Land (Hillside) adjacent to

Hawthorn Rise

Tibberton, Worcestershire

one ten archaeology

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Archaeological Evaluation

NGR: SO 9037 5779

Site code: HRT 14

WSM 57101

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Illustrations by Jill Atherton, MCIfA

January 2015

one ten archaeology

6 Elm Close, Pebworth, Stratford upon Avon, Warwickshire, CV37 8XL

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Front cover; overall view to the north of trench 4. The two 2m scales in the background of the trench represent the positions of feature 403 (foreground) and feature 404 (background)

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SUMMARY

In April and May 2014 an archaeological field evaluation was carried out on land called Hillside, lying to the north of Hawthorn Rise, Tibberton, Worcestershire in respect of a planning application for residential development of the site.

The fieldwork has clearly established that the application site lies within the area of a Late Iron Age settlement. Excavation has revealed what appears to be two parallel enclosure ditches (approx. 6m apart) which appear to align with two further features about 9m apart lying between 20-30m to the south-west.

One of these ditches, lying slightly higher up the slope was noticeably narrower and shallower. This had an upper, isolated and much darker 'sausage-shaped' fill aligned along its length for about 6m. Situated within edge of this deposit was an almost complete pot which appears to have been carefully laid upright indicating deliberate deposition. The pollen evidence, although small-scale, has shown that a meadow-type landscape existed in close proximity to the site and that honey might have been used within the pot prior to its discard. Understanding pollen evidence from *in situ* pots is a little researched field in archaeology and Tibberton has now shown that the potentially useful information that can be gained by this approach.

The charred plant material and pollen evidence at this site show the potential for significant assemblages of environmental remains to be recovered, which can contribute towards the interpretation of the agricultural economy of the area and the landscape around the site.

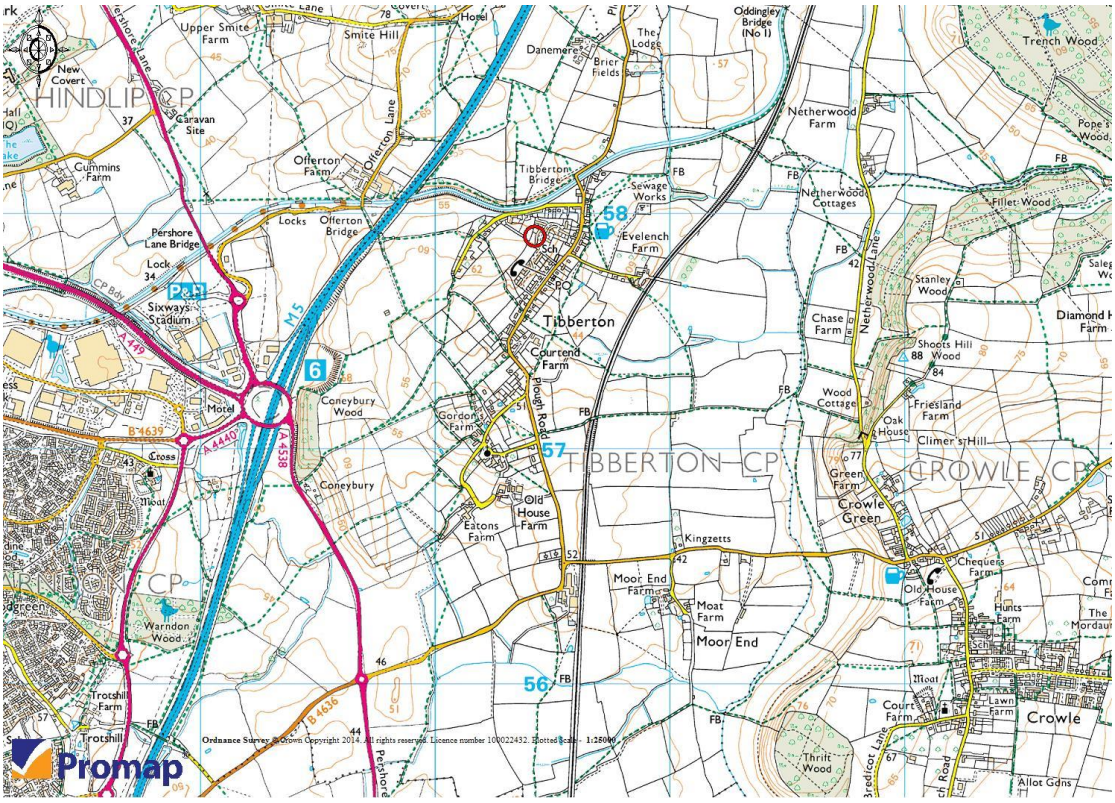
Overall the animal bone assemblage comprised a mixture of remains commonly associated with both butchery discard and domestic food refuse suggesting that the animals were both processed and utilised on site.

The ceramic assemblage recovered from the excavation is particularly significant, so far only a handful of sites and relatively little Iron Age material of note have been excavated in a lowland rural setting around Droitwich, and generally across Worcestershire. It is also very unusual to encounter a site where the chief phase is so tightly dated to one part of the Iron Age, and such sites are, potentially, the most valuable of all for defining a datable framework for finds. The presence of large well-preserved sherds including diagnostic rims at Tibberton, makes this assemblage especially important.

The hill itself is part of an east-west spur on a 60m contour extending from the west and stands prominent with the village lying to east and south-east.

John Snape's map (1776) shows a series of field strips indicative of 18th century cultivation. Finds of this date collected form the topsoil during the trenching are indicative of this activity and this was apparent with the truncation of the features in trench three.

The outline of the fluvial-glacial deposit on the 60m contour (near to the west side of the site) corresponds with a natural plateau on the top of the hill. Such areas were favourable for good drainage and therefore to early settlement It seems possible that further deposits associated with Iron Age occupation of the site can be expected to survive to the north-west around the top of the hill.


Upper Smite Farm
Smite Hill
Hotel
Danemere
Brier Fields
Oddingley Bridge (No 1)
Trench Wood
New Covert
HINDLIP CP
Caravan Site
Netherwood Farm
Cummins Farm
Offerton Farm
Offerton Lane
Tibberton Bridge
Sewage Works
Netherwood Cottages
Fillet Wood
Pershore Lane Bridge
Locks
Offerton Bridge
58
Evelench Farm
Lock 34
Sixways Stadium
Tibberton
Courtend Farm
Chase Farm
Netherwood Lane
Stanley Wood
Diamond Farm
M5
6
Coneybury Wood
Gordons Farm
Plough Road
Wood Cottage
Shoots Hill Wood
Friesland Farm
Oak House
Climer's Hill
Motel
B4639
A4440
A38
Cross
57
TIBBERTON CP
CROWLE CP
Green Farm
Crowle Green
Coneybury
Old House Farm
Eatons Farm
Kingzetts
Moor End Farm
Moat Farm
Moor End
Chequers Farm
Old House Farm
Hunts Farm
Warndon Wood
56
Court Farm
Crowle
Trotshill Farm
Trotshill
B4636
Thrift Wood
Allot Gdns
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Promap

Fig.1

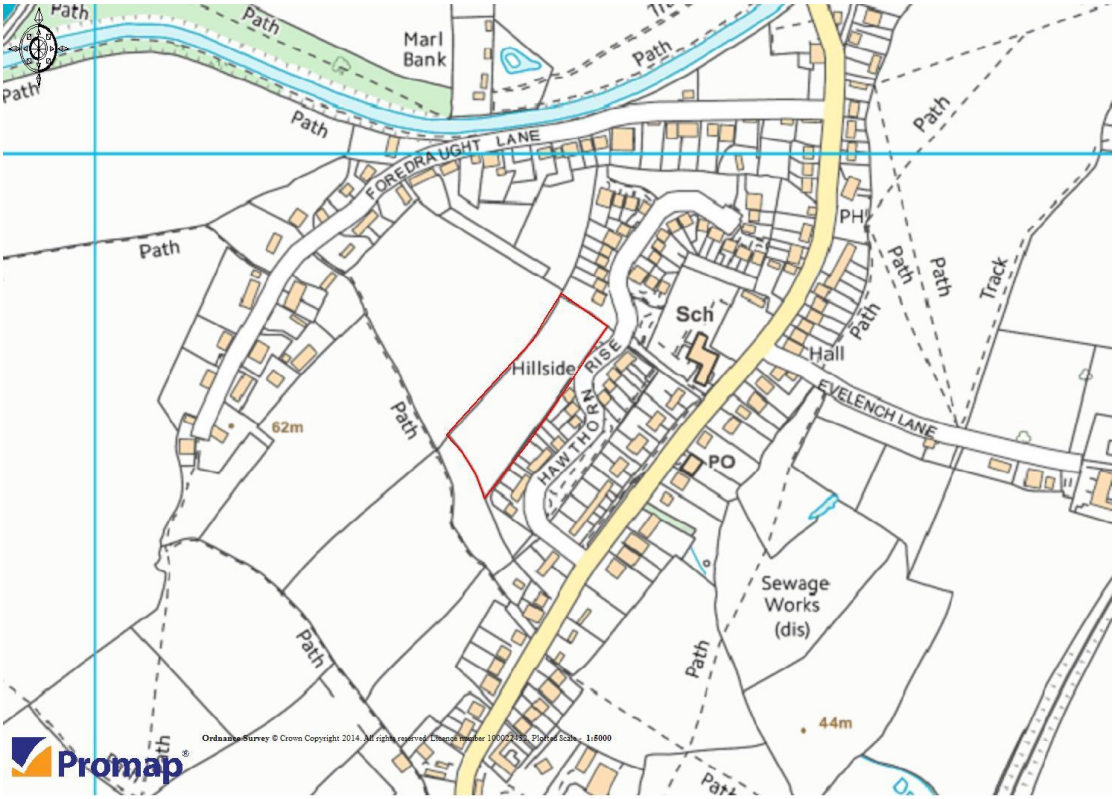
Path
Marl Bank
FOREDRAUGHT LANE
Hillside
RISE
HAWTHORN
Sch
Hall
PH
Track
EVELENCH LANE
PO
62m
Sewage Works (dis)
44m
Ordnance Survey © Crown Copyright 2014. All rights reserved. Licence number 100022432. Plotted Scale - 1:5000
Promap

Fig. 2

INTRODUCTION

Location and scope of work (Figs. 1 & 2)

This document details the results of an archaeological evaluation between 28th April and 2nd May 2014 on land (Hillside) north of Hawthorn Rise, Tibberton, Worcs., WR9 7NU at the request of Rooftop Housing Group who propose residential development of the site. The evaluation was required in predetermination of a pre-application enquiry (ref: CWR10059) by Wychavon District Council and was undertaken in accordance with a brief issued by Worcestershire County Council Historic Environment & Archaeology Service (Glyde, M., 7th November 2013).

The development site is represented by a north-east to south-west rectangular plot of land (amounting to approx. 8,500m^2) called Hillside which is situated on the north-west side of the village. The area was partially evaluated between 2000 and 2002, however the current area was not covered by the geophysical survey nor any trial trenching. While the evaluation of the land immediately adjacent the current proposed site did not reveal any deposits of archaeological significance, both were limited in scale and scope.

Geology and topography

The parish of Tibberton lies in the middle of the county to the north-east of the city of Worcester. Tibberton itself village is located at around 4 miles north-east of Worcester and less than a mile from junction 6 of the M5 motorway and comprises a ribbon development along a north-south road running through the parish. The Worcester and Birmingham Canal (1791-1815) passes just to the north of the village and the Birmingham and Gloucester railway to the east (1875). The site s represented by a large rectangular north-east to south-west plot of land lying on the south-east slope of a hill stretching from east to west at between 55-60m AOD (Above Ordnance Datum). The underlying geology comprises glacio-fluvial deposits (an isolated area on the top of the) surrounded by Twyning Mudstone formation with Skerries (BGS, 1993), this was confirmed during excavation.

Archaeological and historical background

Although little is known about the history of Tibberton documentary sources referring to the place in the 10th century and again during Domesday show that it was already established during the early medieval period. Physical evidence of this activity is evident in the landscape, ridge and furrow has been identified to the south of Evelench Lane (WSM57338) and south-west of Evelench Church (WSM57337) and also east of Court End Farm (WSM57339). An early medieval stirrup mount (WSM38500) has been recorded as found within the parish as part of the Portable Antiquities Scheme.

To the south-west of the site in the area of the existing residential development (Hawthorn Rise) geophysical survey was previously carried out (Stephens, 2000) and some anomalies recorded during the survey were subsequently partially evaluated in 2002 with trial trenching as Land west of Plough Road, Tibberton (Colls, 2002). No significant archaeological features were present in any of the evaluation trenches. Geophysical anomalies were investigated, but it was concluded that they represented variations in the natural mudstone (Keuper Marl).

EXCAVATION METHODOLOGY (Fig. 3)

Plate 1; panoramic view of the site prior to the evaluation (trenching), view to the north

Aims of the evaluation

The objectives of the evaluation were to determine the date, character, quality, survival and extent of the archaeological deposits within the application area likely to be threatened by the proposed development in order that an informed decision on their importance in a local, regional and national context can be made. This information will clarify whether any remains should be considered for preservation *in situ*, or form the basis of a mitigation strategy.

Sample size and scope of fieldwork

The evaluation comprised four trenches totalling 210m of linear trenching metres at approx. 1.50m wide in the location shown on figure 3. Machine excavation was used for the stratigraphic removal of non-archaeologically significant material (modern deposits). There is a general slope down from north to south in the area of trenches 6 & 7 and from north-west to south-east in the area of trenches 3 & 5, whilst trench 4 is on the crest of the scarp. The position of the trenches will provide the best profiles across this part of the site. Trenches 1 & 2 investigate the north-east end of the site whilst maintaining a 5m safety buffer either side of the overhead electric cables. The remaining trenches are positioned to gain an overall investigation of the application area and also to follow the natural contour of the site which shows a sloping downwards from north to south.

Fieldwork methods and recording

The archaeological field work and post-excavation was carried out in accordance with standards and guidance for archaeological field evaluations produced by the Institute for Archaeologists (IfA). All deposits were excavated removing the overburden under close archaeological supervision (using a toothless bucket) and investigated for archaeological features. Plans of the trenches were made and sample sections were cleaned by hand and recorded during excavation

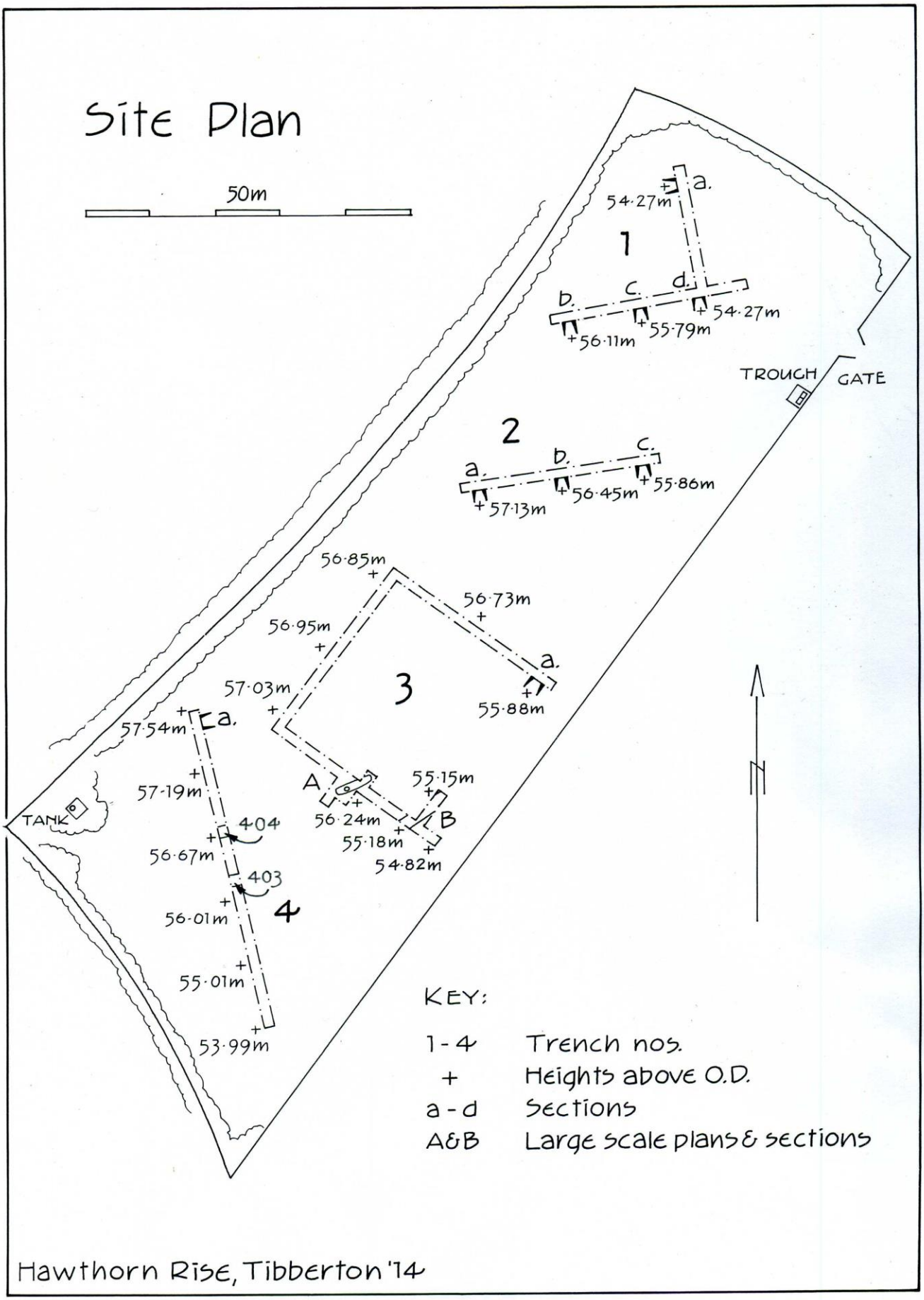
Site Plan
50m
1
a.
54·27m
b.
c.
d.
56·11m
55·79m
54·27m
TROUGH
GATE
2
a.
b.
c.
57·13m
56·45m
55·86m
56·85m
56·73m
56·95m
3
a.
57·03m
55·88m
57·54m
a.
A
55·15m
57·19m
56·24m
B
55·18m
54·82m
TANK
404
56·67m
403
4
56·01m
55·01m
53·99m
KEY:
1-4 Trench nos.
+ Heights above O.D.
a-d Sections
A&B Large scale plans & sections
Hawthorn Rise, Tibberton '14

Fig. 3

RESULTS: GENERAL

Soil and ground conditions

During excavation it became clear there was very little difference in colour between the natural clay substrate and the overlying subsoil deposit, the latter being only slightly greyer. This meant that identifying the interface between the two layers was difficult. Apart from deposit 303, the upper fills (304 & 306) of ditches 305 & 309 were equally hard to identify the fills very similar in colour to the surrounding natural clay. Conditions were generally warm and dry with long periods of sunshine during the first half of the week, although these conditions were favourable for hand excavation, the ground had become dry very quickly and ditch features that were initially hinted at during excavation became more diffuse through the week. This was particularly evident in trench 4 with identifying features 403 and 404, it was only during the latter part of the week after some significant rainfall that these features became more visible.

Reliability of field investigation

The only evidence of previous activity on the site resulting in disturbance of the underlying deposits was truncation from earlier cultivation. This was clearly evident in trench 3 where earlier ploughing had removed the upper part of the ditch features 305, 309, deposit 303 and the top of the *in situ* pot (SF1). The remains of these features surviving within the surface of the unaffected natural clay.

Distribution of archaeological deposits

All of the trenches showed a relatively simple stratigraphic sequence of three layers comprising a clay natural substrate overlain by a relict subsoil which was in turn sealed by the existing topsoil. In trench 3, two truncated ditch features were identified and sample excavated. In trench 4, two further features were recorded, possibly representing a continuation of those trench 3, but these were not excavated.

Presentation of results

The results of the excavation (below) are described from the earliest to the latest deposits. The trench was attributed context numbers with a numerical value equivalent to the number of the trench.

RESULTS: DESCRIPTIONS (Figs. 4 & 5)

Trenches 1-4; contexts 102, 202, 302 & 402 (natural substrate)

Excavation confirmed the geology as predominantly mudstone with skerries, in the field this translated as a brownish-red clay natural substrate which was exposed in all four trenches. The isolated glacio-fluvial deposit, documented as (WSM56935) was anticipated possibly within trench three and also at the north-west end of trench 4 as an area of sand and/or gravel. In the event deposits 302 & 402 within this part of the site revealed the same brownish-red clay, but with a greater sand content. Overall the surface of this layer followed the natural contour with a gentle slope down from west to east in trench 1; north-west to south-east in trenches 2-3 and almost directly north to south in trench 4.

Trenches 1-4; contexts 101, 201, 301 & 401 (subsoil layer)

Overlying and natural substrate in all four trenches and removed by machine was the equivalent subsoil layers 101, 201, 301 and 401. These deposits comprised a greyish-reddish-brown silty-clay varying between 0.20-25m thick throughout the site. In trench 3 the subsoil (301) sealed ditch fills 303, 304 & 306 and in trench 4 its equivalent 401 sealed deposits 403 & 404.

Trenches 1-4; contexts 100, 200, 300 & 400 (topsoil layer)

Overlying the subsoil layers in all three trenches was the modern topsoil a dark greyish brown loam varying in depth from 0.15-20m throughout the site. This layer produced pottery ranging in date from the 17th to 20th century.

Plate 2; trench 1, north end, section 1a, view to the south-west

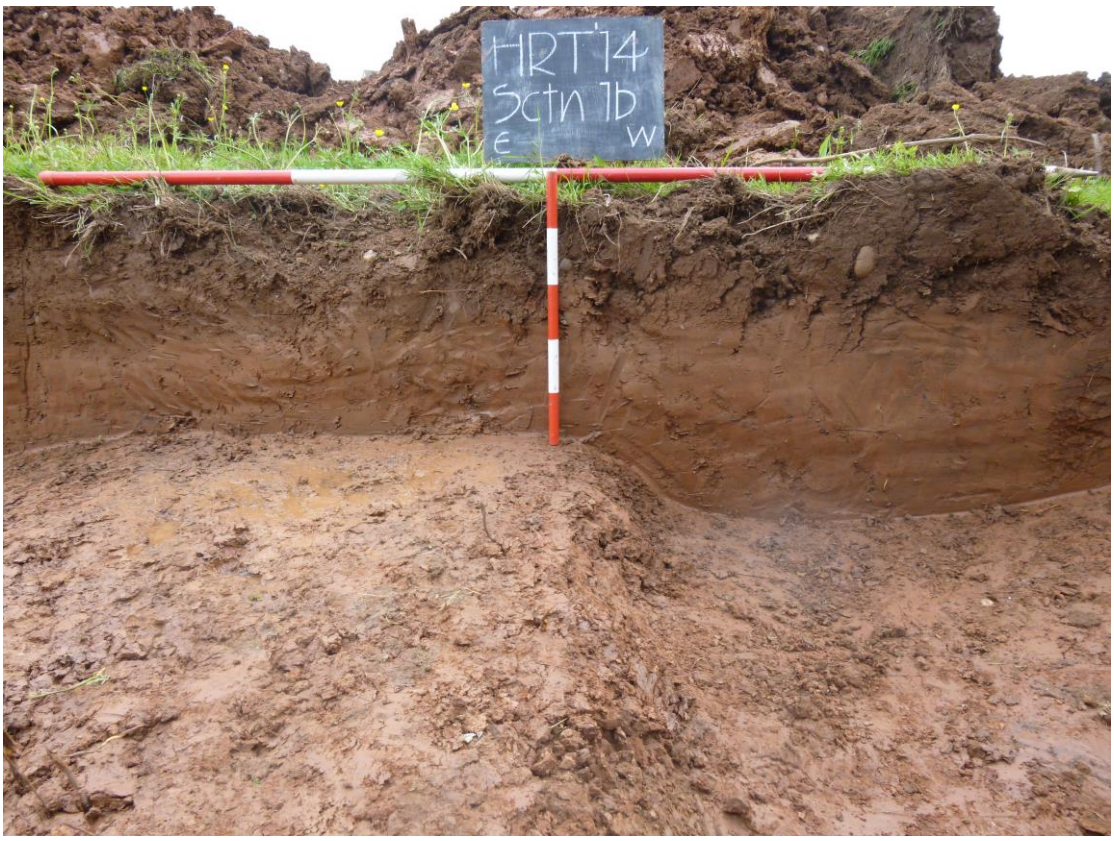

Plate 3; trench 1, section 1b, detail

Plate 4; trench 1, section 1c, detail

Plate 4; trench 1, section 1d, view to the south-east

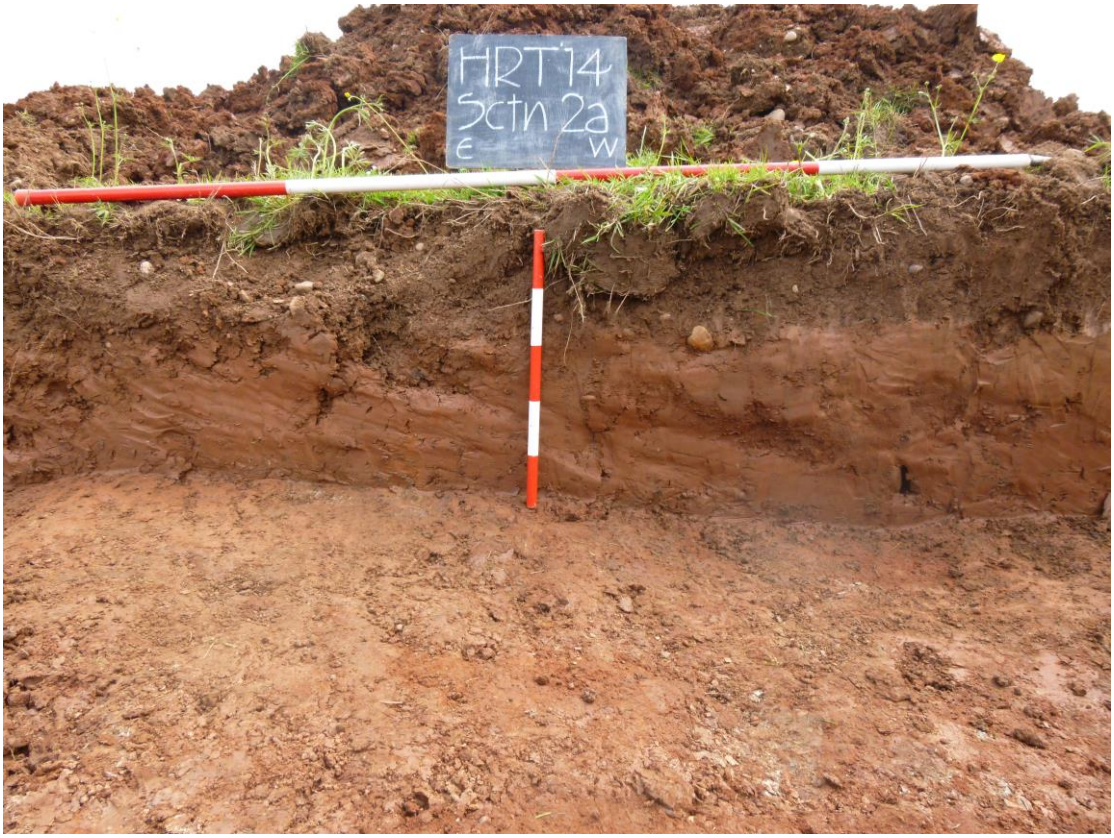

Plate 5; trench 2, section 2a, detail

Plate 6; trench 2, section 2b, view to the south-east

Plate 7; trench 2, section 2c, detail

TRENCH 3; ditch 305 with re-cut 310 (Fig. 4) and ditch 309 (Fig. 5)

Context 305 (ditch), filled by 304

Cut into the surface of the natural clay (context 302) within the central part of the south-west arm of trench 3 was the truncated remains of a ditch (context 305). This was partially hand excavated with a small 1m wide sondage revealing a shallow flat-bottomed feature approx. 0.30m deep with gently sloping sides (Fig. 4, section a). Fill deposit 304 comprised a greyish-brownish-red silty-clay with no inclusions and was similar in colour and texture to the overlying subsoil layer 301.

Given the similarity of fill 304 to the surrounding natural clay it was difficult to establish with confidence the edge and base of the ditch. In the event the north-east side was necessarily overcut in order to observe the differences in colour between the two deposits in the drawn section. This suggested the ditch was about 1.50m wide. The trench arm was further extended to the north-east and south-west and confirmed the continuation of deposit 304 to the north-east and south-west (although this was slightly obscured by upper fill 303). It seems highly possible that deposit 404 in trench 4 to the south-west which also measured approx. 1.50m, wide is a continuation of fill 304.

Finds from 304 comprised some animal bone (Appendix 1) and number of sherds of Late Iron Age pottery (Appendix 2).

Context 310 (ditch re-cut), filled by 303

Overlying ditch fill 304 was the truncated remains of a 'sausage-shaped' deposit (303) extending along the surface of 304 for a distance of approx. 6m long and slightly narrower at 1m wide. The north east end was rounded, the south-west end, square with rounded corners. Sample excavation (within the same sondage as context 304, above) showed this to be a single deposit (almost fully exposed) filling a shallow flat–bottomed depression (context 310), approx. 0.18m deep and 0.90m wide. This consisted of a dark greyish-brown/black, silty-clay, mottled throughout with orangey/ginger flecking (re-deposited natural) and a frequent component of small to large rounded pebbles (a similar sized component of pebbles was recorded within ditch 309). There was also a noticeable inclusion of charcoal flecking. Finds comprised some animal bone and 27 sherds of Late Iron Age pottery. In addition to this an almost complete pot of the same date was excavated (with the internal soil *insitu*) and later submitted for fabric and residue analysis.

Context 309 (ditch cut), filled by 307, 308 & 306

Approximately 9m to the south-east and parallel with ditch 305, was the ditch 309. This was approx. 2m wide and just over 0.60m deep and contained three fills. The earliest of these (307), this was a greyish-brownish-red silty-clay with frequent red mottling (?burnt clay) throughout the deposit. There was also a large pebble (small and large rounded) component, but there was little or no charcoal flecking. Finds comprised animal bone and 21 pieces of Late Iron Age pottery.

Next in the sequence of fills was context (deposit) 308. This was so similar to the natural clay 302 that the excavated sondage (sample excavation trench) was 'box-sectioned' so that the ditch cut could be identified by differences between the colours of the fill within the sides of the drawn section. As in other areas of the excavation, the fill was slightly darker (greyer) than the natural clay. The lack of finds from the fill 308 is because this deposit and the upper fill 306 were excavated as a single event and the finds mixed together. Context 308 was added as an after-thought when recording the ditch section.

Fill 306 (and including fill 308) produced animal bone and 82 sherds of Late Iron Age Pottery. The main difference between the two fills was that 306 contained a large component of large and small rounded pebbles. Some red discolouring (?burnt clay) similar to that in the primary fill 307 was also noted on the north-west side of the ditch fill. It was patches of this red discolouring that aided identification of the continuation of the ditch fill within trench extension to the north-east.

TRENCH 4; contexts (deposits) 403 & 404 (Fig. 3)

Two parallel linear deposits (403 & 404), perpendicular to the trench were each recorded aligned south-west to north-east at approx. 6m apart. These fills were similar in colour to the underlying natural albeit with a slightly greyer tinge. Neither were excavated, but it was thought that each could be continuation of ditches 305 and 309 to the north-east in trench 3. Interestingly, the thinner of the two, deposit 404 would align neatly with ditch 305 whilst deposit 309, the slightly wider would equate well with ditch 309.

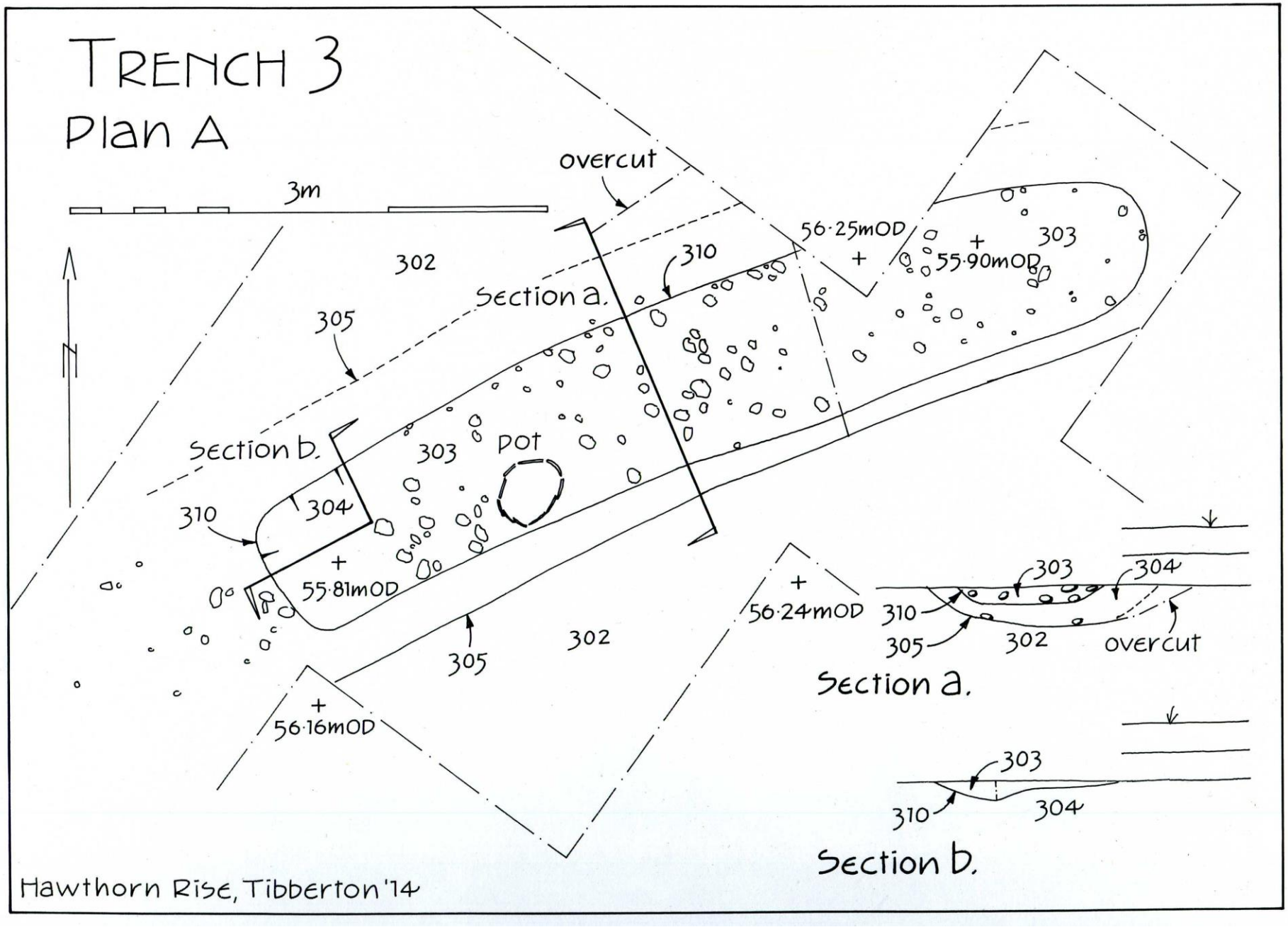
TRENCH 3
Plan A
3m
overcut
302
310
Section a.
305
56·25mOD
303
55·90mOD
Section b.
303
pot
310
304
55·81mOD
305
302
56·16mOD
56·24mOD
303
304
310
305
302
overcut
Section a.
303
310
304
Section b.
Hawthorn Rise, Tibberton '14

Fig. 4

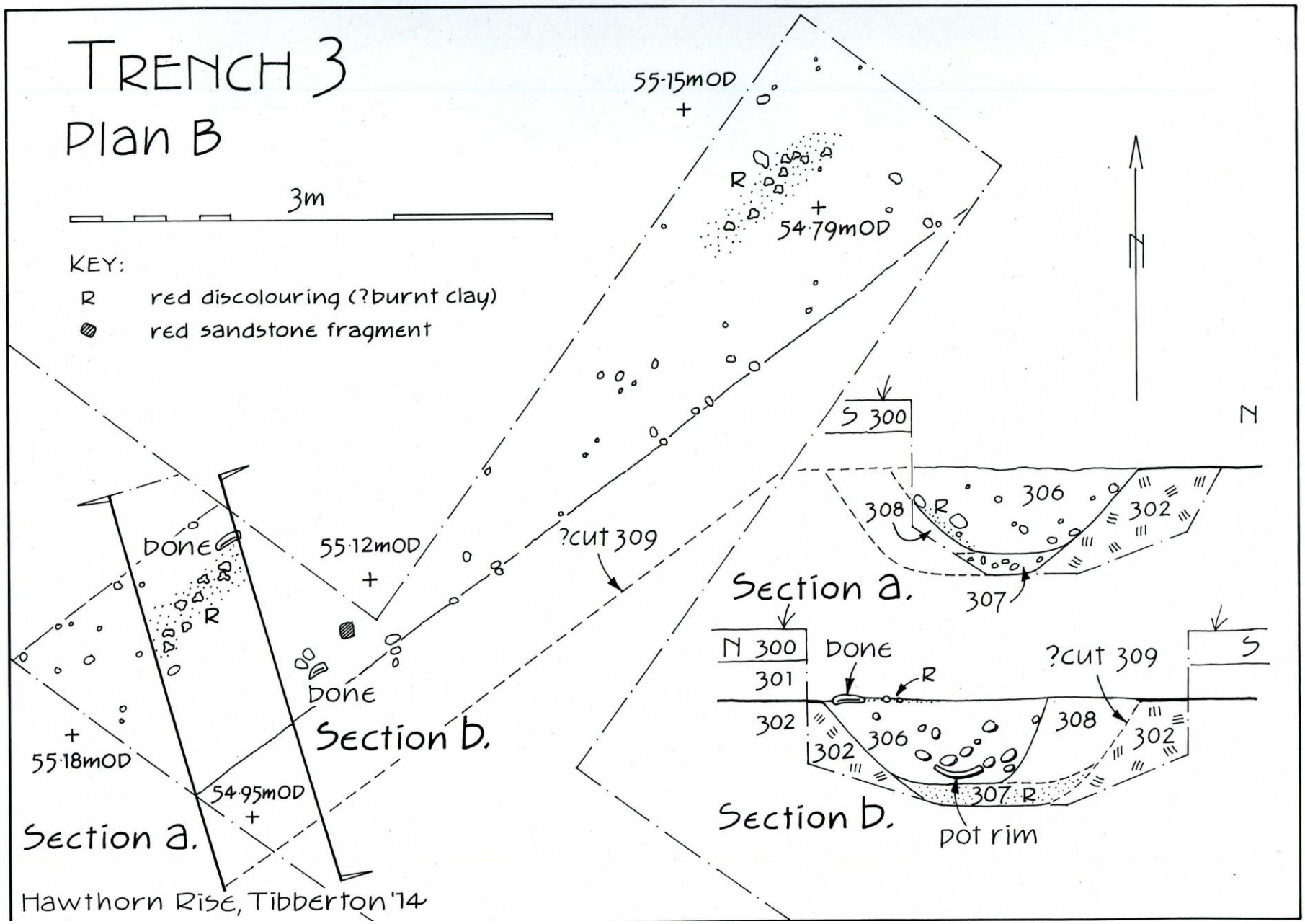
TRENCH 3
Plan B
3m
KEY:
R red discolouring (?burnt clay)
red sandstone fragment
55·15mOD
54·79mOD
55·12mOD
55·18mOD
54·95mOD
DONE
?cut 309
Section b.
Section a.
Hawthorn Rise, Tibberton '14
S 300
N 300
306
308
302
307
301
pot rim

Fig.5

Plate 8; Context (deposit) 303, view to the south-west

Plate 9; Context (deposit) 303, view to the north-east

Plate 10; Context 303, south end with SF1 (pot) *in situ* (behind scale), view to the north-west

Plate 11; SF1 *in situ* from above

Plate 12; section a, Plan A showing cuts 305, 310 & fills 303, 304, view to the south-west

Plate 13; showing continuation north-east of deposit 306 (before excavation)

Plate 14; ditch 309 (Plan B, section a), view to the north-east

Plate 15; ditch 309 (Plan B, section b), view to the south-west

Plate 16; trench 3 (section a, opposite), south-east end of north-east arm showing possible continuation of fill 304 (ditch 305).

FINDS

The ceramics by Laura Griffin (for the full report see APPENDIX 1)

A well-preserved assemblage totalling 155 artefacts was recovered from the site. Pottery formed the largest group amounting to 145 sherds weighing 4370g. A total of 132 sherds could be identified as being of Late Iron Age date. The sherds were exceptionally well-preserved with the average sherd size being substantially higher than normally seen within assemblages of this date, and very little surface abrasion. The group also includes a high proportion of rim sherds with 15 recorded. Both the level of preservation and the high occurrence of form sherds make this assemblage significant for the Worcester/Droitwich area. All diagnostic sherds were from jar forms, a large proportion with sooting on the external surfaces, indicating use as cooking pots. The majority of sherds were burnished, with those in Malvernian fabric having pattern burnish typical of this ware type.

A number of briquetage sherds were also identified. While the presence of these sherds in fairly large number within the assemblage isn't particularly notable due to the proximity of Tibberton to Droitwich, the condition of the sherds, and particularly of their surfaces, was exceptional.

All sherds of this period came from stratified deposits within ditches (305) and (309). The largest proportion came from the latter ditch with 103 sherds in total retrieved from its primary (307) and tertiary (306) fills. At this stage of analysis, it is not possible to establish whether there are any obvious chronological progression between the material from these two fills and so it, presently, remains uncertain how long the ditch was open.

In addition to the above sherds, there was also the intact complete base of a large jar (context 303, SF1), which appeared to have been deliberately placed in the ground. This was not studied in any detail at this stage of analysis except that environmental samples were taken from the contents and the fabric of the vessel was provisionally identified as being of Palaeozoic limestone-tempered ware (fabric 4.1).

Remaining sherds were all domestic pottery types of post-medieval and modern date, and commonly found on sites in Worcestershire dating from the 18th century onwards.

Other finds included six, small fragments of fired clay retrieved from an environmental sample taken from ditch fill (307). In addition, a single pot-boiler fragment was identified within an environmental sample taken from ditch fill (306) and is consistent with the Late Iron Age date of this feature.

All remaining datable finds were of the post-medieval period onwards and consisted of two highly abraded brick fragments and a piece of ceramic field drain.

ENVIRONMENTAL EVIDENCE

Animal bone By Jennifer Wood (Appendix 1)

A total of 66 (914g) refitted fragments of animal bone were recovered. The remains were recovered from deposits within two ditches [305] and [309] dated to the Late Iron Age. The remains were generally of a good overall condition, averaging grade 2 on the Lyman criteria (1996). A single cattle astragalus recovered from ditch [309] displayed evidence of butchery, consistent with cut marks from disarticulation of the carcass. A total of 6 fragments of bone recovered from both ditches displays evidence of gnawing, thought to be carnivore in origin. The lack of gnawing on the remainder of the assemblage may suggest that the remains were rapidly buried, limiting access for scavengers. No evidence of pathology or burning was noted on any of the remains. Cattle remains were the predominant species identified within the assemblage; closely followed by sheep/goat, with small numbers of sheep positively identified. Small numbers of pig were also identified within the assemblage. Skeletal elements represented within the assemblage contains a mixture of remains commonly associated with both butchery discard and domestic food refuse, which may suggest that the animals were both processed and utilised on site.

Palaeo-environmental evidence/environmental remains by Alan Clapham and Suzi Richer

Charred and waterlogged plant remains were recovered from the bases of two ditches on site. Environmental remains in the form of charred plant remains were present in low numbers from both samples. A small amount of waterlogged material was identified from (307).

Charred plant remains were identified from context 303 and consisted of a single tail grain of barley (Hordeum vulgare) and single finds of clover (Trifolium sp) and cinquefoil (Potentilla sp). Other environmental remains included occasional large mammal bone fragments which for the majority were burnt but no identifiable elements were recorded. Small mammal remains were also occasional as were charcoal fragments. The charcoal fragments included a small

piece of roundwood but they were too small to identify with any confidence. Non-environmental remains included occasional pot sherds and a moderate number of heat cracked stones.

In Context 307 the plant remains consisted of a small number of charred plant remains that were identified as indeterminate cereal grain fragments, along with single finds of common chickweed, meadow-grass and a fragment of brome grass. A single waterlogged fruit of duckweed was also identified.

Environmental remains present in the residue consisted of occasional large mammal bone fragments, a small minority of which were burnt, and occasional small mammal bones. No charcoal remains were identified. Non-environmental remains comprised small fragments of heavily organically tempered ?briquetage, occasional pot sherds, and fired clay fragments.

The charred plant remains from both contexts (303) and (307) assessed here may represent a 'background flora'. Charred plant remains are very resilient and, therefore, small numbers may get distributed across a site by accidental or natural means. The presence of burnt large mammal bone in (303) and non-burnt mammal bone in (307) may represent the discard of domestic rubbish, and this may well be the source of the charred plant remains and non-biological finds in the samples. And the presence of duckweed in (307) suggests that the ditch may have contained water at some stage.

DISCUSSION (Figs. 6 & 7)

The excavation

The fieldwork has clearly established that the application site lies within the area of a Late Iron Age settlement. Excavation has revealed two parallel ditches (approx. 6m apart) aligned north-east to south-west in trench 3. These appear to align with two further features about 9m apart lying between 20-30m to the south-west (trench 4) suggesting elements of a double enclosure, or possibly in two phases spanning the south-west slope of the hill.

One of these ditches (305), lying slightly higher up the slope and noticeably narrower and shallower had an upper, isolated and much darker (?organic) 'sausage-shaped' fill aligned along its length for about 6m. By comparison to the underlying fill there was a significant pebble component similar to ditch 309 (further south) which seems indicative of some domestic function. Situated within edge of this deposit was an almost complete pot which appears to have been carefully laid upright indicating deliberate deposition. It was believed that the environmental evidence might throw some light on the nature of this deposit, but the charred plant remains few in number.

The animal bone collected during the excavation reflects the dietry habits associated with the Iron Age occupation of the site. Cattle remains were the predominant species closely followed by sheep/goat, with small numbers of sheep and pig. The assemblage comprised a mixture of remains commonly associated with both butchery discard and domestic food refuse suggesting that the animals were both processed and utilised on site.

The ceramic assemblage is particularly significant, so far only a handful of sites and relatively little Iron Age material of note have been excavated in a lowland rural setting around Droitwich, and generally across Worcestershire. It is also very unusual to encounter a site where the chief phase is so tightly dated to one part of the Iron Age, and such sites are, potentially, the most valuable of all for defining a datable framework for finds. The presence of large well-preserved sherds including diagnostic rims at Tibberton, makes this assemblage especially important.

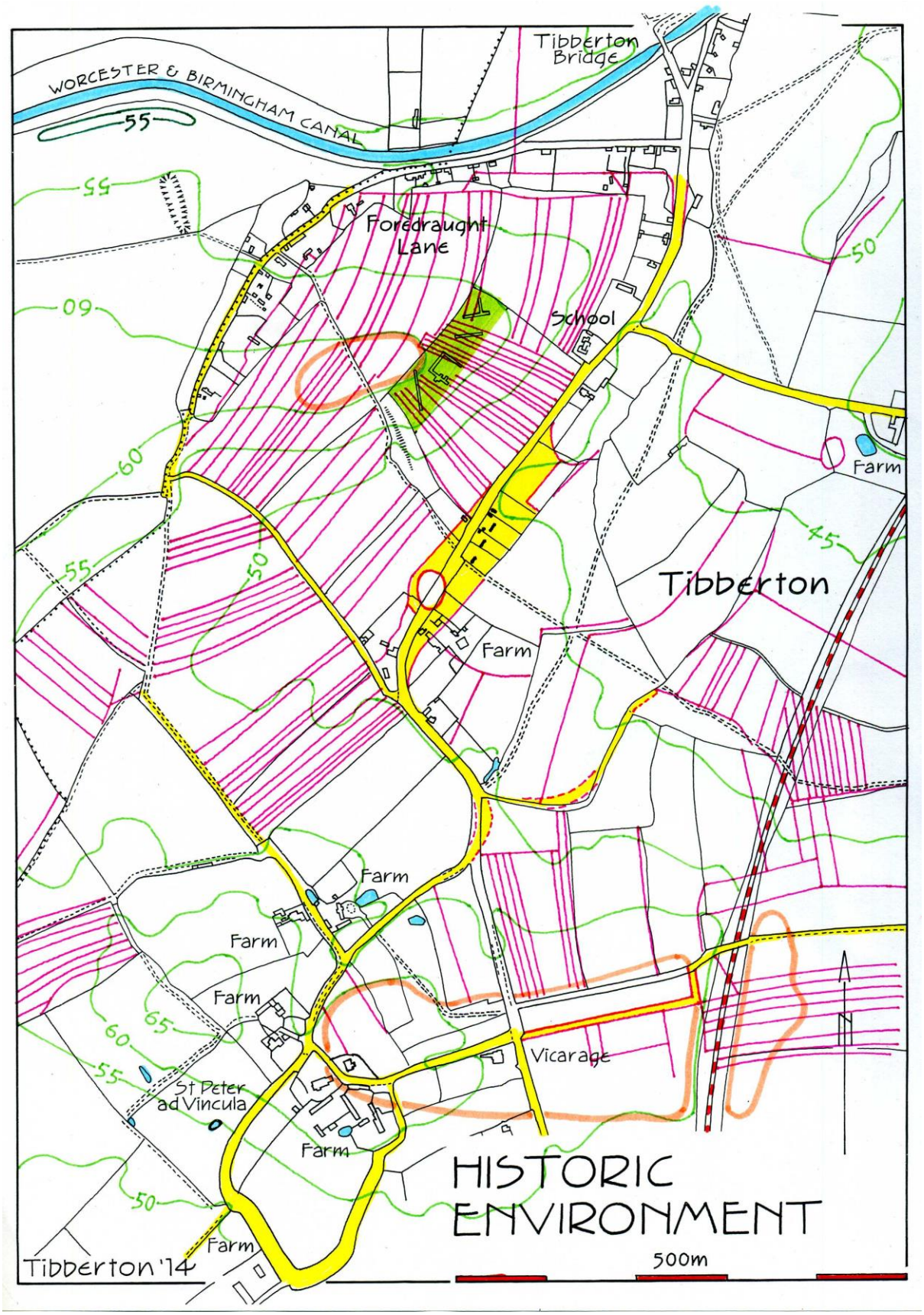

Fig. 6

Black, based on 1st Edition OS (1886); magenta, field strips shown on John Snape's map (1776); yellow, roads and tracks; blue, Worcs. & Birm. Canal (1791-1815); dashed red, Birm. & Glos. Railway (1875); green, area of study; orange, location (outline) of fluvial-glacial deposits; contours, heights in metres OD.

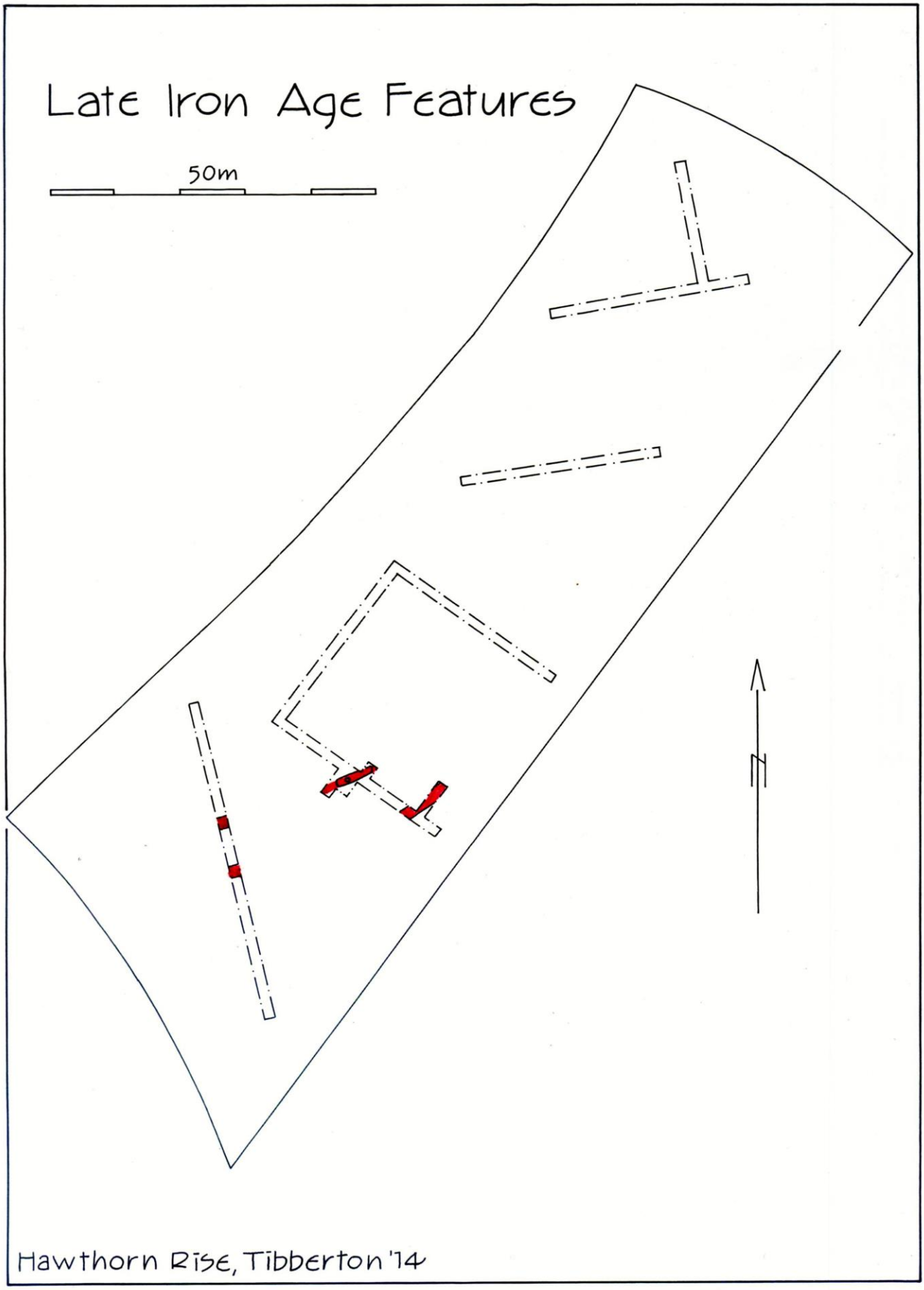

Fig. 7

The historic environment

Plate 17; view to the north, showing potential ancient route-way leading to the top of the hill, the hedge line on the right of the picture corresponds with the south-west boundary of the site.

The hill itself is part of an east-west spur on a 60m contour extending from the west and stands prominent with the old village and the church lying to the south and a line brick buildings between it and contemporary with the canal to the north and the modern village lying to east and south-east.

John Snape's map (1776) shows a series of field strips indicative of 18th century cultivation. Finds of this date collected form the topsoil during the trenching are evidence of this activity and this was also apparent with the truncation of the features in trench three.

The outline of the fluvial-glacial deposit on the 60m contour (near to the west side of the site) corresponds with a natural plateau on the top of the hill. Such areas were favourable for good drainage and therefore to early settlement. It seems possible that further deposits associated with Iron Age occupation of the site can be expected to

survive to the north-west around the top of the hill in the area where this geology is focused.

The top of the hill and the field to the south-west is bisected by a footpath which may have earlier origins and gains some new significance particularly in light of the newly discovered enclosure ditch features on the slope to the north-east. This path, which follows a natural cutting or (Plate 17) in the hill slope, may be an earlier route-way connecting with the settlement.

Summary of results

The evaluation revealed Late Iron Age deposits consisting of what appears to be two parallel enclosure ditches in the south-west corner of the site straddling the slope of the hill. One of these is also associated with the deliberate deposition of a pot, which survives almost complete, within an isolated 'sausage-shaped' fill within the upper part of one of the ditch features.

Significance

The evaluation has demonstrated that the site is the location of an important Late Iron Age settlement identified by what appears to be two enclosure ditches. So far only a handful of sites and relatively little Iron Age material of note have been excavated in a lowland rural setting around Droitwich, and generally across Worcestershire. It is also uncommon to encounter a site where the chief phase is so tightly dated to one part of the Iron Age, and such sites are, potentially, the most valuable of all for defining a datable framework for finds. The presence of large well-preserved sherds including diagnostic rims at Tibberton, makes this assemblage particularly significant (see Appendix 2).

Impact of development

The impact of the development will depend on the design and location of the proposed buildings access roads and services. The results of the investigation suggest that significant Late Iron Age deposits comprising two enclosure ditches survive within the south-west half of the site. There is also the possibility that further significant deposits relating to the settlement survive in areas of the site not examined by the trial trench

Archive Location

The archaeological archive and artefact collection arising from the work will be appropriately conserved and deposited with the Worcestershire County Museum Service, subject to agreement with the legal landowner.

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APPENDIX 1 *the animal bone by Jennifer Wood*

Introduction

A total of 66 (914g) refitted fragments of animal bone were recovered from deposits within two ditches [305] and [309].

Methodology

The entire assemblage has been fully recorded into a database archive. Identification of the bone was undertaken with access to a reference collection and published guides. All animal remains were counted and weighed, and where possible identified to species, element, side and zone (Serjeantson 1996). Also fusion data, butchery marks (Binford 1981), gnawing, burning and pathological changes were noted when present. Ribs and vertebrae were only recorded to species when they were substantially complete and could accurately be identified. Undiagnostic bones were recorded as micro (rodent size), small (rabbit size), medium (sheep size) or large (cattle size). The separation of sheep and goat bones was done using the criteria of Boessneck (1969) and Prummel and Frisch (1986) in addition to the use of the reference material. Where distinctions could not be made the bone was recorded as sheep/goat (S/G).

The condition of the bone was graded using the criteria stipulated by Lyman (1996). Grade 0 being the best preserved bone and grade 5 indicating that the bone had suffered such structural and attritional damage as to make it unrecognisable.

The quantification of species was carried out using the total fragment count, in which the total number of fragments of bone and teeth was calculated for each taxon. Where fresh breaks were noted, fragments were refitted and counted as one.

Tooth eruption and wear stages were measured using a combination of Halstead (1985), Grant (1982) and Levine (1982), and fusion data was analysed according to Silver (1969). Measurements of adult, that is, fully fused bones were taken according to the methods of von den Driesch (1976), with asterisked (*) measurements indicating bones that were reconstructed or had slight abrasion of the surface.

Results

The remains were generally of a good overall condition, averaging grade 2 on the Lyman criteria (1996).

A single cattle astragalus recovered from ditch [309] displayed evidence of butchery, consistent with cut marks from disarticulation of the carcass.

A total of 6 fragments of bone recovered from both ditches displays evidence of gnawing, thought to be carnivore in origin. The lack of gnawing on the remainder of the

assemblage may suggest that the remains were rapidly buried, limiting access for scavengers. No evidence of pathology or burning was noted on any of the remains.

Species Representation

Table 1, Identified Taxa, by Feature

	Late Iron Age		Total
Taxon	Ditch [305]	[309]	
Cattle	3	10	13
Sheep/Goat	3	8	11
Sheep		1	1
Pig	2		2
Large Mammal	3	19	22
Medium Mammal	11	1	12
Unidentified	1	4	5
N=	23	43	66

As can be seen from Table 1, cattle remains were the predominant species identified within the assemblage; closely followed by sheep/goat, with small numbers of sheep positively identified. Small numbers of pig were also identified within the assemblage.

Skeletal elements represented within the assemblage contains a mixture of remains commonly associated with both butchery discard and domestic food refuse, which may suggest that the animals were both processed and utilised on site.

The assemblage is too small at this stage to provide detailed data on the dietary economy, animal utilisation or husbandry practices taking place on site. However, any further excavation is liable to yield much more bone of a good to moderate condition, with potential for establishing further detailed information on animal husbandry and utilisation on this site. The condition of the assemblage suggests very good potential for the preservation of small mammals and fish remains, which will provide a clearer understanding of the diet economy of the site and provide indicators for the local environment. No further work is recommended on this assemblage.

APPENDIX 2 *the ceramics by Laura Griffin* (Figs. 8 & 9)

Introduction

An analysis of artefacts from an archaeological evaluation on land adjacent to Hawthorn Rise, Tibberton, Worcestershire (NGR SO 9037 5779; HER WSM 57101) was undertaken on behalf of One Ten Archaeology.

Artefact recovery policy

The artefact recovery policy conformed to standard Service practice (CAS 1995, appendix 4).

Method of analysis

All hand-retrieved finds were examined and a primary record was made on a Microsoft Access 2000 database. They were identified, quantified and dated to period. A *terminus post quem* was produced for each stratified context. All information was recorded on *pro forma* Microsoft Access 2000 database.

The pottery was examined under x20 magnification and recorded by fabric type and form according to the fabric reference series maintained by the service (Hurst and Rees 1992 and www.worcestershireceramics.org).

Artefacts from environmental samples were examined and are included in the discussion of the finds and the Table 1 quantification.

The artefact assemblage

A well-preserved assemblage totalling 231 artefacts was recovered from the site and is summarised in Tables 1 and 2. Pottery formed the largest group amounting to 221 sherds weighing 6118g. The material could be dated to the Late Iron Age period with the only later material coming from topsoil layers and being of 18th–20th century date (see Table 1). Level of preservation was extremely good with finds displaying only light surface abrasion and large sherds surviving.

Material type	*Total*	*Weight (g)*
Late Iron Age pottery	209	5970
Post-medieval pottery	9	135
Modern pottery	3	13
Fired clay	8	130
Pot-boiler	1	19

Ceramic drain	1	16

Table 1: Quantification of the artefactual assemblage

The pottery

All sherds have been grouped and quantified according to fabric type (Table 2) and diagnostic form sherds dated accordingly. Remaining sherds were datable by fabric type to their general period or production span.

A total of 221 sherds weighing 6118g were retrieved from the site. The assemblage was dominated by Iron Age pottery with the only other sherds consisting of highly abraded post-medieval and modern fragments retrieved from the plough soil.

Fabric code	*Fabric common name*	*Total*	*Weight (g)*	*Period*
1	Sandy briquetage	2	15	Late Iron Age
1.1	Sandy marl briquetage	6	101	Late Iron Age
2	Organic briquetage	9	61	Late Iron Age
3	Handmade Malvernian ware	83	4302	Late Iron Age
4.1	Palaeozoic limestone tempered ware	99	1363	Late Iron Age
5.1	Sand-tempered ware	10	128	Late Iron Age
77	Midlands yellow ware	1	3	post-medieval
78	Post-medieval red ware	5	113	post-medieval
81.3	Nottingham stoneware	1	7	post-medieval
85	Modern china	3	13	modern
91	Post-medieval buff ware	2	12	post-medieval

Table 2: Quantification of the pottery assemblage by fabric type

Late Iron Age

A total of 209 sherds could be identified as being of Late Iron Age date. The sherds were exceptionally well-preserved with the average sherd size being substantially higher than normally seen within assemblages of this date, and very little surface abrasion. The group also includes a high proportion of diagnostic sherds with 10 individual forms identified, all of which were directly comparable with forms from similar sites in

Worcestershire, for instance at Blackstone (Hurst *et al* 2010) and Beckford (Wills *in prep*). Both the level of preservation and the high occurrence of form sherds make this assemblage significant for the Worcester/Droitwich area.

Fabrics identified were all locally produced, consisting primarily of handmade Malvernian ware (fabric 3) and Palaeozoic limestone-tempered ware (fabric 4.1), supplemented by smaller quantities of sand-tempered ware (fabric 5.1). All diagnostic sherds were from jar forms. The most common type was a rounded, barrel-profile necked jar with upright rim (Blackstone form TV1B), of which there were five examples within the assemblage. Remaining identifiable types consisted of four ovoid forms (Blackstone forms TV2 and TV10) and one with an everted rim (Beckford form type CS). The majority of sherds were burnished, with some of those in both Palaeozoic and Malvernian fabrics having pattern-burnish typical of these ware types and this period. A large proportion of these Late Iron Age sherds had sooting on the external surfaces, indicating use as cooking pots.

The assemblage included some notably large vessels, the most substantial being a Malvernian ware TV2 jar with a diameter of 370mm (context 307). This particular sherd was also finely decorated with a deep band of horizontal pattern-burnish below the rim and vertically running down the length of the body below this.

Another vessel of particular note was retrieved in the form of the complete lower portion and base of a large jar, which appeared to have been deliberately placed in the ground (context 303). The jar was removed within a block of the surrounding earth and 'excavated' out with environmental samples taken from the contents and the internal surfaces. The resultant 60 sherds were identified as being of finely burnished Palaeozoic limestone tempered ware (fabric 4.1). The sherds were not only of note due to their deposition but are also unusual in appearance with the exterior surfaces being unevenly fired to a pale buff colour, with a lozenge-shaped black area, presumably where the vessel was pushed up against something during firing. It is not clear why this jar was placed where it was but it was almost certainly deliberate and it is possibly to be explained within a votive context (see pollen report for information about contents).

A number of briquetage sherds were also identified, with sherds of sandy (fabric 1), sandy marl (fabric 1.1) and organic (fabric 2) variants present. While the presence of these sherds in fairly large number within the assemblage isn’t particularly notable due to the proximity of Tibberton to Droitwich, the condition of the sherds, and particularly of their surfaces, was exceptional.

All sherds of this period came from stratified deposits within ditches (305) and (309). The largest proportion came from the latter ditch with 120 sherds in total retrieved from its primary (307) and tertiary (306) fills. It is not possible to establish any obvious chronological progression between the material from these two fills using the

pottery, as the same form types occur in both, and this may indicate that the ditch was in-filled over a relatively short period of time.

Post-medieval and later

Remaining sherds were all domestic pottery types of post-medieval and modern date, and commonly found on sites in Worcestershire dating from the 18th century onwards. These were all from the plough-soil horizon.

Other finds

Other finds included six, small fragments of fired clay retrieved from an environmental sample taken from ditch fill (307) and two more substantial pieces from trench 4 (context 400). These latter pieces look to have been deliberately shaped with a distinct impression in the surface of the large piece. It is possible that these fragments are the remains of a loomweight, which would be consistent with a Late Iron Age date. In addition, a single pot-boiler fragment was identified within an environmental sample taken from ditch fill (306) and again, is consistent with the date of this feature.

All remaining datable finds were of the post-medieval period onwards and consisted of two highly abraded brick fragments and a piece of ceramic field drain (see Table 2).

Overview of artefactual evidence

Context	*Material class*	*Object specific type*	*Count*	*Weight (g)*	*Start date*	*End date*	*Context terminus post quem*
100	ceramic	pot	3	32	M17C	18C	
100	ceramic	drain	1	16			Post-med
200	ceramic	pot	2	11	L18C	20C	modern
300	ceramic	pot	1	39		18C	Post-med
303	ceramic	pot	87	1176			Late Iron Age
304	ceramic	pot	2	15			Late Iron Age
306	stone	pot-boiler	1	19			
306	ceramic	pot	82	2151			Late Iron Age
307	ceramic	pot	38	2628			
307	ceramic	fired clay	6	9			Late Iron Age
400	ceramic	fired clay	2	121			Post-med
400	ceramic	pot	6	69	17C	20C	

Table 3; summary of context dating based on artefacts

Assessment of potential; Late Iron Age

So far only a handful of sites and relatively little Iron Age material of note have been excavated in a lowland rural setting around Droitwich, and generally across Worcestershire, of which Beckford to the south (Wills in prep) is by far the largest. It is also very unusual to encounter a site where the chief phase is so tightly dated to one part of the Iron Age, and such sites are, potentially, the most valuable of all for defining a datable framework for finds. So far the only other Late Iron Age site falling into this category in Worcestershire is at Blackstone (Hurst *et al* 2010) to the north of Droitwich.

In the context of the above, the presence of large well-preserved sherds at Tibberton, including diagnostic rims, makes this assemblage of great significance. Its condition also adds to this significance, as material of this date has usually deteriorated to a greater degree. And so such a positive combination of circumstances increases the value of this assemblage.

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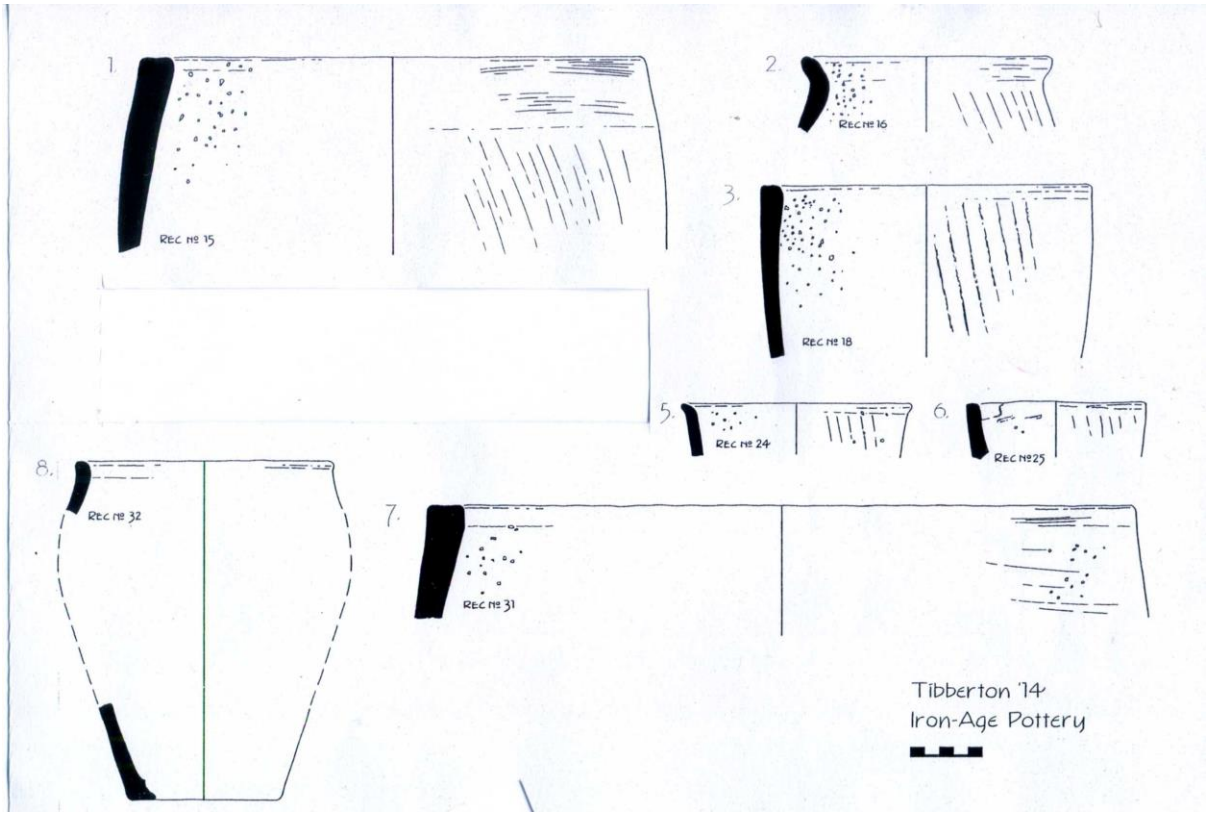
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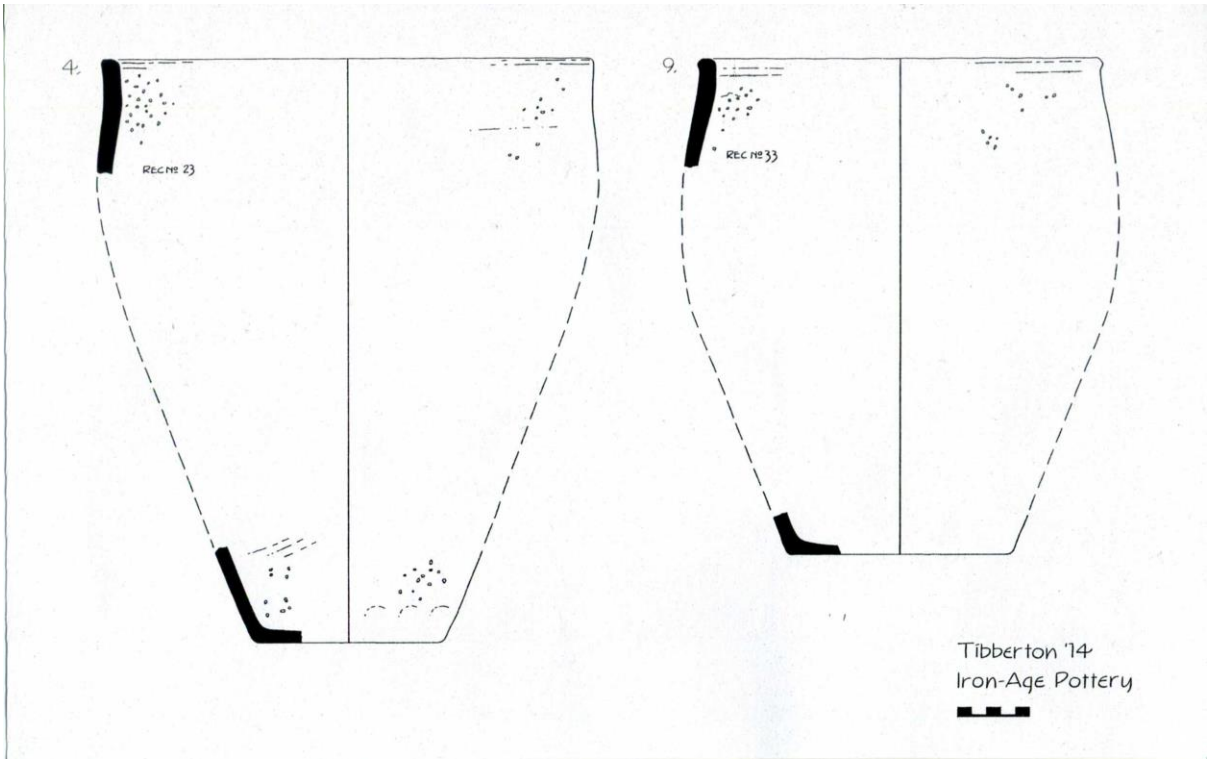
Rec no 31
Tibberton '14
Iron-Age Pottery

Fig. 8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Tibberton '14
Iron-Age Pottery

Fig. 9

APPENDIX 3 *environmental remains by Alan Clapham and Suzi Richer*

Introduction

An assessment of environmental remains from an archaeological evaluation on land off Hawthorn Rise, Tibberton was undertaken on behalf of one ten archaeology. The environmental project conforms to relevant sections of the *Standard and guidance for archaeological field evaluation* (IfA 2012); *Environmental Archaeology: a guide to the theory and practice of methods, from sampling and recovery to post-excavation* (English Heritage 2010); and *Environmental archaeology and archaeological evaluations* (AEA 1995).

The aims were to determine the state of preservation, type, and quantity of environmental remains recovered, from the samples and information provided. This information will be used to assess the importance of the environmental remains.

In particular, the following objectives were identified for the pollen analysis:

- to establish whether the any residues, visible or not, were surviving within the *in situ* pot, and;
- if residues were present, to establish through pollen analysis, possible sources of the residue.

Samples for plant macro analysis were taken according to standard One Ten Archaeology practice. Samples were taken on site by the excavator from deposits considered to be of high potential for the recovery of environmental remains.

Plant macrofossils

A total of two samples (one of 40 litres, one of 10–20 litres) were taken from the site from the following contexts (see Table 1):

- Sample 1, context 303, possible primary fill of a recut (310) of ditch cut (305), late Iron Age (Griffin 2014).
- Sample 2, context 307, possible primary fill ditch cut (309), late Iron Age (Griffin 2014).

Context	Sample	Feature type	Fill of	Position of fill	Sample type	Sample vol (l)	Vol processed (l)	Residue assessed	Flot assessed
303	1	Ditch	305	2nd	Genera	20	10	Yes	Yes

					l				
307	2	Ditch	309	1st	Genera l	40	10	Yes	Yes

Table 1: Samples processed and assessed for environmental remains

Sampling the pot from 303 for pollen

Residues (visible and invisible) can survive in different forms, in various layers inside a pot. Techniques have been developed by Cummings (2007) to retrieve residues, including pollen, that have become trapped in the slight undulations on the interior surface of pottery sherds. The technique involves 'washing' the interior surface of the pot in a controlled manner. These techniques have the advantage of minimising the recovery of post-depositional sediments, therefore reducing the risk of contamination from background flora, and allow for the recovery of microscopic residues, where visible residues are absent. The method of 'washing' developed by Cummings (2007) has, therefore, been employed in an attempt to extract uncontaminated pollen from the interior base of the pot, in addition to the more obvious targeting of the charred residue in the pot.

Laboratory excavation

During excavation One Ten Archaeology removed an *in situ*, but fragmented Iron Age pot. The pot was excavated in the laboratory by Worcestershire Archaeology. During the micro-excavation four new contexts were assigned to context 303:

303A – layer sealing the pot

303B – the pot

33C – the fill of the pot

303D – redeposited natural underneath the pot.

Sub-samples for pollen analysis were taken from context 303 following the micro-excavation of the *in situ* pot. Samples were taken according to the method outlined in Cummings (2007) with control samples taken from the vessel fill (sample 1 and 2) and samples taken from the washes of the interior surface of the pot (samples 5–7). The washes were conducted according to the methodology outlined in Appendix 1 with the aim of extracting pollen from potential residue caught in the small undulations on the surface of the pot. A total of seven samples were taken during the excavation and washing of the pot:

Sample number	Context	Description	Sample size
1	303C	Charred layer on base	1cm³
2	303C	Fill above sample <1>	1cm³
3	303D	Layer directly below the base	2cm³
4	303B	Fragment from the base of the pot.	N/A
5	303B	3rd rinse from wash of the interior surface of the pot <4>	10ml
6	303B	2nd rinse from wash of the interior surface of the pot <4>	10ml
7	303B	1st rinse from wash of the interior surface of the pot <4>	10ml

Table 2: Samples taken from the interior of the pot, for potential pollen analysis

Due to the clayey nature of the fill, the sampled sherd from the base of the pot (sample 4) was washed a total of three times to achieve a clean surface, each wash (samples 5–7) was retained.

The two samples were initially processed for pollen remains; samples 1 and 5. Sample 1 was chosen as a control sample and sample 5 was chosen as the residue wash, because it was deemed to be the least contaminated by the fill of the pot. Samples 2 and 3 were processed subsequently, taking the total number of analysed samples to four.

The pot was has been assigned a late Iron Age date by Griffin (2014).

Plant macrofossils

The samples were processed by flotation using a Siraf tank. The flots were collected on a 300μm sieve and the residue retained on a 1mm mesh. This allows for the recovery of items such as small animal bones, molluscs and seeds.

The residues were scanned by eye and the abundance of each category of environmental remains estimated. A magnet was also used to test for the presence of hammerscale. The flots were scanned using a low power MEIJI stereo light microscope, and plant remains identified using modern reference collections maintained by Worcestershire Archaeology and a seed identification manual (Cappers *et al* 2006). Nomenclature for the plant remains follows the *New Flora of the British Isles*, 3rd edition (Stace 2010).

Pollen analysis

The sub-samples were submitted to the laboratories of the Department of Geography and Environment at the University of Aberdeen for chemical preparation following

standard procedures, as described by Barber (1976) and Moore *et al* (1991). The full methodology is described in Appendix 2.

Where preservation allowed, pollen grains were counted to a total of 150 land pollen grains (TLP) for assessment purposes using a GS binocular polarising microscope at x400 magnification. Identification was aided by using the pollen reference slide collection maintained by the Service, and the pollen reference manuals by Moore *et al* (1991) and Beug (2004). Nomenclature for pollen follows Stace (2010) and Bennett (1994).

Discard policy

Scanned residues will be discarded 6 months after the submission of this report, unless there is a specific request to retain them.

Plant macroremains

The methods and results adopted for the assessment of the plant macroremains allow a high degree of confidence that the aims of the project have been achieved.

Pollen

The sampling for pollen from the interior surface has been ambitious within the context of commercial archaeology. The interior wash of the pot, sample 5, did not produce results in this instance, but future analysis of the other washes (samples 3 and 4) would also be needed in order to establish the overall reliability of that result. Apart from that, the methods employed for the processing of pollen samples and the analysis of the results allow a high degree of confidence that the aims of the project have been achieved.

Plant macrofossils, by Alan Clapham

Environmental remains in the form of charred plant remains were present in low numbers from both samples. A small amount of waterlogged material was identified from (307). The results are shown in Tables 3 and 4.

Context	Sample	large mammal	small mammal	charcoal	Comment
303	1	occ burnt	occ	occ	occ pot, mod heat cracked stone
307	2	occ	occ		occ pot, occ fired clay/briquetage

Table 3: Summary of environmental and other finds present in the sample residues from (key: occ = occasional)

Context 303

Context 303 is a possible primary fill of a recut (310) of ditch cut (305). Charred plant remains were identified from this context and consisted of a single tail grain of barley (*Hordeum vulgare*) and single finds of clover (*Trifolium* sp) and cinquefoil (*Potentilla* sp).

Other environmental remains included occasional large mammal bone fragments which for the majority were burnt but no identifiable elements were recorded. Small mammal remains were also occasional as were charcoal fragments. The charcoal fragments included a small piece of roundwood but they were too small to identify with any confidence.

Non-environmental remains included occasional pot sherds and a moderate number of heat cracked stones.

Context 307

Context 307 was the primary fill of ditch cut (309). The plant remains consisted of a small number of charred plant remains that were identified as indeterminate cereal grain fragments, along with single finds of common chickweed (*Stellaria media*), meadow-grass (*Poa* sp) and a fragment of brome grass (*Bromus* sp). A single waterlogged fruit of duckweed (*Lemna* sp) was also identified.

Environmental remains present in the residue consisted of occasional large mammal bone fragments, a small minority of which were burnt, and occasional small mammal bones. No charcoal remains were identified. Non-environmental remains comprised small fragments of heavily organically tempered ?briquetage, occasional pot sherds, and fired clay fragments.

Latin name	*Common name*	*Habitat*	*303*	*307*
Charred				

Hordeum vulgare tail grain (hulled)	barley	F	1	
Cereal sp indet grain (fragment)	cereal	F		2
Trifolium sp	clover	ABD	1	
Potentilla sp	cinquefoil	BCDE	1	
Stellaria media	common chickweed	AB		1
Poa sp grain	meadow-grass	ABCD		1
Bromus sp grain	brome grass	AF		1
Waterlogged				
Lemna sp	duckweed	E		1

Table 4: Plant remains identified from the environmental samples

Key:

Habitat
A= cultivated ground
B= disturbed ground
C= woodlands, hedgerows, scrub etc
D = grasslands, meadows and heathland
E = aquatic/wet habitats
F = cultivar

DISCUSSION

The charred plant remains from both contexts (303) and (307) assessed here may represent a 'background flora'. Charred plant remains are very resilient and, therefore, small numbers may get distributed across a site by accidental or natural means. The presence of burnt large mammal bone in (303) and non-burnt mammal bone in (307) may represent the discard of domestic rubbish, and this may well be the source of the charred plant remains and non-biological finds in the samples. And the presence of duckweed in (307) suggests that the ditch may have contained water at some stage.

Pollen assessment, by Suzi Richer

The results of the pollen analysis are summarised in Table 5.

Context 303C – Sample 1

Pollen was present in low concentrations and was often poorly preserved; only 130 land pollen grains were counted. Many grains were both degraded and folded, suggesting that they had been exposed to oxygen and also have suffered from the compaction of sediment (Delcourt and Delcourt 1980). The sample was almost entirely dominated by

herbaceous pollen (94% TLP) with tree pollen only accounting for only 6% TLP. The latter was represented by only *Salix* (willow).

The greatest contributor to the herbaceous pollen was *Cichorium intybus*-type (chicory/dandelion) (55% TLP), followed by *Ranunculus acris*-type (meadow buttercup), Cyperaceae (sedge), Apiaceae (carrot family) and *Silene-dioca*-type (red campion).

Context 303 – Sample 2

Pollen from this sample was very poorly preserved; only 40 land pollen grains were counted. The only species surviving were very degraded *Cichorium intybus*-type and some *Salix*. Like in sample 1, many grains were both degraded and folded.

Context 303 – Samples 3

Pollen from this sample was very poorly preserved; only 17 land pollen grains were counted. The only species surviving were very degraded, these consisted of primarily *Cichorium intybus*-type.

Context 303B – Sample 5

Pollen was absent from this sample.

Table 5 (below); results of pollen assessment from context 303 (key; TLP=total land pollen)

Latin Name	Family	Common Name(s)	Sample 1 (303C)	Sample 2 (303C)	Sample 3 (303D)	Sample 5 (303B)
Pinus sylvestris	Pinaceae	pine		1		
Tilia	Tiliaceae	lime			1 ?	
Salix	Salicaceae	willow	13	5		
Poaceae undiff	Poaceae	grass	1	1 ?	3	
Apiaceae	Apiaceae	carrot family	7			
Cichorium intybus-type	Lactuceae	chicory/ dandelion	81	33	13	
Aster-type	Asteraceae	daisies	1			
Cirsium-type	Asteraceae	thistles	1			
Chenopodiaceae	Chenopodiaceae	goosefoots	2			
Cyperaceae undiff	Cyperaceae	sedge	15			
Plantago lanceolata	Plantaginaceae	ribwort plantain	1			
Ranunculus acris-type	Ranunculaceae	meadow buttercup	24			
Silene dioica-type	Caryophyllaceae	red campion	3			
Rubiaceae	Rubiaceae	bedstraws	1			
		TLP Grains counted	150	40	17	0

DISCUSSION

The aim of the pollen analysis was to determine whether uncontaminated pollen survived in the undulations of the base of the pot and if it did, whether this could be indicative of the past contents of the vessel.

Review of surface washing method

The method used to clean the interior surface of the pottery sherd followed a recommended procedure (see Appendix 1) used by PaleoResearch in Colorado, USA. The 'wash' (sample 5), was then sent off to be processed using standard techniques (see Appendix 2) and then analysed for the presence of pollen but none was present. However, it could not be ruled out that this sample might have been almost over-cleaned, because of the clay or that this method might be better suited to drier conditions. The sticky nature of the waterlogged clayey fill of the pot meant that each wash appeared to still contain a lot of the fill, therefore more washes were performed to get down to the surface of the base and then it was only the last wash that was sent for analysis. To fully understand if this method is applicable to contexts like those at Tibberton, further testing of this method would ideally now be needed.

Overall results

The wash from the interior of the pot itself (sample 5) revealed a complete absence of pollen and samples 2 and 3 contained very little pollen. In contrast, pollen grains incorporated within the charred layer (sample 1) of the pot have potentially shown some positive results. Here, the general absence of any considerable arboreal and wind-blown pollen (e.g. grass), with the exception of the willow pollen, is of note. The flowers included within the pollen types identified are all insect pollinated, which means that their pollen would only become incorporated into the soil if the flower was growing close by, or if the pollen had been moved through other mechanisms (eg by water flow or insects). A general meadow environment is indicated by the pollen results.

Accordingly, there are two hypotheses for how this pollen assemblage has formed. Firstly, the pollen could be naturally-occurring, having percolated downwards through the soil to its current position, and been subject to differential preservation due to the effects of transport through the soil. In this instance the pollen could be seen to represent a meadow-type environment. In favour of the idea of differential preservation is the work of Bunting and Tipping (2000), whereby they suggest nine criteria a pollen assemblage should meet before an interpretation can proceed with confidence and differential preservation can be excluded. Some of the criteria where sample 1 fails include:

- at least 300 pollen grains should counted (the original sample size did not permit this),
- the sample should not be dominated by resistant taxa, e.g. *Tilia*, Carophyllaceae, Chenopodiaceae, Asteraceae (Lactuceae), *Artemisia*-type and Brassicaceae. All samples with pollen preserved contained high levels of Lactuceae pollen with Carophyllaceae and Chenopodiaceae also forming part of the assemblage.

At face value, it would appear that post-depositional biasing may have occurred in sample 1 and this is almost certainly the case for Samples 2 and 3, both of which contain very low numbers of pollen (40 and 17 grains respectively). However, Bunting and Tipping (2000) also note exceptions to these criteria, e.g. archaeological samples from residues will be smaller by their very nature, low taxa diversity within a burial context can be associated with deposition of floral or edible offerings and the resistant taxa are also those most likely to come from an agricultural environment. All of the above exceptions are reasonable assumptions for sample 1, meaning that although any other interpretations cannot be made with certainty, they should not be dismissed.

In addition, sample 1 shows a number of marked differences from samples 2 and 3. Namely, that there was better preservation and a higher diversity of species present. In the opinion of the author, the *best* preservation would have been expected from the sample directly underneath the pot (sample 3), as the base would have protected the pollen directly below from further weathering and percolation - this was not the case. Although the pot was *in situ,* it was fragmented, meaning that the charred layer is unlikely to have been within an anaerobic microenvironment, because water would have been escaping from the sides.

Although differential preservation cannot be ruled-out entirely, there are enough factors pointing towards the charred layer as being different from the other samples. One interpretation that should also be evaluated is that a honey-based food or drink was present in the pot within the charred layer of context 303C, which would have led to a different pollen signature. Dandelion, willow, buttercup and species from the carrot family are all plants attractive to, and pollinated by, honey bees and were all found in the sample 1. Though red campion is not a plant associated with honey bees, it is thought to be highly attractive to bumblebees (Bradbury nd). The latter produce honey, but in far smaller quantities than honeybees, which suggests that the possible honey might have been gathered from wild sources, rather than produced in large amounts by honeybees. There is pollen evidence of honey residues from Iron Age sites in Germany indicating that honey was indeed used in this period (Rösch 1999). In addition, Dickenson (1979) also found pollen evidence from a Bronze Age context from Ashgrove in Scotland with a predominance (54%) of one insect-pollinated pollen type, *Tilia* (small

leaved lime), that was interpreted as being from honey, mead or a sweetened ale. The pollen profile from sample 1 showed a similar shape, being dominated (54%) by one insect-pollinated flower, this time *Cichorium intybus*-type (chicory/dandelion).

These results suggest that it is well worth investigating residues through palynology in specific burial circumstances, and, though, in this case, the results were not totally definitive, there seems to be promising evidence here for the culinary use honey in the later prehistoric diet.

It is suggested that pollen survival is likely to occur within the residue of *in situ* pots, especially when the pots are located in damp conditions, e.g. in the base of a ditch, like at Tibberton; or in clay soils, which are often encountered in the West Midlands. In these situations, this study has shown that the best chances of pollen survival come from the waterlogged and charred basal fill of the pot, rather than from a 'wash' of the surface of the base. Where appropriate burial conditions prevail, as recognised at Tibberton, pollen analysis on suitable pots could be employed more widely within the region to further our understanding about how certain pots were used in the past, thereby adding quite refined information about ancient culinary habits.

Synthesis

The pollen and plant macrofossil assessments have both illustrated different aspects of the local vegetation around the site. The charred plant remains are likely to have come from the local environment, but over time they became caught-up in the domestic rubbish of the inhabitants and were discarded into the ditches around the site. The presence of the waterlogged duckweed (*Lemna* sp) fruit shows that the recut ditch (310) once contained water.

It is within this recut ditch that the *in situ* pot (303) was found. Pollen from a charred layer on the base on the pot has survived, possibly due to waterlogging, and has indicated the presence of honey inside the pot. Usually pollen evidence reveals information about the wider landscape. However, here, the distinct lack of grass and tree pollen, in combination with the strongly insect-pollinated pollen assemblage, is instead suggestive of a highly localised environment.

In contrast, the plant macro-remains in this case have provided the evidence of the wider landscape. An open and cultivated landscape is indicated, given the presence of cereal grain fragments, a grain of barley (*Hordeum vulgare*), common chickweed (*Stellaria media*), meadow-grass (*Poa* sp), brome grass (*Bromus* sp), and single finds of clover (*Trifolium* sp) and cinquefoil (*Potentilla* sp).

Significance

The charred plant material and pollen evidence at this site show the potential for significant assemblages of environmental remains to be recovered, which can contribute towards the interpretation of the agricultural economy of the area and the landscape around the site. Waterlogged plant remains are not particularly common and, though only a tiny amount was present, this does indicate that the site has the potential for further survival of this important category of archaeological remains.

The pollen evidence, although small-scale, has shown that a meadow-type landscape existed in close proximity to the site and that honey might have been used within the pot from context 303 prior to its discard. Understanding pollen evidence from *in situ* pots is a little researched field in archaeology and Tibberton has now shown that the potentially useful information that can be gained by this approach.

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Appendix 1 - POLLEN/PHYTOLITH WASHES FROM GROUNDSTONE AND VESSELS (Linda Scott Cummings – PaleoResearch Institute)

Instructions:

All supplies must be "sterilized" prior to collecting the sample. Mix a bleach solution (1 part bleach

to 3 parts water) and use to clean the bowl, brush, and jars. All supplies m ust be thoroughly rinsed with tap water to remove any bleach residue. Bleach oxidizes pollen, so any residue left on the sampling supplies will destroy the sample. Rinse copiously with tap water so there is no bleach smell left on the supplies. Then rinse lightly with distilled water to remove any particles introduced by the tap water. Fill 1 squirt bottle with vinegar and the other with distilled water.

Unwrap first piece of groundstone and remove any dirt clods adhering to the grinding surface (do not include these in the sam ple). Next, remove additional dirt using a clean trowel. Next, use "canned air" to blow any contaminants or loose sediment off the surface. You should have a fairly clean looking surface at this point. If not, loosen more dirt with the trowel and use the "canned air" again. If you cannot see the grinding surface of the tool, call Linda for further instructions, which might include lightly washing the surface with a gentle stream of water.

Wash non-grinding surfaces so that any liquid dripping down these surfaces does not collect additional sedim ent to contam inate the sample. Be certain not to wash the grinding surface during this process unless it is thoroughly covered with calcium carbonate (see next paragraph).

If grinding surface is thoroughly covered with calcium carbonate rinse the entire artifact with water to remove all dirt, scrubbing with a brush to be certain it is clean. Otherwise, skip this step and proceed.

Hold groundstone so that liquid dripping from grinding surface will drip into bowl, but not run down the underside of the artifact. Squirt grinding surface with vinegar to wet. If surface bubbles, there is some calcium carbonate present, which must be dissolved (or the groundstone is made of limestone or other mineral soluble in acid). If the artifact is soluble in acid, only a limited quantity of vinegar should be used on the surface, as it will erode the surface. The wash should be continued with distilled water just as soon as any apparent carbonate deposits are removed. For non-soluble groundstone, use the vinegar until the bubbling stops, indicating that the carbonates have been dissolved. This will uncover the original grinding surface and allow the pollen accumulated on it to be removed. The grinding surface should be scrubbed with the brush (a sonicating

tooth brush works wonders getting the surface clean) while the vinegar is being applied. This is easier with 2 people -- one to hold the rock and the other to squirt the vinegar and brush, or one to hold the rock and brush and the other to squirt the liquid. Do not brush so vigorously that you spray the vinegar or acid on the counter or on people. Remember both safety and that any pollen removed from the grinding surface is contained within the drops being sprayed around. When the surface no longer bubbles, indicating that the carbonates have been dissolved, continue washing with distilled water and brushing (in circles) with the brush. The object is to get the grinding surface clean enough to eat from. This insures that any dirt particles remaining in pores of the rock have been removed, and with them any pollen that had been ground into these pores. Brush only the grinding surface, not the non-grinding areas surrounding them. When the grinding surface is clean, rinse the brush into the collecting bowl with distilled water. Pour the sample into the jar (or jars) and seal. "Sterilize" all supplies with bleach before proceeding to the 2nd wash. Remember to rinse copiously again!

Appendix 2 - Pollen processing methodology (Tim Mighall, Department of Geography and Environment, University of Aberdeen)

ABSOLUTE POLLEN ANALYSIS: PREPARATION SCHEDULE

PRECAUTIONARY NOTES: All procedures, up to stage 25, should take place in the fume cupboard. Read precautionary notices on fume cupboard before starting. Ascertain whereabouts of First Aid equipment NOW. Please wear laboratory coat, gloves and goggles when dealing with all chemicals. Please organize fume cupboard carefully to maximize workspace. Use the containment trays provided. Always keep the fume cupboard door down as far as practically possible. Make sure the fume cupboard is switched on and functioning correctly.

A) SOLUTION OF HUMIC COMPOUNDS

1) Switch on hotplate to heat water bath. Prepare 12 to 16 samples concurrently.

HCl. is an irritant and can cause burns. Wear gloves. Wash with water if spilt on your skin.

Using a clean spatula, place a known volume or weight of sediment (c. 2cm^3) and one spore tablet in each 50ml centrifuge tube. Add a few cm^3 of distilled water (enough to cover the pellet and tablets) and a few drops of 2M HCl. Wait until effervescence ceases, then half fill tubes with 10% KOH; place in a boiling water bath for 15 minutes. Stir to break up sediment with clean glass rod. Return HCl and KOH bottles to the chemical cabinet.

2) Centrifuge at 3,000 rpm for 5-6 minutes, ensuring first that tubes are filled to the same level. This applies throughout the schedule (Mark 7 on centrifuge).

3) Carefully decant, i.e. pour away liquid from tube, retaining residue. Do it in one smooth action.

4) Disturb pellet using vortex mixer; add distilled water, centrifuge and decant.

5) Using a little distilled water, wash residue through a fine (180 micron) sieve sitting in filter funnel over a beaker. NB Be especially careful in keeping sieves, beakers and all tubes in correct number order. Wash residue on sieve mesh into petri dish and label the lid. If beaker contains mineral material, stir contents, wait four seconds, then decant into clean beaker, leaving larger mineral particles behind. Repeat if necessary. Clean centrifuge tube and refill with contents of beaker.

6) Centrifuge the tubes and decant.

B) HYDROFLUORIC ACID DIGESTION

(Only required if mineral material clearly still present. Otherwise, go to stage 13)

NB Hydrofluoric acid is extremely corrosive and toxic; it can cause serious harm on contact with eyes and skin. Rubber gloves and mask/ goggles MUST be worn up to and including stage 11. Please fill sink with H_20; have $CaCo_3$ gel tablets ready. Place pollen tube rack into tray filled with sodium bicarbonate.

7) Disturb pellet with vortex mixer. Add one cm^3 of 2M HCl.

8) With the fume cupboard sash lowered between face and sample tubes, very carefully one-third fill tubes with concentrated HF (40%). Place tubes in water bath and simmer for 20 minutes.

9) Remove tubes from water bath, centrifuge and decant down fume cupboard sink, flushing copiously with water.

10) Add $8cm^3$ 2H HCl to each tube. Place in water bath for 5 minutes. Do not boil HCl.

11) Remove tubes, centrifuge while still hot, and decant.

12) Disturb pellet, add distilled water, centrifuge and decant.

C) ACETYLATION

NB Acetic acid is highly corrosive and harmful on contact with skin. Wash with H_20 if spilt on skin.

13) Disturb pellet, add $10cm^3$ glacial acetic acid, and centrifuge. Decant into fume cupboard sink with water running during and after.

14) Acetic Anhydride is anhydrous. Avoid contact with water. The acetylation mixture can cause severe burns if spilt on skin. Wash with water.

15) Make up $60cm^3$ of acetylation mixture, just before it is required. Using a measuring cylinder; mix acetic anhydride and concentrated sulphuric acid in proportions 9:1 by volume. Measure out $54cm^3$ acetic anhydride first, then add (dropwise) $6cm^3$ concentrated H_2S0_4 carefully, stirring to prevent heat build—up. Stir again just before adding mixture to each tube.

Disturb pellet; then add $7cm^3$ of the mixture to each sample.

16) Put in boiling water bath for 1-2 minutes. (Stirring is unnecessary—never leave glass rods in tubes as steam condenses on the rods and runs down into the mixture reacting violently). One minute is usually adequate; longer acetylation makes grains opaque. Switch off hot plate.

17) Centrifuge and decant all tubes into large (1,000ml) beaker of water in fume cupboard. Decant contents of beaker down fume cupboard sink.

18) Disturb pellet, add 10cm^3 glacial acetic acid, centrifuge and decant.

19) Disturb pellet, add distilled water and a few drops of 95% ethanol centrifuge and decant carefully.

D) DEHYDRATION, EXTRACTION AND MOUNTING IN SILICONE FLUID

20) Disturb pellet; add 10cm^3 95% ethanol, centrifuge and decant.

21) Disturb pellet; add 10cm^3 ethanol (Absolute alcohol), centrifuge and decant. Repeat.

22) Toluene is an irritant. Avoid fumes.

Disturb pellet; add about 8cm^3 toluene, centrifuge and decant carefully into 'WASTE TOLUENE' beaker in fume cupboard (leave beaker contents to evaporate overnight).

23) Disturb pellet; then using as little toluene as possible, pour into labelled specimen tube.

24) Add a few drops of silicone fluid - enough to cover sediment.

25) Leave in fume cupboard overnight, uncorked, with fan switched on. Write a note on the fume cupboard *'Leave fan on overnight - toluene evaporation',* and date it. Collect specimen tubes next morning and cork them. Turn off fan.

26) Using a cocktail stick, stir Contents and transfer one drop of material onto a clean glass slide and cover with a cover slip (22mm x 22mm). Label the slide.

27) Wash and clean everything you have used. Wipe down the fume cupboard worktop. Remove water bath from fume cupboard if not needed by the next user. Refill bottles and replace them in chemical cabinets.