SGSMR 14102

Lower Knole Farm, Almondsbury, South Gloucestershire: Archaeological field evaluation

December 2000

A report for South Gloucestershire Council
by Martin Lawler BA MIFA

Contracts Division

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Summary

It is proposed to establish a mixed-species community woodland at Lower Knole Farm, near Almondsbury, South Gloucestershire. The site covers 67ha of low-lying alluvial farmland, part of which is covered by existing woodland.

Roman remains were detected during a field evaluation on part of the site in 1997. A series of studies of the site were subsequently undertaken for the Forestry Commission in July and August 2000, including an auger survey and geophysical surveys.

An archaeological evaluation was carried out for South Gloucestershire Council by the Glamorgan-Gwent Archaeological Trust in November 2000. This comprised five machine-cut trenches, located on the positions of features detected by the geophysical survey.

Roman remains were detected in three of the trial trenches in the vicinity of the 1997 evaluation, suggesting the presence of a Roman site located on the edge of alluvial wetland. Evidence for a post-medieval field boundary and possible quarry were also detected. A suite of environmental samples have been taken, and will be assessed in a subsequent report.

Recommendations are made for the management of the archaeological resource, for the assessment of the environmental samples and for a methodology for geophysical investigations in these conditions.

Acknowledgements

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The Trust is grateful to David Haigh (Archaeology and Conservation Officer, South Gloucestershire Council); Vanessa Straker (Regional Palaeoenvironmental Advisor, English Heritage); Tim Yarnell and Peter Crow (Forestry Commission); Jenny Hall (Cambria Archaeology) and Nigel Nayling (University of Wales, Lampeter) for their assistance and advice in carrying out the evaluation and subsequent report. Mr John Keel, the present farmer at Lower Knole, kindly provided use of his farmyard and facilities for site accommodation. Gail Boyle (Curator of Archaeology, Bristol City Museum) has advised in the accession of the archive to the museum.

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1.0 PROJECT BACKGROUND

1.1 A proposal has been made to establish a mixed species community woodland (with some small-scale timber production) at Lower Knole Farm, to the west of Almondsbury, in South Gloucestershire. The overall area covers 67ha of pastoral farmland, part of which is occupied by existing woodland.

1.2 The site of the proposed community woodland lies on the inner edge of the Avon Level, which forms part of the larger expanse of alluvial plain on either side of the Severn Estuary, known as the Severn Levels. The Levels have been formed by the long-term deposition of alluvial clays, silts and peats, which have accumulated to depths of several metres since the beginning of the Holocene. The area is notably rich in archaeological and palaeoenvironmental remains, much of which survive in waterlogged conditions.

1.3 A series of investigations have been undertaken to assess *inter alia* the potential effects of the proposed woodland on the environmental and archaeological resource. In July/August 2000, a geotechnical investigation of the entire application area was undertaken by Forest Research. This consisted of an auger survey, comprising 43 hand-drilled auger holes; two root examination pits, excavated in the existing woodland areas, and twenty-four dip wells.[1] The underlying Triassic marl (bedrock) surface and the stratified alluvial deposits were mapped across the application area.

1.4 A geophysical survey was also carried out for the Forestry Commission by Stratascan in July 2000.[2] This study covered a smaller proportion of about 7.8ha of the application area, concentrating on a field on the south-west side of the site (Field F), in which archaeological remains had been detected in 1997, during a field evaluation in advance of the 42" Seabank pipeline.[3] The geophysical survey included four separate techniques: Fluxgate magnetometry, Caesium Vapour gradiometry, Electromagnetics and Resistivity imaging. The geophysical surveys further enhanced the mapping of the sediments and underlying bedrock surfaces within the survey area, and identified a number of anomalies considered to be of potential archaeological interest.

1.5 From the results of the geotechnical and geophysical surveys, it was decided to commission an archaeological field evaluation by trial trenching. This was to be based on the same area as the geophysical survey. The evaluation was to have three objectives:

(a) to investigate the features identified in the geophysical survey.
(b) to assess the archaeological potential of the study area.
(c) to make recommendations for the management of the archaeological resource.

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[1] Crow P 2000 *The potential implications of woodland establishment at Lower Knole Farm (Case study)* Report by Forest Research (Environmental Research Branch).
[2] Parker PP, Tomkinson K and Brookes C 2000 *A report for the Forestry Commission on a geophysical survey carried out at Lower Knole Farm, Almondsbury* Stratascan report no J 1470.
[3] Evaluation carried out by Bridget McGill (McGill Archaeological Consultants, Edinburgh). GGAT has sought further information from McGill Archaeological Consultants, as yet without response.

1.6 In November 2000, the Glamorgan-Gwent Archaeological Trust (Contracts) was commissioned by South Gloucestershire Council to undertake the field evaluation. The excavations were carried out between 15 – 22 November.

1.7 This report presents the results of the fieldwork, and makes recommendations for management of the archaeological resource. Recommendations are also made for the assessment of the palaeoenvironmental samples, which forms part of the commissioned tasks. A further report will present the results of the palaeoenvironmental assessment.

2.0 EVALUATION METHODOLOGY

2.1 The field evaluation was carried out in accordance with a specification submitted by GGAT (Contracts),[1] to fulfill a brief set by South Gloucestershire Council's Archaeology and Conservation Officer.[2]

2.2 This specified the machine excavation and recording of five trenches at predetermined locations within an area of 230m x 80m on the south-west side of the field, extending from Round Hill to the 42" Seabank pipeline. Two of the trenches were to be 50m in length; the remaining three being 20m. Machine excavation was to be carried out to the surface of the underlying bedrock; if the bedrock was not reached at a depth of 1.5m, then the soil profile below this was to be investigated by augering or deep machine excavation. Excavation of archaeological remains was to be limited to the surface of these deposits or the smallest proportion required to define their character. Sampling of environmental deposits was to be carried out with the agreement of the Archaeology and Conservation Officer, on the advice of Vanessa Straker. An assessment of the samples was to be carried out as part of the project.

2.3 The relatively fine weather conditions prevailing during the auger and geophysical surveys (the 'dry, hard nature of the topsoil during the summer months' described in the Stratascan report, 13) did not continue throughout the latter part of the year, which saw the wettest autumn in recorded history. By the time of the field evaluation in November, the underlying alluvial soil horizons were largely saturated and extensive pools of water remained on the field surface. The field was actively under-drained, moreover, by a network of terracotta clay pipes at depths of 0.3 – 0.4m, which, once broken through, provided a steady flow into the excavated trenches. The unstable trench sides tended to collapse within as little as twenty minutes after excavation.

2.4 As a result of these conditions, the intended methodology was necessarily modified. A tracked excavator was substituted for the JCB initially employed. To minimise the drainage and reinstatement problems, the trenches were excavated as shorter lengths, focussed on the specific features being investigated. To reduce the access and working hazards, they were also made wider, with benched and graded sides.

2.5 Excavation, recording and backfilling was completed on all five trenches, and samples of selected deposits were taken from four of these. It was not possible to relate the stratigraphy to OD heights, and levels in each trench were consequently recorded only as depths below surface. The present field surface lies at about 6m OD.

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[1] Yates A 2000 *Lower Knole Farm, South Gloucestershire: archaeological field evaluation specifications* Glamorgan-Gwent Archaeological Trust (Contracts Division).

[2] Haigh D 2000 *Brief for an archaeological evaluation within the Severn Levels: Land at Lower Knole Farm, Almondsbury, South Gloucestershire* Environment and Conservation Section, South Gloucestershire Council.

3.0 TRENCH DESCRIPTIONS

3.1 Trench 1 (ST 58544 84239)

This was intended to investigate a group of geophysical anomalies detected by Caesium Vapour magnetometry (Stratascan survey, p11 and Fig 13).[1] They take the form of a series of weakly positive parallel curvilinear features CV1 and CV2, and a weakly negative anomaly CV7. The latter appears also to have been picked up as a weakly positive feature FM2 in the Fluxgate gradiometry survey (p11, Fig 8). As plotted, these features occupied an area of approximately 45m x 40m, and were interpreted as probable drainage patterns. The trench revealed a relatively deep alluvial profile, continuing to the top of the solid marl at 2.28m. No evidence of features related to the geophysical anomalies was observed in the sections.

Methodology

Trench 1 was located 90m to south-east of Round Hill and 80m to north-east of the field boundary adjoining Boardinghouse Lane. The trench was intended to be 50m in length, intersecting the curvilinear anomalies at an approximate right angle.

At the time of excavation, extensive areas of surface water had collected across the intended site of the trench; two active terracotta field drains were also disturbed during excavation, and the trench filled rapidly. Excavation continued to a depth of 1.5m, without encountering the underlying solid geology. The trench sides became unstable during the course of excavation, collapsing in sections within twenty minutes. To minimise the drainage problems, it was decided to limit the trench to 27m length, representing the north-west half of the intended length. The trench was subsequently pumped out and re-cut to a greater width, with benched and graded sides. A continued steady flow from a fractured drain towards the north-west end presented further hazards, and that end of the trench was backfilled to plug the inflow. To provide a full soil profile, the south-east end of the trench was excavated to the top of the solid marl geology, at a depth of 2.28m.

Stratigraphy (see Figure One and Appendix One)

Below the topsoil was a well-defined band of firm yellowish red clay (029), to a depth of 0.31m. This horizon, at the base of the ploughsoil, could be recognised with variations in most of the profiles on the site. Below this was an alluvial sequence of grey silt clay (030), becoming a clay silt (031) at 0.66m, with increasing mineral concretions. The base of this unit undulated markedly, from 0.93m depth to 1.22m depth. At the north-west end of the trench, the base of 031 was observed at a rather higher level during the initial cleaning; this was not recorded before the trench collapse, but it lay at approximately 0.7m depth.

[1] Parker PP, Tomkinson K and Brookes C 2000 *A report for the Forestry Commission on a geophysical survey carried out at Lower Knole Farm, Almondsbury* Stratascan report no J 1470. Note that the plot of the Caesium Vapour anomalies in Figure 13 of the report is captioned 'Abstraction and interpretation of FM36 magnetometry data', and labels these as being strongly positive and strongly negative. The description on p 11 of the report describes the features as weakly positive and weakly negative, which is followed here.

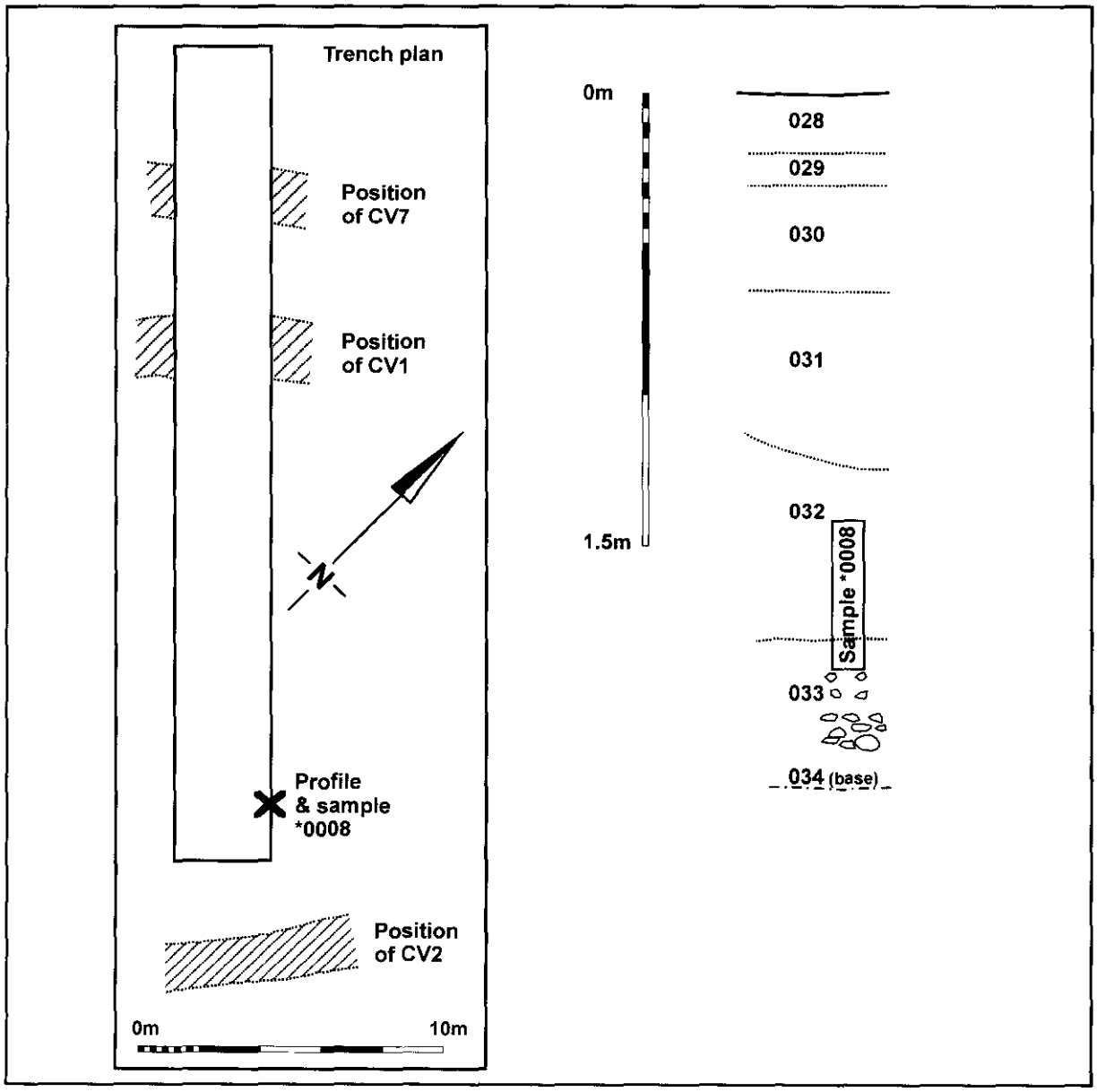


Figure One: Trench 1, plan (inset) and soil profile

Below 031, the coarse alluvial silt became a soft grey clay (032), with frequent crushed shells and occasional ferrous concretions and mottling, becoming darker and slightly coarser with depth, and merging into the underlying unit.

At 1.8m depth, the soft alluvial clay became a darker coarse sandy clay (033) containing occasional angular rocks, which increased in frequency with depth, becoming a continuous layer at 2.03m depth. The weathered upper surface of the marl was reached at between 2.20m and 2.28m depth. A vertical monolith sample (*0008) was taken from 1.35m to 1.85m depth, covering the transition from the coarse stony clay 033 to the basal alluvial deposit 032.

Discussion

Trench 1, although in many ways the least satisfactory element of the evaluation, has provided some interesting results. The evidence of the electromagnetic and auger surveys[1] had indicated that the solid marl geology generally rises on the south-west side of the site and falls away to the north-east, with a shallow trough or inlet extending south-west across the field, between Round Hill and the Seabank pipeline. The curvilinear Caesium Vapour anomalies CV1, CV2 and CV7 (and probably also CV5 and CV6) lie within this ahallow trough, and were interpreted as probable drainage patterns, rather than archaeological features. Overlying the weathered marl, at the base of Trench 1, was a layer of coarse stony clay (033), containing angular sandstone rocks and rounded pebbles of varying lithologies. This material, unrelated to the Mercian Mudstone, is presumably a drift clay, perhaps modified by fluvial or alluvial action. A comparable deposit was found on the marl surface in Trench 5 (context 016), which was also located within, or on the south edge of the shallow trough (see stone report, Appendix Four).

It seems likely, therefore, that the trough or inlet, with its derived drift deposits on the surface of the marl, was a feature of the early Holocene topography, subsequently filled with alluvial silts and clays. This tends to support the conclusion drawn in the Stratascan report that the curvilinear geophysical anomalies CV1, CV2, CV5 - CV7 are probably drainage patterns; no evidence was observed for archaeological features or other remains in the trench sections. The pattern of straight rectilinear features FM1 extending north-south across the field, detected in the Fluxgate (FM36) gradiometer survey,[2] may relate to the series of terracotta land drains, which lie between 0.3m and 0.4m depth and are laid on this general alignment.

3.2 Trench 2 (ST 58596 84167)

This trench was located on the south side of the 42" Seabank pipeline. It was intended to investigate a weakly positive linear anomaly detected by Caesium Vapour magnetometry (Stratascan report, 11, Fig 13). This was interpreted as a forked feature some 30m in length, on a north-west to south-east alignment, possibly disturbed at its north-west end by the influence of the pipeline.

Methodology

The trench was located 25m to south-east of the Seabank pipeline and 54m to north-east of the hedgeline adjoining Boardinghouse Lane. It was aligned north-east to south-west, roughly parallel to the pipeline, and planned to intersect the position of the linear anomaly at somewhat less than a right angle. The trench was planned to be 20m in length.

During excavation a substantial linear cut feature (040) was encountered at a depth of 0.5m, occupying most of the width of the trench and aligned at a slight angle to the main trench axis. The trench was accordingly widened on its north-west side, with benched sides, to retain the cut feature. The angle of the linear cut feature across the

[1] Stratascan report, Fig 16.
Crowe P 2000 *The potential implications of woodland establishment at Lower Knole Farm (Case study)* Report by Forest Research (Environmental Research Branch), Fig 8.
[2] Stratascan report, 10, Fig 8.

trench limited the possible length of the trench to 14.40m, with the reported position of the linear geophysical anomaly towards its north-east end. The trench was continued to the top of the weathered marl at 0.98m. Vertical profiles were recorded through the cut feature on the benched south-east side of the trench (Profile 1) and on the north-east side (Profile 2).

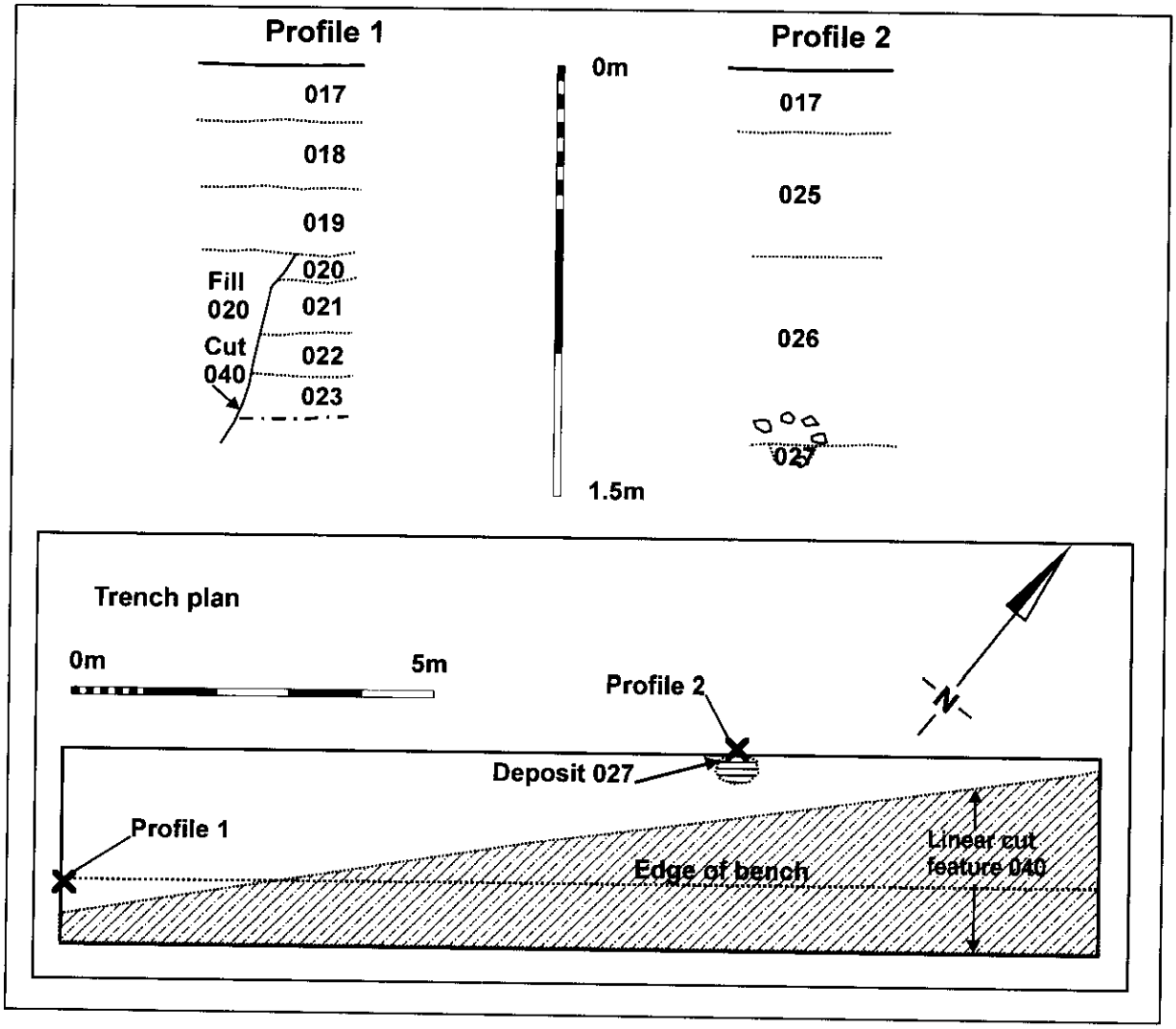


Figure Two: Trench 2, plan (inset) and profile

Stratigraphy (see Appendix One)
Below the rather shallow topsoil was a band of firm, reddish brown slightly sandy clay (018), 0.18m in thickness, containing occasional crushed shells. This overlay an horizon of mottled yellowish grey sandy clays 019 and 020, becoming a dark brown slightly sandy silt clay (021) visible at the west end of the trench, to 0.74m depth.

These deposits sealed the main fill (022) of a linear cut feature (040), which extended from south-west to north-east, at a slight angle to the main axis of the trench. This feature appeared at a slightly higher level (0.5m depth) at the east end of the trench, and it was probably cut from that height or slightly higher in the profile. Contexts 020 and 021 may have been part of the upper fill of the feature, though this was difficult to establish. The main fill (022) was a firm brown coarse sandy clay with

frequent organic flecks. Two fragments of clay pipe were recovered from 022 at a depth of approximately 0.7m. The linear feature had a well-defined shelving profile, and it appeared to have been re-cut. The visible north-west edge ot the feature was fairly straight, and it was at least 2.55m in width, occupying most of the south-east side of the trench. It extended in depth to the surface of the marl, which it cut into, at a depth of 0.98m; the base of the feature was not investigated below this depth.

On the north-west side of the trench, the upper unit of reddish brown silty clay 025 (equivalent to 018 and 019) continued to a depth of 0.51m. Below this was a deep deposit of reddish brown coarse sandy clay (026), becoming finer with depth, which continued to the very weathered surface of the marl at 1.04m. Several pieces of angular rock and fragments of bone were encountered towards the base of this unit, in the vicinity of an underlying deposit of very dark grey sandy clay and charcoal (027). The latter feature, sealed by 026, formed an oval-shaped deposit, 0.44m x 0.40m, extending into the north-west section face of the trench. It was at least 0.5m in depth, cut into the surface of the underlying weathered marl at 1.04m, possibly cut from a thin relict soil overlying the marl, though this was inconclusive. Angular rocks were set around the edge of the feature and partly overlay its surface. A bulk sample was taken of the fill 027 (sample *0006) and also of the fill 022 of the linear feature. Fragments of waterlogged wood (probably from a single item) were recovered from 027 (sample *0010).
No evidence was observed for the linear geophysical anomaly CV3.

Discussion
Trench 2 provided two points of interest: the large linear cut feature 040, and the smaller oval feature 027 on the surface of the marl.

The presence in the trench of a substantial, relatively recent, linear cut feature on a south-east to north-west alignment was unexpected. It did not appear in the geophysical survey abstractions, which had, indeed, indicated a weakly positive linear anomaly extending across this line at almost a right angle. The large cut feature seems likely to be a backfilled field ditch; it lies about 7m to north-west of the recent field boundary, which survives as a distinct linear earthwork across the field. Reference, however, to the 1880 1st edition OS sheet shows that the recent straight field boundary had replaced an older boundary on a different alignment. The earlier boundary had a pronounced angle at a point some 20m to west-south-west of the trench, and its main line lay on or close to the position of the trench itself. The old boundary was presumably a hedgerow with a substantial ditch, comparable to the existing boundaries on the edges of the field, and it seems likely that the cut linear feature is the infilled field ditch. The 1880s OS plan shows several trees along the length of the old boundary; it is possible that the fragments of waterlogged wood in Context 027 (identified by Nigel Nayling as *Prunus* sp.) are the remains of an intrusive root rather than being contemporary with the deposit. There is a faint possibility that the angled south-east leg of the old boundary originally extended as a straight line across the pipeline to join the surviving field boundary along the north-east side of Field F at the pronounced angle 20m to north-west of the pipeline (ie, that the boundary has had three successive positions).

The angled line of the old field boundary can be recognised both in the plot of electromagnetic (EM31) data in the shallow horizontal plane (Stratascan report Fig

14) and in the trace plot of raw Fluxgate (FM36) magnetometer data (Stratascan report Fig 5), and abstraction of this data (Fig 8) particularly near the field edge which adjoins Boardinghouse Lane.

The smaller oval deposit 027 was probably cut from a level close to the surface of the underlying marl. The fragments of stone on its edge and surface were of a similar type to those found in the derived drift deposits on the marl surface in Trenches 1 and 5, though this unit was not present in Trench 2. The gnawed bone fragments from the overlying context 026, immediately above 027, are also similar in character to the finds of bone in the nearby Trenches 3 and 5, which occur in contexts on or close to the surface of the underlying marl. It thus seems likely that 027 is part of the scatter of Roman remains along the south side of the shallow alluvial trough, represented in Trenches 3 and 5 (the latter undated) and in the trench excavated by McGill on the pipeline route in 1997.

3.3 Trench 3 (ST 58572 84130)

This trench was also planned to investigate a weakly positive linear anomaly CV4, detected by Caesium Vapour gradiometry (Stratascan report Fig 13). As plotted, this feature was located 14m to north-east of the field boundary adjoining Boardinghouse Lane, and 32m to south-east of the pipeline. The linear anomaly was approximately 22m in length, aligned north-west to south-east. Excavation revealed a substantial cut linear feature containing Roman pottery and bone, close to, and on the same alignment as the plotted position of the geophysical anomaly. A smaller cut feature with pottery and bone fragments was also found in the vicinity of the linear feature.

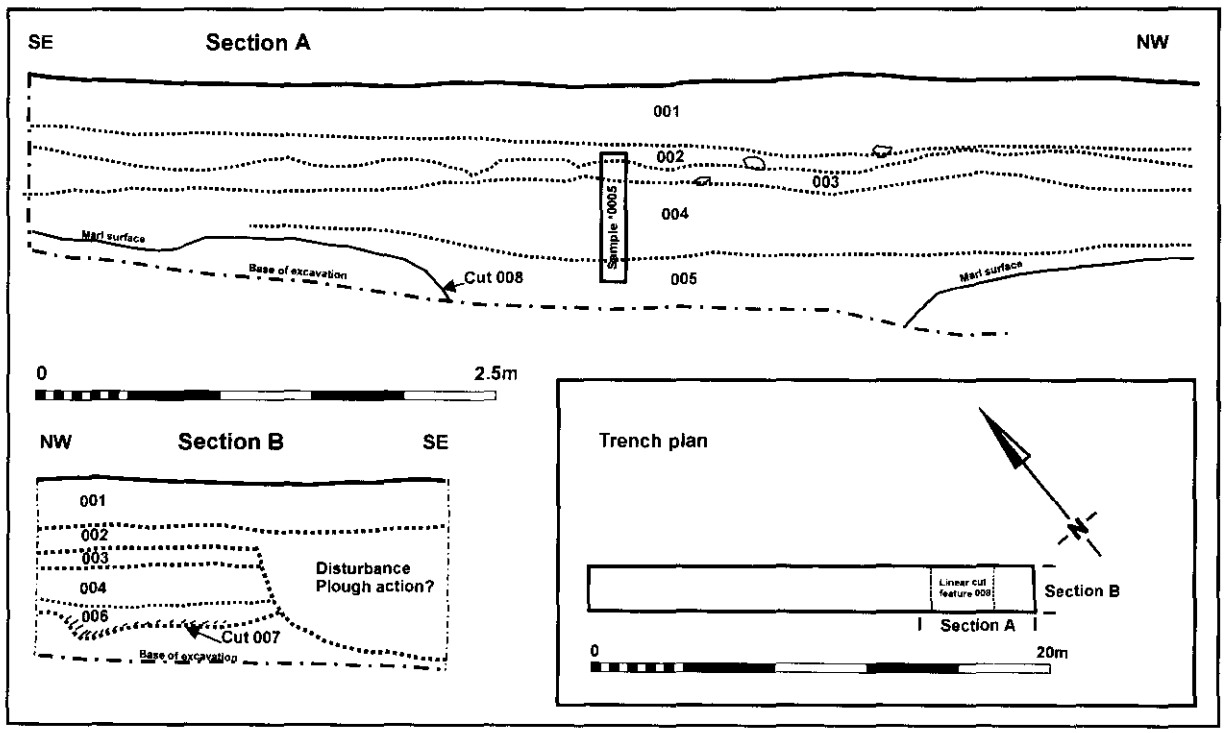


Figure Three: Trench 3, plan (inset) and sections

Methodology
The trench was intended to be 20m in length, intersecting the plotted position of the linear anomaly at a right angle. Some flooding of the trench was experienced during excavation, but this was alleviated by the excavation of a deep sump at the south-west end. The presence of archaeological deposits at the north-east end limited the trench to 18m length. Excavation was continued to the marl surface, at an average of 0.7m depth. Two cut features were found, containing Roman pottery, bone fragments and stone.

Stratigraphy (see Appendix One)
Below the relatively deep topsoil (0.27m in depth) was a thin band of brown slightly sandy clay (002), continuing to 0.31m depth. This sealed a sequence of reddish brown sandy clays, 003 and 004, with increasing quantities of small angular sandstone pebbles and occasional larger cobbles. The lower unit, 004, had an undulating lower horizon, from 0.62m to 0.80m dipping across the surface of an underlying cut feature 008.

This was a linear feature extending across the trench on a north-west to south-east alignment, almost at right angles to the trench axis,. It was cut from slightly above the surface of the weathered marl, at about 0.65m depth. It was about 2.7m in width, with an angled 'V'-shaped profile cutting into the underlying marl, to a depth of at least 0.95m below the surface. The base of the feature could not be investigated. The fill of the linear feature was a dark reddish grey mottled coarse, slightly silty clay (005) containing occasional sandstone fragments, animal bone and Roman pottery.

At the north-east end of the trench, a second cut feature (007) was revealed, also sealed by 004. This was a shallower feature, 0.24m in depth (from 0.4m to 0.64m depth below the surface), with an irregular undulating flat base, 0.9m in width, and near-vertical sides, possibly lying at an angle to the trench alignment. It had been disturbed on south-east side by a possible plough furrow. The fill was a dark reddish grey slightly sandy clay (006) with a discontinuous band of dark brown coarse clay at the base of the feature. It contained a few angular sandstone fragments, fragments of animal bone and a single Roman sherd, which was subsequently lost.

The surface of the very weathered marl 009, disturbed by the two cut archaeological features, may represent a thin soil derived from the parent marl, though this was not evenly represented in the trench sections.

A vertical monolith sample (*0001) was taken through the south-east trench section including the top of the fill (005) of the linear feature 008 and the overlying deposits 004, 003 and the base of 002.

Discussion
Trench 3 revealed two cut features containing Roman pottery and bone. The large linear cut feature 008, which was presumably a ditch, shared the north-west to south-east alignment of the linear geophysical anomaly CV4. The ditch was located some 4m to north-east of the plotted position of the geophysical anomaly, though this difference may not be significant.

Both archaeological features were cut from a level slightly above the surface of the weathered marl, at depths of between 0.4m and 0.65m below the present surface, possibly from a thin relict soil horizon, though this could not be demonstrated. Both features were overlain by the main unit of reddish brown sandy clay 004. Trench 3 was one of four trenches (Trenches 2, 3 and 5, and the McGill pipeline trench) occupying an area of some 90m x 40m on the south side of the shallow alluvial trough; each of which has produced comparable archaeological material.

The potential correspondence between the linear geophysical anomaly CV4 and the linear cut feature 008 in Trench 3 is of interest, particularly for its location, on the south-east margin of the field. Significantly, the line of the old hedge-and-ditch field boundary, which lay 5m – 8m to north-west of the trench, also appears to have been successfully detected in this area, both by electromagnetic (EM31) survey (Stratascan report Fig 14) and Fluxgate (FM36) gradiometry (Stratascan report Figs 5-7), and possibly also by Caesium Vapour magnetometry (Stratascan report Figs 9-12). This is probably in part a reflection of the relatively shallow depth of the underlying marl (which rises in this area to less than one metre below the present surface), though there may be other factors which affect the variable success of the geophysical surveys. Unfortunately, the Roman features in Trench 3 appear to have been masked by the background noise of near-surface magnetic debris FM3, and were not detected in the Fluxgate gradiometer plots.

3.4 Trench 4 (ST 58450 84306)

This was one of two longer trenches in the evaluation. Its objective was two-fold: to assess the archaeological potential of Round Hill and to investigate the reported position of a deep linear feature lying immediately to south-east of the hill, detected by the electromagnetic (EM31) and resistivity surveys.

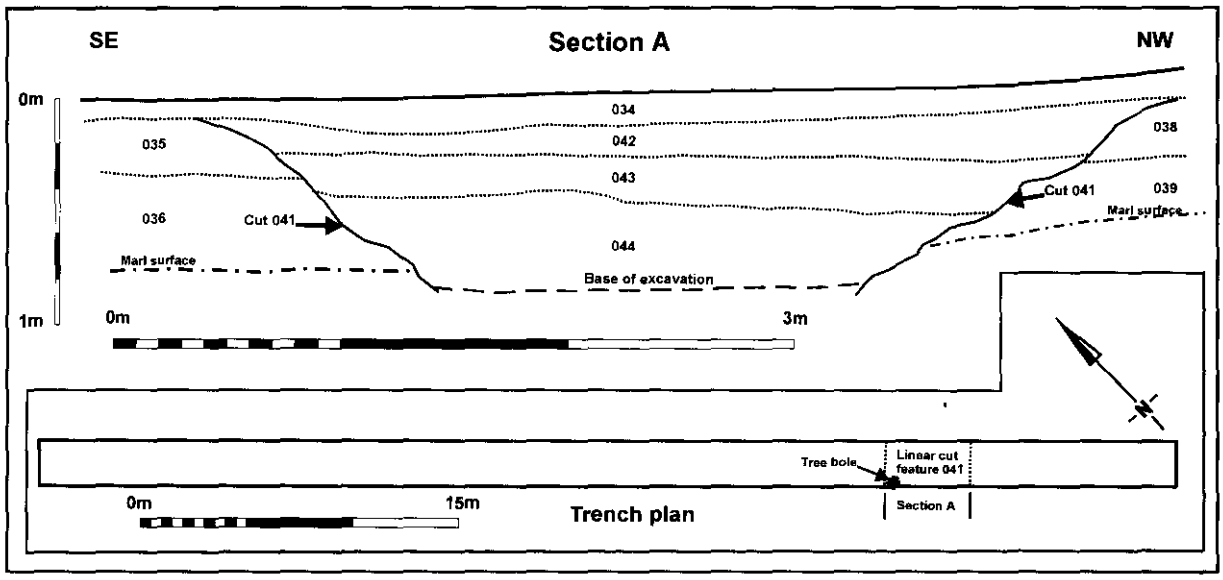


Figure Four: Trench 4, plan (inset) and section

Methodology
The trench was located on the south-east side of Round Hill, which forms a prominent rise of the underlying Triassic Mudstone above the surface of the surrounding alluvium. Trench 4 was 50m in length, aligned north-west to south-east, following the gradient of the hill. The trench was positioned some 10m to south-west of the original intended location to cover a greater proportion of the hill surface. Excavation was continued to the top of the solid marl geology, which was reached at 0.3m depth on the hill surface and at 1.03m depth at the lower, south-east end of the trench. An active field drain at the base of the trench disturbed during excavation caused some flooding of the lower part of the trench. Profiles were recorded through a substantial cut feature on the hillslope and at the lower end of the trench.

Stratigraphy (see Appendix One)
The upper (north-west) end of the trench revealed a predictably shallow soil profile consisting of topsoil to 0.18m depth, overlying a reddish brown slightly sandy clay (038) with a blocky structure, extending to the top of the parent marl, at 0.30m – 0.35m below surface. Several pockets of root disturbance were exposed in the marl surface. No archaeological remains were encountered.

A substantial cut feature (041) was revealed on the hillside, at the mid-point of the trench. This consisted of a broad irregular 'V'-shaped linear cut, approximately 4.4m in width, cut from immediately below the topsoil, and aligned south-west to north-east across the trench. It was filled by a sequence of reddish brown sandy clays (042, 043 and 044). The lower part of the feature cut into the underlying marl; it was investigated to a depth of 0.85m, but its base was not reached. On its north-west (upslope) side, the edge of the cut feature had been disturbed by a small tree, whose felled bole was revealed, overlain by the upper layers (042 and 043) of the backfill of the cut feature. The preserved wood was not waterlogged, and was apparently of relatively recent origin.

At the lower (south-east) end of the trench, the topsoil overlay a mottled brown coarse sandy clay (035) to a depth of 0.39m. This overlay an alluvial deposit of firm greyish brown slightly sandy silt clay (036). The base of this unit was flooded at the time of recording, and it was uncertain if it continued to the top of the solid marl, which was reached at 1.03m.

Discussion
Given the topography of Round Hill, as a small island of solid marl rising some 5m above the surface of the surrounding alluvium, the absence of early archaeological remains (particularly Roman deposits) from this trench was rather surprising. Such topographical features on the Levels are considered to be focal points of high archaeological potential.[1]

[1] Eg, occupation of rock islands such as Alstone, Meare and Brent Knoll, Somerset (Rippon, S 1997 *The Severn Estuary: landscape evolution and wetland reclamation* Leicester University Press, 56-7), Brean Down (Bell, M 1990 *Brean Down excavations 1983-7* English Heritage) and Goldcliff, Monmouthshire (Bell, M, Caseldine A and Neumann H 2000 *Prehistoric intertidal archaeology in the Welsh Severn Estuary* CBA Research Report 120); (Locock M and Walker M 1998 Hill Farm, Goldcliff: Middle Iron Age drainage on the Caldicot Level *Archaeology in the Severn Estuary* **9**, 37-44). Occupation of peat islands at Goldcliff and Redwick, Monmouthshire (Bell, M *et al* 2000) and at Greenmoor Arch, Monmouthshire (Locock M 1999 Iron Age and later features at Greenmoor Arch (Gwent Europark), Newport *Archaeology in the Severn Estuary* **10**, 128-130).

It is possible, of course, that the trench, which represents an inevitably small sample of the hill surface, has simply missed archaeological remains that may lie elsewhere on Round Hill. However, it is also possible that the apparent absence of Roman remains on the hill and their presence on the lower-lying marl surface nearby represents a genuine distribution of past activity. The inferred Roman horizons in Trenches 2, 3 and 5 lie at approximately 5.5m OD, on or close to the surface of the weathered marl, below the alluvial deposits. On this basis, Round Hill in Roman times should probably be considered, not as an island surrounded by alluvial marshland, but as a high point in a larger expanse of low-lying but predominantly dry land, on the margin of wetter regions to north and north-east. Human activity, perhaps settlement, may have been located in an optimal location on the south edge of the shallow trough indicated by the auger and geophysical surveys.

There was no evidence for the deep linear hollow in the underlying marl topography on the south-east side of the hill, deduced from the electromagnetic and Resistivity Imaging data. At the south-east end of Trench 4, which lay close to the mid-point of the reported hollow, the marl was reached at a depth of just over 1m, which was about the same depth as in Trench 2 (0.98m) and Trench 5 (1.52m) and considerably shallower than in Trench 1 (2.28m). In Auger Hole 48, which was located in the centre of the plotted linear hollow, 20m to south-west of Trench 1, the marl was reached at less than 0.9m.[1] The gradient of the marl surface presumably continues to slope away from the hill to south-east of the trench (and it should be noted that Trench 4 was positioned some 10m further to north-west (ie upslope) than originally intended). However, the discrete linear geomorphological feature on the south-east side of the hill indicated by the electromagnetic (EM31) survey should be reconsidered.

As plotted from the vertical (deep) electromagnetic data, the linear hollow in the marl surface detected by the geophysical surveys was a markedly straight, rather narrow feature, some 30m in width, aligned south-west to north-east, oddly out of alignment with the curve of the adjacent hill (Stratascan report, Fig 16). The straight alignment across the field is continued to the north-east in two discontinous segments. The 1880s 1st edition OS map shows a field boundary, since removed, extending across the field on the same alignment and in almost the same position.[2] The field boundary had trees along its length, and presumably consisted of a hedge and ditch, comparable to the surviving boundaries on the edges of the present field, and the linear feature revealed in Trench 2. Although there may also be a natural drainage feature on the south-east edge of the hill, perhaps influenced by surface water run-off, it seems likely that the linear feature detected in the geophysical surveys is in essence the line of the old field boundary.

The substantial cut feature 041 on the hillslope is rather curious. This feature is represented on the ground surface as a marked earthwork terrace, 4m to 6m in width, following the contour of the hillslope for a distance of approximately 35m. It appears to be of relatively recent origin, probably created in the past century or so; perhaps as a quarry providing hardcore for a yard surface or farmtrack. The felled tree on the

[1] Crow P 2000, *ibid*, Fig 15.

[2] Crow P 2000, *ibid*, 9 and Fig 3b. The correspondence of the EM anomaly with the OS map boundary was also discussed by Peter Crow in a review of the geophysical survey: Crow 2000 *Review of Lower Knole Farm Geophysics data using results from auger survey*.

edge of the feature suggests that it had lain open for some time before being backfilled. The present farmer, Mr Keel, was unaware of any recent quarrying activity on the hill. This feature was detected in the resistivity profile across the hill at 80N, particularly its north-west edge at 113E, cutting through the marl (Stratascan report, Fig 19 and detailed inverse model resistivity sections for Profile 2, in the Appendix).

3.5 Trench 5 (ST 58522 85158)

This trench was excavated on the south-west side of the field, close to the 42" Seabank pipeline. It was planned to investigate the projected line of a linear cut feature containing Roman pottery revealed in an evaluation trench excavated in advance of the pipeline in 1997 by Bridget McGill.[1] This feature was 0.4m in width, cutting into the marl to a depth of 0.18m, and aligned south-east to north-west. The linear feature did not continue into Trench 5, although a scatter of animal bone was recovered from the stony clay at the base of the alluvium.

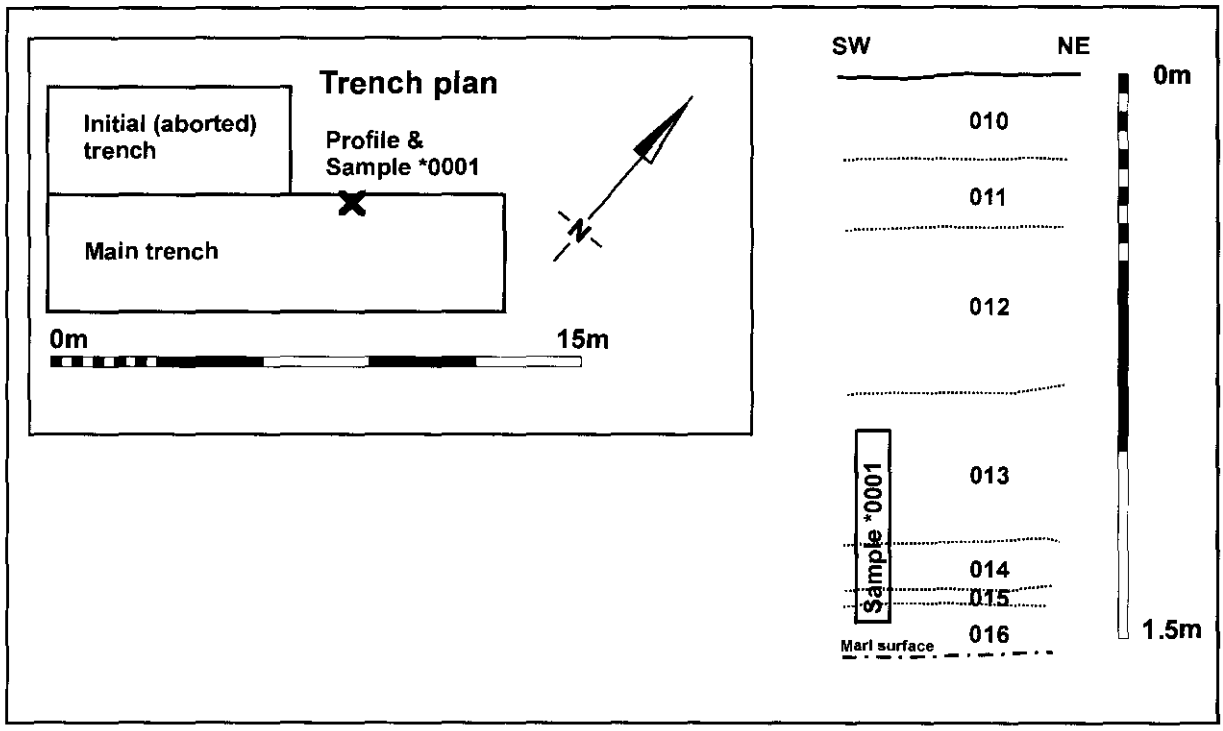


Figure Five: Trench 5, plan (inset) and profile

Methodology

Trench 5 was located 6m from the hedgeline adjoining Boardinghouse Lane and 8m to north-west of the pipeline. The trench was aligned south-west to north-east, parallel with the pipeline. It was originally intended that the trench should be 20m in length, and located further from the pipeline. During excavation of the first 6m of the trench at that position, however, an active field drain was disturbed, which rapidly flooded the excavation and prevented further progress. The trench was, in

[1] Fax of 10/5/00 from Bridget McGill to David Haigh containing sketch plan and partial section of trench in Field 168. The linear cut feature is 009, containing a fill 010, located at 5.05m OD. It is understood from other sources that several Roman sherds were also recovered, but that no specific contextual information is available.

consequence, backfilled, and re-commenced on its south-east side, as a wider trench with stepped sides. The trench was continued to a length of 12m, and halted at the line of the same field drain. The solid marl was reached at a depth of 1.52m

Stratigraphy (see Appendix One)
Below the topsoil was a well-defined band of reddish brown firm, slightly sandy silty clay (011) to a depth of 0.40m below surface. This overlay a typical alluvial sequence of grey clays and silt clays (012, 013 and 014) to a depth of 1.34m, with increasing iron staining to 1.1m depth. At 1.34m, the soft grey clay became a coarser dark grey sandy clay with occasional crushed shell (015). This sealed a distinctive layer of soft coarse sandy clay containing a high proportion of angular rocks and pebbles at an average depth of 1.38m, which also extended across the initial trench, dipping slightly to the north-west. The stony clay directly overlay the top of the marl at 1.52m; it was similar in composition to the equivalent deposit 033 in Trench 1.

Several bones were scattered across the surface of the stony clay 015. No evidence was found, however, for a cut archaeological feature comparable to that recorded in the 1997 evaluation trench; the projected line of the linear feature in the latter trench would have crossed the approximate mid-point of Trench 5. A vertical monolith sample (*0001) was taken from the base of the trench on its south-east section face, including the stony clay 015, and its interface with the overlying alluvial deposits 015, 014 and part of 013. A bulk sample (*0002) was also taken from the stony clay 015 (see stone report, Appendix Four).

Discussion
A significant contrast can be seen between the reddish, coarse sandy clay profiles of Trenches 2 and 3 to the south, where the marl rises higher to the surface, and those of Trenches 1 and 5 within the shallow alluvial trough. The latter are predominantly finer greyish alluvial clays and silt clays, overlying stony drift deposits on the surface of the marl. This general pattern can also be seen in the augered profiles and suggests a long-term trend of somewhat drier conditions where the marl rises higher to the surface, with streams and marshland occupying the alluvial trough between Round Hill and the Seabank pipeline.

The presence of a cut feature with Roman pottery in the 1997 pipeline trench, and of further archaeological features in Trenches 2 and 3, suggests that Roman activity – perhaps occupation - may have been spread across an area of at least 80m x 40m along the south-west margin of the alluvial trough. Trench 5 was located on or close to the edge of the alluvial trough, with a profile that indicated somewhat wetter conditions than in Trenches 2 and 3. (It would be interesting to know whether the stony drift deposits continue as far as the 1997 pipeline trench, 8m further to the south-west). However, the nature of the bone scatter on the surface of the drift deposits in Trench 5 suggests that this is assorted domestic waste rather primary butchery debris, or the results of any natural deposition. The fragments had lain exposed for some time, gnawed by dogs and rats before being overlain by alluvial clays (see bone report, Appendix Three). The implication is that the Roman activity probably extended to the edge of the alluvial margin.

4.0 ASSESSMENT AND RECOMMENDATIONS

4.1 Assessment of geophysical survey results

4.1.1 *Introduction*

Given the research aims which form part of the underlying objectives of the study, it is useful to consider the results of each of the four geophysical techniques in the light of the excavation data. The geophysical survey was carried out by Stratascan (the leading organisation for survey in these conditions), though without the stratigraphic information and map evidence subsequently provided by the geotechnical study. The results thus provide an interesting test of the remote sensing techniques when carried out in isolation. The purpose here is to examine the relative success of the techniques on this type of terrain, and to suggest a possible approach to make the most effective use of geophysical survey potential.

In general, there was a relatively low correspondence between the specific features interpreted by the geophysical survey and the excavated evidence. Most surprisingly, the geophysical surveys failed to detect at least one, probably two, recently filled post-medieval field boundary ditches, which are larger, deeper and more regular than most other archaeological features. The interpreted results of the resistivity vertical profile imaging were also somewhat misleading. On the other hand, with the benefit of hindsight, it may be seen that the raw survey data does contain much of the information which proved initially difficult to interpret. The area selected for the Fluxgate and CV surveys was a particularly challenging site, crossed by a large pipeline and two field boundaries, and may not be a fair indication of the potential of either technique. In addition, the larger-area electromagnetic survey was particularly effective in mapping the topography of the underlying marl surface (compare the Stratascan report, Fig 16 with Peter Crow's auger survey report, Fig 5). The key problem for these alluvial horizons seems to be one of interpretation and processing of the raw data, particularly in the absence of any other stratigraphic information, and this aspect will be highlighted in the subsequent recommendations.

4.1.2 *Fluxgate Gradiometry*

The Fluxgate Gradiometer is used to detect near-surface magnetic anomalies to depths of 0.5m – 1m. The relatively shallow depth of penetration may explain the variable nature of the results (Stratascan report, 10-11, Figs 4-8). It is possible that the rectilinear pattern of weakly positive anomalies FM1, aligned approximately north-south, may relate to the series of parallel terracotta land drains, which were laid on north-south and east-west alignments, at depths of 0.3m – 0.4m below the surface. An alternative suggestion has been made that these are plough-marks, but given the north-east to south-west alignment of the field, this seems less likely. The strongly positive linear anomaly FM4, at the south-west edge of the field, coincides with the relict field boundary; it has probably detected the backfilled ditch, revealed in Trench 2. This feature was only detected for some 32m on the edge of the field, perhaps because the marl surface into which the ditch cuts is somewhat closer to the surface at that point, or because the field boundary/ditch fill near the former corner of the field has a stronger magnetic character. The FM survey also appears to have picked up part of the line of the more recent field boundary near the south-east edge of the

survey area. This feature survives as a linear earthwork extending across the field, though it may have been no more than a fence-line. The Roman linear cut feature 008 in Trench 3 was not detected, however, presumably because of the background noise of the near-surface magnetic debris FM3. These areas of magnetic debris, lying to the south-east of the boundary ditch, also seem likely to be related to the presence of the two post-medieval field boundaries. It would be interesting to know whether the data from FM3 could be manipulated to detect the underlying Roman features.

4.1.3 *Caesium Vapour Magnetometry*

The CV Magnetometer can detect magnetic anomalies at greater depths than the Fluxgate Gradiometer, and is a technique of increasing interest in Levels archaeology; work by Stratascan has produced a successful resolution of a palaeochannel and an area of burning at Cabot Park, Avonmouth.[1] Most of the interpreted features at Lower Knole Farm were weakly positive curvilinear anomalies, and were interpreted as probable drainage features. This seems likely to be the case with those in Trench 1, which may have been located within a shifting minor palaeochannel or braided stream bed in alluvial marshland. It is particularly frustrating that the circumstances of the excavation were generally too unsatisfactory to investigate these features in detail. The weak negative anomaly CV3 is rather more suspect, as it was crossed by a substantial backfilled field boundary ditch, revealed as 040 in Trench 2. The continuation of this relict boundary closer to the field edge is clearly visible as a negative linear anomaly in the processed data plot (Stratascan report, Fig 12), in a similar position to the Fluxgate Gradiometer anomaly FM4. It was presumably discounted in the interpretation in Fig 13 because of its proximity to the pipeline's zone of influence. Puzzlingly, the continuation of the relict field boundary further to north-east was not detected in the CV survey, but this may also have been affected by the pipeline's zone of influence. The possible correlation between the positive linear anomaly CV4 and the linear cut feature 008 is particularly interesting. As noted in the trench account, the archaeological feature did not coincide precisely with the plotted position of the geophysical anomaly, but they shared the same north-west to south-east alignment. As with the Fluxgate data, it would be interesting to see if the CV data could be re-processed or manipulated to enhance the detail of surrounding features.

4.1.4 *Electromagnetic (EM) survey*

This survey, covering all of the area of the archaeological trenches, was in many ways the most informative of the techniques used at Lower Knole. It was particularly successful in mapping the topography of the underlying solid marl geology, as can be seen by comparison with the auger stratigraphy plots (although it would not have been possible to extrapolate directly from the EM plots, without the evidence of the augered profiles). The depth of scan at 3m and 6m (for the horizontal and vertical planes respectively) seems to be well-suited to the alluvial margins, where the marl reaches relatively close to the surface. The angled line of the relict boundary feature on the south side of the Seabank pipeline was also detected, and possibly, too, the later straight boundary, lying further to south along the edge of the plot (Fig 14). Part of the corresponding relict field boundary, lying to the south-east of Round Hill, also appears to have been detected, as a broader straight linear feature. As discussed in the

[1] Yates A 1999 *Cabot Park Phase 2, Avonmouth, Bristol: Building Footprint P-4 Archaeological evaluation* GGAT report 99/021. Locock M 1999 Cabot Park, Avonmouth, Bristol: excavations on Later Bronze Age and medieval sites at Kites Corner and Moorend Farm, 1999 *Archaeology in the Severn Estuary* **10**, 125-8.

account for Trench 4 (section 3.4 above) and in Peter Crow's review of the geophysical data, it is believed that this feature, originally interpreted as a possible palaeochannel, is principally the line of the relict field boundary. It is clearly not a deep feature: the marl was reached at the lower (south-east) end of Trench 4 at just over 1m depth and in Auger Hole 48 at 0.9m. The broad area of higher conductivity on the south-east side of the hill on the line of the field boundary is notable; this may be a long-term consequence of surface water run-off along the margin of the former field. Peter Crow has suggested that organic accumulation in the topsoil derived from leaf litter along the tree-lined field boundary may also have contributed to the high conductivity of this specific region.[1]

4.1.5 *Resistivity Imaging*

Resistivity imaging profiles were carried out along two transects; a 130m transect across Round Hill (Profile 1 at 80N) and an 85m transect further towards the north-east side of the field (Profile 2 at 190N). Trench 4 was excavated along part of Profile 1, on the south-east side of the hill. The inverse model resistivity section for Profile 1 suggested that the bedrock dipped sharply towards the base of the hill, with deep deposits of alluvium and possibly peat lying to the south-east, continuing to depths of more than 5m. Excavation showed that the dip of the bedrock (at about 130E in the profile) was a more limited cut feature of about 4.4m width and that the alluvial plain beyond this was much more shallow than indicated. In Auger Hole 48, located 20m to south-west of Trench 4, the marl surface was 0.9m below the surface. It is likely that the marl topography dips further to the south-east of Trench 1 and Auger Hole 48, though probably not to a depth of 5m. (Trench 1, which lies further to the south-east of the resistivity profile, along the same axis, showed the marl lying at 2.2m depth, which is probably a reasonable indication of the base of this part of the alluvial trough). The discrepancy in depths is quite significant. One of the pockets of very low resistivity identified in the imaging profile is related to root disturbance at the base of the quarry-like feature revealed in Trench 4; the other pockets of very low resistivity are presumably associated with the high conductivity band along the relict field boundary, detected in the EM survey. An equivalent pocket of very low resistivity was detected in Profile 2 at about 140E, where it is crossed by the line of the relict field boundary. Given the nature of the topography, it is unlikely that there are peat deposits elsewhere in Profile 1 and 2; indeed, the auger survey detected peats only on the east side of the overall study area, at some distance from Field F.

4.2 Assessment of archaeological potential

4.2.1 *Overview*

Archaeological remains of probable Roman date have now been detected in four trenches: Trenches 2, 3 and 5 and the 1997 pipeline evaluation trench. These occupy an area of about 80m x 50m, lying on the south-west edge of the shallow alluvial trough revealed by the auger and electromagnetic surveys. The archaeological remains all appear to lie slightly above the surface of the underlying marl; their stratigraphic context suggests activity on low-lying but predominantly dry land on the margins of a wetter floodplain, intersected by streams and minor channels. The deposits included cut features, with finds of cow and pig bone, local pottery, charcoal

[1] Crow 2000 *Review of Lower Knole Farm Geophysics data using results from auger survey.*

and stone. At present, the evidence suggests a relatively low-intensity activity (perhaps short-term settlement), in the 2nd century. The site was subsequently affected by later Roman or post-Roman alluviation.

4.2.2 *Extent of site*

The Roman remains so far detected seem to lie on the south-west edge of the alluvial trough, which presumably offered an optimum marginal location. Given the nature of the topography, it seems unlikely that Roman activity, particularly settlement, would extend very much further north into the deeper alluvial trough, represented by the lower-lying marl and the stony drift deposits in Trenches 1 and 5. There is some concern, however, that the full extent of Roman activity has not been established, particularly to south, where the marl rises higher. Round Hill, on the north-west side of the alluvial trough, has not produced Roman remains, and its potential is unknown. The variable success of the geophysical survey suggests that these techniques may not provide a reliable distribution plot of the underlying archaeology on the site. It would be useful to know whether the watching brief on the Seabank pipeline revealed further Roman deposits along the line of the alluvial margin to north-east and south-west.

4.2.3 *Potential*

From the limited evidence available, it seems likely that the site is a small Roman settlement on the edge of marshland. This is essentially a dry-land archaeological site, subsequently overlain by alluvium. The potential for early waterlogged deposits in these conditions may be correspondingly limited, although the deeper alluvial horizons to the north-west probably retain palaeoenvironmental data. There may have been some damage by plough action, particularly where the marl rises closer to the present surface (as suggested by a possible disturbance to the cut feature 007 in Trench 3).[1] The site's primary interest lies (a) in its topographical and environmental situation, and the nature of Roman activity in such a marginal location and (b) in the evidence for late or post-Roman alluviation across the Roman landscape.

4.3 Impact assessment

4.3.1 The study area can be divided broadly into three areas:

4.3.2 Round Hill has an uncertain archaeological potential. Given the shallow stratigraphy, any disturbance to the hill surface would have a severe impact on buried remains.

4.3.3 The broad, shallow alluvial trough between Round Hill and the Seabank pipeline has a low archaeological potential. The depth of the alluvial deposits suggests that disturbance caused by tree planting would have a low impact on any buried archaeological remains. Establishment of woodland may affect the position of the

[1] An indication of the severe effects of plough action on shallow Roman deposits on the Avon Level can be seen at Northwick, excavated in 1992-3 in advance of the Second Severn Crossing Approach Roads. That site was, however, characterised by close-set ridge and furrow, which seems not to be the case at Lower Knole Farm.(Bellamy P and Barnes I, 1993, Excavations on a Romano-British site at Northwick, in Barnes *et al* 1993 Second Severn Crossing: English Approaches; an interim statement on the 1992/3 fieldwork *Archaeology in the Severn Estuary* **4**, 5-30).

water table, but it is thought unlikely that Roman deposits have been preserved in waterlogged conditions within the study area.

4.3.4 The area of the archaeological remains detected in Trenches 2, 3 and 5 and the 1997 Seabank pipeline trench is likely to be particularly sensitive. Although the archaeological horizons lie at depths of about 1m on the north-west side (ie, Trenches 2 and 5), they appear to rise to the south-east, following the rise in the underlying marl geology. In Trench 3, a Roman cut feature (007) was revealed at a depth of 0.4m below the surface, and it is likely that the contemporary horizons lie at this depth or less further to the south-east. Disturbance caused by the establishment of woodland on the archaeological remains in this area would be moderate to severe.

4.4 Recommendations

4.4.1 *Recommendations for site management*

It is recommended that the proposed woodland plantation should entirely avoid the Roman archaeological remains detected in Trenches 2, 3 and 5 and the 1997 pipeline trench. As the full extent of the archaeological site is unknown, this exclusion area should cover a larger area, particularly to the south-east of the trial trenches. Any other intrusive works within this excluded area should be monitored by an archaeological watching brief

It is also recommended that plantation on and in the near vicinity of Round Hill should be minimised, and should be monitored by an archaeological watching brief.

4.4.2 *Recommendation for palaeoenvironmental assessment*

It is recommended that an assessment should be made of the palaeoenvironmental samples for potential further analysis. The specific objective should be to characterise the environment of the Roman site, and the subsequent alluvial transition. This should be carried out by the following:

Assessment of pollen, sediments, diatom and foraminifera potential in two of the vertical monolith samples *0001 (Trench 5) and *0005 (Trench 3). Subject to the agreement of Vanessa Straker, these samples will be submitted to the University of Wales, Lampeter, for the assessment.

4.4.3 *Recommendation for geophysical survey in similar conditions*

The successive investigations at Lower Knole have each provided interesting evidence, both on the specific nature of the present site, and on the interrelationship of parallel data sets. One of the difficulties posed by the phasing of these studies has been a lack of close integration between the geophysical survey and the subsequent archaeological evaluation.

In this case, much of the stratigraphical information that could inform the geophysical survey during the processing and interpretation of the results has only become available after the completion of the fieldwork stage (including here the auger survey and the trench excavation). This was particularly the case with the resistivity image

profiles, but it has also concerned the detailed magnetometer surveys. There is also clearly a need for some level of conventional desk-based assessment, so that features such as the relict post-medieval field boundaries can be recognised during the processing and interpretation. Conversely, there are questions raised by the excavation which could perhaps be answered either by further geophysical investigation, or by reviewing the existing survey data. The experience of the present study shows that in alluvial conditions of this type a much closer integration of the geophysical survey and excavation phases would maximise the effectiveness of the evaluation.

APPENDIX ONE: CONTEXT DATA

Context	Below	Above	Depth	Description	Notes
TRENCH 1					
028		029	0m - 0.20m	TOPSOIL: Dark brown (7.5YR 4/4) clay loam	
029	028	030	0.20m - 0.31m	Yellowish red (5YR 5/6) stoneless plastic clay with occasional mottles and ferrous concretions. Well-defined upper and lower boundaries.	
030	029	031	0.31m - 0.66m	Grey (5YR 5/1) slightly gritty silty clay with reddish mottles and frequent ferrous concretions. Blocky structure.	
031	030	032	0.66m - 0.93m to 1.22m	Grey (10YR 6/1) clayey silt with very frequent ferrous concretions. Undulating lower contact, ranging from 0.93m depth to 1.22m, becoming deeper further to east.	
032	031	033	1.22m - 1.80m	Soft, plastic clay with very frequent crushed shells. Occasional iron concretions and mottling. Predominantly grey (N5), becoming darker with depth, merging into the underlying unit (033).	
033	032	034	1.80m - 2.28m	Soft, coarse dark grey (5YR 4/1) sandy clay with occasional to frequent angular rocks, becoming a continuous deposit at 2.03m.	
034	033		2.28m	Top of the weathered marl in Trench 1.	
TRENCH 2: Profile 1					
017		018	0m - 0.15m	TOPSOIL: Dark brown (5YR 4/3) clay loam	Profile 1
018	017	019	0.15m - 0.33m	Reddish brown (5YR 4/4) firm, slightly sandy clay, with occasional crushed shell. Reddish.	Profile 1
019	018	020	0.33m - 0.51m	Yellowish grey (5YR 4/6) coarse sandy clay. Reddish	Profile 1
020	019	021	0.51m - 0.59m	Predominantly yellowish grey (5YR 4/6) firm, slightly sandy clay.	Profile 1
021	020	022	0.59m - 0.74m	Dark brown (7.5YR 4/4) firm, slightly sandy silty clay, with frequent mottles. Greyer than above.	Profile 1. Recorded at the edge of the linear cut feature.

022	021	023	0.50m to 0.74m - 0.85m	Brown (10YR 4/3) firm, coarse sandy clay with frequent organic flecks. Elsewhere this deposit is brown (7.5YR 5/2). Well-defined upper and lower boundaries. Forms the upper fill of a substantial linear cut feature 040, extending approximately NS across the trench.	Profile 1.
023	022	024	0.85m - 0.98m	Predominantly yellowish brown (10YR 5/4) soft clay mottled with yellowish brown (10YR 5/4); derived from parent marl. Possibly a relict soil horizon?	Profile 1 and 2
024	023		0.98m -	Top of weathered marl.	Profile 1 and 2
040	020		0.5m to 0.74m - 1.04m	Linear cut feature, extending approximately south-west to north-east across the trench, at a slight angle to the amin trench alignment. Only the north-west side of the feature was exposed within the trench; the south-east side extended into the south-east section face. At its maximum exposure at the east end of the trench, the cut feature was at least 2.55m in width. The linear feature was cut from a depth of approximately 0.5m, and sealed by 019 and 025. The feature had been cut into the top of the underlying weathered marl 024, and its base was not revealed.	Profile 1
TRENCH 2: Profile 2					
025	017	026	0.15m - 0.51m	Clean, reddish brown (5YR 4/4) firm silty clay. Sharp upper and lower boundaries.	Profile 2. Equivalent to 018 and 019 in Profile 1.
026	025	027 023	0.51m - 1.04m	Coarse sandy clay, becoming finer with depth, without a clear boundary. Becomes a firm silty clay towards base. Bone recovered within this context.	Profile 2. Overlies the surface of the oval charcoal deposit 027.
027	026	023	1.04m -	Very dark grey (5YR 3/1) sandy clay with high proportion of presumed charcoal. Angular stones (50mm - 120mm) set around the edge of, and partly overlying the surface of the deposit. Oval-shaped deposit, 0.44m NS x 0.40m EW, extending into the NW section face.	This deposit is at least 50mm in depth, and probably fills a cut feature, cutting into, and from the level of, the surrounding soft marl-derived clay 023. Wood sample *0009.
TRENCH 3					
001		002	0m - 0.27m	TOPSOIL: Dark brown (5YR 4/2) clay loam, with mottles of brown (7.5YR 5/4) silty clay. Lower boundary undulating by 120mm depth; average 0.2m depth.	
002	001	003	0.27m - 0.31m	Brown (7.5YR 4/4) slightly sandy clay, with occasional pea sized iron concretions and Mn flecks. Sharp contact with overlying 001. Forms a thin band, possibly leached.	Partly represented at the top of Monolith *0001.

003	002	004	0.31m - 0.46m	Reddish brown (5YR 5/3) coarse slightly sandy clay with mottles of yellowish red (5YR 5/6). Frequent rootlets and occasional sandstone cobbles and angular fragments. Essentially the same as the overlying 002, with a higher mineral content.	In Monolith *0001.
004	003	005 006	0.46m - 0.62 to 0.80m	Reddish brown (5YR 5/3) sandy clay with Mn flecks, frequent pea-sized angular sandstone pebbles and occasional larger sandstone cobbles. Undulating lower horizon, rising to N and S of trench. Dips across the top of the cut feature 008.	In Monolith *0001. This deposit seals both archaeological cut features 007 and 008.
005	004		0.66m - 1.04 (not base of unit)	Dark reddish grey (5YR 4/2) coarse slightly silty clay, mottled with reddish grey (5YR 5/2). Occasional sandstone fragments. Occasional bone fragments and pot sherds. Forms the upper fill of cut feature 008.	Lowest unit in Monolith *0001.
006	007	004	0.40m - 0.64m	Fill of cut feature 007 exposed at N end of trench. Sealed by 004. Predominantly dark reddish grey (5YR 4/2) slightly sandy clay, with discontinuous band of dark brown (7.5YR 4/2) coarse clay at the base of the feature. Contains rare angular sandstone fragments and a single sherd of pottery (from the darker band).	Exposed at N end of trench..
007	004 006	009	0.40m - 0.64m	Cut feature exposed in section at N end of trench. Irregular, undulating, flat-based cut 0.9m in width (possibly at an angle to the trench alignment). Disturbed on E side by possible plough furrow.	
008	004 005	009	0.66m – 1.04m (not base of cut)	Cut feature exposed in section on E and W sides of trench. Overlain by 004 and cuts weathered marl 008. Filled by 005.	
009	004 005 008		0.7m -	Top of soft weathered marl. The very weathered surface of the marl may represent a thin soil derived from the parent rock, though this was not evenly represented in the trench profiles.	
TRENCH 4: Profile 1					
034			0m - 0.18m	TOPSOIL: Dark brown (10YR 3/3) clay loam. Sharp contact with underlying 035	Profiles 1 and 2
035			0.18m - 0.39m	Brown (10YR 4/3) coarse, slightly sandy clay, mottled with dark yellowish brown (10YR 4/4) clay. Iron staining.	Profile 1
036			0.39 – base uncertain	Greyish brown (10YR 5/2) firm, slightly sandy silty clay with Mn flecks. Blocky structure.	Profile 1. Trench flooded. Base of this unit and underlying deposits were submerged at the time of recording.
037			1.03	Top of solid marl.	Profiles 1 and 2.

TRENCH 4: Profile 2					
038	034		0.20m – 0.49m	Reddish brown (5YR 4/3) slightly sandy clay. Blocky structure. Derived from parent marl.	Profile 2.
039	038	037	0.49m – 0.80m	Reddish brown (10YR 4/4) soft, very weathered marl with veins of greenish marl.	Profile 2.
037			0.80m	Top of solid marl.	
041	034 (contains 042)	Cuts 035 036	0.10m – 0.85m (not base)	Cut feature extending approximately north-east to south-west on the east side of Round Hill, crossed at right angles by Trench 4. This consists of a broad irregular 'V'-shaped cut, approximately 4.4m in width, cut from immediately below the topsoil. It cuts into the surface of the solided marl and its surface was not revealed. Contains infilling deposits 042, 043 and 044.	The cut feature is represented on the surface as a broad linear feature extending around part of the east side of the hill.
042	034	043	0.14m – 0.29m	Reddish brown (5YR 4/4) firm, slightly sandy clay, with well-defined upper and lower boundaries. Part of the fill of cut feature 041.	
043	042	044	0.29m – 0.45m	Brown (10YR 4/3) coarse sandy clay; Part of the fill of cut feature 041.	
044	043		0.45m – 0.85 (not base of feature)	Soft, reddish brown (10YR 4/4) coarse sandy clay, probably derived from the parent marl. Part of the fill of cut feature 041.	
TRENCH 5					
010			0m - 0.21m	TOPSOIL: Dark reddish brown (5YR 3/3) clay loam	
011			0.21m - 0.40m	Reddish brown (5YR 4/4) firm, slightly sandy silty clay. Well defined base contact with underlying 012	
012			040m - 0.83m	Grey (5YR 5/1) clay with yellowish brown mottles and ferrous staining, increasing to base.	
013			0.83m - 1.23m	Soft grey (N5) silt clay with high proportion of ferrous concretions, decreasing in lower part of unit, from 1.1m to 1.23m depth. Well-defined, undulating lower contact with 014.	Monolith sample *0001
014			1.23m - 1.34m	Soft grey (N5) clay with occasional vertical iron staining, following relict root channels.	Monolith sample *0001
015			1.34m – 1.38m	Dark grey (5YR 4/1) sandy clay with occasional iron concretions and fragments of crushed shell. Merging contact with overlying 014, over 3cms.	Monolith sample *0001

016			1.38m – 1.52m	Soft grey (5YR 5/1) coarse sandy clay with frequent angular tabular stones and some sub-rounded cobbles of varying lithology. Occasional bones scattered across the surface, sealed by the overlying 015. The stony deposit directly overlies the top of the weathered marl at 1.52m	Monolith sample *0001 Bulk sample *0002.

APPENDIX TWO: POTTERY

By Steve Sell

The finds included sherds of Roman pottery from Trenches 2 and 3 and fragments of clay pipe from Trench 2.

Trench 3: Context 005
Context 005 produced a small group of Romano-British sherds. Three sherds (12g) are in a limestone and shell-tempered fabric, likely to represent a local tradition of imitating the form, style and technique of Black-burnished wares. They include the rim of a bowl imitating the form of Black-burnished plain-rimmed bowls. The two body-sherds exhibit internal sooting, and almost certainly come from the same cooking vessel.

True Black-burnished wares are also represented in Context 005 by three sherds (12g), one of which also belongs to a plain-rimmed bowl with a slight bead, perhaps as Gillam 1976, No. 75. One of the body sherds is in the West Country variant fabric characterised by platy shell inclusions.

A single body sherd from 005 in red ware (2g), probably from a colour-coated flagon, was also noted; a second century date for this piece, and for the group as a whole, would be appropriate.

Trench 3: Context 006
A single body sherd in a dark grey fabric was recovered from 007 but subsequently lost on site (information from the excavator).

Trench 2: Context 026
A small, very weathered sherd (2g) in a limestone and shell tempered fabric, similar to those in Context 005, came from Context 026.

Trench 2: Context 022
Two small, very worn fragments of clay pipe (a fragment of bowl and part of a stem) were recovered from this context.

APPENDIX THREE: ANIMAL BONE

By Martin Locock

Bone was recovered from four contexts in three trenches, as follows:

No of fragments	Element	Species	Completeness	Remarks
Trench 3: Context 005				
1	Radius	Cow	5	Chopped; gnawed by dog.
1	Unidentified	Large mammal	-	
1	Unidentified	Large mammal	-	'Burnished' on one face. Gnawed by dog.
1	Unidentified	Large	-	
4	Unidentified	Medium	-	
Total: 8				
Trench 3: Context 006				
1	Metapodial	Cow	4	Chopped; gnawed by dog.
1	Unidentified	Medium	-	Heavily corroded; flaking surface.
1	Incisor	Pig	1-5	
1	Canine	Pig	1-5	
Total: 4				
Trench 5: Context 016				
1	Scapula	Cow	1	Δ1. Heavily corroded; gnawed by dog.
1	Radius	Cow	2-4	Δ2. Proximal ephysis unfused. Gnawed by dog and rodent.
1	Unidentified	Medium	-	Δ3. Surface corroded.
1	Tibia	Cow	2-4	Δ4. Gnawed by dog. Surface corroded.
1	Metatarsal	Cow	2-4	Δ6. Gnawed by dog and rodent.
1	Unidentified	Medium	-	Corroded. Gnawed.
1	Unidentified	Large	-	Corroded.
1	Unidentified	Medium.	-	Gnawed by rodent.
Total: 8				
Trench 2: Context 026				
1	Pelvis	Large	2	Gnawed by dog.
1	Unidentified	Medium	-	Gnawed by dog.
Total: 2				

(Note: Items marked Δ refer to bones whose individual positions were plotted).

Discussion

The bone is in a fair condition, quite dense, but with some flaking and cracking. Gnawing by dogs is common (8 examples: 36% of assemblage), and rodents (3 examples: 14%). It is likely that the bones were left exposed on the surface for some time before becoming buried. The cow bone is from the meat-bearing elements, reflecting a kitchen-type assemblage. The pig would imply slaughter on-site, but since only one jaw need be represented, this may not be significant. The absence of definite sheep and the preponderance of cattle is notable.

APPENDIX FOUR: STONE

By Jenny Hall

Bulk sample *0002, Context 016, Trench 5

The bulk sample consisted of coarse sandy clay containing frequent angular stones and pebbles. A subsample of stones was extracted from this sample by GGAT; the stones were cleaned and submitted for analysis.

The stones from the subsample consisted of the following types:

> Angular rocks of three different lithologies, two of which are quartzitic types, with traces of weathering on some of the fractured faces.
>
> A rose quartz pebble.

The stone material is not derived from the local Triassic mudstone, or of fluvial origin. The combination of the varied lithologies and the differential weathering of shattered faces strongly suggests a glacial or periglacial origin.

APPENDIX FIVE: SAMPLES LIST

A total of nine samples were taken, including five bulk samples, three 50cm monoliths and a sample of waterlogged wood. The summarised details are as follows:

Sample No	Trench	Context(s)	Sample type	Material
*0001	5	013 014 015 016	50cm vertical monolith	Alluvial silt clays and coarse sandy clay with stone (drift deposit).
*0002	5	016	Bulk sample	Coarse sandy clay with stone (drift deposit). Proportion subsampled for assessment of lithology by Jenny Hall (see Appendix Four).
*0003	5	014	Bulk sample	Soft grey clay.
*0004	5	015	Bulk sample	Dark grey sandy clay.
*0005	3	002 003 004	50cm vertical monolith	Coarse sandy clays and silt clays.
*0006	2	027	Bulk sample	Very dark grey sandy clay with angular stones.
*0007	2	022	Bulk sample	Coarse sandy clay
*0008	1	033 032	50cm vertical monolith	Clay silt, clay and coarse sandy clay with stone (drift deposit).
*0009	2	027	Wood fragments	Wood fragments, probably from one piece. Identified by Nigel Nayling as *Prunus* sp.

APPENDIX SIX: EVALUATION ARCHIVE

The evaluation archive consists of the following:

Written archive
Original plans and section drawings on permatrace
Folder of A4 excavation context and sample records
Miscellaneous documentation

Photographic archive
Processed black and white negatives (1 roll)
Unmounted colour transparencies (1 roll)

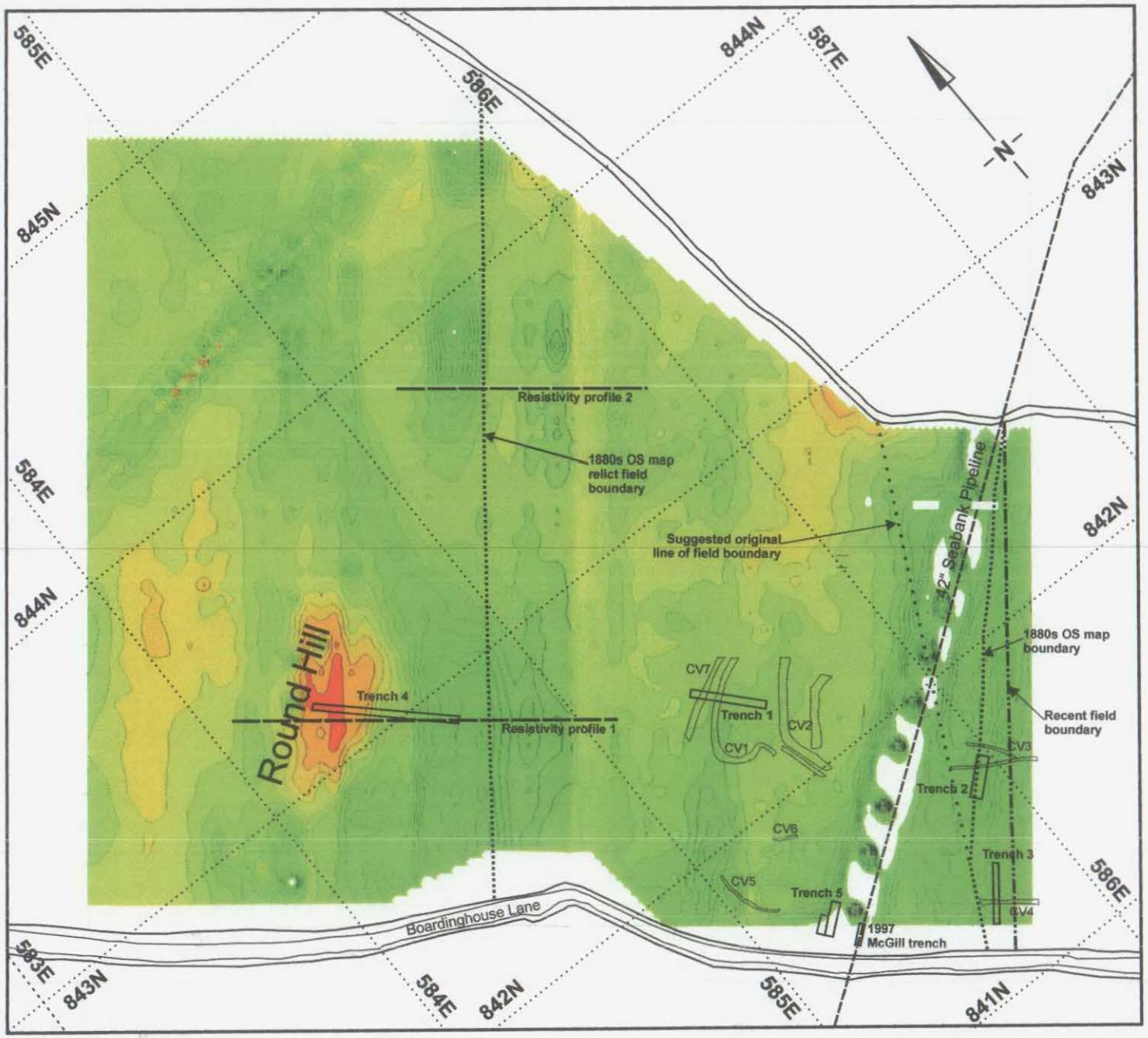
Finds archive
Small quantity (8 sherds) of Roman pottery and two clay pipe fragments
Small quantity (22) of bones from associated Roman contexts
Specialist pottery and bone reports

Samples
Three 50cm monolith samples
Five 5kg bulk soil samples
Small fragments of waterlogged wood from Roman feature (possibly an intrusive root)

With the exception of the samples, the evaluation archive will be transferred to Bristol City Museum (Accession No BRSMG 2000.47). The samples will be evaluated by University of Wales, Lampeter, and will subsequently be retained by GGAT until a decision has been made on possible further analysis.

Copies of the present report and the palaeoenvironmental assessment will be deposited with the Archaeology and Conservation Officer, South Gloucestershire Council; Bristol City Museum and the National Archaeological Record (RCHME). A copy of the archive report and all supporting information will also be deposited with South Gloucestershire Council's SMR in an agreed format on CD-ROM.

A report will be offered for publication to an appropriate journal within 12 months of the completion of the palaeoenviromental assessment and any possible subsequent analyses.

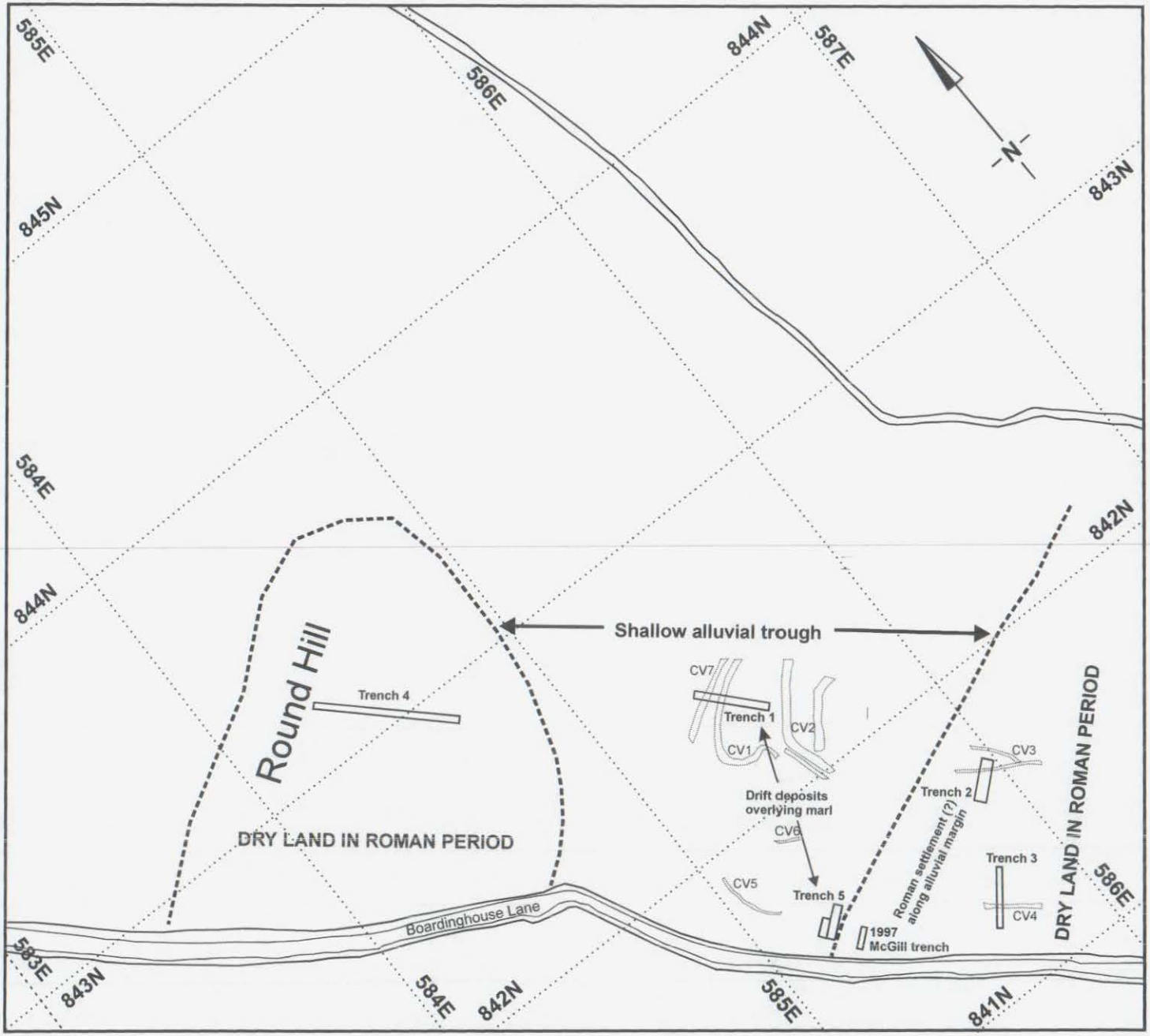


Lower Knole Farm, Almondsbury, South Gloucestershire: Archaeological field evaluation

Figure Six: General site plan, overlain on Stratascan Electromagnetic (EM) survey data in the vertical plane (Figure 16)

Based on the Ordnance Survey map with the permission of the Controller of Her Majesty's Stationery Office. Glamorgan-Gwent Archaeological Trust. Licence No AL 100005976.

0 100m



Lower Knole Farm, Almondsbury, South Gloucestershire: Archaeological field evaluation

Figure Seven: Interpretative plan showing approximate position of alluvial trough and areas of dry land in Roman period

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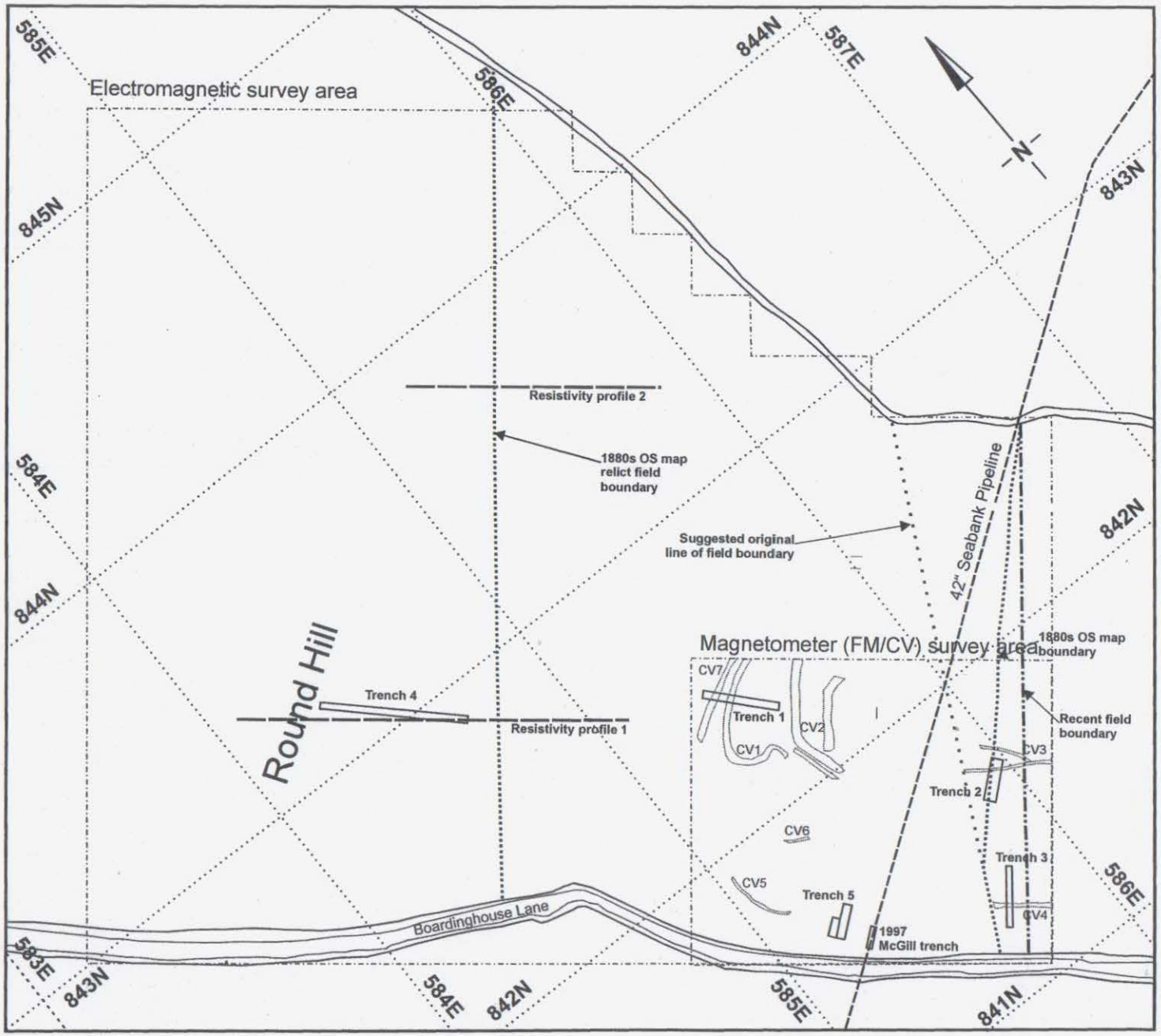

Lower Knole Farm, Almondsbury, South Gloucestershire: Archaeological field evaluation

Figure Eight: General site plan, showing locations of Trenches 1 - 5, 1997 pipeline trench, geophysical survey areas, Caesium Vapour anomalies CV1 - CV7 and relict field boundaries

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