ARCHAEOLOGICAL EXCAVATION AND ASSESSMENT REPORT

GREENE KING ACCESS ROAD, BURY ST EDMUNDS BSE 207

A REPORT ON THE ARCHAEOLOGICAL MONITORING, 2002
(Planning app. no. E/99/3345/P)

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SCCAS Report No. 2004/43

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Acknowledgements

This project was funded by Greene King Ltd. and was monitored by Robert Carr (Suffolk County Council Archaeological Service, Conservation Team). The fieldwork was carried out by Andrew Tester and David Gill from Suffolk County Council Archaeological Service, Field Team. The project was managed by Tom Loader.

The small find was identified by Sue Anderson and the illustrations were done by Kelly Powell. Advice on the pollen was provided by Patricia Wiltshire, who also submitted the radiocarbon samples for dating.

Summary

During the construction of a road linking the Greene King brewery on Westgate Street with Cullum Road, a section was excavated through the Friars Lane footpath, the ditch on the western side and partially through the eastern, ditch, known as the Black Ditch. The section revealed an earlier gravel footpath c.0.5m below with a Terminus Post Quem of the late medieval period which was provided by a horseshoe sealed by the path. The Black Ditch cut the earlier footpath but as the ditch was probably re-dug and cleaned many times during the course of maintenance it cannot be used to date the origin of this feature which is thought to pre-date the footpath. Evidence to support this is provided by a silt deposit sealed by the footpath, but apparently unrelated, which is likely to be material upcast from an earlier cut of the Black Ditch.

Radiocarbon dates from the peat beneath the footpath suggest it accumulated between AD 230 and AD440P, and AD760 and AD990 although the upper layer may have been truncated thereby foreshortening the peat sequence. We can infer wetter conditions developed along the valley floor in the Late Roman/Early Saxon period causing the growth of peat and a further change to even wetter conditions the Middle to Late Saxon period is suggested in the pollen assessment. This may represents water management of the meadows following the foundation of the Anglo-Saxon town and Abbey.

SMR information

Planning application no.	E/99/3345/P
Date of fieldwork:	March 2002
Grid Reference:	TL 8554 6341
Funding body:	Greene King Ltd.

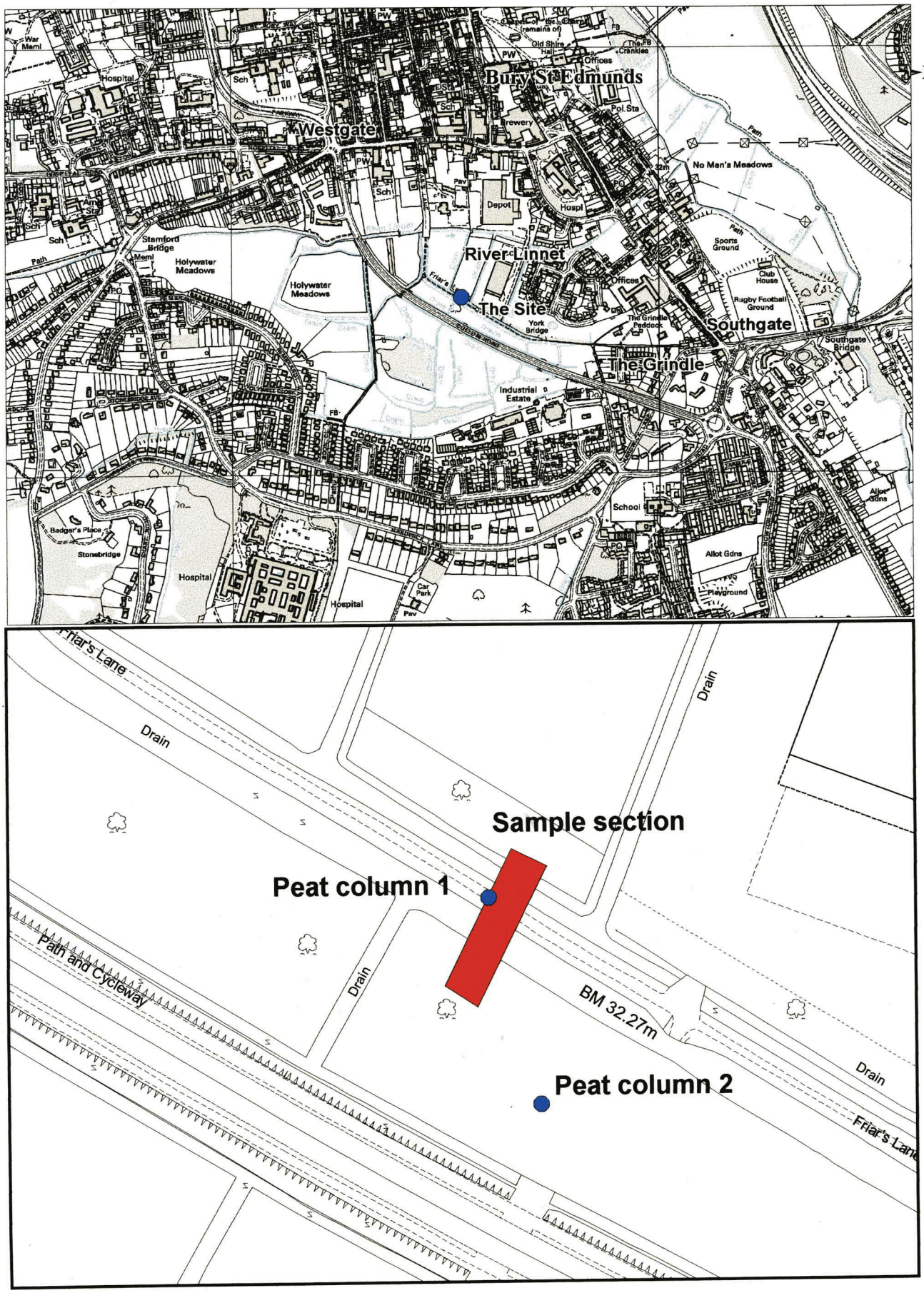

Figure 1 Site Location plan

1:1000

Lucy Robinson
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 <<DATE>>

Introduction

An archaeological monitoring and excavation was carried out as part of a condition on planning application E/99/3345/P. The work was set out in a Brief and Specification by Robert Carr (Appendix 1) and was preceded by an archaeological evaluation of the site (Gill 1998). The fieldwork work took place during March 2002. The project involved building a link between Cullum Road and the Greene King brewery in Westgate Street. This construction involves cutting across the water meadow of the river Linnet and through Friars Lane and the Black Ditch which runs alongside it.

Historical Background

The Friars Lane footpath and the complex water management scheme associated with Great Sextons Meadow and the river Linnet have hardly changed since they were recorded in the Warren map of Bury St Edmunds from 1746. And there is evidence that they may go back much further (Breen, in Gill 1998). Friars Lane and the Black Ditch, which is on the south side of the lane, follow the natural line of the medieval town defences as they may have been conceived in plan during the 12th century. The Black Ditch and The Grindle form part of an arc linking the Southgate with Westgate, this is very similar to the way that the town ditch and wall linked the Northgate to Risbygate. Topographically, however the Rivers Lark and Linnet serve to isolate the Southgate from the main part of the town; it seems clear that if the line of the Black Ditch was incorporated in a defensive scheme it was done to create a symmetrical plan rather than a practical defensive arrangement (Fig. 2).

The river is likely to have had economic value; there are known to have been corn mills powered by the river Lark at Tolgate and within the Abbey and medieval fullers lived in Westgate Street in the late medieval period; the present course of the River Linnet on the north side of the floodplain makes it very accessible from the town and the river might supply water and power for industrial use.

It was hoped that the fieldwork would help to shed light on some of the historical issues which have been raised. An important objective of the fieldwork was to establish the longevity of the extant water scheme, particularly the Black Ditch and the Friars Lane footpath. It was also hoped to record something of the human impact on the River Linnet and its environs.

Methodology

Archaeological monitoring was carried out during the stripping of topsoil by a back-acting machine, prior to the laying of hardcore. The first stage of the work involved the excavation of the Friars Lane footpath and the flanking ditches. Unfortunately during the first stage of the work the footpath which was still open to the public began to subside and the contractors were obliged to shutter the 'Black Ditch '(the ditch on the western side of Friars Lane) to prevent any further collapse. It therefore became impractical to excavate a section across this feature. It was decided to cut a machine trench across Friars Lane in order to establish its archaeological potential. This produced a cross section which extended below the water table and included a layer of peat sealed beneath the road (Fig. 2). No archaeological cut features were exposed but it was decided to take a column sample of the peat to try and establish its age and a possible construction date for the path. This work was carried out and an assessment of the pollen is included below and includes two radiocarbon evaluations of the peat.

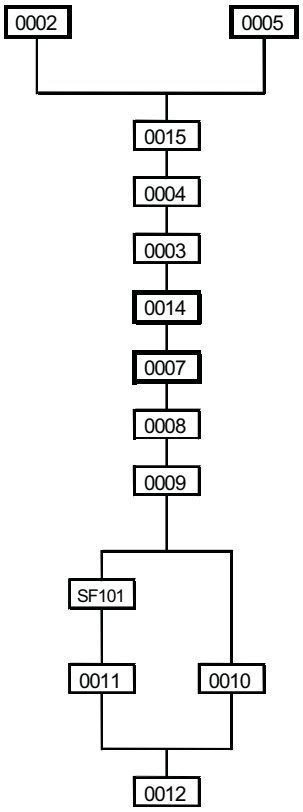
A single context recording system was used. The sections were drawn at a scale of 1:20. Levels were taken of the work.

Results

A 2m ditching bucket was used to excavate a section across the Friars Lane (Fig. 2). The section cut through wet peat and ran below the water table which made rapid recording essential. A section was drawn on which a range of levels were taken.

Section 1

The section sequence is shown in the matrix below.



The latest features include existing footpath, 0002, and ditch 0005. The footpath is 2m wide and the ditch approximately 3.5m wide and 1.5m deep of which c.0.8m had filled up with fine silt and clay. Both these features are cut into a modern topsoil, 0015, with a second layer of made ground north of the ditch, 0004. These soils overlie an accumulation of fine silt and clay, 0003, which was 0.8m thick. This fine deposit must be the result of overbank flooding occurring over many seasons. Appearing in the southern edge of the section is an earlier cut of the Black Ditch, 0014, which was sealed by 0003, and cutting the south edge of an earlier course of Friars Lane. The path was composed of three deposits an upper surface, 0007, made of coarse gravel 0.12m thick; a middle layer of gravel and sand 0.10m thick and a lower layer of grey silt up to 0.35m thick. This layer is uneven beneath the footpath trailing away towards the north. To the north of ditch 0005, flood deposit 0003 overlies a silty peat 0010 and a darker peat 0012. South of ditch 0005 there is a thin band of chalk at the interface with silty peat layer 0011 that overlies dark peat 0012 which is assumed to be continuous either side of the ditch.

Only a single find was made during the work; a horseshoe SF0101 was recovered from the surface of the peat, its position is marked on Figure 3. A 0.5m column sample was taken through the peat and radiocarbon dates were obtained from the top and bottom, which are discussed by Wiltshire below. In order to provide comparative evidence, further column samples were taken during the excavation of a wildlife pond, which was part of the landscaping scheme, approximately 15m south-east of column 1. The depth of peat was much less than under the footpath and therefore two columns were taken. The section shows 0.3m of topsoil over a mixed dumped deposit of clay and silt but including brick rubble and mortar which was 0.5m thick. Beneath this was 0.35m of silty clay with iron panning and below that 0.3m of blue clay which sealed 0.2m of peat, overlying more blue clay that was 0.15m thick. This section was seen to be representative of the surrounding meadow close to the Black Ditch although the peat layer did not extend much to the south of the sample location.

Visits were made to the site during the construction of the road across the meadow. These showed the road construction did not expose archaeological levels beneath flood deposits 0011 (Section 1).

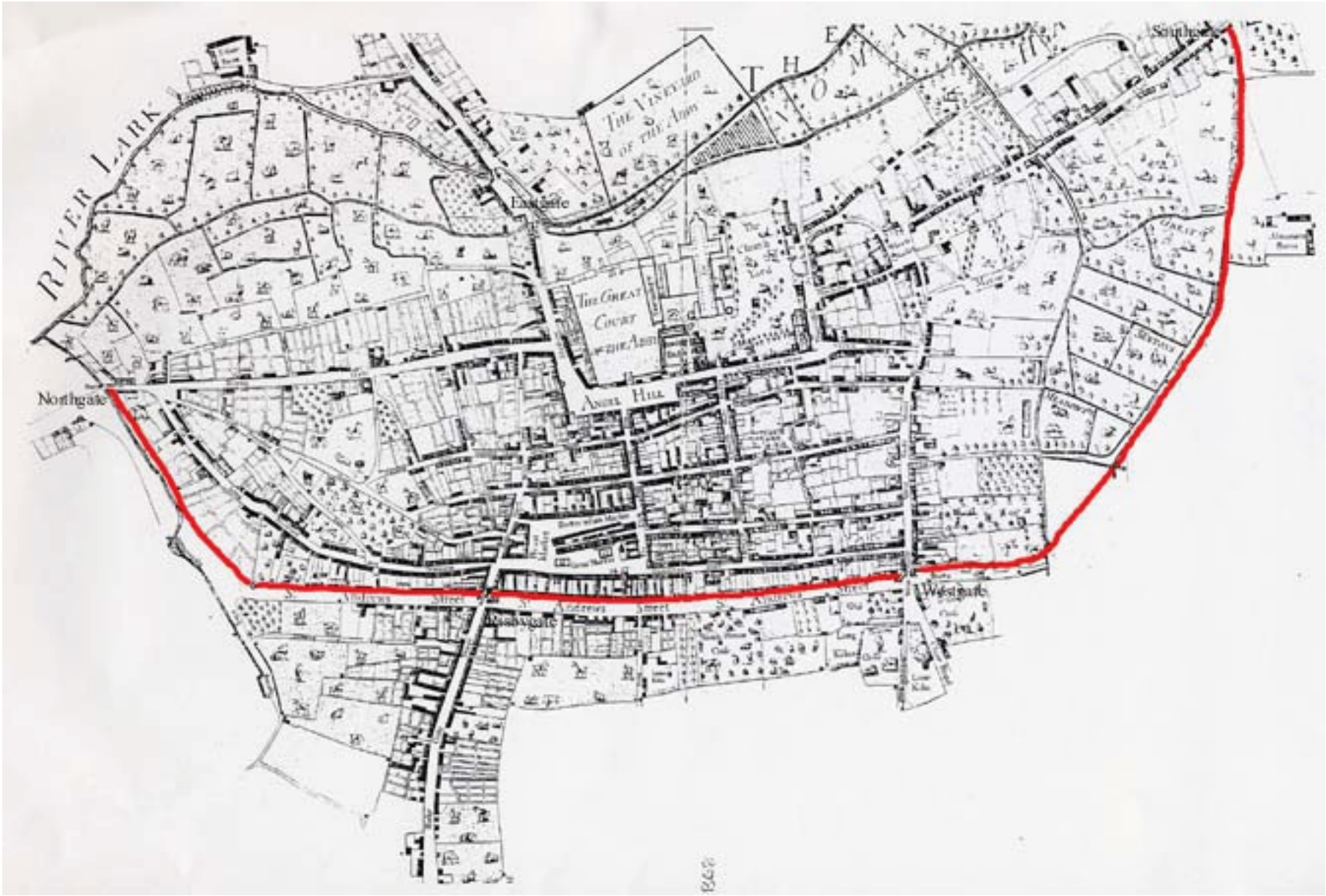


Figure 2 Projected line of the medieval town defences on Thomas Warren's Map of Bury St Edmunds 1747

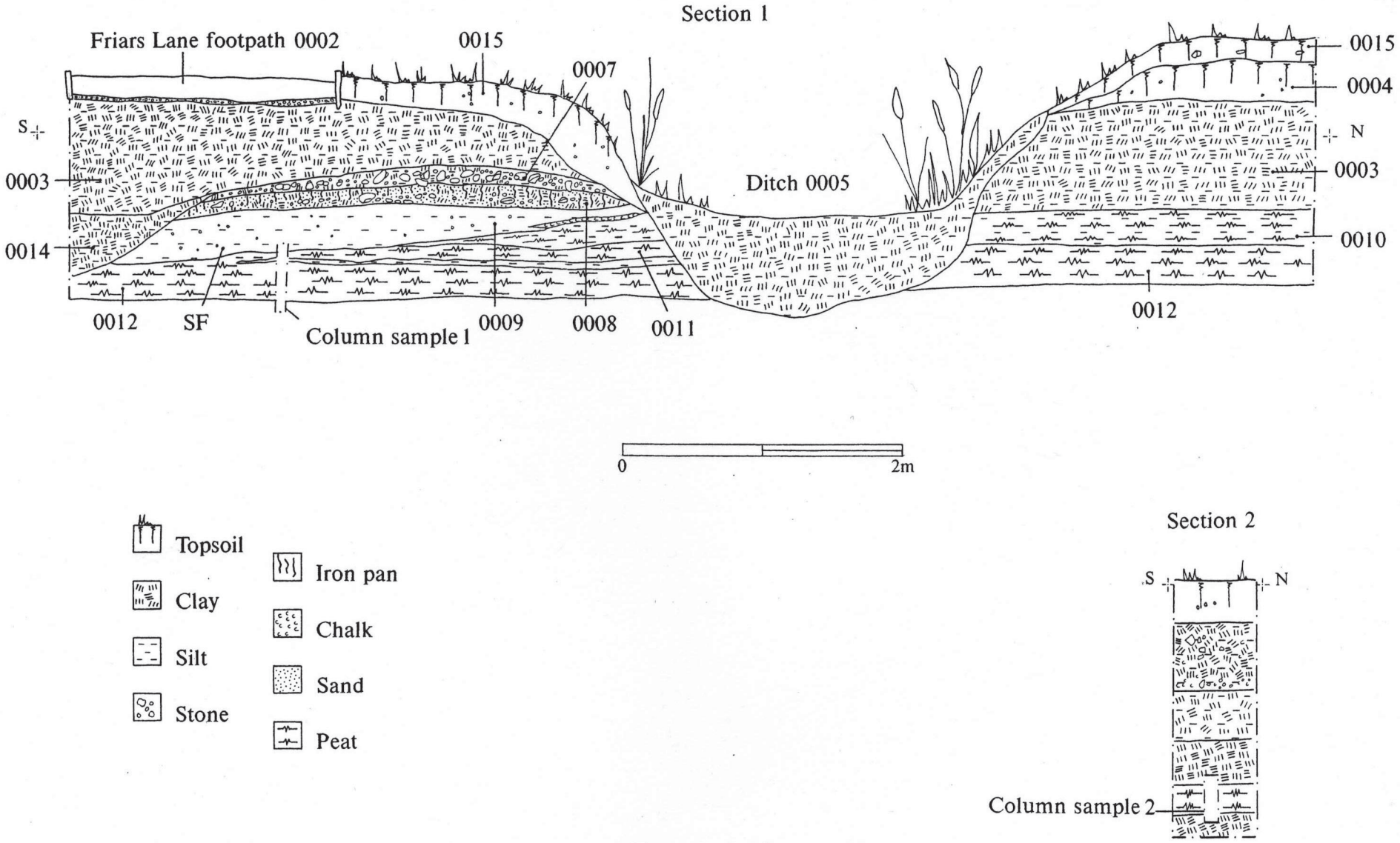


Figure 3. Sections

Environmental evidence

Palynological assessment of sediments from the Greene King development

Patricia E.J. Wiltshire

Introduction

A number of sediment sections were obtained in the hope that palynological analysis might give a picture of past landscape and land use, and provide information on the spatial heterogeneity of vegetation within the catchment of the site. The approach adopted was to assess the potential of one of the core samples with a view to further analysis of this, and other, samples if the sediments proved to be adequately polleniferous. Two radiocarbon estimates were obtained from the assessed sequence to provide a temporal framework for the palynological interpretation. In view of the relatively cursory nature of palynological assessments, fine details of methodologies have been omitted. Only standard techniques were employed in the assessment and these are well documented. Furthermore, no attempt has been made to provide a bibliography since that would be more appropriate if full analysis were to be completed. Changes in land-use at the Greene King site are clearly visible in the palynological record and, although the usual caveats must be applied to the interpretation of these assessment data, it has been thought worthwhile to attempt to provide some visualisation, albeit crudely, of the temporal changes in the environment at and around the site.

Methods

Standard methods were used in processing sediments although 2.0 g of deposit were treated to enhance palynomorph concentrations in preparations. All samples were treated with hydrofluoric acid and standard acetolysis. Samples were stained with 0.5% aqueous safranine and mounted in glycerol jelly. Slide preparations were then subjected to systematic scanning with a minimum of 10 scans per slide being achieved. Scanning was carried out with a Zeiss phase-contrast microscope at x400 magnification. Critical identification was achieved by examination at x1000 magnification and reference to standard keys and reference material. All palynological taxa identified in the scanning process were noted. No attempt was made to count palynomorphs, and relative abundance is shown on a 7-point scale with "+" representing presence and "++" indicating more than one occurrence in routine scanning. Thereafter, a scale of 1-5 was applied with 1 = least abundant and 5 = most abundant. For east of description, the sequence was divided into five palynological zones based on palynological assemblages. These were designated GK1 (base) to GK5 respectively.

Pollen Zone	5			4		3		2		1
Depth (cm)	2	5	8	11	20	29	35	40	42	46
Sediment colour										
Pale yellow with stones	+	+								
Dark yellow			+							
Darker & redder				+	+					
Dark brown/black						+	+	+	+	
Pale grey										+
Palynomorph abundance	+	1	1	3	2	1	++	++	++	+
Palynomorph preservation	1	2	3	3	2	2	2	2	1	1
Microscopic Charcoal	+	+	1	1	++	++	++	++	++	++
Iron Pyrite Framboids			3	+	3	3	2	4	2	2
Fungal spores	+	2	3	4	2	2	+	+	+	++
Hyphae										+
Algal spores		++		1	1				++	+
Trees & Shrubs										
Alnus		+		1					+	
Betula				1	+					
Corylus type			+	1	1	++				
Pinus				+		++	+			
Quercus		+	++	++	+	+	+	+	+	+
Rosaceae (*Prunus* type)		+	+	++	+					
Rosaceae			+	+		+	++	+	+	
Salix				++						
Dwarf shrubs										
Ericaceae				+						

Crop plants										
Cannabis type				+						
Cereal type		++	++	1	1					
Herbs										
Achillea/*Anthemis* type			+	++	++	+				
Apiaceae			+	++						
Artemisia		+	+							
Asteraceae (fenestrate type)		++	++	++	++	++	++	++	++	+
Brassicaceae (*Sinapis* type)			+	+						
Caryophyllaceae				+	+					
Centaurea cyanus				+						
Centaurea nigra				+	+		+			
Cirsium			+	+						
Galium type			+	+	+					
Plantago lanceolata		+	+	+	+		+			
Poaceae	+	++	+	3	2	+	+		+	+
Polygonum aviculare		+	+							
Ranunculus type			+	++						
Rumex indet		+		+						
Sanguisorba minor			+							
Scrophulariaceae					+					
Senecio/*Bellis* type					+	+				+
Succisa			+	+		+		+		
Ferns etc.										
Equisetum			+	+						
Ophioglossum						++	1	++	+	
Polypodium					+	1	+	+		
Pteridium									+	
Pteropsida monolete		+	+		+	++	++	2	+	+
Trilete spores		+			+	1				
Plants of wet soil										
Cyperaceae		+	+	3	2	++			+	
Filipendula			+		+					
Lychnis flos-cuculi		+	+	+	++					
Aquatics										
Butomus		+		+	++					
Menyanthes					+					

Table 1. Palynological results.
2 seeds of Menyanthes were also found

Loss-on-ignition estimations were carried out on the samples taken for radiocarbon estimations (at 12 cm and 36 cm). This was necessary to ensure that the samples submitted for analysis contained sufficient elemental carbon for successful dating estimation.

3.0 Palynological Results

The results are shown on Table 1. It is clear that the zonation was broadly correlated with sediment stratigraphy. It is of interest that the dark sediment between 29-42 cm was less polleniferous than the more minerogenic deposit between 5-20 cm but this can be explained in terms of microscopic charcoal levels within the sediment. The dark colouration of the sediment was due to high levels of burnt organic fragments (microscopic charcoal) rather than humification of organic remains.

3.1 Zone GK/1 (46 cm): This zone is represented by a single sample at 46 cm in the basal pale grey clay. Palynomorph abundance was low and preservation was poor. The presence of iron pyrite framboids would suggest that there was standing water at the base of the feature and that it contained fermenting organic material. Microscopic charcoal was present and attests to local human activity. The paucity of palynomorphs may be due to very rapid sediment accumulation and/or efficient decomposition during drier phases within the deposit. The only taxa found in this sample were *Quercus* (oak), fenestrate Asteraceae (dandelion-like plants), Poaceae (grasses), *Senecio/Bellis* type (ragwort/daisy and others), and monolete Pteropsida (undifferentiated ferns). It would be unwise to attempt interpret the nature of the surrounding vegetation from this sample.

3.2 GK/2 (29 cm-35 cm): The sediment in this zone was dark brown/black in colour and this was due to the high levels of microscopic charcoal dispersed throughout the matrix. This suggests that the centre of human activity was quite close to the site. Iron pyrite framboids were abundant and this indicates that standing water was present within the feature for much of the time represented by this zone. Lower microbial activity (and hence lower levels of decomposition) was indicated by the slightly higher palynomorph abundance, better preservation, and slightly less abundant fungal spores. However, fungi are ubiquitous and have very varied ecology; every caveat must be applied when using them as environmental indicators.

Although some pollen of Cyperaceae (sedges) was found, there was no indication of excessive wetness in soils adjacent to the feature. The abundance of plants such as monolete Pteropsida

(undifferentiated ferns), *Ophioglossum* (adder's tongue fern), and *Polypodium* (polypody fern) suggests that at least some areas very close to the feature (even an edge) supported growths of ferns. *Ophioglossum, Succisa* (devil's bit scabious), *Galium* type (goosegrass/bedstraws), and Poaceae (grasses) might also indicate damp meadow while *Pteridium* (bracken), *Centaurea nigra* type (knapweed), and *Plantago lanceolata* (ribwort plantain) suggest slightly better drained soils. The
reason for the high frequency of fenestrate Asteraceae (dandelion-type plants) is perhaps difficult to envisage but this taxon contains very many species and they were obviously favoured by
local conditions. The very low representation of grasses might indicate relatively high grazing pressure in the area. Dandelion and its relatives are certainly favoured by intense grazing since these rosette plants are often protected from cropping; they can flower profusely when competition from tall grasses is removed by animals.

The most abundant tree in the sequence was *Quercus* (oak) while occasional *Alnus* (alder) and *Pinus* (pine) were growing somewhere in the catchment. However, the pollen of Rosaceae (hawthorn/bramble/rose and others) was frequent. Rosaceous pollen is rarely recorded in any abundance unless the plant is growing very prolifically *in situ* (personal observation from modern pollen studies) or it has been dumped into a feature. It is possible, therefore, that there were dense stands of bramble (or possibly some hawthorn bushes) growing very close to the site. Bramble is less favoured by cattle although can be cropped quite heavily by sheep (personal observation) so, although it is highly conjectural to suggest that cattle rather than sheep were the main stock being kept locally, it is a point to bear in mind if other evidence to support the contention were forthcoming.

3.3. Zone GK/3 (29 cm): This zone is represented by a single sample. The sediment still had high levels of microscopic charcoal but palynomorph abundance increased along with iron pyrite framboids and fungal spores. Fossil trilete spores were also observed in the record. It is possible that conditions were wetter in the feature and there was some erosion of surface soil into the sediment. Ferns were abundant and sedges increased markedly but there seems to have been little change in the surrounding grassland and the immediate vicinity of the feature. However, it is of interest that there was a marked increase in pine pollen and *Corylus* (hazel) was recorded in moderate abundance for the first time. There are certainly indications of some small-scale changes in local land-use and it is possible that management of woody resources (such as pollarding and coppicing) was more relaxed than previously.

3.4 Zone GK/4 (5 cm-20 cm): The sediment became increasingly pale over time in this zone and this was due, at least in part, to the decrease in microscopic charcoal. It was much less abundant that in the previous two zones and, while this may have been due to a filtering function of fringing vegetation, it is also possible that burning activity was much less frequent in the environs of the feature. Palynomorph abundance and preservation improved and fungal spores were very much more abundant.

There is little doubt that the feature became wetter, and probably neglected, since it became colonised by aquatics such as *Butomus* (flowering rush) and *Menyanthes* (bog bean) and plants of swampy conditions such as sedges, *Equisetum* (horsetail), *Filipendula* (meadowsweet), and *Lychnis flos-cuculi* (ragged robin). Iron pyrite framboids were abundant except for at the top of the zone and fungal spores were highly abundant. It is highly likely that the fungal spores were being produced by micro-fungi colonising local plants. With the higher levels of plant biomass closely adjacent to, and within, the feature, an increase in fungal remains is to be expected. Ferns were much less well represented. It is possible that very local conditions had either become too wet for them, or they were out-competed by aquatics and emergents. It is also possible, of course, that they were cleared away or even harvested for some use such a flooring, or bedding for animals.

As well as wetland plants, there was a marked increase in the species richness and abundance of other herbs. Grasses increased noticeably along with many plants that were probably components of the damp, grassland community. Ruderal herbs such as *Polygonum aviculare* (knotweed), *Artemisia* (mugwort), *Cirsium* (thistle), and *Rumex* (docks) were also well represented and were probably growing in soils that were subject to frequent disturbance. There is little doubt that the area close to the feature supported a range of plant communities ranging from the wetland to damp grassland/pasture, open broken soils, and dry turf.

One distinct change in the record was the consistent appearance of crop plants. Cereal type pollen (wheat/barley/oats but not rye) was relatively abundant, and *Cannabis* type (hop/hemp) was recorded. Considering the nature of the local plant communities, it is more likely that the *Cannabis* represents a hemp crop rather than hops. Some of the herbs in this zone are likely to have been growing in association with the crops themselves, for example Centaurea cyanus (cornflower). Before modern agri-chemicals this plant was a potent indicator of cereal fields. Indeed, it is likely that other herbaceous taxa in this zone were also infesting the crop fields.

The enhanced representation of grasses, ribwort plantain, and many other herbs that had obviously managed to reach a flowering stage, indicates that grazing pressure had relaxed near the feature. It seems that the locality was subjected to a different management regime than during the period represented by the earlier pollen zones. This is borne out by the general increase in representation of trees and shrubs. Oak and hazel appear to have been the most frequent but *Betula* (birch), alder, and pine were also growing in the catchment. The persistence of rosaceous pollen might suggest a continuing presence of brambles locally, but it is also possible that *Crataegus* (hawthorn) was growing nearby. The appearance and relative abundance of *Prunus* type pollen (sloe/bullace/cherry) along with *Salix* (willow), hazel, and possibly hawthorn (or bramble) is highly suggestive of hedging. It is possible that hedge boundaries had been created locally to accommodate changing patterns of farming in the area. There are precedents for this in pre-history; a mature, hedged landscape supporting mixed agriculture has recently been revealed for the Bronze Age in the area now occupied by London Airport (Wiltshire forthcoming).

3.5 Zone GK/5 (2 cm): This zone is represented by a single sample. Microscopic charcoal was found and the only pollen taxon recorded was that of grasses. No conclusion can thus be drawn from this zone.

4.0 Radiocarbon Results

The sample taken from 36 cm yielded a radiocarbon estimate of between AD 230 and AD 440 at 95.4% probability. The sample taken from 12 cm yielded an estimate of between AD 760 and AD 990 at 90.4% probability. While the true date could fall anywhere within 210 years for the lower sample and within 230 years for the upper one, it is perhaps useful to take the mid points of these intervals to give some idea of the temporal scale involved in the changes observed in the vegetation history of the site. Although this approach is not ideal, it will be adopted for convenience; the lower date is assumed to be somewhere in the region of AD 335 and the upper one AD 880 and the assumption is made that the sediment between these two samples took about 545 years to accumulate. Although grossly over-simplified (especially as constant accumulation rates are also being assumed), it might be suggested that the major changes in landscape at the site occurred somewhere in the region of AD 600.

4.0 Discussion

There appear to be two main phases in the Saxon landscape at the Greene King site. If we take the very crude date estimate of about AD 600 for the change in land-use, it would seem that in earlier Saxon times, the landscape was relatively open. Woody resources were heavily managed and the area was dominated by damp pasture that appeared to be fairly heavily grazed. The feature itself was also relatively free of vegetation and, although it contained standing water, it did not support aquatic plants with tall, emergent herbs fringing the edges.

In later Saxon times (post AD 600), the site became wet, colonised by aquatics and tall herb vegetation and grazing pressures seem to have become relaxed. The area was dominated by herb-rich meadow, and a range of plant communities were supported in the varied soil conditions within the catchment. Crops were being grown in the vicinity (cereals and probably hemp) and woodland resources appeared to be less exploited, or at least managed differently. It is possible that hedgerows had been incorporated into the local land management regime and the need for hedges may have been related to a change to mixed farming at the site.

It must be stressed most strongly that the scale of changes cannot be ascertained accurately from palynological data. It is possible that while there was a change to a floristically richer, less grazed regime at the site after about AD 600, other areas of the local landscape could have supported the regime of earlier times. If light is to be thrown on the spatial and temporal heterogeneity in the landscape history at Greene King, it would be necessary for several, separated, sediment cores to be evaluated.

General Discussion

If the stratigraphy, pollen evidence and radio carbon dates are considered together we may attempt to establish a chronology and general time framework for the meadows.

The primary layer below Section 1 was of blue clay (not drawn). The clay is likely to represent standing water or overbank flooding, (there is no sign in the section of an earlier course of the River Linnet. Gravel was exposed during deeper excavations below the Black ditch, which must have been deposited by an earlier river, but this may have been glacial and not reflect the course of the river in historic times).

The continuous band of peat 0012 at the base of section 1 has provided radiocarbon dates calibrated at between AD 230 and AD 440 at 95.4% probability for the lower sample and an estimated date of between AD 760 and AD 990 at 90.4% probability for the top. This implies a change in water management in the Late Roman period or possibly Early Saxon, with wetter conditions in the valley causing peat to form. A further change is recorded in the pollen record with the valley becoming wetter during the Middle to Late Saxon period. The pollen assessment has provided a framework picture of the environment at this time. It shows an open landscape with managed woodland and damp pasture, which was relatively free of vegetation; and although there was some standing water there were few aquatic plants. This changed however, possibly around 600AD, and the land became even wetter with tall aquatic plants, possibly hedges and cereal crops being grown close by, and probably hemp (Wiltshire above). This change seems to occur at about the same time as Bury Abbey was founded by king Sigeberht in c.630 AD. The centre of the Abbey is c. 700m downstream of the site alongside the river Lark, into which the water of the Linnet drains. Although the evidence is sufficient to allow speculation over the effect the settlement had on the valley the dating is too insecure to make a positive association.

The same may be said over the Late Saxon evidence; the end of peat growth might indicate a change in the water management of the Meadows; however, the peat layer differs in profile either side of ditch 0005; and there are two possible explanations, the peat could have been truncated where it is covered by silt layer 0009 or it has become compressed. Either is possible and is explained by the position of the Black ditch and Friars Lane. However a horseshoe (SF 0101) impressed into the top of the peat is suggested to be late medieval (Sue Anderson pers.com.). This tends to suggest the peat was truncated although we cannot be certain on this evidence alone, it does provide us with a Terminus Post Quem for the footpath and silt deposit 0011, which must be later than the horseshoe.

The uneven spread of 0011 militates against it being a foundation deposit for the footpath; it is instead more likely to be part of the bank thrown up by the excavation or cleaning of the Black ditch, with the footpath being a secondary addition. The only visible cut and fill of the Ditch

post dates the footpath, but this is unlikely to be the original cut (the documentary assessment of the site identified records recording the lease of the water meadows in 1552 by the Office of Augmentation which includes a description of the site mentioning the Black Ditch [Breen in Gill 1998]). This feature was almost certainly in place during the time of the Abbey and may still have marked the town boundary from the 12th century. It is clear that silt 0011 could only represent a later cleaning given it's stratigraphic position.

A major change in land management is indicated by the build up of silt layer 0003. This deposit was probably laid down as a result of flooding. A possible cause might be a change land use upstream with pastureland being ploughed, leading to soil erosion and flash flooding in the valley bottom. Equally water control in the meadows may have changed; we know from historical records that the Abbey owned the Meadows (the name Sextons Meadow is a corruption of Sacrist Meadow [Breen in Gill 1997]) and that it operated a number of mills in the area. A change in the way water was controlled, or not controlled, along the Lark and the Linnet may have led to seasonal flooding. The deposit itself is quite deep but may not represent a huge period of time; this amount of silt could form in less than a hundred years. Based simply on the section it could have happened anytime between the dissolution of the Monastery and the 19th century.

Above the silt, ditch 0005 cut through all deposits including layer 0004 which is relatively recent; the ditch itself however must date from before 1747 when it appears on the Warren Map. Presumably continual dredging has obliterated all trace of the primary cut.

Recommendations for further work

The trenching work across the Friars Lane footpath and it's flanking ditches have thrown significant light on the history of the water meadows and their environs. Of particular importance was the discovery of peat beneath the footpath and across the meadow generally. An assessment of the potential for pollen analysis has indicated excellent survival. Two radiocarbon dates have also been produced from the peat.

The work carried out so far has shown the potential of the samples to throw significant light on the history of both the water meadow and the town. Further work should include

- A full analysis of the pollen column to add substance to the outline provided by the assessment
- A minimum of two sub-samples should be submitted for radio carbon dating either side of the environmental change suggested by the pollen assessment.
- A third sample of peat taken from the top of the second section should be submitted for radio-carbon dating in order to establish whether the peat from beneath the footpath has been truncated.
- Provision should be made to publish the results in a suitable journal.

References

Gill, D. 1998, 'Archaeological evaluation Report, Great Sextons Meadow, Bury St Edmunds, 'For Greene-King Ltd, .SCCAS unpublished Report No. 98/41

SUFFOLK COUNTY COUNCIL
ARCHAEOLOGICAL SERVICE - CONSERVATION TEAM

Brief and Specification for an Archaeological Excavation

WESTGATE BREWERY ACCESS, Bury St Edmunds

Although this document is fundamental to the work of the specialist archaeological contractor the developer should be aware that certain of its requirements are likely to impinge upon the working practices of a general building contractor and may have financial implications, for example see paragraphs 2.1, 4.1 & 4.6.

1. Background

1.1 Consent has been granted for development (E/99/3345/P). The planning authority have applied a PPG 16, paragraph 30 condition to the consent.

1.2 The development area has been evaluated (Suffolk County Council Archaeological Service, Report No 98/41), the report adequately describes the archaeology of the site.

1.3 In order to comply with the planning condition the prospective developer has requested a brief and specification for the archaeological recording of archaeological deposits which will be affected by development.

1.4 There is a presumption that all archaeological work specified for the whole area will be undertaken by the same body, whether the fieldwork takes place in phases or not. There is similarly a presumption that further analysis and post excavation to final report stage will be carried through by the excavating body. Any variation from this principle would require a justification which would show benefit to the archaeological process.

1.5 All arrangements for field excavation of the site, the timing of the work, and access to the site, are to be negotiated with the commissioning body.

2. Brief for Archaeological Project

2.1 In the areas defined on Figure 1, archaeological excavation, as specified in Section 3, is to be carried out prior to development. The precise location of the area is relative to the detailed development drawings, figure 1 is purely indicative.

2.2 The excavation objective will be to provide a record of all archaeological deposits which would otherwise be damaged or removed by development, including services and landscaping.

2.3 The academic objective will centre upon the high potential for this site to produce evidence for the form, construction technique and date of the Friars Lane path. The evaluation indicated that the path was markedly different from the surrounding pasture. Documentary evidence shows it was a landscape feature by the 18th century and may have dated to the Medieval period. Circumstantial evidence links the area to a possible town defence line which could date back to the 12th century (the date of the town walls).

2.4 In addition to the formal archaeological excavation there will be a programme of systematic archaeological monitoring of other ground disturbing development activities associated with the scheme. These consist of : the construction of two bridges over the River Linnet, the culverting of the ditches beside Friars Lane, the excavation drainage ditches beside Cullum Way and the formation of a roadway over the meadows. See section 4.

2.5 This project will be carried through in a manner broadly consistent with the 'Management of Archaeological Projects' English Heritage 1991 (MAP). Excavation is to be followed by the preparation of a full archive, and an assessment of potential for analysis. Analysis and final report preparation will follow assessment and will be the subject of a further brief and updated project design.

2.6 The submission of a Project Design based upon this brief and the accompanying outline specification of minimum requirements, is an essential requirement. The Project Design will be used to establish whether the requirements of the planning condition will be adequately met. Selection of an archaeological contractor should not take place until the Project Design has been approved.

2.7 The developer or his archaeologist will give the Conservation Team of the Suffolk County Archaeological Service (Suffolk County Council, Shire Hall, Bury St Edmunds IP33 2AR. Telephone/Fax: 01284 352443) five working days notice of the commencement of ground works on the site, in order that the work of the archaeological contractor may be monitored. The method and form of development will also be monitored to ensure that it conforms to previously agreed locations and techniques upon which this brief is based.

3. Specification for the Archaeological Excavation

The excavation methodology is to be agreed in detail before the project commences, certain minimum criteria will be required:

3.1 In the area defined in Figure 1 the excavation is to include the entire width of the lane as delimited by the inner edges of the ditches to north and south. The ditches themselves will be archaeologically recorded by the monitoring of the main contractor's works. Modern surfaces and topsoil can be removed by machine with a toothless bucket to the top of the first archaeological level. See section 4.

3.2 Fully excavate all features which are, or could be interpreted as, structural. Post-holes, and pits which may be interpreted as post-holes, must be examined in section and then fully excavated. Fabricated surfaces within the excavation area(e.g. road or patch surfaces) must be fully exposed and cleaned. Any variation from this process can only be made by agreement with a member of the Conservation Team of the County Archaeological Service, and must be confirmed in writing.

3.3 All other features must be sufficiently examined to establish, where possible, their date and function. For guidance:

a) A minimum of 50% of the fills of the general features is be excavated.

b) Between 10% and 20% of the fills of substantial linear features (ditches etc) are to be excavated, the samples must be representative of the available length of the feature and must take into account any variations in the shape or fill of the feature and any concentrations of artefacts. Any variations from this practice are to be agreed [if necessary on site] with the Conservation Team.

Any variation from this process can only be made by agreement with a member of the Conservation Team of the County Archaeological Service, and must be confirmed in writing.

3.4 for both excavation and monitoring areas collect and prepare environmental samples (by sieving or flotation as appropriate). A general policy on environmental remains, including sampling strategy and processing, is to be agreed with the Regional Environmentalist before the commencement of site work, and should be contained in the Project Design. The possibility of preserved timber piling and revetments should be borne in mind (although the evaluation gave no indication of presence).

3.5 A finds recovery policy is to be agreed before the project commences. It should be addressed by the Project Design.

3.6 All finds will be collected and processed. No discard policy will be considered until the whole body of finds has been evaluated.

3.7 All ceramic, bone and stone artefacts to be cleaned and processed concurrently with the excavation to allow immediate evaluation and input in decision making.

3.8 Metal artefacts must be stored and managed on site in accordance with *UK Institute of Conservators Guidelines* and evaluated for significant dating and cultural implications before despatch to a conservation laboratory within 4 weeks of excavation.

3.9 Human remains are to be treated at all stages with care and respect, and are to be dealt with in accordance with the law. They must be recorded *in situ* and subsequently lifted, packed and marked to standards compatible with those described in IFA Technical Paper 13 "Excavation and post-excavation treatment of Cremated and Inhumed Human Remains", McKinley & Roberts. Proposals for the final disposition of remains following study and analysis will be required in the Project Design.

3.10 Plans of the archaeological features on the site should normally be drawn at 1:20 or 1:50, depending on the complexity of the data to be recorded. Sections should be drawn at 1:10 or 1:20 again depending on the complexity to be recorded. Any variations from this must be agreed with the Conservation Team.

3.11 A photographic record of the work is to be made, consisting of both monochrome photographs and colour transparencies.

3.12 Excavation record keeping is to be consistent with Suffolk County Council Sites and Monuments Record requirements and compatible with its archive. Methods must be agreed with the SCC Conservation Team.

4. Brief for Archaeological Monitoring

4.1 To provide a record of archaeological deposits which are not to be archaeologically excavated prior to development but which will be damaged or removed by any development [including services and landscaping] permitted by the current planning consent. The areas for monitoring are shown in Figure 1. The principal aims will be : to establish at the 2 new bridge locations the form of the banks of the River Linnet; to establish whether the Linnet is an artificial canalised route and to establish the date of any early engineering works; to determine the form and history of the ditches bordering Friars Lane; to confirm the evidence of the evaluation about the form and structure of the meadow crossed by the roadway. To achieve an adequate record it is to be presumed that there will be full time observation of machine excavation work associated with bridge and culvert creation, and intermittent recording of the road lines and drainage ditches beside Cullum Road.

4.2 To carry out the monitoring work the developer will appoint an archaeologist (the observing archaeologist) who must be approved by the Planning Authority's archaeological adviser (the Suffolk County Council Archaeological Service).

4.3 The developer or his archaeologist will give the Suffolk County Archaeological Service (Environment and Transport Department, Suffolk County Council, Shire Hall, Bury St Edmunds IP33 2AR. Telephone/Fax: 01284 352443) 48 hours notice of the commencement of site works.

4.4 A contingency allowance must be made to cover archaeological costs incurred in monitoring the development works. The size of the contingency should be estimated by the approved archaeological observer on the basis of the work specified below and the building contractors timetable and working practices.

4.5 The developer shall afford access at all reasonable times to both the County Council archaeologist and an 'observing archaeologist' to allow archaeological observation of building and engineering operations which disturb the ground.

4.6 Opportunity must be given to the 'observing archaeologist' to hand excavate any discrete archaeological features, which appear during earth moving operations, retrieve finds and make measured records as necessary.

4.7 The 'observing archaeologist' will not be entitled to enforce specific delays and hold ups to the work of the contractor other than those previously agreed and set out in the Project Design. If delays prove desirable to the archaeological recording process they should be arranged by mutual agreement with the contractor; the developer's architect may be approached as an arbitrator.

4.8 All archaeological features must be planned at a minimum scale of 1:50 on a plan showing the proposed layout of the development.

4.9 All contexts must be numbered and finds recorded by context.

4.10 The data recording methods and conventions used must be consistent with, and approved by, the County Sites and Monument Record.

4.11 The precise extent of the monitoring works required are largely dependent upon the degree of ground disturbance by the contractor and the timetable for these works. Working practices are to be defined in the Project Design.

For the purposes of providing an indication of the scale of work and comparable quotations for this work it is suggested that for this entire application area a minimum of attendances on site will be:

Four attendances of two concurrent days each for two staff
plus four attendances of one day each for one member of staff

4.12 The results of this monitoring must be recorded in a manner consistent with the main excavated areas and incorporated into the archive record.

5. General Management

5.1 A timetable for all stages of the project must be agreed before the first stage of work commences.

5.2 Monitoring of the archaeological work will be undertaken by the Conservation Team of Suffolk County Council Archaeological Service. A decision on the monitoring required will be made by the Conservation Team on submission of the accepted Project Design.

5.3 The composition of the project staff must be detailed and agreed (this is to include any subcontractors). For the site director and other staff likely to have a major responsibility for the post-excavation processing of this site there must be a statement of their responsibilities for post-excavation work on other archaeological sites.

5.4 A general Health and Safety Policy must be provided, with detailed risk assessment and management strategy for this particular site.

5.5 The Project Design must include proposed security measures to protect the site and both excavated and unexcavated finds from vandalism and theft.

5.6 Provision for the reinstatement of the ground and filling of dangerous holes must be detailed in the Project Design.

5.7 No initial survey to detect public utility or other services has taken place. The responsibility for this rests with the archaeological contractor.

5.8 The Institute of Field Archaeologists' *Standard and Guidance for Archaeological Desk-based Assessments* and for *Field Evaluations* should be used for additional guidance in the execution of the project and in drawing up the report.

6. Archive Requirements

6.1 Within four weeks of the end of field-work a timetable for post-excavation work must be produced. Following this a written statement of progress on post -excavation work whether archive, assessment, analysis or final report writing will be required at three monthly intervals.

6.2 An archive of all records and finds is to be prepared consistent with the principle of 'Management of Archaeological Projects', English Heritage 1991 (MAP), particularly Appendix 3. However, the detail of the archive is to be fuller than that implied in MAP Appendix 3.2.1. The archive is to be sufficiently detailed to allow comprehension and further interpretation of the site should the project not proceed to detailed analysis and final report preparation. It must be adequate to perform the function of a final archive for lodgement in the County SMR or museum.

6.3 A clear statement of the form, intended content, and standards of the archive is to be submitted for approval as an essential requirement of the Project Design (see 2.5).

6.4 The site archive quoted at MAP2 Appendix 3, must satisfy the standard set by the "Guideline for the preparation of site archives and assessments of all finds other than fired clay vessels" of the Roman Finds Group and the Finds Research Group AD700-1700 (1993).

6.5 Pottery should be recorded and archived to a standard comparable with 6.3 above, i.e. *The Study of Later Prehistoric Pottery: General Policies and Guidelines for Analysis and Publication,* Prehistoric Ceramics Research Group Occ Paper 1 (1991, rev 1997), the *Guidelines for the archiving of Roman Pottery*, Study Group Roman Pottery (ed M G Darling 1994) and the *Guidelines of the Medieval Pottery Group* (in draft).

6.6 All coins must be identified and listed as a minimum archive requirement.

6.7 The data recording methods and conventions used must be consistent with, and approved by, the County Sites and Monuments Record. All record drawings of excavated evidence are to be presented in drawn up form, with overall site plans. All records must be on an archivally stable and suitable base.

6.8 A complete copy of the site record archive must be deposited with the County Sites and Monuments Record within 12 months of the completion of fieldwork. It will then become publicly accessible.

6.9 Finds must be appropriately conserved and stored [in accordance with UK Institute Conservators Guidelines].

6.10 Every effort must be made to get the agreement of the landowner/developer to the deposition of the finds with the County SMR or a museum in Suffolk which satisfies Museum and Galleries Commission requirements, as an indissoluble part of the full site archive. If this is not achievable for all or parts of the finds archive then provision must be made for additional recording (e.g. photography, illustration, analysis) as appropriate. If the County SMR is the repository for finds there will be a charge made for storage, and it is presumed that this will also be true for storage of the archive in a museum.

6.11 Where positive conclusions are drawn from a project, a summary report in the established format, suitable for inclusion in the annual 'Archaeology in Suffolk' section of the Proceedings of the Suffolk Institute for Archaeology journal, must be prepared and included in the project report, or submitted to the Conservation Team by the end of the calendar year in which the evaluation work takes place, whichever is the sooner.

7. Report Requirements

7.1 A report on the fieldwork and archive must be provided consistent with the principle of MAP, particularly Appendix 4. The report must be integrated with the archive.

7.2 The objective account of the archaeological evidence must be clearly distinguished from its archaeological interpretation.

7.3 An important element of the report will be a description of the methodology.

7.4 The report will give an opinion as to the potential and necessity for further analysis of the excavation data beyond the archive stage, and the suggested requirement for publication.

Further analysis will not be embarked upon until the primary fieldwork results are assessed and the need for further work is established. Analysis and publication can be neither developed in detail or costed in detail until this brief and specification is satisfied.

7.5 The assessment report must be presented within six months of the completion of fieldwork unless other arrangements are negotiated with the project sponsor and the SCCAS, Conservation Team.

Specification by: R D Carr

Suffolk County Council
Archaeological Service Conservation Team
Environment and Transport Department
Shire Hall
Bury St Edmunds
Suffolk IP33 2AR Tel: 01284 352441

Date: 30 August 2000 Reference: /brewery08

This brief and specification remains valid for 12 months from the above date. If work is not carried out in full within that time this document will lapse; the authority should be notified and a revised brief and specification may be issued.

If the work defined by this brief forms a part of a programme of archaeological work required by a Planning Condition, the results must be considered by the Conservation Team of the Archaeological Service of Suffolk County Council, who have the responsibility for advising the appropriate Planning Authority.

Appendix 2: Radiocarbon dating

The University of Waikato

Radiocarbon Dating Laboratory

Private Bag 3105
Hamilton,
New Zealand.
Fax +64 7 838 4192
Ph +64 7 838 4278
email c14@waikato.ac.nz
Head: Dr Alan Hogg

Report on Radiocarbon Age Determination for Wk- 11245

(AMS measurement by IGNS [NZA-15911])

Submitter	P. Wiltshire
Submitter's Code	GREK1/11
Site & Location	Greene King Bury St Edmunds, United Kingdom
Sample Material	Soil, organics
Physical Pretreatment	Physical contaminants removed.
Chemical Pretreatment	Washed in hot 10% HCl, rinsed and treated with hot 0.5% NaOH. The NaOH insoluble fraction was treated with hot 10% HCl, filtered, rinsed and dried.

$d^{14}C$	-143.2 ± 5.2	‰
$\delta^{13}C$	-28.9 ± 0.2	‰
$D^{14}C$	-136.5 ± 5.3	‰
%Modern	86.3 ± 0.5	%
Result	**1179 ± 49 BP**	

Comments

AG Hogg

30/09/02

- Result is *Conventional Age or % Modern* as per Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier of 1 .
- The isotopic fractionation, $\delta^{13}C$, is expressed as ‰ wrt PDB.
- Results are reported as *% Modern* when the conventional age is younger than 200 yr BP.

The University of Waikato

Radiocarbon Dating Laboratory

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email c14@waikato.ac.nz
Head: Dr Alan Hogg

Report on Radiocarbon Age Determination for Wk- 11246

(AMS measurement by IGNS [NZA-15823])

Submitter	P. Wiltshire
Submitter's Code	GREK1/35
Site & Location	Greene King Bury St Edmunds, United Kingdom
Sample Material	Soil, organics
Physical Pretreatment	Looked through sample and removed any roots
Chemical Pretreatment	Washed in hot 10% HCl, rinsed and treated with hot 0.5% NaOH. The NaOH insoluble fraction was treated with hot 10% HCl, filtered, rinsed and dried.

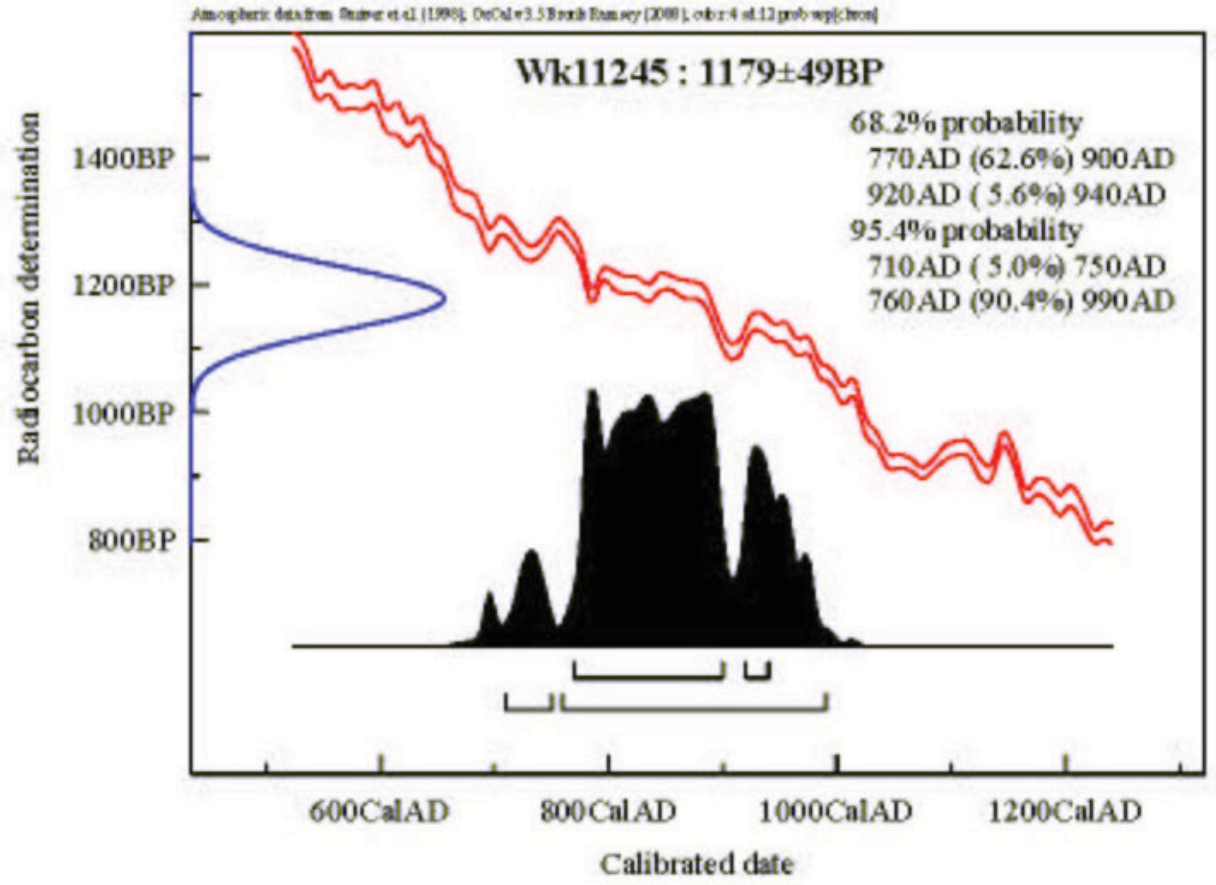
$d^{14}C$	-194.5 ± 4.7	‰
$\delta^{13}C$	-27.5 ± 0.2	‰
$D^{14}C$	-190.5 ± 4.7	‰
%Modern	81.0 ± 0.5	%
Result	**1697 ± 47 BP**	

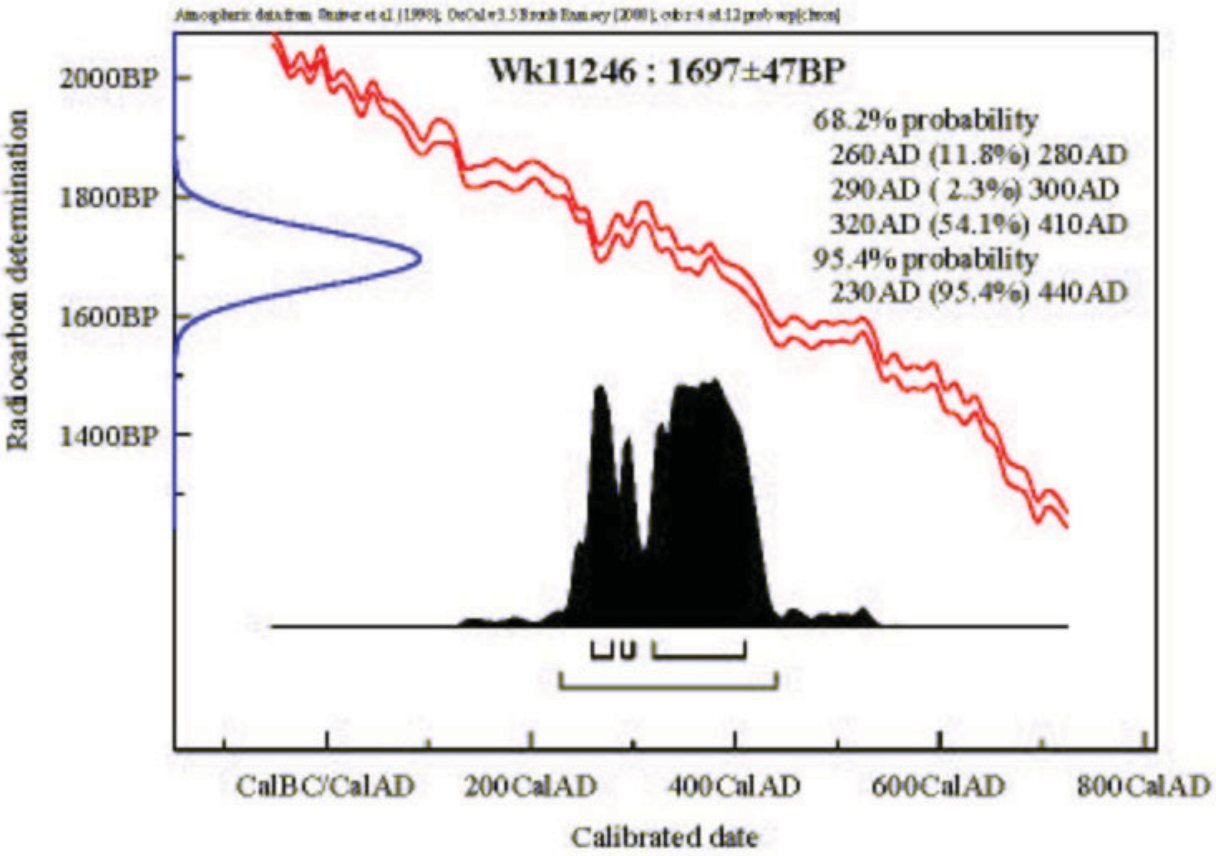
Comments

A G Hogg

30/09/02

- Result is *Conventional Age or % Modern* as per Stuiver and Polach, 1977, Radiocarbon 19, 355-363. This is based on the Libby half-life of 5568 yr with correction for isotopic fractionation applied. This age is normally quoted in publications and must include the appropriate error term and Wk number.
- Quoted errors are 1 standard deviation due to counting statistics multiplied by an experimentally determined Laboratory Error Multiplier of 1 .
- The isotopic fractionation, $\delta^{13}C$, is expressed as ‰ wrt PDB.
- Results are reported as *% Modern* when the conventional age is younger than 200 yr BP.


Wk11245 : 1179±49BP
68.2% probability
770 AD (62.6%) 900 AD
920 AD (5.6%) 940 AD
95.4% probability
710 AD (5.0%) 750 AD
760 AD (90.4%) 990 AD
Radiocarbon determination
1400BP
1200BP
1000BP
800BP
600CalAD
800CalAD
1000CalAD
1200CalAD
Calibrated date


Wk11246 : 1697±47BP
68.2% probability
260 AD (11.8%) 280 AD
290 AD (2.3%) 300 AD
320 AD (54.1%) 410 AD
95.4% probability
230 AD (95.4%) 440 AD
Radiocarbon determination
2000BP
1800BP
1600BP
1400BP
CalBC/CalAD
200CalAD
400CalAD
600CalAD
800CalAD
Calibrated date