2 Monitoring will continue until the deposition of the site archive and finds, and the satisfactory completion of an OASIS report - see 5.4 below.
- 5. REPORTING**
- 5.1 Upon completion of this stage of fieldwork the archaeological contractor should produce a full report that will collate the written, graphic, visible and recorded information outlined in section 3 above. The report shall include plans and reports of all documentary and other research, and of the trenches, features, deposits and artefacts together with their interpretation. The report will also include an overall plan showing the boundaries of the site, the location of the evaluative trenches in relation to those boundaries and all exposed archaeological features and deposits.
- The report shall demonstrate the archaeological potential of the site and the impact upon it of the proposed development. The report may in appropriate cases make suggestions as to appropriate mitigation of the archaeological impact of the proposal, but these will be subject to review by the HES, who will make final recommendations to the Local Planning Authority.
- 5.2 The HES expect the report to be submitted as supporting informing with any planning application for the site.
- 5.3 On completion of the report, in addition to copies required by the Client, hard copies of the report shall be supplied to the HES on the understanding that one of these copies will be deposited for public reference in the HER. In addition to the hard copies of the report, one copy should be provided to the County Historic Environment Service in digital format - in a format to be agreed in advance with the HES - on the understanding that it may in future be made available to researchers via a web-based version of the Historic Environment Record.
- 5.4 The archaeological consultant should complete an online OASIS (*Online AccesS to the Index of archaeological investigationS*) form in respect of the archaeological work. This will include a digital version of the report. The report will also include the OASIS ID number.
- 5.5 *Publication*
Should particularly significant remains, finds and/or deposits be encountered, then these, because of their importance, are likely to merit wider publication in line with government planning guidance. If such remains are encountered, the publication requirements – including any further analysis that may be necessary – will be confirmed with the HES. If further archaeological works are undertaken, then the results of these initial evaluative investigations will be incorporated into the publication text resulting from further works.
- 6. FURTHER WORK**
- 6.1 In the light of the results of the archaeological evaluation it will be possible to identify what further work, (e.g. further evaluative work to clarify the site stratigraphy, area excavation, etc), if any, is needed as mitigation for the impact of the proposed development on the archaeological resource.
- 6.2 Should the site be demonstrated to be archaeologically sterile then there would be no requirement for further archaeological works.
- 7. PERSONNEL**
- 7.1 A professional archaeological consultant, to be agreed with the HES, shall carry out the programme of works. Staff must be suitably qualified and experienced for their project roles. All work should be carried out under the control of a Member of the Institute of Field Archaeologists (MIFA), or by a person of similar standing.
- 7.2 Health and Safety matters, including site security, are matters for the consultant. However, adherence to all relevant regulations will be required.
- 7.3 The work shall be carried out in accordance with *IFA Standards and Guidance for Archaeological Field Evaluations (1994)*, as amended (1999).
- 8. DEPOSITION OF ARCHIVE AND FINDS**
- 8.1 The archaeological consultant should contact the museum that will receive the site archive to obtain an accession number and agree conditions for deposition.

- 8.2 Archaeological finds resulting from the investigation (which are the property of the landowner), should be deposited with the appropriate museum - in a format to be agreed with the museum, and within a timetable to be agreed with the HES. The museum's guidelines for the deposition of archives for long-term storage should be adhered to. If ownership of all or any of the finds is to remain with the landowner, provision and agreement must be made for the time-limited retention of the material and its full analysis and recording, by appropriate specialists.

9. **CONTACT NAME AND ADDRESS**

Tim Gent, Archaeological Officer, Devon County Council, Environment, Economy and Culture Directorate,
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Tel: 01392-38197 Fax: 01392-383011 E-mail: tim.gent@devon.gov.uk

11th November 2008

Appendix 2

WRITTEN SCHEME OF INVESTIGATION FOR ARCHAEOLOGICAL EVALUATION AT EXETER AIRPORT BUSINESS PARK, DEVON.

Location: Land at Exeter Airport Business Park
Parish: Clyst Honiton and Aylesbeare
District: East Devon
County: Devon
NGR: SY 0087 9314
Planning Application no: Pre-application
Proposal: Flybe Academy/Hotel
DCHES ref: Arch/dc/ed/13824

1.0 INTRODUCTION

1.1 This document forms a Written Scheme of Investigation (WSI) and details the proposed scheme and methodology for archaeological evaluation to be undertaken prior to the development of land at Exeter Airport Business Park. It has been drawn up by South West Archaeology (SWARCH) at the request of Flybe (the Client) with regard to the archaeological works required to provide information in support of a proposed planning application. The WSI and the schedule of work it proposes conforms to a brief as supplied by the Devon County Historic Environment Service (DCHES) (Tim Gent, 11.11.08).

2.0 ARCHAEOLOGICAL BACKGROUND

2.1 A desk-based assessment of the site has been produced by Southwest Archaeology (Report No. 081014). The report includes the results of a fieldwalking exercise at the site, and is supported by the results of a geophysical survey, also undertaken by Southwest Archaeology (Report No. 081013). This work identified known archaeological sites of prehistoric to modern date in the vicinity, and has identified the potential for the survival of remains and deposits associated with prehistoric activity at the site. An assemblage of worked prehistoric flint, including a chert handaxe of probable middle to upper Palaeolithic date, was recovered during fieldwalking.

3.0 AIMS

3.1 To evaluate the survival of below-ground archaeological deposits across the proposed development area to inform as to the requirement for any further investigations in mitigation for the impact of the proposed development upon the archaeological resource.
3.2 To undertake further archaeological investigations as appropriate based on the results of the evaluation.
3.3 Analyse and report on the results of the project as appropriate.

4.0 METHOD

4.1 Evaluation excavations:

A series of trenches will be excavated across the proposed development area. The locations of these excavations will be determined in consideration of the below-ground impact of the proposed development, the site topography, the results of the desk-based assessment and the results of the geophysical survey and will include: potential archaeological sites 1-7 and their environs, as listed in Southwest Archaeology geophysical report No. 081013; the boundary between the two fields; and an adequate representative sample of the areas in which geophysical features appear to be absent.

Details of the strategy for positioning the trenches will be agreed with the DCHES.

4.1.1 The archaeological work will be carried out in accordance with the *Institute of Field Archaeologists Standard and Guidance for Archaeological Field Evaluation 1994 (revised 2001 & 2008)* and *Standard and Guidance for an Archaeological Watching Brief 1994 (revised 2001 & 2008)*.

4.1.2 The evaluation trenches will be opened by a mechanical excavator fitted with a toothless grading bucket under the direct control of the site archaeologist to the depth of formation, the surface of *in situ* subsoil/weathered natural or archaeological deposits whichever is highest in the stratigraphic sequence.

4.1.3 Spoil will be examined for the recovery of artefacts.

4.1.4 Once the level of the archaeology has been reached all archaeological material will be excavated by hand down to the depth of the archaeology, although this need not require excavation to natural deposits if it is clear that complex and deep stratigraphy will be encountered.

4.1.5 All excavation of exposed archaeological features shall be carried out by hand, stratigraphically, and fully recorded by context to IFA guidelines.

4.1.6 If archaeological features are exposed, then as a *minimum*:

i) small discrete features will be fully excavated;

ii) larger discrete features will be half-sectioned (50% excavated);

iii) long linear features will be excavated to sample 20% of their length - with investigative excavations distributed along the exposed length of any such feature.

4.1.7 Should a feature or features are exposed which extend beyond the limits of the trenching, slight expansion of the excavated area may be undertaken to clarify the feature/s. Decisions regarding expansion will be considered in consultation with the DCHES.

- 4.1.8 Whether any further excavation is required will be confirmed with DCHES. Should the above excavation not yield sufficient information to allow the form and function of archaeological features/deposits to be determined, full excavation of such features/deposits may be required.
- 4.1.9 In exceptional circumstances where materials of a particularly compact nature are encountered, these may be removed with a toothed bucket, subject to agreement with archaeological staff on site.
- 4.1.10 Should archaeological or palaeoenvironmental remains be exposed, the site archaeologist will investigate, record and sample such deposits.
- 4.1.11 Human remains must be left *in-situ*, covered and protected. Removal can only take place under appropriate Ministry of Justice and environmental health regulations. Such removal must be in compliance with the relevant primary legislation.
- 4.1.12 Should gold or silver artefacts be exposed, these will be removed to a safe place and reported to the local coroner according to the procedures relating to the Treasure Act 1996. Where removal cannot be effected on the same working day as the discovery suitable security measures will be taken to protect the finds from theft.
- 4.2 The Client will provide SWARCH with details of the location of existing services and of proposed groundworks within the site area, and of the proposed construction programme.
- 4.3 Health and Safety requirements will be observed at all times by any archaeological staff working on site, particularly when working with machinery. As a minimum: high-visibility jackets, safety helmets and protective footwear will be worn.
 - 4.3.1 Appropriate PPE will be employed at all times.
 - 4.3.2 The site archaeologist will undertake any site safety induction course provided by the Client.
 - 4.3.3 If the depth of trenching exceeds 1.2 metres the trench sides will need to be shored or stepped to enable the archaeologist to examine and if appropriate record the section of the trench. The provision of such measures will be the responsibility of the client.
- 4.6 SWARCH will agree monitoring arrangements with DCHES who will be informed of the start of the fieldwork, will monitor the project throughout, and will inspect the works in progress and at the conclusion of each stage of work, as well as examining both the site and primary records before the fieldwork phase can be signed off.
- 5.0 ARCHAEOLOGICAL RECORDING**
- 5.1 This will be based on IFA guidelines and those advised by DCHES and will consist of:
 - 5.1.1 Standardised single context recording sheets, survey drawings in plan, section and profile at 1:10, 1:20, 1: 50 and 1:100 as appropriate and digital photography.
 - 5.1.2 Survey and location of features.
 - 5.1.3 Labelling and bagging of finds on site, post-1800 unstratified pottery may be discarded on site after a representative sample has been retained.

Any variation of the above shall be agreed in consultation with the DCHES.
- 5.2 Should suitable deposits be exposed (e.g. palaeoenvironmental) then scientific assessment/ analysis/dating techniques will be applied to further understand their nature/date and to establish appropriate sampling procedures. The project will be organised so that specialist consultants who might be required to conserve or report on other aspects of the investigations can be called upon.
- 6.0 FURTHER WORK**
- 6.1 The evaluation excavation represents the second stage of the archaeological investigation of the site and further archaeological intervention may be required if deposits or features are exposed that are considered by DCHES to be archaeologically important.
- 6.2 If no archaeological deposits are exposed by the evaluation it may be decided by DCHES that no further archaeological works will be required.
- 6.3 The need for further archaeological work and the means of investigation (monitoring and recording, trenching or open area excavation) will be determined in consultation with the archaeological contractor, DCHES and the Client once the results of the evaluation is known. Subsequent work will be carried out in accordance with the above specification (4.0 and 5.0).
- 6.4 The development shall not proceed until the requirement for further archaeological intervention has been established by the DCHES.
- 7.0 ARCHIVE AND REPORT**
- 7.1 An ordered and integrated site archive will be prepared in accordance with *The Management of Archaeological Projects* (English Heritage, 1991 2nd edition) upon completion of the entire project. This will include relevant correspondence together with context sheets, field drawings, and environmental, artefactual and photographic records. The archive and finds will be deposited with the Royal Albert Memorial Museum, Exeter under accession number 241/2009. The museum's guidelines for the deposition of archives for long-term storage will be adhered to.
- 7.2 Archaeological finds resulting from the investigation (which are the property of the landowner), will also be deposited with the above museum (under the accession number above) in a format to be agreed with the museum, and within a timetable to be agreed with the HES. The museum's guidelines for the deposition of archives for long-term storage will be adhered to and any sampling procedures will be carried out prior to deposition and in consultation with the museum. If ownership of all or any of the finds is to remain with the landowner, provision and agreement must be made for the time-limited retention of the material and its full analysis and recording, by appropriate specialists.

- 7.3 An illustrated summary report will be produced as soon as possible following completion of fieldwork, specialist reports allowing. A draft report will be submitted to the HES for comment prior to its formal submission to the Local Planning Authority. Copies of the report will be provided to the DCHES as well as the Client. If few or no archaeological deposits are exposed then, with advance agreement with the DCHES, the submission of a short HER entry will be acceptable.
- 7.4 The report will demonstrate the archaeological potential of the site and the impact upon it of the proposed development. The report may in appropriate cases make suggestions as to appropriate mitigation of the archaeological impact of the proposal, but these will be subject to review by the HES, who will make final recommendations to the Local Planning Authority.
- 7.5 The report will include the following elements:
- 7.5.1 A report number and the OASIS record number;
 - 7.5.2 A copy of the DCHES brief and this WSI;
 - 7.5.3 A location plan and overall site plan including the boundaries of the site, the location of the evaluative trenches in relation to those boundaries and all exposed archaeological features and deposits;
 - 7.5.4 Plans and sections of significant features or deposits at a relevant scale;
 - 7.5.5 A description of any remains and deposits identified including an interpretation of their character and significance;
 - 7.5.6 An assessment of significant artefacts, historical and/or architectural features, environmental and scientific samples together with recommendations for further analysis;
 - 7.5.7 Any specialist reports commissioned;
 - 7.5.8 Discussion of the archaeological deposits encountered and their context.
- 7.6 DCHES will receive the report within three months of completion of fieldwork, dependant on the provision of specialist reports, radiocarbon dating results etc, the production of which may exceed this period. If a substantial delay is anticipated then an interim report will be produced. The report will be supplied to the HES on the understanding that one of these copies will be deposited for public reference in the HER. In addition to the hard copies of the report, one copy will be provided to the HES in digital format, in a format to be agreed in advance with the HES, on the understanding that it may in future be made available to researchers via a web-based version of the HER.
- 7.7 Should particularly significant features, below-ground remains or finds be encountered, then these, because of their importance, are likely to merit wider publication in line with government planning guidance. If such remains are encountered, the publication requirements –including any further analysis that may be necessary – will be confirmed with the HES.
- 7.8 A copy of the report detailing the results of these investigations will be submitted to the OASIS (*Online Access to the Index of archaeological investigationS*) database.
- 8.0 PERSONNEL**
- The project will be managed by Colin Humphreys; the excavation work will be undertaken by SWARCH personnel directed by Brynmor Morris. Relevant staff of the DCHES will be consulted as appropriate. Where necessary appropriate specialist advice will be sought, (see list of consultant specialists in Appendix 1 below).

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Appendix 3

List of Contexts

Context	Description	Depth
(001)	<i>Topsoil</i> Variable. Reddish-brown silty clay loam topsoil grading to greyish-brown silt clay in western field. Frequent sub-rounded to rounded stones 30-80mm in diameter, increasingly common towards base of slope. Occasional shattered flint. Dark, humic greyish-brown silty clay in the eastern field. Common sub-rounded to rounded stones 30-80mm diameter. Occasional plastic or metal waste.	0.3-0.4m
[410]	<i>Cut</i> Curving section of ditch c.15m long, posited original diameter of c.14m. Between 1.5m and 2.5m in with, maximum depth of c.0.4m. Shallow, concave profile. Filled by (411)(412)(413).	c.0.4m
(411)	<i>Fill</i> Middle fill of ditch [410]. Firm mid greyish-brown silt clay. Abundant heat-affected stones and charcoal. Above (413), below (411).	c.0.1m
(412)	<i>Fill</i> Upper fill of ditch [410]. Firm/sticky mid yellowish-brown clay silt.	c.0.18m
(413)	<i>Fill</i> Lower fill of ditch [410]. Firm mid-brown silty clay. Occasional charcoal flecks. Below (411).	c.0.12m

Appendix 4

Concordance of Finds

Context	Flint		Stone		Pottery			Other		DATE		
	fragments	weight kg	notes	fragments	weight kg	notes	shards	weight kg	Fragments		notes	
Finds from excavation												
411 (ring ditch fill)					1	0.002	small fragments, probably prehistoric				prehistoric	
Unstrat topsoil	1	0.030	Flake								prehistoric	
East field unstrat.	1	0.008	Flake		3	0.028	1 x Bris/Staffs yellow slipware, 1 x S. Som. Coarseware				C17-18th	
West field unstrat.	2	0.120	1 core, 1 heated nodule								prehistoric	
Finds from field walking												
East Sq 1				1	0.005	small slate fragment	2	0.041	2 x S. Som. coarsewares C18th; 1 x brick		C18th	
East Sq 2				1	0.022	lime	2	0.021	Pantile C19th; S. Som. coarseware C17-18th	2	0.029	Amorphous glass
East Sq 3							3	0.105	Stoneware C19th; S. Som. trailed slipware dish 1700-1820; S. Som. chamber pot C18th	1	0.007	Glass
East Sq 4	1	0.014	retouched?	1	0.029	slate	3	0.049	Jug/cup back glazed C17-e18th; S. Devon type mid-late C18th; S. Som coarseware C17-18th			C17-18th
East Sq 5							2	0.053	S. Som coarseware C18th; S. Som coarseware C17-18 th			C17-18th
East Sq 7				1	0.033					1	0.050	Bos metatarsal
East Sq 8							1	0.040	Tile post-1800			post-1800
East Sq 9				2	0.079	slate	1	0.005	S. Som. coarseware C18th			C18th
East Sq 11	1	0.002	scraper?	1	0.006	lime				1	0.016	Heat damaged glass
East Sq 16				2	0.019	lime and slate	1	0.031	Tile post-med			post-med
East Sq 17							2	0.013	S. Som. coarseware C18th			C18th
East Sq 19	2	0.075	struck flint debris	1	0.022	slate	1	0.005	S. Som. coarseware C18th			C18th
East Sq 20	1	0.025	flake, retouched?	1	0.004	lime						
East Sq 21				1	0.022	lime, much coarser						
East Sq 27							11	0.099	x11 white refined earthenware (x2 blue transfer-printed)	4	0.025	C19 vessel glass
West Sq 1	1	0.011					1	0.025				

West Sq 2	3	0.399				1	0.013	Raeren jug/mug, late C15-16 th					L C15-16th
West Sq 4	1	0.057	heated										
West Sq 7	2	0.032	1 core										
West Sq 8	1	0.022											
West Sq 9	1	0.002	retouched, scraper?	1	0.072	slate							
West Sq 10								S. Som. coarseware C18th					C18th
West Sq 12								x27 white refined earthenware (x3 blue transfer-printed); x2 S. Som. coarseware; x3 Notts. white stoneware; x1 C19 stoneware	8	0.088		x1 window; x4 C18th vessel glass	C18t-19th
West Sq 14	3	0.099	heated										
West Sq 15								x19 white refined earthenware (x3 blue transfer-printed); x3 S. Som. Coarseware; x1 C19th stoneware; x1 Notts. white stoneware	13	0.171		Vessel glass, x2 C18th type	C18-19th
West Sq 16	1	0.006											
West Sq 18	3	0.072	2 unworked										
West Sq 21	12	0.286	4 heated, 1 scraper, rest worked debris	1	0.218	hammerstone?	1	0.040	post-med, glazed				
West Sq 22	9	0.522	1 large nodule, 1 heated, 5 small-medium pot. worked, 2 retouched scrapers	1	0.015	slate	1	0.057	S. Som coarseware C18th				C18th
West Sq 23	1	0.032										Slag	
West Sq 24	2	0.045	1 retouched, 2 worked debris										
West Sq 25	2	0.195	Both heated, 1 worked, 1 pot. worked						S. Som coarseware C18th				C18th
West Sq 26									Land drain			Bullseye glass	
West Sq 27	3	0.045	1 heated, 2 worked debris	3	0.038	slate fragments	2	0.079	Land drain; S. Som. coarseware C17-18th	1	0.103	Glass	C17-18th
West Sq 28	3	0.013	small, pot. worked				5	0.064	Bris/Staffs yellow slipware C18th, 3 S. Som coarseware C18th; 1 brick				C18th
West Sq 29	4	0.049	3 small, pot. worked, 1 heated				32	0.806	29 x S. Som. coarseware, many C18th, some C17th; 1 stoneware C19th; 1 brick (worm); 1 ind. English earthenware mid C18th+	4	0.029	Glass	C17-19th
West Sq 30	1	0.001					5	0.074	S. Som. coarseware C18th				C18th
West Sq 31							1	0.049	Tile post-1800	2	0.002	Clay Pipe Stem	post-1800
West Sq 33	3	0.096	1 heated				2	0.016	1 x N.Devon post-med gravel; 1 x N.Devon post-med gravel-free	1	0.110	Coal	post-med
West Sq 34	1	0.005											
West Sq 35	1	0.043	heated										
TOTALS	67	2.306	-	18	0.584	-	145	2.317	-	40	0.684	-	-

Other finds included: modern brick and ceramic land drain fragments, highway Cat's Eye and plastic waste [all discarded].

Appendix 5

The Stone Artefacts, *by Martin Tingle*

A small flint assemblage, made up of 39 pieces weighing 1925 grams and including a Palaeolithic biface, was collected by fieldwalking in two adjacent fields next to Exeter airport.

Raw Materials

The assemblage is largely made up of gravel flint, probably locally sourced, although there are also 3 pieces of worked chert (including the biface) and a single example of worked quartz. Most of the flint and chert, with the exception of the biface, is unpatinated

Composition and Technology

Find	No	Weight (g)
Broken flake	1	7
Tertiary Flake	1	12
Uncorticated Flake	5	48
Quartz Flake	1	28
Core Fragment	6	519
Systematic core	1	25
Retouched Flake	1	39
Biface	1	256
Burnt Flint	15	602
Burnt Pebble Fragment	2	282

Table 1: Finds from the western field

Over half the material recovered was unworked burnt flint which may not even represent prehistoric activity, but frequently does. The biface is reported on separately (Appendix 5, below), but it is worth noting that the retouched flake thought also to be possibly of Palaeolithic origins was found at least 30 metres from it and was made from a brown flint rather than the chert used for the former. The only other piece of note is the systematic core which is a small, intensively reduced, single platform flake core. It is made from a speckled brown flint and at 25g must have reached the point at which it was physically impossible to reduce it any further.

Find	No	Weight (g)
Broken Flake	1	9
Secondary Flake	1	25
Uncorticated Flake	1	3
Core Fragment	1	56
Scraper	1	14

Table 2: Finds from the eastern field

Only five pieces were found in the eastern field although it is notable that none of them were pieces of burnt unworked flint. The single retouched tool is a broken end scraper.

Distribution

Most of the material (34 of the 39 pieces) was found in the western field with a low level concentration of burnt material around three adjacent squares (14, 21 and 22). The much lower density of material in the eastern field may well reflect differential weathering brought about by differing methods of cultivation

Dating

Aside from the biface, none of the pieces are datable. The retouched flake is made from a different material than the biface. It is impossible to say whether or not the two are contemporary.

Conclusion

This is a very small assemblage and represents a fairly typical selection of off-site surface collection. The only exception to this is the biface, a class of find rarely encountered during fieldwalking

Terminology

Throughout this analysis the term 'cortex' refers to the natural weathered exterior surface of a piece of flint while 'patination denotes the colouration of the flaked surfaces exposed by human or natural agency.

Following Andrevsky (1998, 104) dorsal cortex is divided into four categories; the term primary flake refers to those with cortex covering 100% of the dorsal face while secondary flakes have cortex on between 50% to 99% of the dorsal face. Tertiary flakes have cortex on 1% to 49% of the dorsal face while flakes with no dorsal cortex are referred to as non cortical

A blade is defined as an elongated flake whose length is at least twice as great as its breadth. These often have parallel dorsal flake scars, a feature that can assist in the identification of broken blades that, by definition, have an indeterminate length/breadth ratio

Bibliography

Andrevsky, W. 1998: *Lithics. Macroscopic approaches to analysis*. Cambridge: Cambridge University Press.

Appendix 6

The Biface Handaxe, *by Laura Basell*

Introduction

This report has been prepared on two surface lithic finds discovered during an evaluation by South West Archaeology Ltd. Dr Brynmor Morris, who was working on site at the time of discovery, brought the artefacts to the attention of the author because of her interest and involvement in projects looking at Quaternary landscape evolution of the South West, and its relationship to the Palaeolithic colonisation of Britain by hominins. The following report focuses particularly on the biface as this is a diagnostic artefact, and west of the Axe valley there are comparatively few Palaeolithic finds. The report provides a techno-typological description of the artefact and an associated flake (seen only in a photograph), a description of the finds' context and finally a more general discussion where the wider significance of the finds is considered.

Find Description

The biface (see Figure 9, Figure 10 & Figure 11) is bifacially worked with invasive flaking on both sides. Its condition is reasonably fresh; the arêtes are minimally abraded and the edges remain quite sharp. However, a few small edge-damage flake removals are present around the tip of the object on both sides. Apart from the edge-damage the biface is heavily patinated on both sides. (Patination is the chemical/physical weathering of the artefact's surface that has occurred since flaking). This patination is predominantly creamy-white with patches of orange brown. The entire biface is covered with tiny orange-brown and blue grey flecks, which are part of the patination. A glossy sheen covers most of one side of the biface. There are a few small patches of similar sheen on the other side, although these are not as glossy. The biface is relatively small, and although it has been worked on both sides, the flaking is not completely covering.

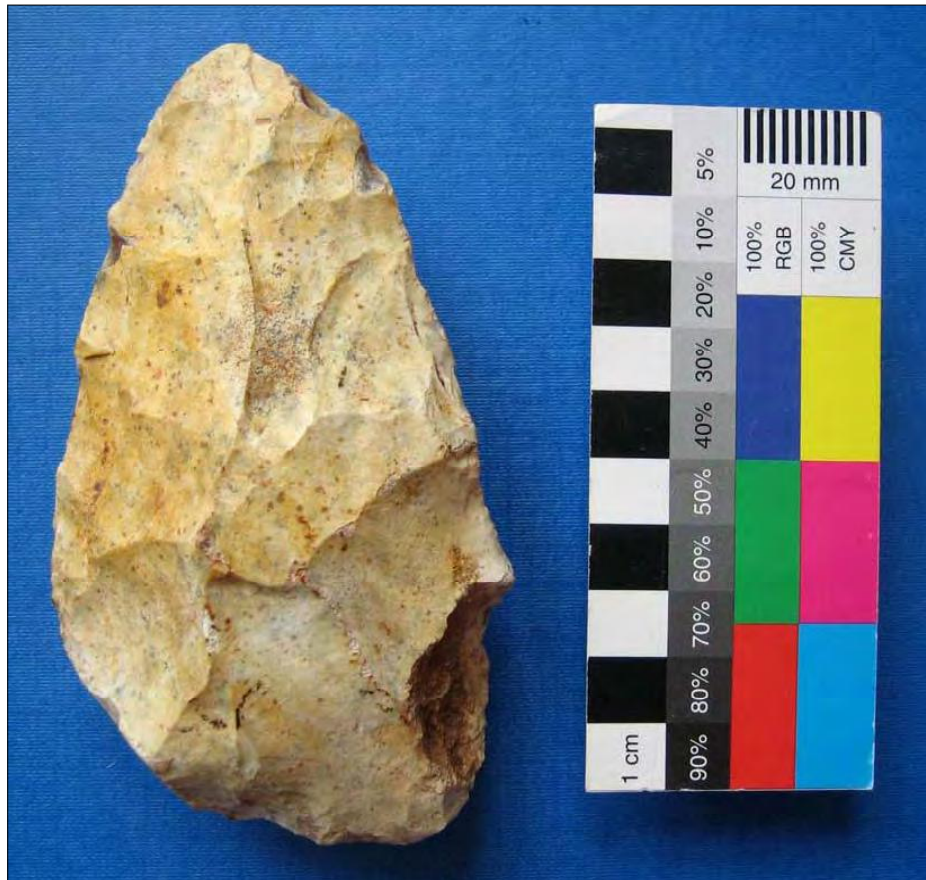


Figure 9: The CHEA08 Biface (photo: L.Basell).

The biface has been made on a large flake. The platform, which is plain and probably cortical, and some of the bulb of percussion, remain visible and unworked. With the biface oriented on its long-axis and

respecting its symmetry, this platform is on the proximal lateral margin of the piece, with an area of unworked rough orange brown cortex on the opposing proximal, lateral margin of the biface. The area immediately adjacent to this cortex has been used as a platform for some small removals. It is possible that the area described as cortex above was an internal flaw in a raw material nodule, but this seems unlikely. The biface is made from orange-brown chert, which is quite coarse-grained, although the heavy patination means it is only possible to see the unaltered raw material from the edge damage flakes. Despite the edge damage some small removals are visible around the tip of the biface. Typologically it is an elongated cordiform. More specifically, according to Bordesian typology, the biface may be described as a typical amygdaloid due to the sharp butt of the biface, but the retention of cortex in the butt region (Debénath and Dibble 1994).

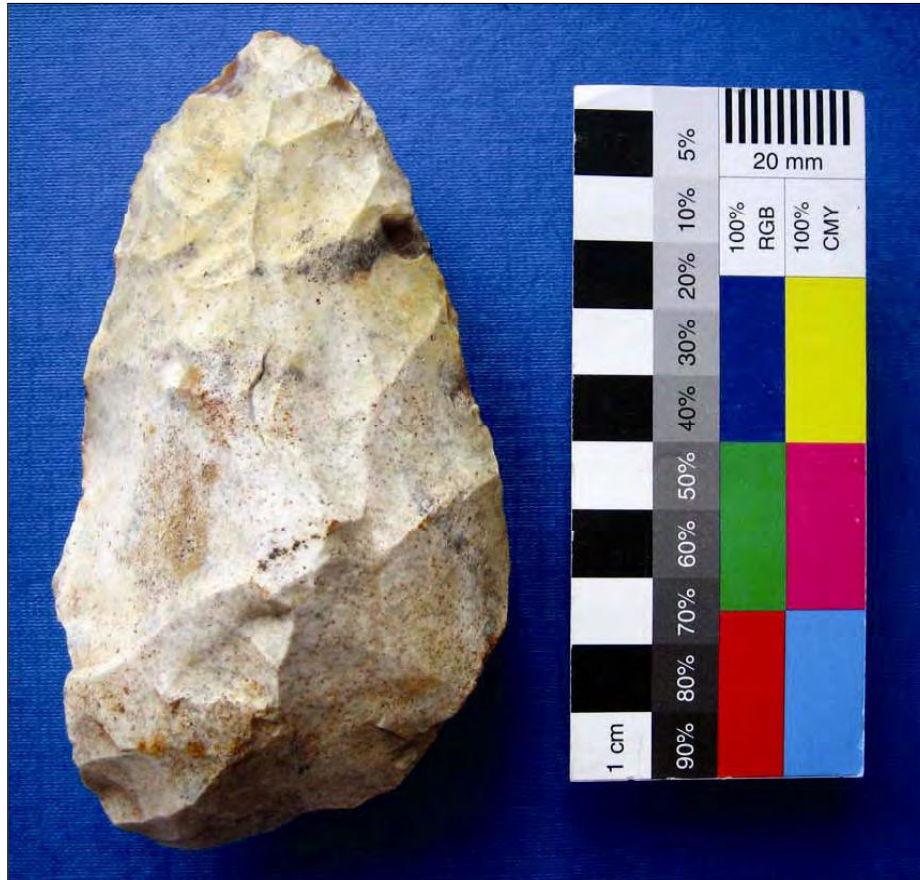


Figure 10: The CHEA08 Biface (photo: L.Basell).

A further lithic artefact was found during fieldwalking/geophysical survey in this field. The author has not seen this artefact, except in a photograph. It is a reasonably large flake (about 9 cm maximum linear dimension) and may be retouched on one side although closer examination would be necessary to see whether it's intentional or simply plough/natural edge damage. From the photograph, the location of the removals, their invasiveness and regularity suggests intent rather than edge damage. The flake retains an area of cortex at on its dorsal surface at the tip, and is otherwise unpatinated, unlike the biface described above. Its relationship to the biface is not known spatially, but it is of the same raw material as the biface, and its large size is interesting. The striking platform cannot be seen in the photographs but is likely to be plain, and is about 2 cm wide. With the dorsal side facing upwards, there is normal retouch (ventral to dorsal) on the distal and upper medial right side, and inverse (dorsal to ventral) retouch on the lower, medial right side. It is likely this is alternating retouch, but it is not possible to say without closer examination.

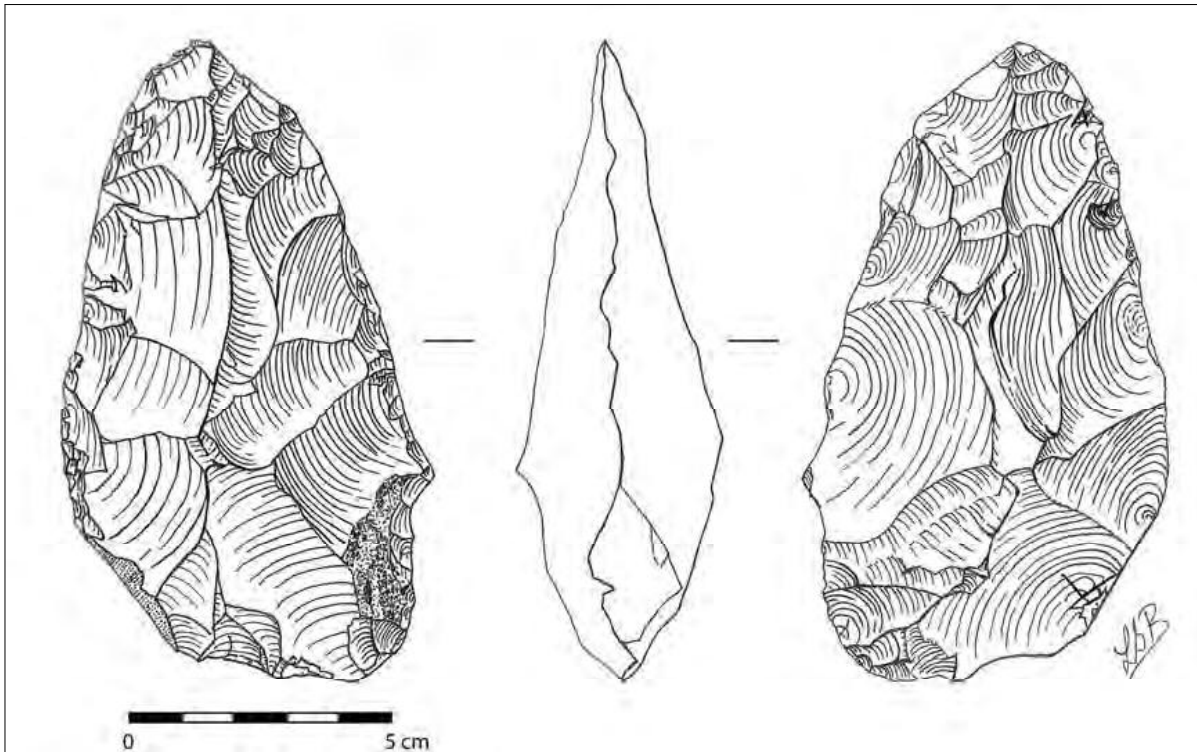


Figure 11: The CHEA08 Biface (drawing by L.Basell).

Morphometric Data [Biface]

Maximum Linear Dimension:	122.02 mm
Box length:	120.96 mm
Box width:	68.2 mm
Maximum width:	68.28 mm
Maximum thickness:	40.02 mm
Weight:	252.1g
Width 1/5 from the top:	42.21 mm
Width 1/5 from the butt:	56.64 mm
Invasiveness of flaking:	Covering on both sides, but with some cortex retention around the butt.
Tranchet blow:	No.
Original raw material form:	Not possible to tell.
Cortex %:	10-15%

Find Context

The biface was found on the crest of slight break of slope in the middle of the western field. The approximate position is SY 00810 93145. This falls on an area of the 1:50,000 Exeter geological sheet mapped as Aylesbeare Mudstone, close to a boundary with older head (solifluction) deposits (Edwards and Scrivener 1999). Several river terrace deposits associated with the Clyst, an eastern tributary of the Exe, are mapped in the vicinity. The majority of Palaeolithic finds in the UK come from river terrace deposits (Wymer 1999), and the Palaeolithic Rivers of South West Britain Project confirmed the distribution of open Palaeolithic finds in the south west being within/on river terrace deposits or extremely close to them and probably derived from them (Hosfield *et al.* 2007).

Although no river terrace deposits are mapped in the precise location in which this biface was found, it is highly likely the biface is derived from fluvial deposits. Such fluvial deposits were once far more extensive than the river terrace fragments which survive, and have been mapped, today. It is possible that small or remnant patches of terrace deposits, and reworked terrace deposits exist in this area, but were not mapped due to a lack of exposure at the time of mapping. Given the data available some preliminary conclusions regarding the finds' context can be reached.

The fresh condition of the biface indicates it has not been transported far. Examination of the mapped topography and terraces in the area strongly suggest this biface is derived from terrace 5 or possibly terrace

6. To the north west of the find spot there is a large exposure of terrace 4, but it is improbable that this is the source of the biface as the terrace 4 fragment is altitudinally lower than the find spot by about 5 metres, and it is very unlikely the biface will have moved uphill, unless by later human agency. An exposure of older head is mapped to the east of the grid reference provided, but the topography suggests the biface location is too high and too far west of the stream which also forms the boundary of the head to be derived from this particular deposit.

The gravel observed in the geotechnical pits could represent an eroded remnant of terrace 5 or terrace 6, but could also represent older head deposits which itself is probably derived from reworked higher terraces in this area. The older head is differentiated by Edwards and Scrivener (1999) as occurring in westward dipping deposits, containing clasts of the Budleigh Salterton Pebble beds in a matrix of clayey sand, or sandy clay in a variety of colours. The deposits seen in the photographs of the geotechnical pits sent to the author could fit this description, although further photographs and sedimentological logs would help to verify this. If gravel was only noted in the geotechnical pits in the lowest part of the field, near to the stream, it is also possible that the gravel is the limit of the mapped older head deposit which has subsequently been incised by the stream.

Discussion

The fresh condition of the find is surprising given its context as a surface find in a ploughed field. The heavy patination covering the artefact suggests it has lain exposed or in wet deposits for some time. It is also likely that the glossy sheen noted above could have been caused by prolonged exposure of that side of the biface. I.e. that the glossy side of the artefact lay uppermost in the field for a longer period of time. The taphonomy of the biface has probably differed slightly from that of the flake, which remains unpatinated despite being on the same raw material. The fact that one is patinated and the other is not does not mean the two pieces are of a different age. Patination is not a reliable indicator of antiquity because small changes in temperature, moisture or acidity for example, can affect the rate at which alterations occur (e.g. Burroni *et al.* 2002). In this case patination can only be used to suggest slightly different depositional histories. The flake and the biface may be of different ages, or the same age. Closer examination of the flake may throw some light on this (by considering the reduction technique used to produce it), but it is unlikely the question regarding contemporaneity will be resolved unless further finds are made, or further work is undertaken at the site.

Cordiform bifaces made on flakes and retaining a platform on the lateral butt, as in this example, are commonly but not exclusively found in assemblages of the Mousterian or Acheulean Tradition. It is a form which was frequently manufactured by *Homo neanderthalensis*, and also by *Homo sapiens*. However, there are many earlier occurrences of this form, for example at Boxgrove in the UK (dated to about 500,000 BP and associated with *Homo heidelbergensis*), and the form cannot be used to date the artefact more specifically than Lower to Middle Palaeolithic. In the case of a surface find, which lacks a clear stratified context, the possibility that an artefact was made more recently than the period in which the form is most commonly found (i.e. the Palaeolithic), should never be entirely ruled out. However, all the indications are that this artefact should be considered as Lower to Middle Palaeolithic in antiquity.

The relatively small size of the biface is probably related to raw material availability and size. Clasts of chert from the Blackdown Hills are abundant in the terraces of the River Clyst and its present day bedload. It is most likely that a large flake knapped from one of these clasts formed the blank on which the biface was made. The biface is remarkably similar in size, form and raw material to another biface found in Magdalen street (see Figure 12), Exeter which was found 1.5 metres below the surface during the excavation of a drain in 1935 (Pickard, 1933-1936). The findspot location of the Magdalen Street biface has subsequently been mapped as river terrace 5 of the River Exe. The terrace 5 attribution is in keeping with the biface from CHEA08 and several other bifaces from the region.

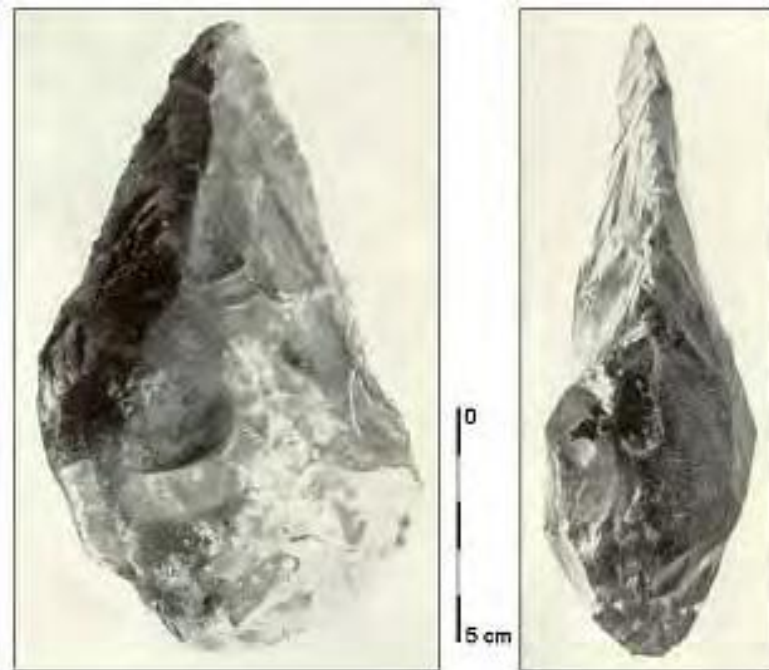


Figure 12: The biface found in Magdalen Street, Exeter, in 1935.

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Appendix 7

The Wood Charcoal, by Dana Challinor

INTRODUCTION AND METHODOLOGY

Following the radiocarbon dating of a piece of alder which yielded a date of 1270-1020BC, it was decided to undertake full analysis on the charcoal. The sample came from the middle fill of a curving ring-ditch [410]. A single sherd of prehistoric pottery was produced from the same context, along with some fire-shattered rocks.

Since the sample contained abundant charcoal (>500 fragments of identifiable size), 100 fragments were selected for full analysis. The charcoal was fractured and sorted into groups based on the anatomical features observed in transverse section at X7 to X45 magnification. Representative fragments from each group were then selected for further examination using a Meiji incident-light microscope at up to X400 magnification. Maturity was noted where possible. Identifications were made with reference to Schweingruber (1990), Hather (2000) and modern reference material. Classification and nomenclature follow Stace (1997).

RESULTS

The results are presented in Table 3. Seven taxa were identified: *Alnus glutinosa* (alder), *Corylus avellana* (hazel), *Fraxinus excelsior* (ash), *Ilex aquifolium* (holly), Maloideae (hawthorn, apple, pear etc.), *Populus/Salix* (poplar or willow) and *Quercus* sp. (oak). All of the identifications were consistent with native taxa and, on this assumption, have been given to species level where possible.

A few fragments exhibited ring curvature suggesting that small branchwood was represented, but the majority of the wood appeared to be from trunkwood. Tyloses noted in the large pores of oak attested the presence of heartwood, but sapwood could not be confidently identified owing to sediment obscuring the pores. In general, though, the preservation was good with large fragments.

	Feature type	Ditch
	Feature number	410
	Context number	411
	Sample number	1
<i>Quercus</i> sp.	oak	58h
<i>Alnus glutinosa</i> Gaertn.	alder	5
<i>Corylus avellana</i> L.	hazel	7r
<i>Alnus/Corylus</i>	alder/hazel	8
<i>Populus/Salix</i>	poplar/willow	9
Maloideae	hawthorn group	8r
<i>Ilex aquifolium</i> L.	holly	1
<i>Fraxinus excelsior</i> L.	ash	3r
Bark		1

r=roundwood; h=heartwood

Table 3: Results of the charcoal analysis

DISCUSSION

The charcoal was found in association with fire-shattered rocks, which suggests the remnants of cooking or burnt mound type activities. The assemblage is pretty diverse, with seven taxa represented, although oak forms the dominant component. Many burnt mound features exhibit a diverse range of charcoal taxa (e.g. Gale 2003), which is also common in domestic hearth assemblages. Interestingly alder is often used, possibly since full burnt mound features are nearly always close to springs or streams. The provenance of

the charcoal from Land at Exeter Airport is less clear, but is likely to represent the spent fuelwood from some sort of domestic cooking activity.

The species are appropriate for a variety of environment types available in the middle Bronze Age including woodland, riverside or damp ground and woodland margins. There is no particular suggestion of hedgerows, though ash is a colonising species which indicates open areas. The general south-west pollen picture suggests that the dominant Neolithic woodland of oak-hazel was modified by the end of the early Bronze Age (Wilkinson & Straker 2008), and the results from this analysis are not inconsistent with that picture.

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Appendix 8

Radiocarbon Determinants, by SUERC



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The bulk sample collected during the excavation was sent for specialist charcoal analysis (see Appendix 7). Charcoal suitable for radiocarbon dating was selected and sent to SUERC in June 2010. The result was received on 13th August 2010.

- N.B.**
1. The quoted ¹⁴C ages are in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standard and blank and the random machine error.
 2. The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).
 3. Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email g.cook@suerc.gla.ac.uk or Telephone 01355 270136 direct.

