LAND AT THE THREE HORSESHOES INN, BRANSCOMBE, DEVON

(Centred on NGR SY 1890 9128)

Results of an Archaeological Trench Evaluation and Excavation

Scheduled Monument No. 1017771

East Devon District Council Planning Reference: 15/1609/FUL

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On behalf of:
Charles E. Ware and Son

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AC archaeology

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The views and recommendations expressed in this report are those of AC archaeology and are presented in good faith on the basis of professional judgement and on information currently available.

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Summary

An archaeological trench evaluation and excavation was carried out by AC archaeology during October and November 2016, on land formerly occupied by The Three Horseshoes Inn, Branscombe, Devon (NGR SY 1890 9128). The main archaeological interest in the area was scheduled monument 107771, a cross ridge dyke of uncertain date. The evaluation consisted of the machine-excavation of five trenches totalling 94m in length and each 1.6m wide. An excavation area was positioned to target the cross ridge dyke ditch identified in two of the trenches.

Directly beneath the demolished structure of the former inn, the ditch of the linear earthwork, previously investigated elsewhere in 1993, was hand-excavated and the deposits filling it were extensively sampled for palaeoenvironmental analyses. There were no finds from the lower ditch fills, and no dating evidence was forthcoming, but the results of pollen assessmment found that the ditch, when in use, was located in an open pasture landscape. A small assemblage of worked flint was recovered from upper ditch fills and overlying deposits. In addition, six small pits and ditches were exposed in the evaluation and excavation; these were not closely dated, but some produced medieval pottery.

1. INTRODUCTION

1.1 Archaeological investigations on land formerly occupied by The Three Horseshoes Inn, Branscombe, Devon (NGR SY 1890 9128; Fig. 1 & Plate 1), were undertaken by AC archaeology during October and November 2016. The works were commissioned by Charles E. Ware and Son on behalf of clients and was required by East Devon District Council following advice from Historic England and the Devon County Council Historic Environment Team. The new development will comprise the erection of four new residential dwellings, two replacement dwellings and associated works.

1.2 The site is located approximately 3km to the north of Branscombe, and lies adjacent to the A3052 Exeter to Lyme Regis road, which is followed along this stretch by the northern boundary of Branscombe parish where it meets Southleigh. It lies on elevated ground forming a plateau at around 170m above Ordnance Datum and the underlying solid geology comprises sandstone of the Upper Greensand Formation (British Geological Survey On-line Viewer 2018).

2. ARCHAEOLOGICAL BACKGROUND

2.1 The inn was constructed over the remains of a linear earthwork which is a scheduled monument known as 'Cross ridge dyke extending north and south of The Three Horseshoes Inn' (National Heritage List for England no. 107771). It has recently been described in detail (Quinnell and Reed 2012), which reported on excavation during the laying of a water pipe and subsequent palaeoenvironmental analyses. The ditch was found in excavation to be V-shaped, about 5m wide and 1.7m deep. The pollen analysis of the ditch deposits indicated a certain amount of tree cover, mostly hazel, but with ash, alder, willow and pine present when the ditch was becoming filled, with the upper fills showing an increase in grassland species, indicating a more open landscape later on as the ditch filled (Straker and West 2012).

2.2 In summary, the earthwork remains are undated, but are known to have survived as an earthen bank for a total distance of 640m crossing the plateau in a north-south alignment, with a ditch on the east side. It has since the 19th century been eroded by ploughing and there is no trace of the monument at ground level, except at its far north end. The former Three Horseshoes Inn sat

directly above the earthwork and was located approximately central to its known length. The inn was built around 1830 as a roadside coaching inn and was subsequently altered and extended at various intervals, before finally closing in the early 2000s.

2.3 Archaeological work undertaken to provide supporting information for the planning application and Scheduled Monument Consent (SMC) comprised archaeological trial trenching and a historic appraisal of the inn (Passmore *et al*. 2015). The evaluation aimed to assess the survival of the monument, as well as establishing if there were any other archaeological features and deposits adjacent to it. The extensive presence of live services meant it was not possible to excavate a trench across the monument at this stage. However, six trenches totalling 57m in length were dug to the east of the known line of the earthwork, with the exposed archaeological features and deposits almost entirely of modern date and associated with the public house.

3. AIMS

3.1 The aims of the evaluation and excavation were to preserve by record any archaeological features or deposits present within the scheduled area and on its west side, which would be damaged or destroyed by the development work, (or under future permitted development), with particular reference to the cross ridge dyke. More specific aims were to:

- Establish the presence/absence and level of survival of the cross ridge dyke ditch and associated bank;
- Carry out formal archaeological excavation and recording should there be surviving remains;
- Establish the nature of the activity of any hitherto previously unrecorded archaeological remains outside the scheduled area to the west;
- Recover any environmental evidence from archaeological features;
- Identify any artefacts to positively date the monument and any hitherto previously unrecorded archaeological remains; and,
- Provide further information on the archaeology of Devon from any archaeological remains encountered.

4. METHODOLOGY

4.1 The archaeological works were undertaken in accordance with a project design prepared by AC archaeology (Valentin 2016), with reference to the Chartered Institute for Archaeologists' *Standard and Guidance for Archaeological Field Evaluation* (2014) and *Standard and Guidance for Archaeological Excavation* (2014) and the terms of an SMC for the development. It comprised the initial excavation of five trial trenches totalling 94m in length, followed by the stripping of an approximately 10m x 10m targeted excavation area, agreed with the Devon County Council Senior Historic Environment Officer and Historic England.

4.2 All trenches and the excavation area were located with a Leica Netrover GPS with sub-10mm accuracy. The removal of overlying deposits within the trenches was undertaken in a maximum of 0.2m spits under the control and direction of a site archaeologist. Stripping by mechanical excavator ceased at the level at which archaeological deposits or natural geology was exposed. Spoilheaps were scanned for displaced artefacts.

4.3 All features and deposits revealed were recorded using the standard AC archaeology *pro forma* recording system, comprising written, graphic and photographic records, and in accordance with AC archaeology's *General Site Recording Manual, Version 2* (revised August 2012). Detailed

sections and plans were produced at a scale of 1:10, 1:20 or 1:50 as appropriate. All site levels relate to Ordnance Datum.

4.4 A major aim of the archaeological works was to derive environmental evidence from the deposits within the cross ridge dyke ditch and any other dated features uncovered. The evaluation had the aims of establishing the presence and potential significance of surviving features to determine the importance and significance of the site to assist in determining the level and nature of any further (excavation) work. No dated features were exposed in this phase, so no samples were taken, and it was established that the cross ridge dyke survived and a programme of environmental sampling was established to meet the research aims of the project and with reference to Historic England's *Environmental Archaeology – A guide to the theory and practice of methods, from sampling and recovery to post-excavation*. The results of the environmental work are described in detail in section 8.

5. RESULTS – TRENCH EVALUATION (Fig. 2)

5.1 Introduction

Natural subsoil was exposed at a depth varying between 0.3 and 0.6m below existing ground levels and comprised mid yellowish-red clay, with patches of flint gravel as well as areas of slightly sandy clay. The overlying layer sequence varied and is described for each individual trench below. Archaeological features were exposed in all trenches.

5.2 Evaluation Trench 100 (Plan Fig. 3a, sections Fig. 3b-d; Plate 2)

This trench was 11m long, aligned approximately northwest by southeast and located in overgrown scrub at the northwest end of the site. Natural subsoil was exposed at a depth of between 0.77m to 0.9m below existing ground levels. Two features were exposed, curvilinear gully F10009 and sub-oval hollow F10004. These were overlain by up to 0.35m of subsoil (10001), composed of mid yellowish-brown silty clay loam. Sealing this was topsoil (10000), composed of mid grey loam.

Gully F10009

This was slightly curvilinear in plan, aligned approximately northwest-southeast, with a terminal at the north end which turned slightly to the west. It was 0.33m wide and had slightly concave, steep sloping sides, with a shallow concave base. Sections through the profile and terminal produced the same fill (10005/10007). This was composed of mid reddish-brown silty clay loam. Fill 10005 produced nine sherds of medieval pottery dated to the later 13th and early 14th centuries, these were abraded, with the largest sherd having poor surface condition, indicating that the sherds are probably residual in this context.

Hollow F10004

This was sub-oval in plan, but not fully revealed within the trench. The exposed length was 3.7m, with an exposed width of 1.03m. It had moderately-sloping concave edges, irregular in places, with a slightly rounded base (also irregular in places), and contained a single fill (10003). This was composed of mid brown silty clay, containing abundant moderately-sorted angular flint gravel. It produced one piece of prehistoric worked flint. The irregular nature of the base and sides, coupled with the high amount of coarse components may suggest this was a natural tree-throw.

5.3 Evaluation Trench 101 (Plan Fig. 3e, sections Fig. 3f-g; Plate 3)

This was east-west aligned and located to the southwest of Trench 100. It measured 13m long and natural subsoil (10103) was exposed at a depth of 0.3m to 0.6m below existing ground levels, revealing three features; ditch F10105, posthole F10107 and partially exposed feature F10109. These were overlain by a subsoil deposit (10102/10110). This was primarily composed

of a 0.28m thick mid reddish-brown to mid yellowish-brown silty clay loam. Overlying 10102 was a 0.2m thick re-deposited layer (10101), composed of mid yellowish-red silty clay, present for only 1.4m at the east end of the trench. Sealing the trench was topsoil (10100), composed of a 0.3m thick dark brown humic silty loam, containing modern debris such as brick, plastic and iron.

Ditch F10105
This was aligned east-west and measured 0.5m wide by 0.2m deep. It had moderately-sloping concave sides, a shallow rounded base and contained a single fill (10104). This was composed of mid brownish-yellow silty clay, containing two pieces of prehistoric worked flint.

Posthole F10107
This was oval in plan, measuring 0.2m long by 0.16m wide and 0.24m deep. It had vertical, straight sides with a concave base and contained a single fill (10106). This was composed of mid brownish-yellow silt clay and contained no finds.

Feature F10109
This was only partially exposed in the southwest corner of the trench, in close proximity to F10105. It was 0.25m deep and had shallow-sloping straight sides leading to a flat base. It contained a single fill (10108), which was composed of mid brownish-yellow silty clay, containing three small and abraded sherds of medieval pottery.

5.4 Evaluation Trench 103
This trench was 20m long and aligned northwest-southeast, positioned parallel with, and to the north of Trench 104. Natural subsoil was encountered at a depth of between 0.4 and 0.6m below existing ground levels. This exposed modern concrete and brick footings only. Subsoil (10301) was 0.2 to 0.52m thick and was composed of mid yellowish-red silty clay. This was sealed by overburden (10300), composed of pale greyish-brown silty clay containing demolition rubble. No pre-modern archaeological features or deposits were exposed.

5.5 Evaluation Trench 104 (Plate 4)
This was 25m long and aligned northwest-southeast, positioned parallel with, and between, Trenches 103 and 105. Excavation was halted at depths of between 0.15 and 0.4m below the bottom of demolition levels, where natural subsoil was exposed, along with linear features F10404 and F10406. Natural subsoil was composed of mid red silty clay. Overlying subsoil (10401) was composed of a 0.35m thick mid reddish-brown silty clay. Sealing this was a demolition layer (10400), composed of a 0.2m thick mid greyish-brown soil containing frequent modern brick and tile fragments.

Ditch F10404
This feature was not excavated at this stage as it was clearly the cross ridge dyke ditch which the project had targeted (see F1012, discussed in full detail below).

Ditch F10406
This feature was also not excavated at this stage in anticipation of the full area excavation (see F1005 discussed below).

5.6 Evaluation Trench 105
This was 25m long and aligned parallel with and to the immediate south of Trench 104, on a northwest-southeast alignment. Natural subsoil was exposed at a depth of 0.5 to 0.6m below existing ground levels. This revealed the cross ridge dyke ditch F10506 (see F1012, below). This was overlain by up to 0.45m of subsoil (10501) composed of mid yellowish-brown silty clay loam. This was sealed by demolition spread (10500), composed of a 0.2m thick mid greyish brown silty clay loam containing frequent modern demolition material.

6. RESULTS – EXCAVATION (Plate 5)

6.1 Introduction

Following positive identification of the cross ridge dyke ditch surviving in Trenches 104 and 105, the area was fully opened up for a formal excavation. This revealed two linear features, the cross ridge dyke, F1012, with a later ditch F1005 of later post-medieval date cutting across the top of it on a different alignment to the dyke ditch and dug after the dyke ditch had finally filled in this area in the post-medieval period. Natural subsoil was primarily a mid reddish clay with mixed sand/silt. This contained nodular flint gravel inclusions, which started sparse in number, but became frequent as depth increased. Some natural variation was present, with patches of pale yellow sandy clay or mid yellowish-red clay for example.

6.2 Cross ridge dyke ditch F1012 (Plan Fig. 4a, section Fig. 4b; Plates 6-7)

The ditch was aligned approximately north to south and measured from 4.27m to 5m wide, becoming wider to the south. It was up to 1.6m deep, shallowing to the south. The profile of the edges varied, due to minor variations in geology and weathering, but were generally steep and concave, shallowing to a rounded base. The base in the southern section was wider and flatter than to the north. The depositional sequence was largely identical in both sections, with only minor variations relating to primary deposits.

The earliest fill was 1031, which was composed of a 0.1m thick dark yellowish-brown silty clay with common sub-rounded flint nodules up to 70mm long. This was a clear initial edge weathering primary deposit that had accumulated rapidly after the ditch was cut. A slumped fill (1009) on the northwest edge filled a step on the side of the ditch and comprised re-deposited natural. Fill 1013 was a secondary deposit composed of homogeneous greyish-brown silty clay and was largely stone free indicating that the fill represents very stable sides and perhaps the presence of a berm between ditch and bank reducing the opportunity for the slumping of the bank onto the ditch. The pollen evidence from the lowest 38cm of the ditch fill (comprising fill 1031 and the lower part of 1013) indicates that the local environment over the time that these earliest deposits were accumulation was one of open rough grassland of a strongly pastoral nature with pollen grains of *Plantago lanceolata* (ribwort plantain), *Ranunculus* type (buttercups), *Trifolium* type (clover), *Centaurea nigra* type (knapweed) and Asteraceae types (daisy family) present. Some small evidence for cereal production in the general region was present, with a possible pollen grain of rye (*Secale cereale*) noted at the base of the profile. In particular though there was little evidence of woodland species in the immediate locality, although small stands *Quercus* (oak), *Alnus* (alder) and *Corylus* (hazel) were growing in the wider landscape; this was supported by the presence of small fragments of oak charcoal identified from bulk samples in the same fill. Processing of the bulk palaeoenvironmental samples from these fills showed that no macrofossil plant remains were present and there was no evidence for waterlogging of the ditch deposits, either in the bulk samples or through the microscopic search for diatoms which were found to be absent.

Secondary fill 1013 was partially overlain on the west side by slump deposit 1016, which was 0.32m thick and composed of mid brownish-grey silty clay loam, with a gritty/sandy element and contained frequent fine sub-rounded to sub-angular flint gravel up to 20mm long with rare exceptions up to 100mm long; this may be equivalent to slumped bank material (551) from the previous excavation (Quinnell and Reed 2012). Secondary fill 1013 was more generally overlain by tertiary fill 1017. The differentiation between secondary and tertiary fills (1013 vs 1017) is one of *in situ* post-depositional gleying rather than significant differences in the sedimentary and infill processes. This was further substantiated by the pollen evidence which shows that the environmental context is the same in the upper secondary fill 1013 and the tertiary fill 1017 with pollen grains indicating that the sides of the ditch were probably vegetated and stable during the period when these fills accumulated which is reflected in the lower percentages of *Lactucoideae* in these fills which are most likely derived from local, primary sources rather than being an input

from weathering of the sides of the ditch. Grasses remain dominant throughout and there is an increase in *Plantago lanceolata* from the lower fills, which suggests that rough pasture continued to dominate the locality. Other herbs types that attest to this include *Ranunculus* type (buttercups), *Trifolium* type (clover), Asteraceae types (daisy family) and *Rumex* (docks). Small numbers of *Cereal* type pollen more latterly in this zone may indicate some arable agriculture more regionally. As with the lower fills, the majority of the tree pollen recorded is most likely derived from long distance sources from trees growing as part of the wider landscape mosaic. These include *Betula* (birch), *Quercus* (oak), *Alnus* (alder) and *Corylus avellana* (hazel). However, *Tilia* (lime) and *Ilex* (holly) pollen, recorded at 104cm, have a limited dispersal area and as such, it may be inferred that these taxa were growing in closer proximity to the site.

The only finds from cross ridge dyke ditch F1012 came from tertiary fill 1017 and comprised four pieces of prehistoric worked flint, as well as a nail and one sherd of post-medieval pottery.

6.3 Ditch F1005

This was cut through the top of cross ridge dyke ditch F1012. On its south side it was on an east-west alignment, then to the west it turned at right angles to extend north-south. The ditch was 0.35m deep and on average 1.4m wide, with moderately-sloping concave sides, with a rounded base to the southeast and a flat base to the west. It had a single fill (1004/1006), composed of mid reddish-brown silty clay which contained a length of iron wire and six sherds of medieval pottery which were residual in this context.

7. THE FINDS *by Naomi Payne*

7.1 Introduction

All finds recovered on site during the evaluation and excavation have been retained, cleaned and marked where appropriate. They have been quantified according to material type within each context and the assemblage examined to extract information regarding the range, nature and date of artefacts represented. The collection of finds is summarised in Table 1.

Area	Context	Context Description	Iron	Worked flint/chert		Medieval pottery		Post-medieval pottery	
			No	No	Wt	No	Wt	No	Wt
Exc	1004	Sole fill of shallow ditch F1005 (excavation area)	1			6	36		
Exc	1017	Uppermost deposit, cross ridge dyke F1012	1	4	67			1	1
Exc	1023	Secondary deposit, cross ridge dyke F1012		3	18				
Tr 100	10000	Topsoil		3	75	1	2	1	25
Tr 100	10001	Subsoil		1	19	1	2		
Tr 100	10003	Sole fill of probable tree-throw F10004		1	9				
Tr 100	10005	Fill of small gully F10009				9	45		
Tr 101	10102	Subsoil				3	5		
Tr 101	10104	Fill of ditch F10105		2	6				
Tr 101	10108	Fill of partially exposed feature F10109				3	3		
Tr 103	10301	Subsoil		1	2				
Total			2	15	196	23	93	2	26

Table 1: Finds quantification by context (weights in grams)

7.2 Metalwork

Two iron objects were recovered from two contexts within the excavation area. A nail was found in context 1017, uppermost fill within cross ridge dyke F1012, which also contained a sherd of post-medieval pottery. The other object is from context 1004, sole fill of shallow ditch F1005, which also contained six sherds of medieval pottery. This is a length of iron wire, 3mm in diameter, which has been bent back on itself into an elongated loop. This has in turn been bent into an L-shape and the two ends are crossed over each other. It has very little corrosion and could conceivably be later in date than the pottery from this context.

7.3 Worked flint

14 pieces (192g) of worked flint were recovered from eight contexts within the excavation area and Trenches 100, 101 and 103. The worked flint is summarised in Table 2.

The raw material is mainly good quality dark flint, perhaps sourced from nearby Beer Head. Where present, cortex is nodule. The assemblage comprises a small number of flake cores and flakes, only one of which is possibly retouched, and two scrapers, one of which appears to have been lightly burnt. This is too small an assemblage to offer meaningful discussion of technology or date, but none of the pieces would be out of place in the later Neolithic or Early Bronze Age.

Context	Cores			Flakes			Blades			Tools		Burnt worked	Chips	Total	Comment
	Flake	Blade	Frag	Whole	Broken	Retouched	Whole	Broken	Retouched	Scraper	Other				
1017				1	2	1								4	Large, thick secondary flake with possible retouch at distal end
1023				1						1				2	Scraper is possibly burnt
10000	2			1										3	
10001										1				1	Coarse scraper
10003					1									1	
10104					2									2	
10301				1										1	
Totals	2	0	0	4	5	1	0	0	0	2	0	0	0	14	

Table 2: Summary of worked flint by context

7.4 Medieval pottery

23 sherds (93g) of medieval pottery were recovered from six contexts within the excavation area, Trench 100 and Trench 101. All of this material derives from jars made in Upper Greensand Derived (UGSD) fabrics, which were manufactured nearby in the Blackdown Hills. Pottery of this type has a date range of *c.* AD 950-1350, however the collection includes two cupped rim sherds from contexts 1004 and 10005. This rim form appeared in *c.* 1200 and was the most common type produced in UGSD during the later 13th and early 14th centuries (Allan 1984, 4). There is a further rim sherd from context 1004, but this is not of sufficient size to determine its form with certainty.

7.5 Post-medieval pottery

Two sherds (26g) of post-medieval pottery were recovered from two contexts within the excavation area and Trench 101. The sherds are described in Table 3. The only slightly unusual post-medieval sherd in the assemblage is the fragment of porcelain from context 1017. This is possibly a Chinese import.

Context	Description of pottery sherds	No.	Wt (g)	Date range
1017	1 small body sherd polychrome hand-painted porcelain	1	1	*c.* 1680-1850
10000	1 rim sherd from South Somerset earthenware bowl	1	25	C17-18

Table 3: Summary of post-medieval pottery by context

8. PALAEOENVIRONMENTAL ASSESSMENT

8.1 This section provides a summary of the findings of an assessment of the geoarchaeology, pollen and diatoms from cross ridge dyke ditch F1012. The sample suite that was assessed for pollen and diatoms is given in Table 4.

Ditch fill	***Context***	***Pollen***	***Diatoms***
Upper Tertiary	1017 upper	**4cm** 8cm	**4cm** 8cm
Tertiary	1017 lower	*16cm* **24cm** 32cm **40cm**	**16cm** 24cm 32cm **40cm**
Upper secondary	1013 upper	48cm **56cm** 64cm **72cm** 80cm **88cm** 96cm **104cm**	48cm 56cm **64cm** 72cm 80cm **88cm** 96cm 104cm
Lower secondary	1013 lower	110cm **118cm** 126cm **134cm** **142cm**	**110cm** 118cm 126cm **134cm** 142cm
Primary	1031	**150cm**	**150cm**

Table 4: Depths of palaeoenvironmental subsamples: samples in **bold** were assessed

8.2 Geoarchaeology *by Michael J. Allen*

The deposits were fine-grained and surprisingly stone-free considering the stony nature of the local Clay-with-Flints superficial geology (Plates 8 and 9). The ditch deposit profile is tabulated in Appendix 1. No charcoal was noted. No waterlogging was noted, but some deep ancient rootlets survived and possible weak traces of former waterlogged wood were present on the exposed surface at *c.* 1m depth. No bank or buried soil were observed. The lack of artefacts makes dating challenging, but tends to confirm the rural non-settlement nature of the cross ridge dyke; situated away from settlement activity and burning areas. The detail of the geoarchaeology findings have been incorporated within the excavation report above.

8.3 Pollen *by Catherine Langdon and Rob Scaife*

Twelve sediment sub-samples were taken for pollen assessment from a ditch profile of the cross ridge dyke (see Table 4). Overall, the deposits are fine-grained, mainly stone-free, silty clay. The principal objectives of this study were to establish if sub-fossil pollen and spores are present and, if so, their state of preservation, to provide a record of the past vegetation and environment during the period of sediment accumulation. Of the twelve samples assessed, all contained pollen, mostly in abundance, although preservation was variable. A pollen diagram (Fig. 5) has been constructed and some preliminary information on the palaeoenvironment obtained.

Methods

Due to the minerogenic nature of the sediment large pollen sub-samples of up to 4ml volume were processed using standard techniques for the extraction of the sub-fossil pollen and spores (Moore and Webb 1978; Moore *et al.* 1992). The pollen and spores were identified and counted

using Nikon and Olympus biological research microscopes at magnifications of x400 and x1000. Pollen counts ranged from 150 to 250 grains per sample. Fern spores and miscellaneous elements were counted outside of the basic pollen sum. The pollen diagram (Fig. 5) was plotted using Tilia and Tilia View. Percentages have been calculated in a standard way, as follows:

Sum =	% total dry land pollen (tdlp).
Marsh/aquatic =	% tdlp + sum of marsh/aquatics.
Spores =	% tdlp + sum of spores.
Misc. =	% tdlp + misc.

Pollen taxonomy, in general, follows that of Moore and Webb (1978), modified according to Bennett *et al.* (1994) and Stace (1992). These procedures were carried out in the Palaeoecology Laboratory of the School of Geography, University of Southampton (PLUS). An extensive pollen reference/comparative collection was available for identification of some taxa encountered.

The pollen data

Two local pollen assemblage zones (l.p.a.z.) have been recognised for ease of interpretation and description of the palynological sequence. The characteristics of these zones are detailed and described in Table 5.

Pollen assemblage zone	***Palynological characteristics***
Zone 2 4-112cm Poaceae-*Plantago lanceolata* Upper Secondary and Tertiry fills	Poaceae dominate during this zone (up to 70%) with *Plantago lanceolata* also a significant component of the pollen assemblage with values between 20% and 40%. Tree pollen is represented at relatively low percentages with *Quercus* (2%), *Alnus* (<5%) and *Corylus avellana* type (2-5%) present throughout the zone. Other trees and shrubs recorded at <2% include *Betula*, *Ulmus*, *Ilex*, *Salix* and *Calluna*. Whilst Poaceae and *Plantago lanceolata* dominate the herb pollen assemblage, *Ranunculus* type and Brassicaceae also continually feature at values of <3%. The occasional occurrence of Caryophyllaceae types, Chenopodiaceae, *Dipsacus*, Fabaceae, *Medicago* type, *Trifolium* type, and *Rhinanthus* type are also noted (amongst others). *Cereal* type pollen is recorded from 68cm to the end of the zone (<2%). Liverworts feature throughout the zone and spores of *Dryopteris* type and *Polypodium vulgare* are also present.
Zone 1 112-150cm Poaceae-Lactucoideae Primary and Lower Secondary fills	Poaceae peaks at 80% at 142cm and remains at values of *c*.60% for the rest of the zone. Meanwhile, Lactucoideae (dandelion types) peak at 25%. Trees are present at low percentages with *Quercus*, *Corylus avellana* type and *Alnus* present throughout at values of <5%. There is also the occasional incidence of *Betula* and *Ulmus*. *Plantago lanceolata* rises from 15% to 22% as the zone progresses, whilst *Ranunculus* type, Brassicaceae and *Trifolium* type are continually recorded at values of <5%. *Cereal* type pollen is present during the entire zone and other herbs sporadically present include *Dianthus*, *Dipsacus*, *Anthemis* type and *Centaurea nigra* type. Fern spores (*Polypodium vulgare* and *Dryopteris* type) occur throughout with *Pteridium aquilinum* also part of the assemblage.

Table 5: Pollen zonation and description of the ditch sediment fill

Interpretation and discussion

Typically pollen present in ditches may be taphonomically complex and can derive from a number of sources which should be considered in the interpretation of this pollen profile. These sources may include direct pollen transfer from surrounding vegetation via airborne or insect vectors or from secondary, derived sources such as domestic waste of various forms. Crop processing, waste food and human and animal faecal debris are frequent sources of secondary

pollen found in ditch and pit profiles. Reworked pollen from older sediment and soils must also be considered here. Zone 1 is contemporaneous with the primary and lower secondary fill deposits, which consist of silty clay and some stones that are reported to have weathered from the sides of the ditch. As a result, this zone appears to be taphonomically complex and the pollen will have derived from local and regional sources and also from in-wash from earlier/secondary deposits. The increase in *Lactucoideae* (dandelion types) pollen percentages (114-134cm, within lower 1013) that is concurrent with the slightly more stony deposits is most likely, at least in part, to be of secondary derivation from soils that have washed in as a result of this weathering/instability. *Lactucoideae* pollen is particularly robust and tends to differentially preserve in soil samples as it has a longer residence time than other, less robust, pollen types (Dimbleby 1957) and would thus account for this increase.

Despite this complex taphonomy it is clear from the pollen data that the local environment was one of open grassland of a strongly pastoral nature. *Plantago lanceolata* (ribwort plantain), *Ranunculus* type (buttercups), *Trifolium* type (clover), *Centaurea nigra* type (knapweed) and *Asteraceae* types (daisy family) all attest to this interpretation of an environment dominated by rough pasture. Small numbers of Cereal type pollen are also evident, which may represent some arable activity more within the region. A possible grain of rye (*Secale cereale*) was noted at the base of the profile. Rye tends to be thought of as an Iron Age or Roman introduction but has now been identified at an increasing number of sites pertaining to the late Bronze Age (Chambers 1984).

In general there is a paucity of pollen associated with tree and shrub taxa in the initial zone, however it may be surmised that *Quercus* (oak), *Alnus* (alder) and *Corylus* (hazel) were growing in small stands in the wider landscape. The pollen of these taxa is anemophilous and may have been transported from more regional or extra regional sources. The presence of small numbers of *Calluna* pollen from 142cm is also indicative of some localised acidophilous, heath type vegetation.

Zone 2 (upper secondary and tertiary fills) reflects a period in which the sides of the ditch were probably vegetated and stable, an assumption that is concurrent with the interpretation of the infill history described above. This is reflected in the lower percentages of *Lactucoideae* in this zone which are most likely derived from local, primary sources rather than being an input from weathering of the sides of the ditch. Grasses remain dominant throughout and there is an increase in *Plantago lanceolata* from the previous zone, which suggests that rough pasture continued to dominate the locality. Other herbs types that attest to this include *Ranunculus* type (buttercups), *Trifolium* type (clover), Asteraceae types (daisy family) and *Rumex* (docks). Small numbers of *Cereal* type pollen more latterly in this zone may indicate some arable agriculture more regionally.

During zone 2, again, the majority of the tree pollen recorded is most likely derived from long distance sources from trees growing as part of the wider landscape mosaic. These include *Betula*, (birch), *Quercus* (oak), *Alnus* (alder) and *Corylus avellana* (hazel). However, *Tilia* (lime) and *Ilex* (holly) pollen, recorded at 104cm, have a limited dispersal area and as such, it may be inferred that these taxa were growing in closer proximity to the site.

Comparative pollen data

There is a wealth of pollen data relating to Devon, however, with the exception of Straker and West (2012) of the cross-ridge dyke to the north of The Three Horseshoes Inn, there are no other local pollen data. Pollen studies in this county have, however, concentrated on natural peat and sediment accumulations and few a few soils, the latter usually associated with archaeological sites. Overall, pollen studies have largely focussed on the upland regions of Dartmoor and Exmoor where peat accumulation forming under anaerobic conditions is abundant. In contrast to the highland zone, there are fewer data coming from the lowland zone, especially from east

Devon (Hatton and Caseldine 1991), where there have been only a few analyses of on-site archaeological contexts.

Archaeologically based pollen analyses include the earlier soil pollen studies of Woodbury Castle (Dimbleby 1973-1976), Kestor Iron Age camp (Blackburn 1954) and Cholwichtown stone circle (Simmons 1964). The latter two, however, are soil pollen analyses from upland Dartmoor. More recent pollen analyses of archaeological contexts include the fills of a Romano-British well or water hole feature at Pomeroy Wood, Honiton, East Devon (Scaife 1999). The latter, a Romano-British water-hole/well produced well-preserved and abundant pollen. This showed a habitat in which tree and shrub pollen was sparse but with an abundant/diverse herb flora thought to have come from a variety of different sources. The pollen taphonomy was complex and the pollen sources may include domestic waste such as animal bedding and straw containing pollen of cereals and associated weeds. As such this may not be comparable with the data obtained from Branscombe, although the homogeneity of the sequence and the assemblages do bear a strong similarity.

The Branscombe data thus appear to fill a small gap in the otherwise significant pollen contribution that Devon has made to our understanding of vegetation and environmental change for the South West of England as a whole. The Branscombe profile shows a clear grassland, almost certainly pasture, habitat. It should, however, be noted that pollen profiles such as obtained from contexts of limited spatial extent as examined at Branscombe, will have derived from a small catchment. As such, the pollen recovered will only represent the on, and very near site vegetation (Dimbleby 1985). Nevertheless, patterns of vegetation can be determined from analysis of a range of such sites within a specific region. The value of using multiple small sites for recording local vegetational histories and temporal and spatial aspects of wider vegetation and landscape change has been amply shown by Fyfe *et al.* (2004) for a number of small sediment filled basins around Rackenford. From these sites, they demonstrated that, by the start of the Iron Age, the lowland landscape was dominated by pastoral activities. During the middle Iron Age, there was increased human pressure on the landscape leading to clearance of valley side (alder) woodland. Subsequently from the late Iron Age, there is evidence that it was characterised by continuous pastoral activity, which continued through into the Roman period. This bears resemblance to the interpretation of the Branscombe data.

It can be said that the overall open and agricultural environment described here, is as might be expected for the Iron Age to Romano-British periods in this region. However, at Aller Farm (Hatton and Caseldine 1991) pollen data pertaining to the Romano-British and later periods show substantial woodland. This comprised oak, ash, alder and hazel woodland and emphasises the need for additional analyses of on-site archaeological features in addition to the more normal peat and lacustrine sequences found in upland Devon.

Summary and conclusions

- Pollen was generally of reasonable preservation and of high concentration, although this was reduced in the uppermost samples.

- The initial zone was one of more complex pollen taphonomy with some inwash into the ditch.

- The environment was very open and dominated by rough pasture throughout the time-span represented by the infilling of the ditch sediment.

- Occasional *Cereal* pollen types are present suggesting small amounts of arable activity and the possible cultivation of rye.

- There is little tree and shrub pollen suggesting that a predominantly open habitat existed at least in proximity to the site. The arboreal taxa which have been recovered are mostly anemophilous and are likely to derive from regional or long distance sources.

- Change through time and a vegetation history can be detected.

Diatoms *by Nigel Cameron*
Eight samples have been prepared and assessed for diatoms. The purpose of carrying out this diatom assessment was to record the presence or absence of diatoms and the potential of diatom assemblages for further analysis. Of particular interest is whether diatoms provide an indication of water-filled ditches in the past and if there were changing water levels that might be related to land-use history. The diatom assessment takes into account the numbers of diatoms, the state of preservation of the diatom assemblages, species diversity and diatom species environmental preferences.

Methods
Diatom preparation followed standard techniques (Battarbee *et al.* 2001). Two coverslips were made from the sample and fixed on a slide in Naphrax for diatom microscopy. A large area of the coverslips was scanned for diatoms at magnifications of x400 and x1000 under phase contrast illumination.

The samples selected for diatom assessment are shown in Table 6.

Ditch fill	***Context***	***Diatom sample no***	***Diatoms***
Upper Tertiary	1017 upper	**1**	**4cm** 8cm
Tertiary	1017 lower	**2** **3**	**16cm** 24cm 32cm **40cm**
Upper secondary	1013 upper	 **4** **5**	48cm 56cm **64cm** 72cm 80cm **88cm** 96cm 104cm
Lower secondary	1013 lower	**6** **7**	**110cm** 118cm 126cm **134cm** 142cm
Primary	1031	**8**	**150cm**

Table 6: Samples assessed for diatoms. The sample depths of the samples selected for assessment are shown in bold type.

Results
The results of the diatom assessment for the Branscombe site are shown in Table 7.

Diatoms are absent from all eight samples assessed from Branscombe cross ridge dyke.

Sample	Diatoms	Diatom numbers	Quality of preservation	Diversity	Assemblage type	Potential for % count
1	absent	-	-	-	-	none
2	absent	-	-	-	-	none
3	absent	-	-	-	-	none
3	absent	-	-	-	-	none
5	absent	-	-	-	-	none
6	absent	-	-	-	-	none
7	absent	-	-	-	-	none
8	absent	-	-	-	-	none

Table 7: Summary of diatom assessment results for samples from the cross-ridge dyke

Discussion

The absence of diatoms may reflect unfavourable conditions for diatom silica preservation (Flower 1993; Ryves *et al.* 2001). Given the ubiquity of diatoms in water and in many semi-terrestrial habitats, the absence of their remains from the samples can be attributed to taphonomic processes. This may be the result of diatom silica dissolution and breakage, caused by factors such as high sediment acidity or alkalinity, through flow of water in the sediments, the under-saturation of sediment pore water with dissolved silica, cycles of prolonged drying and rehydration, or physical damage to diatom valves from abrasion.

It is not, therefore, possible to comment on the presence or absence of water in the ditch, water levels, water quality or other aspects of the aquatic environment based on diatom remains. There is no further potential for diatom analysis of these samples.

Conclusions

1. Diatom assemblages are absent from the eight samples taken from the Late Bronze Age/Iron Age cross-ridge dyke at Branscombe. It is not, therefore, possible to determine from diatom analysis whether or not water was present in the ditch or to comment on the nature of any variations in water levels and the aquatic environment. There is no further potential for diatom analysis of these samples.

2. The absence of diatom assemblages from the sediments is attributed to taphonomic processes.

Ostracods

As no evidence for diatoms or waterlogging was present the presence of ostracods was not assessed.

8.4 Archaeobotanical assessment

This section provides the findings of an assessment of the archaeobotany.

Environmental sample assessment *by Cressida Whitton*

Five environmental bulk samples were recovered during archaeological excavation of the cross ridge dyke ditch F1012. Four priority bulk samples (Samples 1 and 3 - 5) were selected from 25cm sections taken from the secondary fill (context 1013) for processing. It should be noted that no specific dumps or deposits had been observed and the processed bulk samples were taken as representative of the fill of the cross ridge dyke ditch. The main priority was to recover charcoal/charred plant macrofossils (CPM) suitable for radiocarbon dating in order to place the palaeoenvironmental analyses of the monolith samples within a chronological context, although it was recognised that the charcoal/CPM, would date that material rather than the construction or use of the ditch, and this would provide only a general indication of the feature's date. In addition, it was hoped that CPM could be recovered that would be suitable for specialist assessment. Sample 2 was taken from shallow ditch F1005 which cut the upper fills of the cross

ridge dyke ditch F1012 and was not processed as finds indicated that this had high potential for modern contamination.

Methodology
The samples were processed by flotation and sieving, using standard methods, in a siraf-type tank. The largest residue (5.6mm mesh) was dried and hand-sorted for artefacts and ecofacts using an illuminated hand lens and the waste was discarded. The dried flots (250 micron) and smaller residues (2mm and 500 micron) were scanned and/or part-sorted using a stereo-binocular microscope (10-30 x magnification).

Results (Table 8)
The samples contained a high clay content with natural chert inclusions, as well as occasional to moderate lumps of grey inorganic clay. Very little charcoal was visible during initial flotation, but some small trunk/branchwood fragments were collected mainly in the 2mm residue (rather than the flot). No waterlogged organic material was present in the samples, with occasional mineralised fine roots in the flot. There was very poor presence of charred plant macrofossils when all the flots and finer residues were scanned under the microscope a small fragment of probable hazelnut shell was observed (supporting the presence of *Corylus* (hazel) as identified in the pollen assessment, see Langdon and Scaife, above). All charcoal fragments were collected into tubes and forwarded for specialist assessment (see Challinor, below).

Sample no.	**Context no.**	**Description**	**Sample volume** Litres (Lts) processed & % of Flot assessed (scanning & sorting) Small flot – 0.25 -0.5ml Large flot – 0.5 litre +	**Ecofacts** Charcoal fragments - size (mm) type e.g. trunk/branchwood (t/bwd) Charred Plant Macrofossils (CPM) - grain (type)/chaff, legume, weed seed, nut & berry
1	1013	Upper 25 cm of fill	15 litres processed (100% of sample) 100% of small flot (50ml) sorted	xx – moderate, 10 + trunk/branchwood (t/bwd) charcoal fragments size <2 mm and 1 x 3mm)
3	1013	Basal 25cm of fill	25 litres processed (100% of sample). 100% of small flot (50ml) sorted	15 + trunk/branchwood (t/bwd) charcoal fragments size 2- 4 mm) 2 x ? Roundwood twigs
4	1013	25cm – 50cm of fill	21 litres processed (100% of sample). 100% of small flot sorted	xx moderate 15+ trunk/branchwood (t/bwd) charcoal fragments size 2 - 4 mm)
5	1013	25cm – 50cm of fill	20 litres processed (100% of sample). 100% of small flot sorted	x occasional10 + small trunk/branchwood (t/bwd) charcoal fragments size (2 - 3 mm) 1 x medium 5mm charcoal t/bwd fragment CPM 1 x HNS fragment (very small)

Table 8: Results of palaeoenvironmental bulk sample assessment

Charcoal assessment *by Dana Challinor*
The samples were examined for the identification of charcoal and selection of suitable pieces for radiocarbon dating. Standard procedures for identification were followed, with the material mounted in a sand bath for examination. Unfortunately, the charcoal was very small in size (<2mm) and it was not possible to determine maturity as most of the fragments exhibited less than a whole growth ring. It was possible to identify oak, but not whether heartwood or sapwood

was represented. All of the material was smaller than would usually be selected for dating, plus the oak could have come from a long-lived specimen meaning that the potential for reliable radiocarbon dating was considered very poor.

9. DISCUSSION

9.1 The results of the trench evaluation and excavation have revealed limited evidence for three dated phases of activity on the site; prehistoric, medieval and post-medieval/modern. These are discussed by phase below. There are also four undated features including the cross ridge dyke ditch and these are also discussed.

9.2 Prehistoric

General prehistoric activity in the application area is evidenced by the recovery of residual worked flint from multiple features, as well as throughout the soils on site. An absence of a distinct concentration, as well as tools, indicates only transient activity. It would appear then that there was no significant prehistoric activity within the area investigated, beyond the excavation area of the cross ridge dyke ditch, which produced no securely dateable artefacts. This corresponds with the findings of the previous evaluation of the area to the east of this excavation, which found no pre-modern archaeological evidence (Passmore *et al.* 2015).

9.3 Medieval

There is evidence of limited medieval activity across site, in the form of finds from overlying layers, ditch F1005 (in the excavation area), gully F10009 (in trench 100) and ditch F10109 (in trench 101), The pottery is residual in F1005 as it cut the upper fill of cross ridge dyke ditch F1012 which contained finds of post-medieval date and the pottery also may be residual in gully F10009 and ditch F10109, given its abraded condition. The limited number of finds and small number of possible linear features perhaps indicates that agricultural activity was taking place at this time.

9.4 Undated

Two features encountered in the evaluation, which did not produce any secure dating but might conceivably be post-medieval, were ditch F10105 and posthole F10107 (both in Trench 101). F10105 produced worked flint, but this could easily be residual. The proximity of F10105 and posthole F10107 to each other), might suggest that they are broadly contemporary. Furthermore, F10105 could potentially relate to F10504 (in Trench 105), or even be a continuation of the same feature, as they have a similar alignment running roughly parallel to the modern road. Therefore these features could represent a post-medieval field boundary alongside the road. Another feature which could not be securely dated was hollow F10004, in Trench 100. This produced a single piece of worked flint and was close to possible medieval gully F10009. Neither the worked flint nor its proximity to F10009 is enough to suggest a secure date, while its form suggests it may well be a natural tree-throw.

9.5 The cross ridge dyke ditch F1012

The focus of the archaeological works was the scheduled area containing the cross ridge dyke whose ditch was identified in the evaluation trenches and subsequent excavation. A small part of the ditch of the linear earthwork which had survived the construction of Three Horseshoes Inn was exposed. The profile and filling of the ditch was different to that previously exposed a short distance to the north in 1993 (Quinnell and Reed 2012). In the more recent excavation the ditch profile had a rounded base, with irregular sides and was not the V-shape previously observed. This difference within the central section of the known monument may indicate that variation in shape occurs along the length of the monument, although the dimensions were broadly similar, with the previous excavation indicating that the ditch was 5m wide by 1.7m deep and the new excavation giving figures of up to 5m wide by 1.6m deep, with the shallower depth accounted for

by the greater truncation of the ditch in this area, which was evident as no former ground surface or bank material survived, as they had in the area of the earlier excavation.

Palaeoenvironmental significance
The pollen assemblages indicate a cross ridge dyke constructed in a pre-existing open-country landscape suggesting the ditch was dug in the mature Bronze Age or later. A possible grain of rye cereal pollen may be concomitant with a Late Bronze Age (Chambers and Jones 1984) or later date, but its widespread introduction is generally thought to be Iron Age or Romano-British in date; but see Wytch Farm, Dorset, where it is present in both the plant macrofossil (Carruthers 1991) and pollen (Scaife 1991) records in the Iron Age and is discussed as being better suited to poor heathland podzols than many other cereals (Allen and Scaife 1991, 219).

The cross ridge dyke ditch infill sequence seems to have been moderately rapid, though there is no evidence of deliberately slighting or backfilling. Nor is there evidence in the upper secondary fill of clear stasis and soil development as often see (cf. Allen 2017, 39, fig. 40; Evans 1972, 321-8, fig. 123).

The cross ridge dyke ditch cut through a pastoral landscape, one of rough pasture with small stands of birch, oak, alder and hazel growing as part of the wider landscape mosaic. Cereal cultivation is indicated within this landscape more regionally, but a slight increase in cereal representation in the upper secondary and tertiary fills may indicate more arable agriculture locally.

This very open, rough pasture and grazed landscape here, differs from the assessment of pollen from the same cross ridge dyke immediately north of the Three Horseshoes Inn (Straker and West 2012). That data indicates a greater level of tree cover, mostly hazel, but with ash, alder, willow and pine. Only in the upper fills was there an increase in grassland species, indicating a more open landscape later on in its use, more comparable to that seen here.

These two pollen spectra are broadly consistent, despite minor variations and represent a long land-use history.

The value of this data is, however, diminished by the lack of any formal chronology for the construction of the cross ridge dyke, and for any date within its infill history. The pollen sequence, and land-use history derived from it, has only poor and vague chronological reference. Nevertheless they provide an important, and subtly contrasting record from that examined from the ditch previously.

Dating
The only artefacts recovered during the excavation of F1012 were flint-working waste flakes and a pair of post-medieval finds, all from the uppermost fills of the ditch and not providing a date for its construction. In a pair of articles John Torrance (2008; 2009) has, through tracing placename elements in the near locality, shown convincingly that the linear earthwork was an extant feature in Saxon times given the name *Raddis* (and variants) translating as ‘red ditch’, which can be documented in various guises for farms, fields and routeways from *Domesday* onwards. This is an appropriate moniker for the ditch given the colour of the natural clay, and although it is not unusual for earlier earthworks to be given Saxon names, the use of the colour in its name presumably indicates that the name was applied in regard to how it looked when either first dug or cleaned out.

Interpretation
Some discussion of the purpose of this linear earthwork, which appeared to have acted as a cross ridge dyke, has been presented previously (Quinnell and Reed 2012, 96). Unfortunately, the most recent intervention, although adding to our knowledge in regard to the morphology of

the ditch and its environment, has not been able to provide an absolute date for its construction, which by necessity inhibits the possibility of understanding the monument within its context. In addition to what has previously been opined, the opportunity is taken here to add a few observations which may lead to a better understanding of its purpose.

The earthwork appears to cut off a large chunk of plateau forming an east-west ridgeway along an amorphous spur of Broad Down before it finally drops to the valley of the Axe some 5.5km to the east. The ditch is on the east side of the bank indicating that it was probably constructed by those on its west side concerned with people approaching from the east. That the current A3052 road follows an ancient ridgeway route is quite probable and it may follow the line of a Charmouth to Exeter Roman road (Devon HER no. MDV16647; Margary 1973, 116), with some possible evidence for this road found a little further to the east in a pipe-line trench close to Hangman's Stone (Quinnell and Reed 2012, 97). Several other named stones known historically (Two Sisters, Great Stone and Bound Stone) along the stretch of road adjacent to the former inn have been used to argue for the significance of this ridgeway route in prehistory (Torrance 2008; 2009), however, given that they follow the line of the parish boundary between Branscombe and Southleigh (as hinted by the name 'Bound Stone'), their existence can also be explained by their positioning as boundary stones of medieval or later date.

10. CONCLUSIONS

10.1 The archaeological works on land at the Three Horseshoes Inn, Branscombe, have revealed evidence for three periods of activity on the site. Prehistoric worked flint, none of which appears to be contemporary with features on the site, indicates some unspecified use of the area during this period, but does not appear to represent evidence of settlement. Similarly features of medieval date and those which were undated indicate some, probably small-scale, but unspecified use of the site.

10.2 The excavation exposed part of the ditch of the cross ridge dyke which had survived beneath the construction of the Three Horseshoes Inn during the first half of the 19th century. The profile of the ditch was different to that previously exposed a short distance to the north in 1993. In the more recent excavation the ditch profile had a rounded base with irregular sides and was not the V-shape previously observed. This difference within the central section of the known monument may indicate that variation in shape occurs along its length, although the dimensions were broadly similar. The previous excavation showed that the ditch was 5m wide by 1.7m deep and the new excavation confirmed the width but was a little less deep at 1.6m. The shallower depth of the ditch is accounted for by the greater truncation of the ditch in this area, which was evident as no former ground surface or bank material survived as it had in the area of the earlier excavation. This suggests that construction of the inn had levelled the area down to the deposits which already filled the ditch. Another difference between the findings of the excavations is that the assessments of the pollen grains found preserved in the basal deposits of the ditch in 1993 showed that the ditch had been dug in an environment with a certain amount of tree cover, in contrast however, the pollen in the recent excavation showed that the ditch was dug in an open environment of rough grassland, with only evidence for distant patches of woodland. Both phases of excavation failed to locate any dating material.

11. ARCHIVE AND OASIS

11.1 The finds, paper and digital archive is currently held at the offices of AC archaeology Ltd, at 4 Halthaies Workshops, Bradninch, near Exeter, Devon, EX5 4LQ under the unique project codes of **ACD1147** and **ACD1381** and under a temporary reference number **RAMM: 16/13** from the Royal Albert Memorial Museum, Exeter. The finds and paper archive will be offered to the museum, but if they are unable to accept this, then it will be dealt with under their current accession policy.

11.2 An online OASIS entry has been completed, using the unique identifier **220673**, which includes a digital copy of this report.

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PROJECT

Land at the Three Horseshoes Inn, Branscombe, Devon

TITLE

Fig. 1: Location of site

AC archaeology

PROJECT

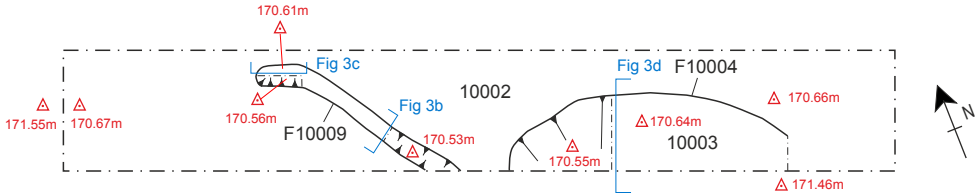
Land at the Three Horseshoes Inn, Branscombe, Devon

TITLE

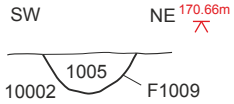
Fig. 2: Location of all evaluation trenches and the excavation area, with archaeological features shown

AC archaeology

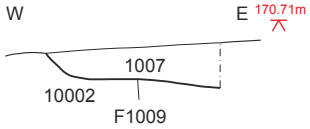
a) Plan of Trench 100



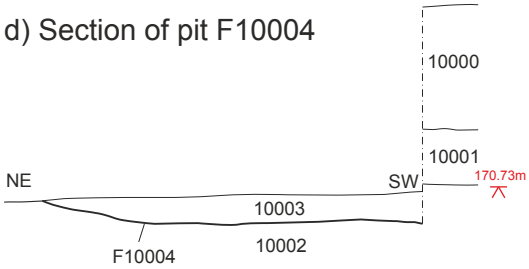
b) Section of gully F10009



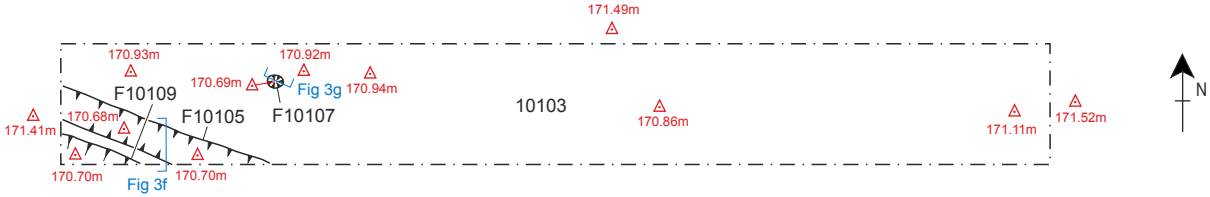
c) Section of gully F10009



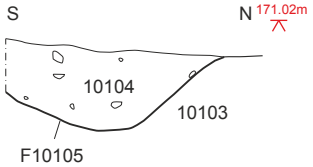
d) Section of pit F10004



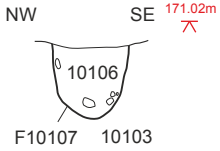
e) Plan of Trench 101

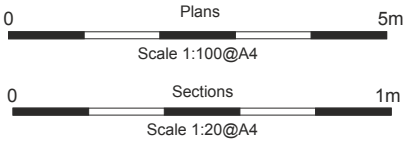


f) Section of ditch F10105



g) Section of ditch F10107





PROJECT

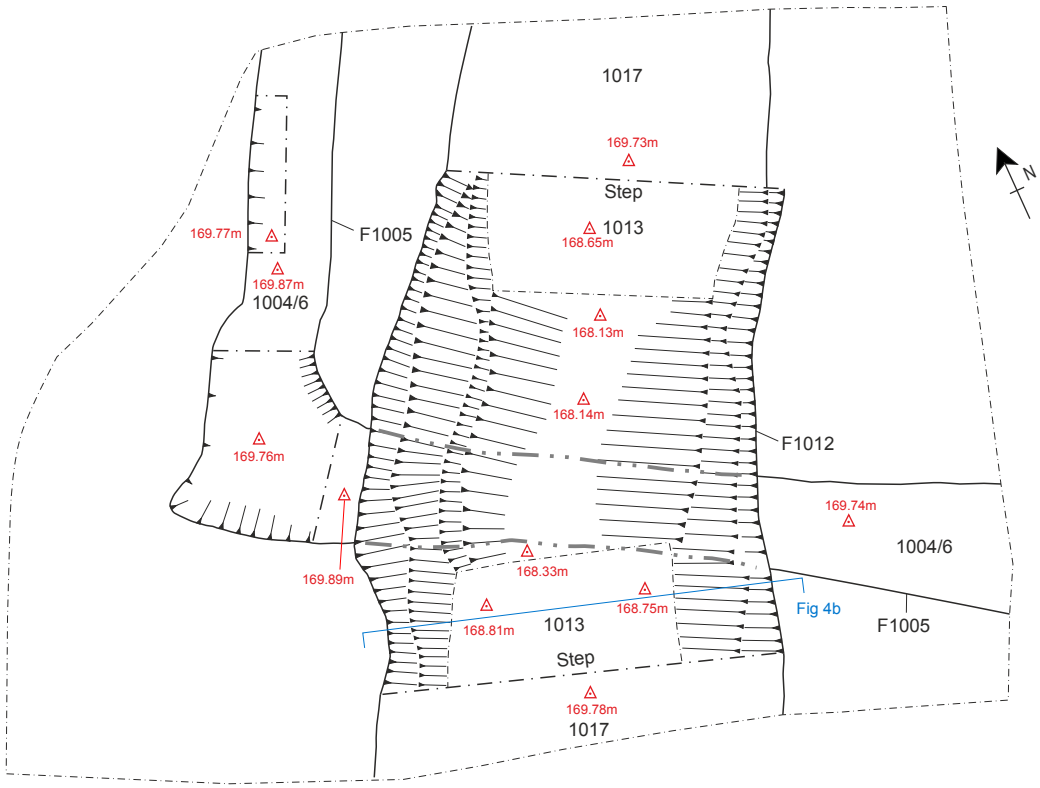
Land at the Three Horseshoes Inn, Branscombe, Devon

TITLE

Fig. 3: Trenches 100 and 101, plans and sections

AC archaeology

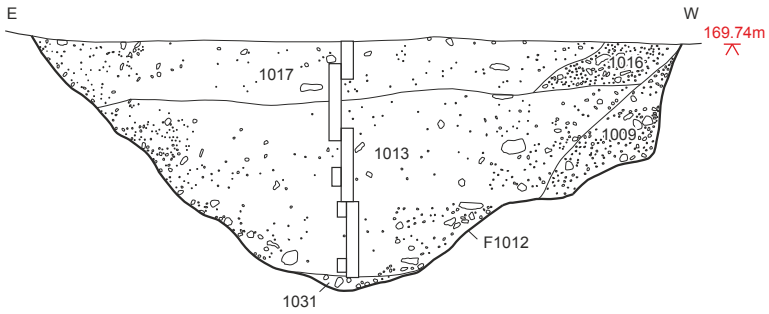
a) Plan of Excavation area



0 5m

Scale 1:100@A4

b) Section of ditch F1012



0 3m

Scale 1:50@A4

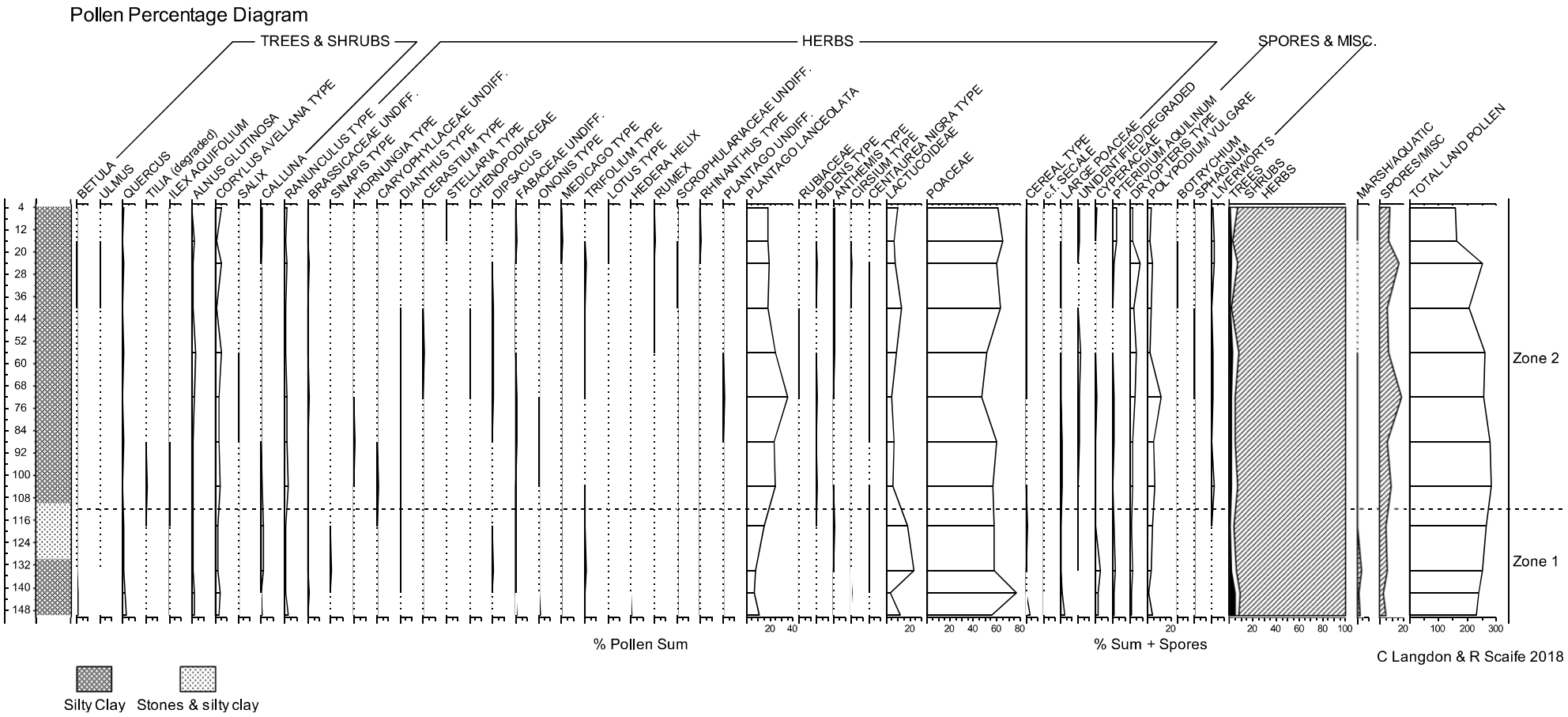
PROJECT

Land at the Three Horseshoes Inn, Branscombe, Devon

TITLE

Fig. 4: Plan and section of cross ridge dyke F1012, showing position of palaeoenvironmental samples

AC archaeology



PROJECT

Land at the Three Horseshoes Inn, Branscombe, Devon

TITLE

Fig. 5: Pollen assessment histogram from the cross ridge dyke ditch F1012

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Plate 1: General view of the site with Trench 106 in the foreground, looking north (2m scale)

Plate 2: Trench 100, general view with gully F10009, looking southeast (2 x 1m scales)

Plate 3: Trench 101, ditch F10105 and posthole F10107, looking west (1m scale)

Plate 4: Trench 104, general view, looking east (2 x 1m scales)

Plate 5: Excavation area, looking north (1m and 2m scales)

Plate 6: Excavation area, working in progress, excavating southern section of cross ridge dyke ditch F1012, looking southwest

Plate 7: Excavation area, northern section of cross ridge dyke ditch F1012, looking north (2m scale)

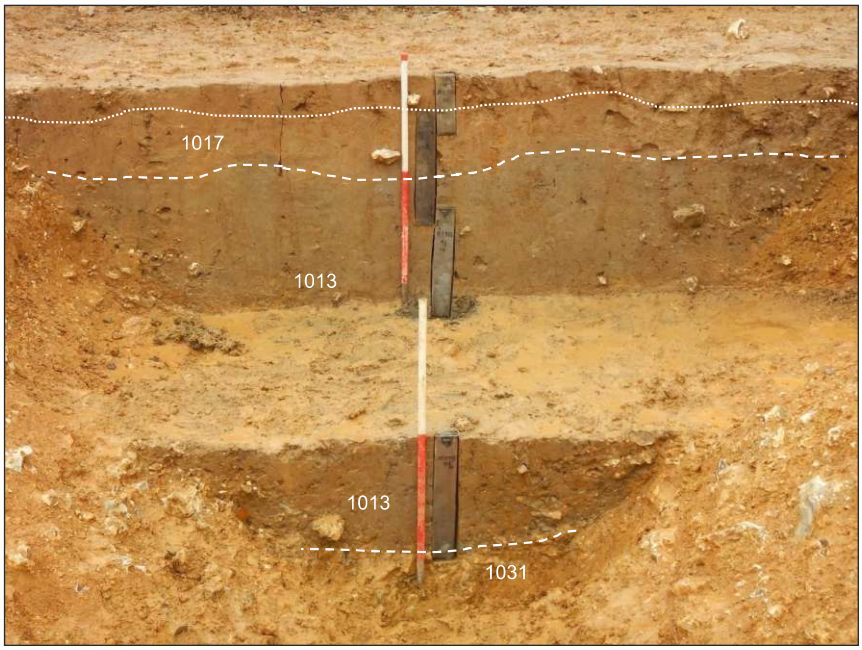

Plate 8: The cross-ridge dyke with monoliths in place(1m and 1m scales)

Plate 9: The profile showing location of three foil kubiena samples (1m scale)

Appendix 1

Palaeoenvironmental Assessment by Michael J. Allen, Catherine Langdon, and Nigel Cameron

AEA 336: FORMER THREE HORSESHOES INN, BRANSCOMBE, DEVON (ACD1381):
palaeo-environmental assessment (geoarchaeology, pollen and diatoms)

by ***Michael J. Allen, Catherine Langdon and Nigel Cameron***

version AEA 336.02.01
19th February 2018

for:-
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version 1.0

AEA 336: FORMER THREE HORSESHOES INN, BRANSCOMBE, DEVON (ACD1381):
palaeo-environmental assessment (geoarchaeology, pollen and diatoms)

Michael J. Allen, Catherine Langdon and Nigel Cameron

Summary
Excavations conducted by ACD were visited on 15 November 2016, and the section of the prehistoric cross-ridge dyke (Scheduled Monument No. 107771) recorded and sampled (Allen 2016). The assessment was commission on 8 January 2018.This report summarised the ditch infilling sequences (geoarchaeology), and the assessment of the pollen and diatoms. Assessment show good level of pollen preservation and indicates the ditch was consisted in an open pastoral landscape. Diatoms were not preserved.

Michael J. Allen

The prehistoric (but undated) cross-ridge dyke at the Three Horseshoes Inn, Branscombe, Dorset (Passmore *et al.* 2015) is located on Upper Greensand Formation overlain by deep (>1.6m) of Clay-with-Flints Formation and is mapped as supporting a complexity of soils including stagnogleyic argillic brown earths of the Hornbeam 2 Association and pelo-stagnogley soils of the Dunkeswell Association with further afield typical brown earths of the Bromsgrove Association (Findlay *et al.* 1984).

The ditch [1012] was exposed in a stepped section and totalled *c.* 1.6m deep. The northern section was selected for description and sampling (Fig. 1). The ditch profile was fully described: and an area of the cleaned sectioned was pecked to expose and reveal true colour and sediment structure, and described following standard terminology (Hodgson 1997); see Appendix 1. Field descriptions were augmented by examination of the undisturbed (monolith) samples in laboratory conditions at the AEA laboratory facilities. Ditch fill notation follows Allen (2017, 38-41); Evans (1972, 321-8); and Limbrey (1975, 290-300).

Sampling

A sequence of four overlapping monolith tins sampled the entire profile excepting the base of the very thin (0.13m thick) stony primary fill. These enabled more detailed geoarchaeological description and interpretation, and subsampling at 10mm bandwidth and appropriate intervals for pollen, diatoms and foraminifera. In addition three foil kubiena samples (*c.* 8 x 12cm) were taken for consideration for characterisation of the deposits (Figs 1-3) and recorded on the section drawing (Fig. 3).

The sequence

The deposits were fine-grained and surprisingly stone-free considering the stony nature of the local Clay-with-Flints superficial geology. No charcoal was noted. No waterlogging was noted, but some deep ancient rootlets survived and possible weak traces of former waterlogged wood were present on the exposed surface at *c.* 1m depth. No bank or buried

soil were observed. The lack of artefacts makes dating challenging, but tends to confirm the rural non-settlement nature of the cross-ridge dyke; situated away from settlement activity and burning areas.

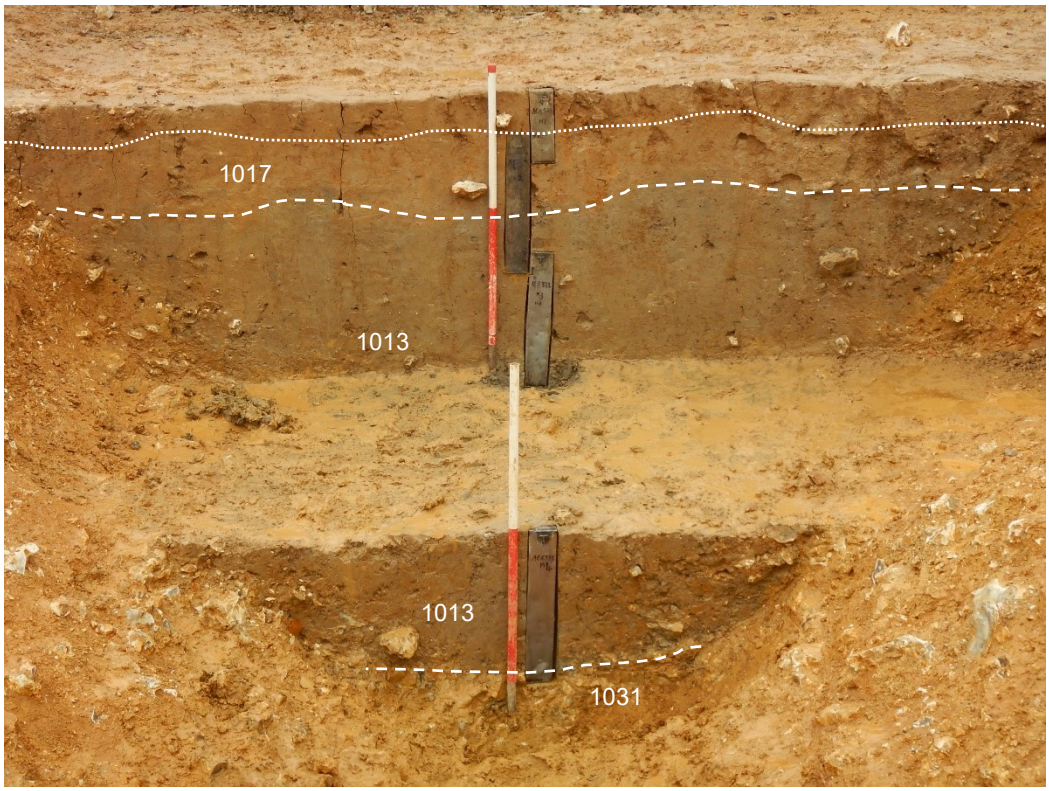

Figure 1. The cross-ridge dyke with monoliths in place


Figure 2. The profile showing location of 3 foil kubiena samples

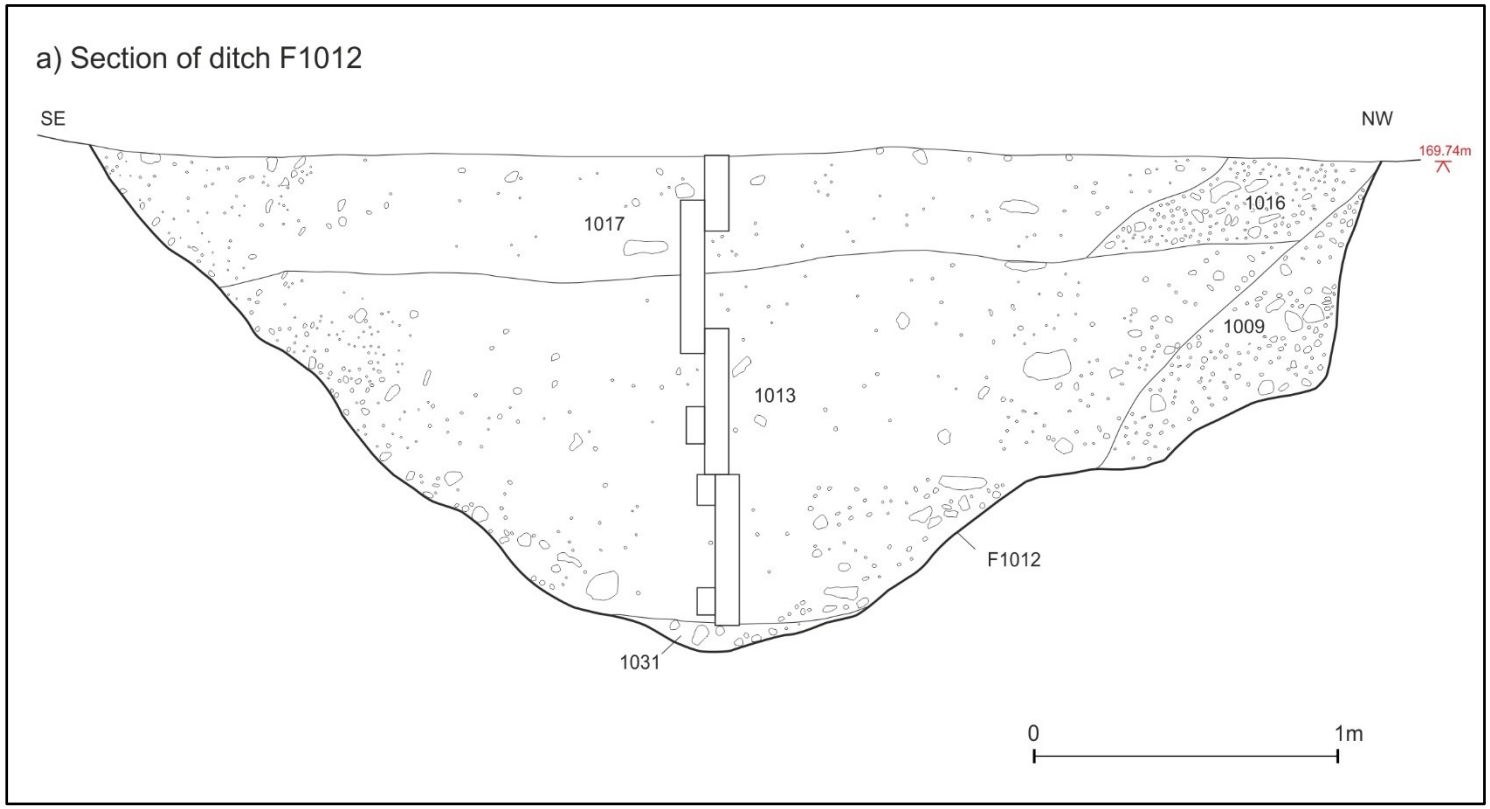

Figure 3. Field section drawing of ditch 1012 showing the location of the four monolith tins (M1-M4) and three kubiena sample (K1-K3)

The fills can be summarised as follows (more detailed descriptions are given in Appendix 1):

Depth (cm)	***Context***	***Fill***	***Summary description***
0-14	1017	Upper tertiary fill	Yellowish brown stone-free silty clay, weak medium to large blocky structure, strong brown mottles
14-41	1017	Tertiary fill	Stiff greyish brown silty clay, stone-free, rare large flints, strong brown mottles
41-98	1013	Upper secondary fill	Homogeneous greyish brown silty clay, essential stone-free, fine to medium abrupt mottling to 60cm
98-146	1013	Lower secondary fill	As above (greyish brown silty clay), but from 118cm rare small stones weathered from the sides, very soft stuctureless deposits
146-157	1031	Primary fill	Dark yellowish brown silty clay with common small and medium flints derived
157+		Geology	Brownish yellow to yellowish brown stiff firm massive silty clay, common medium and large brecciated and partial cortical flints

Geoarchaeology and interpretative comments
The thin primary fill (1031) contains numerous flints and deposits derived directly from the geology and which had accumulated rapidly after the ditch was cut (within months to years). The shallow nature of this deposit (11cm), however, suggests either the stony primary fill was cleared out, or that the sides were stable and weathered slowly. The main (secondary) fill (1013) was uncharacteristically almost stone-free. Although the lower portion (98-146cm) contained a few more stones than the rest of the profile, the lack of this clastic material indicates very stable sides and conditions around the cross-ridge dyke. The differentiation between the secondary and tertiary fills (1013 vs 1017) is largely one of *in situ* post-depositional gleying rather than significant changes in sedimentary and infill fill process. The infill process seems to have been relatively constant and consistent and undifferentiated and there were no indications of stasis or the formation of a buried soil.

Localised slumping of the sides was recorded relatively late in the infill history (Fig. 3), and in particular stony deposit 1016 occurs over the main secondary after the majority of the ditch had infilled, and may represent later slippage from bank, again suggesting the present of a constraint or berm. The lack of evidence in the lower ditch profile of any bank-derived material suggest that the bank was retained or that a significant berm existed between bank and ditch, and that this was not breached by the weathering and erosion of the presumably significant bank. Strong gleying of the deposits indicate the presence of high and fluctuating ground water table, but permanent long-term waterlogging does not seem to be evident.

There is general paucity of artefacts despite the relatively large portion of the ditch excavated, and this confirms the lack of human activity (i.e. settlement, occupation etc.) within the immediate vicinity. The combination of artefacts paucity and the lack of organic remains (charred or waterlogged) makes dating the ditch, and the long infill history difficult. Although the fills have the potential to provide a palaeo-environmental sequences covering

possibly several millennia, the lack of any dating evidence depletes the value of any palaeo-environmental information.

The infill deposits were fine-grained deposits, and the base of the ditch was below groundwater level at the time of excavation (November 2015), alerted to the possibility of the ditch being in part waterfilled in prehistory. Hence sampling for diatoms and other micro-environmental remains the assessment of which was considered.

Palaeo-environmental subsampling
The monoliths were examined in laboratory conditions under normal light, and illuminated magnification. The sediment face in the four monoliths of undisturbed sediments was carefully cleaned and described to augmented field records (Appendix 1). Samples of 10mm bandwidth were taken at 80mm intervals through the sequence for pollen, foraminifera/ostracods and diatoms. A total of 59 subsamples were removed as three sequences of 20 samples (Table 1). The location of the samples is indicated in Appendix 1 and Table 1.

Ditch fill	***Context***	***Pollen***	***Diatoms***	***Foraminifera /ostracods***
Upper Tertiary	1017 upper	**4cm** 8cm	**4cm** 8cm	 8cm
Tertiary	1017 lower	*16cm* **24cm** 32cm **40cm**	**16cm** 24cm 32cm **40cm**	16cm 24cm 32cm 40cm
Upper secondary	1013 upper	48cm **56cm** 64cm **72cm** 80cm **88cm** 96cm **104cm**	48cm 56cm **64cm** 72cm 80cm **88cm** 96cm 104cm	48cm 56cm 64cm 72cm 80cm 88cm 96cm 104cm
Lower secondary	1013 lower	110cm **118cm** 126cm **134cm** **142cm**	**110cm** 118cm 126cm **134cm** 142cm	110cm 118cm 126cm 134cm 142cm
Primary	1031	**150cm**	**150cm**	150cm

Table 1. Depths of subsamples: samples in **bold** were assessed

PALAEO-ENVIRONMENTAL ASSESSMENT

Palaeo-environmental assessment was undertaken of the pollen (land-use history) and diatoms (ditch hydrological micro-environment).

Aims
The aims of assessment were to determine the presence and preservation of pollen and diatoms thought the sampled sequence and the potential for defining a land-use, landscape and vegetation history of the sequence.

Assessment also aims at attempting to define the potential that analysis could define the environment and land use when the ditch was cut, and record any change in that environment / land-use after its establishment. In addition diatoms specifically hoped to address if the ditch was water filled in past, what the potential was for analysis to and map the changing water levels which could indirectly be related to the history of human activity.

Samples
The sample suite was assessed for pollen and diatoms is given in Table 1 and Appendix 1.

Pollen Assessment

Catherine Langdon & R. Scaife

Twelve sediment sub-samples were taken for pollen assessment from a ditch profile of the prehistoric cross-ridge dyke (see above, and Table 1, Appendix 1). Overall, the deposits are fine-grained, mainly stone-free, silty clay. The principal objectives of this study were to establish if sub-fossil pollen and spores are present and, if so, their state of preservation, to provide a record of the past vegetation and environment during the period of sediment accumulation and to provide any recommendations for further analysis. Of the twelve samples assessed, all contained pollen, mostly in abundance, although preservation was variable. A pollen diagram (Fig. 4) has been constructed and some preliminary information on the palaeo-environment obtained.

Methods
Due to the minerogenic nature of the sediment large pollen sub-samples of up to 4ml volume were processed using standard techniques for the extraction of the sub-fossil pollen and spores (Moore & Webb 1978; Moore *et al.* 1992). The pollen and spores were identified and counted using Nikon and Olympus biological research microscopes at magnifications of x400 and x1000. Pollen counts ranged from 150 to 250 grains per sample. Fern spores and miscellaneous elements were counted outside of the basic pollen sum. The pollen diagram (Fig. 4) was plotted using Tilia and Tilia View. Percentages have been calculated in a standard way, as follows:

Sum =	% total dry land pollen (tdlp).
Marsh/aquatic =	% tdlp + sum of marsh/aquatics.
Spores =	% tdlp + sum of spores.
Misc. =	% tdlp + misc.

Pollen taxonomy, in general, follows that of Moore and Webb (1978), modified according to Bennett *et al.* (1994) and Stace (1992). These procedures were carried out in the Palaeoecology Laboratory of the School of Geography, University of Southampton (PLUS). An extensive pollen reference/comparative collection was available for identification of some taxa encountered.

The pollen data
Two local pollen assemblage zones (l.p.a.z.) have been recognised for ease of interpretation and description of the palynological sequence. The characteristics of these zones are detailed and described in table 2.

Branscombe, Devon

Pollen Percentage Diagram

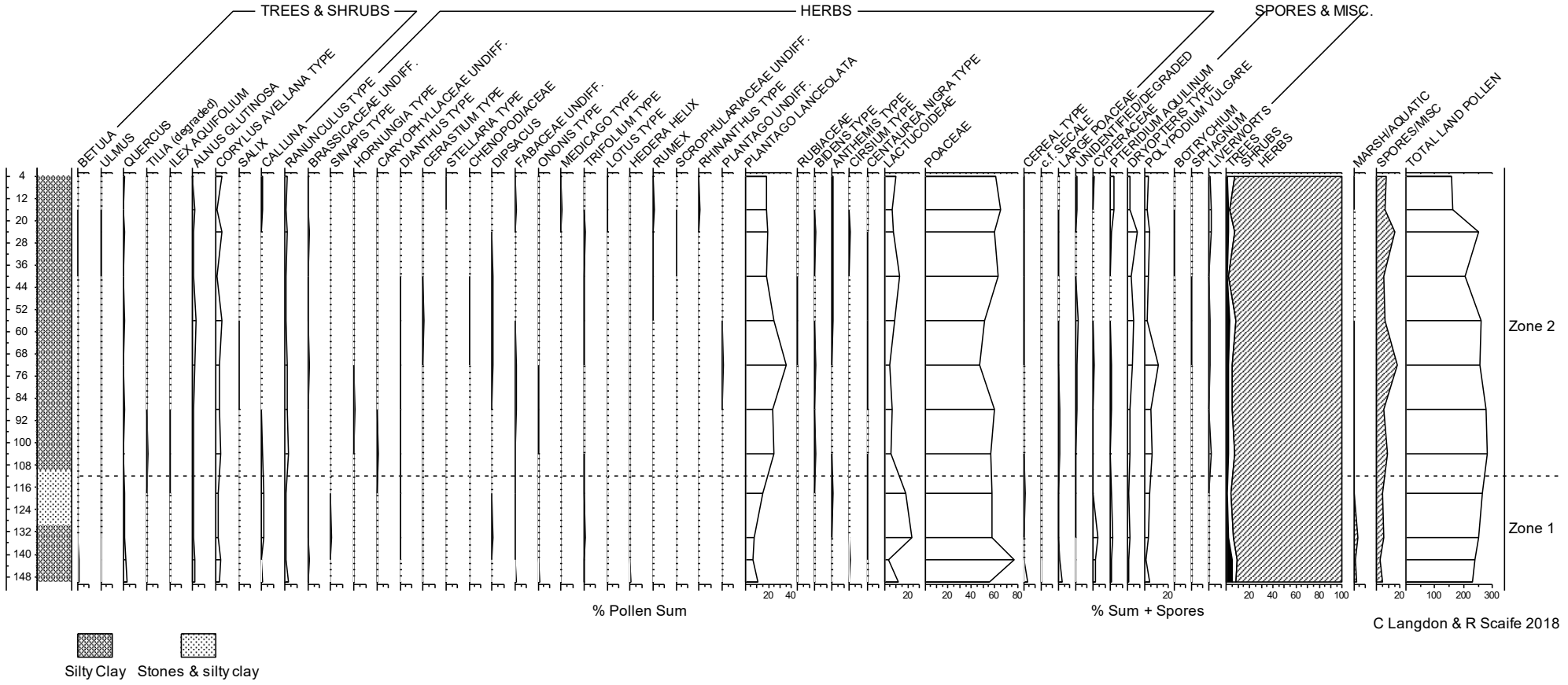

Figure 4. Assessment pollen histograme from the cross-ridge dyke dicth [1012] at the Three Horsehoes Inn, Branscombe

Pollen assemblage zone	***Palynological characteristics***
Zone 2 4-112cm Poaceae-*Plantago lanceolata* Upper Secondary and Tertiry fills	Poaceae dominate during this zone (up to 70%) with *Plantago lanceolata* also a significant component of the pollen assemblage with values between 20% and 40%. Tree pollen is represented at relatively low percentages with *Quercus* (2%), *Alnus* (<5%) and *Corylus avellana* type (2-5%) present throughout the zone. Other trees and shrubs recorded at <2% include *Betula*, *Ulmus*, *Ilex*, *Salix* and *Calluna*. Whilst Poaceae and *Plantago lanceolata* dominate the herb pollen assemblage, *Ranunculus* type and Brassicaceae also continually feature at values of <3%. The occasional occurrence of Caryophyllaceae types, Chenopodiaceae, *Dipsacus*, Fabaceae, *Medicago* type, *Trifolium* type, and *Rhinanthus* type are also noted (amongst others). *Cereal* type pollen is recorded from 68cm to the end of the zone (<2%). Liverworts feature throughout the zone and spores of *Dryopteris* type and *Polypodium vulgare* are also present.
Zone 1 112-150cm Poaceae-Lactucoideae Primary and Lower Secondary fills	Poaceae peaks at 80% at 142cm and remains at values of *c*.60% for the rest of the zone. Meanwhile, Lactucoideae (dandelion types) peak at 25%. Trees are present at low percentages with *Quercus*, *Corylus avellana* type and *Alnus* present throughout at values of <5%. There is also the occasional incidence of *Betula* and *Ulmus*. *Plantago lanceolata* rises from 15% to 22% as the zone progresses, whilst *Ranunculus* type, Brassicaceae and *Trifolium* type are continually recorded at values of <5%. *Cereal* type pollen is present during the entire zone and other herbs sporadically present include *Dianthus*, *Dipsacus*, *Anthemis* type and *Centaurea nigra* type. Fern spores (*Polypodium vulgare* and *Dryopteris* type) occur throughout with *Pteridium aquilinum* also part of the assemblage.

Table 2: Pollen zonation and description of the ditch sediment fill.

Interpretation and Discussion

Typically pollen present in ditches may be taphonomically complex and can derive from a number of sources which should be considered in the interpretation of this pollen profile. These sources may include direct pollen transfer from surrounding vegetation via airborne or insect vectors or from secondary, derived sources such as domestic waste of various forms. Crop processing, waste food and human and animal faecal debris are frequent sources of secondary pollen found in ditch and pit profiles. Reworked pollen from older sediment and soils must also be considered here. Zone 1 is contemporaneous with the primary and lower secondary fill deposits, which consist of silty clay and some stones that are reported to have weathered from the sides of the ditch. As a result, this zone appears to be taphonomically complex and the pollen will have derived from local and regional sources and also from in-wash from earlier/secondary deposits. The increase in Lactucoideae (dandelion types) pollen percentages (114-134cm, within lower 1013) that is concurrent with the slightly more stony deposits is most likely, at least in part, to be of secondary derivation from soils that have washed in as a result of this weathering/instability. Lactucoideae pollen is particularly robust and tends to differentially preserve in soil samples as it has a longer residence time than other, less robust, pollen types (Dimbleby 1957) and would thus account for this increase.

Despite this complex taphonomy it is clear from the pollen data that the local environment was one of open grassland of a strongly pastoral nature. *Plantago lanceolata* (ribwort plantain), *Ranunculus* type (buttercups), *Trifolium* type (clover), *Centaurea nigra* type (knapweed) and Asteraceae types (daisy family) all attest to this interpretation of an environment dominated by rough pasture. Small numbers of *Cereal* type pollen are also evident, which may represent some arable activity more within the region. A possible grain of rye (*Secale cereale*) was noted at the base of the profile, although further analysis would be required to confirm this. Rye tends to be thought of as an Iron Age or Roman introduction but has now been identified at an increasing number of sites pertaining to the late Bronze Age (Chambers 1984).

In general there is a paucity of pollen associated with tree and shrub taxa in the initial zone, however is may be surmised that *Quercus* (oak), *Alnus* (alder) and *Corylus* (hazel) were growing in small stands in the wider landscape. The pollen of these taxa is anemophilous and may have been transported from more regional or extra regional sources. The presence of small numbers of *Calluna* pollen from 142cm is also indicative of some localised acidophilous, heath type vegetation.

Zone 2 (upper secondary and tertiary fills) reflects a period in which the sides of the ditch were probably vegetated and stable, an assumption that is concurrent with the interpretation of the infill history described above. This is reflected in the lower percentages of Lactucoideae in this zone which are most likely derived from local, primary sources rather than being an input from weathering of the sides of the ditch. Grasses remain dominant throughout and there is an increase in *Plantago lanceolata* from the previous zone, which suggests that rough pasture continued to dominate the locality. Other herbs types that attest to this include *Ranunculus* type (buttercups), *Trifolium* type (clover), Asteraceae types (daisy family) and *Rumex* (docks). Small numbers of *Cereal* type pollen more latterly in this zone may indicate some arable agriculture more regionally.

During zone 2, again, the majority of the tree pollen recorded is most likely derived from long distance sources from trees growing as part of the wider landscape mosaic. These include *Betula*, (birch), *Quercus* (oak), *Alnus* (alder) and *Corylus avellana* (hazel). However, *Tilia* (lime) and *Ilex* (holly) pollen, recorded at 104cm, have a limited dispersal area and as such, it may be inferred that these taxa were growing in closer proximity to the site.

Comparative pollen data

There is a wealth of pollen data relating to Devon, however, with the exception of Straker and West (2012) of the cross-ridge dyke to the north of The Horseshoe Inn, there are no other local pollen data. Pollen studies in this county have, however, concentrated on natural peat and sediment accumulations and few a few soils, the latter usually associated with archaeological sites. Overall, pollen studies have largely focussed on the upland regions of Dartmoor and Exmoor where peat accumulation forming under anaerobic conditions is abundant. In contrast to the highland zone, there are fewer data coming from the lowland zone, especially from east Devon (Hatton & Caseldine 1991), where there have been only a few analyses of on-site archaeological contexts.

Archaeologically based pollen analyses include the earlier soil pollen studies of Kestor Iron Age camp (Blackburn 1954), Woodbury Castle (Dimbleby 1973-1976) and Colwichtown

stone circle (Simmons 1964). The latter is, however, soil pollen analysis from upland Dartmoor. More recent pollen analyses of archaeological contexts include the fills of a Romano-British well or water hole feature at Pomeroy Wood, Honiton, East Devon (Scaife 1999). The latter, a Romano-British water-hole/well produced well-preserved and abundant pollen. This showed a habitat in which tree and shrub pollen was sparse but with an abundant/diverse herb flora thought to have come from a variety of different sources. The pollen taphonomy was complex and the pollen sources may include domestic waste such as animal bedding and straw containing pollen of cereals and associated weeds. As such this may not be comparable with the data obtained from Branscombe, although the homogeneity of the sequence and the assemblages do bear a strong similarity.

The Branscombe data thus appear to fill a small gap in the otherwise significant pollen contribution that Devon has made to our understanding of vegetation and environmental change for the South West of England as a whole. The Branscombe profile shows a clear grassland, almost certainly pasture, habitat. It should, however, be noted that pollen profiles such as obtained from contexts of limited spatial extent as examined at Branscombe, will have derived from a small catchment. As such, the pollen recovered will only represent the on, and very near site vegetation (Dimbleby 1985). Nevertheless, patterns of vegetation can be determined from analysis of a range of such sites within a specific region. The value of using multiple small sites for recording local vegetational histories and temporal and spatial aspects of wider vegetation and landscape change has been amply shown by Fyfe *et al.* (2004) for a number of small sediment filled basins around Rackenford. From these sites, they demonstrated that, by the start of the Iron Age, the lowland landscape was dominated by pastoral activities. During the middle Iron Age, there was increased human pressure on the landscape leading to clearance of valley side (alder) woodland. Subsequently from the late Iron Age, there is evidence that it was characterised by continuous pastoral activity, which continued through into the Roman period. This bears resemblance to the interpretation of the Branscombe data.

It can be said that the overall open and agricultural environment described hare, is as might be expected for the Iron Age to Romano-British periods in this region. However, at Aller Farm (Hatton & Caseldine 1991) pollen data pertaining to the Romano-British and later periods show substantial woodland. This comprised oak, ash, alder and hazel woodland and emphasises the need for additional analyses of on-site archaeological features in addition to the more normal peat and lacustrine sequences found in upland Devon.

Summary and Conclusions

- Pollen was generally of reasonable preservation and of high concentration, although this was reduced in the uppermost samples.

- The initial zone was one of more complex pollen taphonomy with some inwash into the ditch.

- The environment was very open and dominated by rough pasture throughout the time-span represented by the infilling of the ditch sediment.

- Occasional *Cereal* pollen types are present suggesting small amounts of arable activity and the possible cultivation of rye.

- There is little tree and shrub pollen suggesting that a predominantly open habitat existed at least in proximity to the site. The arboreal taxa which have been recovered are mostly anemophilous and are likely to derive from regional or long distance sources.

- Change through time and a vegetation history can be detected.

Diatom Assessment

Nigel Cameron

Eight samples from a large Late Bronze Age/Iron Age cross-ridge dyke at Branscombe, Devon have been prepared and assessed for diatoms. The purpose of carrying out this diatom assessment is to record the presence or absence of diatoms and the potential of diatom assemblages for further analysis. Of particular interest is whether diatoms provide an indication of water-filled ditches in the past and if there were changing water levels that might be related to land-use history. The diatom assessment takes into account the numbers of diatoms, the state of preservation of the diatom assemblages, species diversity and diatom species environmental preferences.

Methods

Diatom preparation followed standard techniques (Battarbee *et al.* 2001). Two coverslips were made from the sample and fixed on a slide in Naphrax for diatom microscopy. A large area of the coverslips was scanned for diatoms at magnifications of x400 and x1000 under phase contrast illumination.

Results & Discussion

The samples selected for diatom assessment are shown in Table 3.

Ditch fill	***Context***	***Diatom sample no***	***Diatoms***
Upper Tertiary	1017 upper	**1**	**4cm** 8cm
Tertiary	1017 lower	 **2** **3**	**16cm** 24cm 32cm **40cm**
Upper secondary	1013 upper	 **4** **5**	48cm 56cm **64cm** 72cm 80cm **88cm** 96cm 104cm
Lower secondary	1013 lower	 **6** **7**	**110cm** 118cm 126cm **134cm** 142cm
Primary	1031	**8**	**150cm**

Table 3. Samples assessed for diatoms. The sample depths of the samples selected for assessment are shown in bold type.

The results of the diatom assessment for the Branscombe site are shown in Table 4.

Sample	Diatoms	Diatom numbers	Quality of preservation	Diversity	Assemblage type	Potential for % count
1	absent	-	-	-	-	none
2	absent	-	-	-	-	none
3	absent	-	-	-	-	none
3	absent	-	-	-	-	none
5	absent	-	-	-	-	none
6	absent	-	-	-	-	none
7	absent	-	-	-	-	none
8	absent	-	-	-	-	none

Table 4. Summary of diatom assessment results for samples from the cross-ridge dyke

Diatoms are absent from all eight samples assessed from Branscombe cross- ridge dyke.

The absence of diatoms may reflect unfavourable conditions for diatom silica preservation (Flower 1993; Ryves *et al.* 2001). Given the ubiquity of diatoms in water and in many semi-terrestrial habitats, the absence of their remains from the samples assessed here can be attributed to taphonomic processes. This may be the result of diatom silica dissolution and breakage, caused by factors such as high sediment acidity or alkalinity, through flow of water in the sediments, the under-saturation of sediment pore water with dissolved silica, cycles of prolonged drying and rehydration, or physical damage to diatom valves from abrasion.

It is not, therefore, possible to comment on the presence or absence of water in the ditch, water levels, water quality or other aspects of the aquatic environment based on diatom remains. There is no further potential for diatom analysis of these samples.

Conclusions

1. Diatom assemblages are absent from the eight samples taken from the Late Bronze Age/Iron Age cross-ridge dyke at Branscombe. It is not, therefore, possible to determine from diatom analysis whether or not water was present in the ditch or to comment on the nature of any variations in water levels and the aquatic environment. There is no further potential for diatom analysis of these samples.

2. The absence of diatom assemblages from the sediments is attributed to taphonomic processes.

Discussion; significance and potential

Michael J Allen

The cross-ridge dyke ditch infill sequence seems to have been moderately rapid, though there is no evidence of deliberately slighting or backfilling. Nor is there evidence in the upper

secondary fill of clear stasis and soil development as often see (cf. Allen 2107, 39, fig. 40; Evans 1972, 321-8, fig. 123).

Preservation
All twelve samples assessed contained pollen, mostly in abundance, although preservation was variable. Diatoms, however, were not preserved and were absent from all samples assessed.

Significance
The pollen assemblages indicate a cross-ridge dyke constructed in a pre-existing open country landscape suggesting the ditch was dug in the mature Bronze Age or later. A possible grain of rye cereal pollen may be concomitant with a Late Bronze Age (Chambers 1984) or later date, but its widespread introduction is generally thought to be Iron Age or Romano-British in date; but see Wytch Farm, Dorset, where it is present in both the plant macrofossil (Carruthers 1991) and pollen (Scaife 1991) records in the Iron Age and is discussed as being better suited to poor heathland podzols than many other cereals (Allen & Scaife 1991, 219).

The cross-ridge dyke ditch cut through a pastoral landscape, one of rough pasture with small stands of birch, oak, alder and hazel growing as part of the wider landscape mosaic. Cereal cultivation is indicated within this landscape more regionally, but a slight increase in cereal representation the upper secondary and tertiary fills may indicate more arable agriculture locally.

This very open, rough pasture and grazed landscape here, differs from the assessment of pollen from the same cross-ridge dyke immediately north of the Three Horseshoes Inn (Straker & West 2012). That data indicates a greater level of tree cover, mostly hazel, but with ash, alder, willow and pine. Only in the upper fills was there an increase in grassland species, indicating a more open landscape later on in its use, more comparable to that seen here.

These two pollen spectra and broadly consistent, despite minor variations and represent a long land-use history.

Potential
There is little pollen and palaeo-environmental analysis within the immediate vicinity of the work here (cf. Straker *et al*. 2008), with the exception of the pollen assessment from the cross-ridge dyke to the north of the Three Horseshoes Inn (Straker & West 2012). The value of this data is, however, diminished by the lack of any formal chronology for the construction of the cross-ridge dyke, and for any date within its infill history. The pollen sequence, and land-use history derived from it, has only poor and vague chronological reference. Nevertheless they provide an important, and subtly contrasting record from that examined from the ditch previously.

Recommendations

Geoarchaeology

The geoarchaeological interpretation has been undertaken in full. Additional work on soil micromorphology (K1, K2 and K3) is not worth pursuing and the samples should be discarded.

The data and text should prepared for publication.

Pollen

For publication purposes it is recommended that pollen counts are increased to at least 500, which would give greater statistical accuracy and possibly provide a more comprehensive picture of the diversity of pollen types.

Although ideally a further eight pollen samples (completing the sample intervals, see Table 1), could also be included to add stratigraphical detail to the profile, this is unlikely to significantly change the overall interpretation of this analysis of the ditch fill.

Diatoms

No further work on the diatoms is recommended.

Report completion and archive

The work reported here (and any additional analyses) should be prepared for publication for inclusion in a short article in the *Proceedings of the Devon Archaeological Society*, to provide a record and complements that published by Quinnell & West (2012) just to the north of the Three Horseshoes Inn.

Subsamples for foraminifera and ostracods should be discarded, along with kubiena samples.

The costs of the recommendations are provided separately.

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APPENDIX 1: Profile record

Depth	*context*	*Samples*			*description*
0-14	1017		M1	4cm 8cm	Yellowish brown (7.5YR 5/6) but looks reddish brown, essentially stone-free silty clay, fine sand distinctly detected, rare medium and large flints, weak medium to large blocky structure, coarse strong brown (7.5YR 5/6) mottling abrupt wavy boundary Upper tertiary fill
14-41	1017	M2		16cm 24cm 32cm 40cm	Stiff greyish brown (10YR 5/2) (looks almost bluish grey) silty clay, stone-free, rare large flints, clear medium sharp strong brown mottles to 40mm diameter, (i.e. as above except greyish and mottled) abrupt boundary Tertiary fill
41-98	1013		M3	48cm 56cm 64cm 72cm 80cm 88cm 96cm 104cm	Homogeneous greyish brown silty clay, essential stone-free, fine patchy dark greyish brown mottles, fine to medium abrupt mottling to 60cm Upper secondary fill
98-146	1013	M4		110cm 118cm 126cm 134cm 142cm	As above, but from 20cm rare small stones, weathered from the sides, are present, weak amorphous mottling, very soft stuctureless deposits, sharp to abrupt boundary Lower secondary fill
146-157	1031			150cm	Dark yellowish brown (10YR 4/6) silty clay with common small and medium flints derived from the stony brecciated flints in the clay-with-flints, abrupt to sharp boundary Primary fill
157+					Brownish yellow to yellowish brown stiff firm massive silty clay, common medium and large brecciated and partial cortical flints

Monolith and kubiena sample depth locations

M1		0-25cm	
M2	169.61m OD	15-65cm	
M3	169.18m OD	58-108cm	K1 83-95cm
M4	168.72m OD	104-154cm	K2 104-110cm; K3 141-150cm

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