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An assessment of the insect remains from excavations at the Lanes, Carlisle (site code: CAR79-82)

by

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Summary

Invertebrate remains from samples of sediment from excavations at Keay's Lane (KLA) and Law's Lane (LAL), Carlisle have been assessed for their potential as a source of archaeological information. Macrofossils (principally insects, but in some case mites) and microfossils (mainly eggs of parasitic nematodes) clearly have potential at the routine context and feature level. There were no particularly unusual groups, the remains being essentially like those from other Roman settlements examined. The assemblages may reveal zonation within the present sites on closer analysis, but this is not apparent from assessment.

There are strong indications of differences between the fauna (and implied conditions) of KLA and LAL and those of the Lanes sites already worked (Old Grapes Lane, Lewthwaites Lane) and of the Castle Street and Annetwell Street sites. There is thus potential for reconstruction of the pattern of land use and activity in space and time in Carlisle.

The invertebrates from the KLA and LAL sites will provide data for wider synthesis. The material is certainly important in the context of Carlisle and of Roman Britain as a whole, and hence (although of limited value seen in isolation) is of national importance.

Recommendations for further work are given together with estimates of resource requirements.

Keywords: THE LANES; KEAY'S LANE; LAW'S LANE; CARLISLE; ROMAN; MEDIEVAL; ASSESSMENT; INVERTEBRATES; INSECTS

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Introduction

A complex series of excavations in the Lanes area of Carlisle was carried out by Carlisle Archaeological Unit in the late 1970s and early 1980s in advance of major redevelopment. Material from two of the sites, Old Grapes Lane and Lewthwaites Lane, has already been investigated and the results of studies of invertebrate remains have been reported by Kenward *et al.* (1992a-c). A series of other sites in Carlisle have been investigated for biological remains, with emphasis on Roman deposits (Allison *et al.* 1991a; b; Allison and Kenward forthcoming; Kenward 1990; Kenward *et al.* 1991; Kenward *et al.* in press a; b). These have provided a wide range of evidence concerning Roman Carlisle, including evidence of zonation of activities and living conditions.

This report represents a component of the assessment of the second group of Lanes sites. A major objective of the present assessment has been to determine the value of the sample material from Keay's Lane (KLA) and Law's Lane (LAL) as a further source of information concerning zonation in Roman Carlisle. Other aspects of the potential of the material under review included routine context, feature and site interpretation, and value for comparison with other settlements, especially of the Roman period.

Methods

The number of samples submitted to the EAU for assessment was substantial (Table 1), and further selection was necessary. All of the samples were inspected in the laboratory and a description of their lithology recorded using a standard *pro forma*. Some of the samples had clearly dehydrated in storage, and a note was made where this was the case.

Subsamples of 1 kg for extraction of macrofossil remains were taken from 133 samples (Table 1); these included all of those assigned Priority 1 by the excavator, together with a further selection designed to represent the ranges of likely interpretative potential and of apparent degradation in storage. Laboratory methods followed procedures described by Kenward *et al.* (1980; 1986).

Macro-invertebrates were assessment recorded in the sense of Kenward (1992); a rapid inspection of the flot, noting the major taxa and ecological groups present, and recording any notable rarer remains having interpretative or other significance. A priority was assigned to the invertebrate assemblages at this stage, using the scale: P1 (high potential for archaeological interpretation); P2 (perhaps of some interpretative value); P3 (some remains present but not likely to have significant archaeological value); and P0 (no identifiable invertebrate remains). Where remains were rather rare but likely to have some significance, the processing of a large subsample was recommended and a new priority assigned contingent upon this. The time required for sorting the flot (if appropriate) and for recording the remains was estimated, for both the existing assemblage and that likely to be recovered from a further, larger, subsample. It is emphasised that this is a guide used only as a basis for calculating the total time required for these stages; an estimate of the resources required for a full study of the material from these sites is given in Table 3.

The residues were not examined for invertebrate remains.

Subsamples from 58 of the samples were also examined for microfossils, particularly the eggs of parasitic nematodes, using the methods of Dainton (1992).

Results

The results of the investigations are presented in Tables 4-6 at the end of the text. Table 4 gives a list of samples in context number order by site and trench together with details of action taken and sediment type; Table 5, which is in period order, gives a brief resumé of the results of the assessment for invertebrate remains; and Table 6 summarizes the information by period.

Table 1. Numbers of samples from the KLA and LAL sites submitted for assessment for invertebrate remains.S - submitted; A - assessed.

Site/ trench	Number of samples		% A
	S	A	
KLAA	28	19	68
KLAB	53	26	49
KLAC	39	28	72
KLAD	19	13	68
KLA total	**139**	**86**	**62**
LALB	11	7	64
LALC	29	19	65.5
LALD	41	21	51
LAL total	**81**	**47**	**58**
Total	**220**	**133**	**60**

The macrofossil content of the processed subsamples varied very greatly. A substantial proportion were barren, or essentially so, but many contained substantial numbers of remains. Beetles (Coleoptera) were usually the most numerous, but fly puparia (Diptera) were sometimes even more abundant. Preservation was generally average to good when compared with that in a large number of other occupation site deposits with anoxic waterlogging. Surprisingly, dehydration does not seem to have resulted in serious degradation of fossils; preservation seems more likely to have been determined by sediment type.

Summary of results and potential by site, trench and period *(See also Tables 5 and 6)*

This section deals primarily with the insect assemblages. Samples giving positive results for parasite eggs were scattered through the trenches and periods, and mainly represented pitfills (Table 5). Parasite eggs from these sites thus have some potential for identification of layers containing faeces, and measurements of *Trichuris* sp. eggs should determine the species present, and hence the host.

As can be seen from Table 5, many of the subsamples produced numerous fly (Diptera) puparia, or indicated that useful numbers would be recovered from larger quantities of sediment. A much smaller number contained sufficient mites (Acari) to suggest that analysis would provide archaeologically useful information.

Keay's Lane

Trench KLA A

Two pitfills of **Period 1-5** had only small numbers of insects in them, but in one case it was considered that a larger subsample would give an assemblage (mostly of beetles and fly puparia) which would permit depositional conditions to be defined.

Four gulley fills dated to **Period 7B** gave rather, or very, small groups. It was judged likely that one of these would produce a useful assemblage of macro-invertebrates if more material were processed. Grain pests were present but the nature of the fills could not easily be deduced from the material seen during assessment.

Eleven pit fills of **Period 8B** were studied. Numbers of invertebrates ranged from small to quite substantial, and most subsamples contained useful numbers of puparia. Although the implications of these

assemblages were not immediately clear, there were hints of the remains of stable manure. Some of the assemblages were assigned P1, or P1 if larger subsamples were processed, as it was considered reasonably certain that the nature of the fills, and by implication their origin, could be clarified.

A single pitfill of **Period 10E-11A** was barren.

Only a single sample was examined from a series of **post-Roman** pitfills and probable pitfills (and a single post hole fill). There was some preservation of invertebrate remains and the material should not be rejected without at least a rapid review of the remaining samples.

Trench KLA B

Two of three soil layers of **Period 2** were processed but neither produced any invertebrate remains. Similarly, samples of **Period 5A** and **Period 5B** gave no remains or only a small number. Only one sample from **Period 6**, from a soil layer, gave any hint of the nature of the deposit, which in this case may have included stable manure.

The remaining sample of **Period 7B**, from a gulley, had interpretative potential if a much larger subsample could be processed; both beetles and fly puparia were considered to have some value. A soil layer of **Period 7B-8A** was rejected, as were two of four pit fills. The two which were assessed both had interpretative potential if larger subsamples were processed. Both may have included stable manure. A single ?pitfill of **Period 8B** was not examined.

There were nine samples from **Period 9A**, six of them layers or other surface deposits, two pitfills and a gulley fill. Three samples from the soil layers were chosen for assessment; two gave modest insect remains, probably of interpretative potential if larger subsamples could be studied, and the third gave only a trace. A 'charcoal layer' gave an ecologically mixed group of remains preserved by anoxic waterlogging. This material was described in the laboratory as consisting of 'amorphous organic sediment with herbaceous detritus', so clearly at least the sampled part of the layer had not been burned. Further work was considered worthwhile providing there was no error in numbering. The gulley fill sample gave only a trace of invertebrate remains.

For **Period 9C**, one of three post trench fills was examined but gave few remains; the same was true of a soil layer. A ?hearth deposit was not assessed, but the remaining sample, a pitfill, gave an ecologically mixed group, including *Aphodius* dung beetles, further study of which (from a larger subsample) would probably be rewarding.

Most of the samples from **Period 10A** and **Period 10C** were rejected for one reason or another. A single deposit of **Period 10A** was barren. Two soil layers of **Period 10D** contained at most a few insect fragments of no interpretative value; this was also true of a single 'occupation silt' of **Period 12A**. A sample of '?building debris' of **Period 12B** was rejected.

Three of four samples from **post-Roman** deposits were examined. Two gulley fills were barren, or effectively so. A layer of decayed wood produced a modest-sized group, with abundant puparia. Foul, open-textured decaying matter was indicated and it was judged that a useful interpretation could be made if more material were processed.

Trench KLA C

Two soil layers of **Period 2** gave a few insect remains of unclear significance; it was judged that little information would be obtained even from much larger subsamples. Similarly, a ditch fill of **Period 3** contained only sparse remains of very limited value.
Samples of **Period 4A** included three ditch fills, of which two were assessed. One gave few remains and had little potential, the other produced a group of moderate

size with hints of grazing land turf; in this case a larger subsample would be needed for clarification of interpretation. A layer of wood chippings of this period gave only rare, poorly preserved remains, and a 'clay layer' was rejected.

Two pitfills of **Period 5A-B** were both assigned P1, although it was considered that it would be necessary to process more material in one case. One group included grain pests, decomposers and fly puparia, with hints that stable manure may have been present. The other included a rather odd mix of taxa whose implications were far from clear on assessment.

Period 6 was represented by only a single soil layer. Insect remains were rather decayed, but subjectively considered potentially significant in archaeological terms; work on a much larger subsample appeared worthwhile if material was available.

Period 7B was rather well represented among the samples, with eleven available and ten processed. There were four soil layers (three processed) and a 'surface layer' (rejected). The former gave few or no remains and only in one case was it considered that even a much larger subsample would give an interpretable assemblage - not even an intuitive interpretation could be made from the available remains. This period gave three gulley fills, one almost barren and two with small insect groups; in these cases it appeared that a large subsample would provide useful remains. Both gave hints that the cuts had been used for the disposal of stable manure.

Pitfills of **Period 7B** (three were examined) gave modest assemblages. Again, stable manure may have been dumped into the cuts, but again also, larger subsamples were considered desirable. Two of these layers gave numerous fly puparia, judged to be of interpretative value.

A sample from a surface layer of **Period 8A** was not assessed, the lithology suggesting that it had no potential. A gulley fill of **Period 8B to 9** and one of two pitfills of the same date appeared to include stable manure but required the processing of more material for confirmation; the second pitfill was not considered to be of more than second priority.

The two remaining samples from this trench - a soil layer of **Period 10A-11E** and a hypocaust fill of **Period 12A** - were effectively barren of invertebrate remains.

Three of four **post-Roman** samples - an 'organic deposit' and two pitfills - gave interesting groups of macro-invertebrate remains, although in each case, and in that of a third pit fill, larger subsamples were deemed desirable or essential in order to obtain archaeologically useful information.

Trench KLA D

One of two pitfills dated to **Period 1-5** was assessed and gave a fairly small group of insects, with hints of hay - perhaps stable manure in view of the abundant puparia.

A single ditch fill of **Period 3** gave a small group of beetles whose significance was not clear, and some puparia. It seemed possible that a larger subsample might give an interpretable assemblage, but even so the material could only be assigned P2. Another small group was recovered from a **Period 6** soil layer; again, processing more material might yield useful information.

Period 7B was represented by five soil or surface layers - of which one was processed - and three gulley fills (two processed). The former was judged to be of only second priority even if more sediment were processed. The latter may have included stable manure and were regarded as potentially useful, although in one case only if a larger subsample were investigated.

Two **Period 8B** pitfills were assessed. One gave a small but perhaps useful group of beetles and many puparia, the other a substantial assemblage including a mixture of ecological groups which together suggest stable manure. This sample gave

sufficient mites to indicate analysis to be worthwhile.

A **post-Roman** pitfill was almost barren. Two of the remaining three samples - all from gulley or ditch fills - contained few remains and had little potential (although one had hints of aquatic deposition). The third gave a small group of remains including fly puparia, and it was considered that a larger subsample would produce useful information.

Law's Lane

Trench LAL B

Two of three 'slot fills' of **Period 5A** were assessed, but both gave very few remains and had little potential. A soil layer of **Period 6** produced similar remains.

A pitfill of **Period 8B** gave some remains, ecologically mixed but probably interpretatively useful if a larger subsample were processed. A gulley fill of **Period 10C** gave only a trace of invertebrate remains and a soil layer dated to **Period 12A** was barren.

The single **post-Roman** sample, from a soil layer was effectively barren of invertebrate remains.

Trench LAL C

Two gulley fills were dated to **Period 1-5**; one gave a few remains, the other only hints of decayed cuticle. Three **Period 2** soil layers were assessed. No invertebrate remains were seen in two, and only a trace of identifiable material was present in the third.

Ditch fills of **Period 4A** were represented by three samples. One had little promise, and the other two were assigned P2 - it was considered that one of these *might* produce useful information if a much larger subsample could be processed. A single slot fill of **Period 5A** and a soil layer of **Period 6** also produced only rare invertebrate remains.

A gulley fill dated to **Period 7A-8B** gave small numbers of rather poorly preserved beetles and fly puparia; it was judged likely that a larger subsample would help identification of the nature and source of the fills. From **Period 9A**, a sample of 'burnt soil' was rejected for assessment.

Four pit fills of **Period 10A** all had clear potential, although in three cases the material was regarded as P2 unless larger subsamples could be processed. The deposits appeared to contain stable manure. Each gave enough puparia to justify study and one contained useful numbers of mites which should provide further information (the only sample from LAL for which this was true). Two further pitfills were dated to **Period 10B**. One contained a somewhat mixed insect fauna and may have included peat or turf as well as stable manure, the former perhaps representing litter. The other contained few insects and was difficult to work with; it was designated P2.

Period 10D was represented by two soil layers, both of which gave only a few identifiable remains. They had little potential for the elucidation of past conditions or activities.

Trench LAL-D

A soil layer of **Period 2**, a post hole fill of **Period 3**, two ?surface deposits and a construction trench fill of **Period 4A** and two destruction layers and a soil layer dated to **Period 4B** all gave few, or no, invertebrate remains and further investigation was not considered to be worthwhile.

A single pitfill, from **Period 4C** gave an assemblage of modest size suggesting foul matter, conceivably stable manure, and deserved further analysis although a larger subsample was considered desirable. From **Period 5A**, a 'slot fill' gave a great variety of insect remains, all in small numbers. Subjectively it was considered perhaps to be rapidly cleared-out stable manure. It, too, required more detailed investigation.

There were two samples representing **Period 6**. The first, a soil layer, gave a large flot consisting of plant debris, amongst which were insect remains including aquatics. Interpretation was not clear on assessment but should emerge on full analysis. The second sample of **Period 6** was taken from a pit fill. Subjectively there were indications of stable manure; investigation of a larger subsample was considered worthwhile in order to confirm this.

Period 10A and **Period 10B** provided samples from a soil layer and a turf layer respectively. The first gave small numbers of remains but there were hints of soil fauna and further work was thought worthwhile. The second gave moderate numbers of fragmentary and rather decayed invertebrate fossils. Although a proper quantification of the remains would probably not be possible, they were assigned P1 and should provide useful information about this layer.

All of the remaining samples from LAL-D were taken from well fills, one dated to **Period pre-11B**, the remaining six (of which five were assessed) to **Period 11D**. They gave substantial numbers of insect remains, often including large groups of fly puparia, although in two cases it was judged that larger subsamples should ideally be processed. The mixture of ecological components suggested that stable manure was present. Full analysis of this material is certainly desirable and would produce a substantial amount of information about the nature and origin of the fills.

Discussion

Many of the samples had good preservation of invertebrate remains despite long storage and, in many cases, complete or almost complete dehydration; water loss appears not to have lead inexorably to destruction of fossils in the present material.

A substantial proportion of the samples contained assemblages assigned P1, or P1 if more material could be processed (Table 2). These groups appear likely to add substantially to context or site interpretation, and together to provide a broad view of the site and adequate data for comparison with other sites in Carlisle and elsewhere. A quite large proportion of the samples needed larger subsamples than the 1 kg assessment tests; it should be noted, however, that there is little or no further material for some of them, and this may to some extent limit the information obtainable from the insect remains from these sites. Cut features gave most of the useful groups, and surface deposits were generally barren or nearly so. Stable manure was frequently indicated, or at least hinted at, by the fossils.

Potential for site interpretation

There is considerable potential for interpretation at the routine context and feature level using the insect assemblages. There were, however, no especially unusual groups, most of the remains being 'normal' for Roman settlements examined previously.

Potential for elucidation of wider issues

Full recording of the assemblages may reveal patterns of zonation within the present sites, but these are not apparent from assessment. There are, however, strong indications of differences between the fauna (and implied conditions) of KLA and LAL and those of the Lanes sites already worked on (Old Grapes Lane and Lewthwaites Lane) and of Castle Street and Annetwell Street. There is thus potential for reconstruction of the pattern of land use and activity in space and time in Carlisle.

The present sites will also provide data of value in wider synthesis. The material is thus certainly important in the context of Carlisle and of Roman Britain as a whole, and hence (although of limited value seen in isolation) is of national importance**.**

Recommendations

A selective survey of the eggs of parasitic nematodes should be carried out using multiple 'squashes' to overcome the effects of patchy distribution within sediments. This survey should concentrate on pitfills and should be co-ordinated with the botanical and entomological work to optimise information recovery. Where warranted by the condition of the eggs, measurements should be carried out to determine the species present and thus distinguish between human faeces and excrement from domestic animals.

It is recommended that full analysis (at the 'scan recording' level of Kenward 1992) of the beetle assemblages from all P1 samples is carried out, using larger subsamples where recommended (and providing material is available). Again where material is available, samples assigned P2 or P3 but P1 if larger subsamples are processed should also be studied. The P2 groups should be quickly reviewed and selectively recorded even where no further material is available. The first priority groups of fly puparia should be investigated. The choice of material of lower priorities (both beetles and fly puparia) should be determined on the basis of the botanical results. Some of the unassessed samples should be surveyed and any of interest added to the list for fuller examination.

The work on invertebrate remains should be co-ordinated with botanical studies (in particular), and the results integrated.

Retention and disposal

No material should be disposed of at this stage, pending application for funding for further study of selected samples.

Archive

All extracted fossils from the test subsamples, and the residues and flots are currently stored in the Environmental Archaeology Unit, University of York, along with paper and electronic records pertaining to the work described here.

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Table 2. Summary of numbers of assemblages at each priority for KLA and LAL. Key: P - priority; N - number at priority; R - basic recording time; Pup - number of P1 puparia assemblages; Process - number of subsamples to process further; Sort - sort time; Mite - number of P1 mite assemblages. Note that the time in 'R' are contact time for recording only, used as a guide for calculating project resource requirements, and do not include data input and peripheral tasks.

P	N	R	Pup	Process	Sort	Mite
KLA-A						
P1	2	11	2	-	-	-
LP1	7	29	7	7	-	-
P2	2	2	1	-	1	-
LP2	0	-	-	-	-	-
P3	7	3.25	-	-	-	-
P0	1	-	-	-	-	-
Total	19	43.25	10	7	1	0
KLA-B						
P1	5	13	3	5	-	-
LP1	4	5	1	3	-	-
P2	0	-	-	-	-	-
LP2	0	-	-	-	-	-
P3	7	2.25	-	-	-	-
P0	10	-	-	-	-	-
Total	26	20.25	4	8	0	0
KLA-C						
P1	9	44.5	7	9	7	-
LP1	7	22	3	7	-	-
P2	1	0.5	-	-	2	-
LP2	0	-	-	-	-	-
P3	9	3.25	1	-	-	-
P0	2	-	-	-	-	-
Total	28	70.25	11	16	9	-
KLA-D						
P1	4	6.75	3	-	2	1
LP1	3	6.5	3	3	-	2
P2	0	-	-	-	-	-

P	**N**	**R**	**Pup**	**Process**	**Sort**	**Mite**
LP2	2	4	2	2	-	-
P3	4	1.5	-	-	-	-
P0	0	-	-	-	-	-
Total	13	18.75	8	5	2	3
LAL-B						
P1	1	6.0	-	1	-	-
LP1	0	-	-	-	-	-
P2	0	-	-	-	-	-
LP2	0	-	-	-	-	-
P3	4	2.75	-	-	-	-
P0	2	-	-	-	-	-
Total	7	8.75	0	1	0	0
LAL-C						
P1	3	14.5	2	2	-	1
LP1	3	6.0	3	3	-	-
P2	3	5	-	1	3	-
LP2	0	-	-	-	-	-
P3	7	4.25	-	-	-	-
P0	3	-	-	-	-	-
Total	19	29.75	5	6	3	1
LAL-D						
P1	12	52	7	4	7	-
LP1	0	-	-	-	-	-
P2	1	1.5	-	-	-	-
LP2	0	-	-	-	-	-
P3	4	2	-	-	-	-
P0	3	-	-	-	-	-
Total	20	55.5	7	4	7	0
ALL						
P1	36					
LP1	24					
P2	7					
LP2	2					

P	**N**	**R**	**Pup**	**Process**	**Sort**	**Mite**
P3	38					
P0	21					
Total	**128**	**246.5**	**45**	**47**	**22**	**4**

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Table 3. Staff and other resource requirements for recommended programme of investigation of invertebrate remains from The Lanes, KLA and LAL. Costs provided separately. Staff: RAi - Research Assistant (insects); RAmi - Research Assistant (microfossils); RFi - Research Fellow (insects); Tech - Technician.

Table 3A. Staff

Task	**Staff**	**Time** (hours)	**Cost**
General			
General laboratory tasks, sample movement, etc.	Tech	49.21	
Maintain databases	RAi	10.64	
Administration	RFi	9.04	
	RAi	9.04	
Internal project meetings and EH monitoring meetings	RFi	16.95	
	RAi	19.95	
Obtain and organise archaeological information	RFi	9.04	
	RAi	19.95	
GBA samples			
Process 47 additional subsamples from assessed samples	Tech	147.63	
Process selected 10 additional (unassessed) samples)	Tech	29.26	
Sort where necessary	Tech	29.26	
Record main insect assemblages	RFi	79.10	
	RAi	399.00	
Record 10 selected groups of puparia	RAi	49.21	
	Cons	40.00	
Record mites	Cons	30.00	
Microfossils			
Review parasite eggs from 40 selected GBA samples	RAmi	26.60	
Measure 10 selected groups of parasite eggs	RAmi	26.60	
Data analysis and basic reporting			
Data analysis	RFi	16.95	
	RAi	9.31	
	RAmi	9.31	
Technical (EAU) Report preparation (including archive tables)	RFi	24.86	
	RAi	59.85	
	RAmi	9.31	
EAU Report finalisation	RFi	9.04	
EAU Report production and dissemination	Tech	7.98	
Publication Report			
Preparation of Publication Report including illustrations	RFi	16.95	
	RAi	49.21	
	RAmi	10.64	
Text revision and editing	RFi	9.04	
	RAi	10.64	
Proofs	RFi	4.52	

Task	**Staff**	**Time** (hours)	**Cost**
Totals		1248.09	

Table 3B. Consumables etc.

Item	Cost
Reagents	
Safety and protective equipment	
Glass specimen tubes	
Microscope slides and cover slips	
Computer consumables and maintenance	
! Maintenance contracts for contact time of project	
! Replacement of computers, allowing 4-year life	
! Routine consumables (including laser printer cartridges, diskettes)	
Beatson jars	
Stationery, including photocopying	
Postage	
Telephones/faxes	
Polyethylene bags	
Labels and markers	
Miscellaneous, including repairs to equipment	
Photographic materials and processing costs	
! Materials	
! Processing and printing	
! SEM Access charges	
Travel (including museum visits) and subsistence	
Total	

Table 4. Samples from Keay's Lane and Law's Lane: Action taken and abbreviated sediment descriptions (in context number order by trench). Key: Act - EAU action (f = 1 kg flot; w/o = 1 kg washover); CN -context number; CT - Context type; EP - Excavator's priority (= P1); MS - Moisture status; NA - no action (rejected for assessment); NFA - no further action (rejected for assessment after initial examination); SN -sample number.*

TRENCH KLA-A

CN	SN	EP	CT	Act	MS	Texture
605.1	181		pit fill?	NA		
605.2	182		pit fill?	NA		
605.3	183		pit fill?	NA		
605.4	184	*	pit fill?	f (no f3)	just moist	slightly humic sandy silty clay
606	179		pit fill	NA		
615	185		pit fill	NA		
628	186		soil layer	NA		
721	194		post hole fill	NA		
1096.01	239		pit fill	f	moist	very humic silt
1096.2	238		pit fill	NFA	moist	humic, slightly sandy clay silt
982	201		gulley fill	NFA	moist	?humic/ashy slightly sandy clay silt
1020	205	*	gulley fill	f (no f3)	moist	sandy silty clay
1064.2	244	*	gulley fill	f	moist	slightly sandy clay silt
1064.3	232	*	gulley fill	w/o	moist	sandy clay
1031.1	212	*	pit fill	f	wet	sandy clay
1031.2	217	*	pit fill	f	moist	sandy clay silt with patch of compressed amorphous organic sediment
1031.3	213	*	pit fill	1 kg dry 1.35 kg wet flot	dry	sandy silty clay
1031.4	250	*	pit fill	w/o	moist	silt/clay
1052.2	214	*	pit fill	950 g dry 1.47 kg wet flot	dry	humic silty sand

CN	SN	EP	CT	Act	MS	Texture
1055.01	245	*	pit fill	1.13 kg flot	dry	humic, moderately stony sandy silt
1055.02	243	*	pit fill	1 kg dry 1.35 kg wet flot	dry	humic slightly stony sandy clay silt
1055.03	246	*	pit fill	f	moist	slightly humic sandy clay silt
1063.2	219	*	pit fill	f	moist	slightly sandy clay silt
1063.4	220	*	pit fill	1.2 kg dry 1.5 kg wet flot	dry	sandy clay silt
1067.1	233	*	pit fill	f	wet	humic silty clay
879	195	*	pit fill	1 kg dry 1.25 kg wet flot	just moist	slightly humic sandy silty clay
891	196	*	pit fill?	980 g dry 1.45 kg wet flot	dry	humic sandy silt
901	198	*	pit fill?	1 kg dry 1.55 kg wet flot	dry	slightly humic sandy clay silt

TRENCH KLA-B

CN	SN	EP	CT	Act	MS	Texture
84	31	*	soil layer	1 kg dry 1.04 kg wet washover	just moist	slightly sandy clay
93.1	33	*	gulley fill	w/o	wet	humic slightly sandy clay
93.2	34	*	gulley fill	w/o	wet	sandy clay silt
97	51	*	post trench fill	f	wet	amorphous organic sediment
99.2	29	*	gulley fill	w/o	wet	humic slightly sandy clay

CN	SN	EP	CT	Act	MS	Texture
100.2	30		slot fill	NA		
139	53		soil layer	NA		
142	35		depression fill	NA		
173	43		post trench fill	NA		
173.1	49	*	post trench fill	NFA	moist	sandy clay
179	47	*	soil layer	NFA	moist	sandy clay
175	50	*	post trench fill	NFA	moist	sandy clay
187	48	*	soil layer	w/o	moist	slightly sandy clay
219	54	*	soil layer	1 kg dry 1.09 kg wet washover	just moist	sandy clay
224	59	*	slot fill	w/o	moist	humic slightly sandy clay silt
235	56	*	slot fill	NFA	moist	humic slightly sandy clay silt
235.1	58	*	slot fill	NFA	just moist	clay sand
235.2	60	*	slot fill	NFA	moist	humic slightly sandy clay silt
296	63	*	surface deposit?	w/o	just moist	clay sand
354	65	*	soil layer	NFA	just moist	sandy clay silt
358.1	69	*	pit fill	NFA	moist	slightly sandy clay
358.2	66	*	pit fill	890 g washover	moist	very humic sandy clay silt with large amorphous organic component
358.3	70	*	pit fill	NFA	just moist	very sandy clay
358.4	71	*	pit fill	1 kg dry 1.11 kg wet washover	just moist	very sandy clay
358.5	72	*	pit fill	NFA	just moist	very sandy clay
696	191		building debris?	NA		
717	193	*	decayed wood	f	moist	very humic clay or amorphous organic sediment
728	192	*	occupation 'silt'	980 g dry 1.38 kg wet washover	dry	slightly humic sandy clay
975	197	*	soil layer	w/o	just moist	humic sandy clay silt

CN	SN	EP	CT	Act	MS	Texture
1065	200	*	soil layer	w/o	just moist	humic sandy clay
1103	253		pit fill	NA		
1122	221		surface deposit	NA		
1130	209	*	soil layer	NFA	just moist	very sandy clay
1177	202		depression fill	NA		
1182	206	*	soil layer	NFA	just moist	sandy clay
1186	203	*	soil layer	w/o	just moist	sandy clay
1203	241		post hole fill	NFA	completely desiccated	
1204.2	222	*	post hole fill	f (extra P2,f1,f2)	wet	very humic slightly sandy 'silt'
1220.2	224	*	pit fill	f	moist	sandy clay silt
1222	225		hearth?	NA		
1223	215	*	slot fill	f (no f3)	moist	sandy silt/clay
1229	210		surface deposit?	NA		
1230	218	*	soil layer	w/o	moist	humic sandy clay/silt
1231	204	*	soil layer	f (no f3)	moist	very humic clay silt
1231	207	*	soil layer	NFA	moist	very humic clay silt
1234	208	*	charcoal layer	f (no f3)	moist	amorphous organic sediment and herbaceous detritus
1249	227		pit fill?	NA		
1249	228		pit fill?	NA		
1249.1	234		pit fill?	NA		
1268	211	*	soil layer	f	just moist	slightly sandy silty clay
1280	229	*	soil layer	w/o	just moist	sandy clay
1281	231	*	gulley fill	NA		
1282	235	*	gulley fill	f (no f3)	just moist	clay sand

TRENCH KLA-C

CN	SN	EP	CT	Act	MS	Texture
758	372	*	organic deposit	778 g flot	moist	amorphous organic sediment with fine herbaceous detritus
759	373	*	pit fill	f (extra f4 and f5)	moist	slightly sandy amorphous organic sediment with fine herbaceous detritus
811.1	376	*	pit fill	0.96 g dry 1.38 wet flot	dry	?humic, slightly sandy clay silt
811.2	377	*	pit fill	f	just moist	sandy clay silt
851	380	*	hypocaust fill	1 kg dry 1.21 kg wet washover	dry	sandy clay silt
1081	385	*	soil layer	f	moist	humic, slightly sandy clay silt
1182	387	*	gulley fill	950 g flot	moist	very humic, slightly sandy clay silt
1189	390	*	pit fill	f (extra f4)	moist	amorphous organic sediment with fine herbaceous detritus
1203	391	*	pit fill	f	moist	very humic sandy clay silt
1249	393	*	layer of wood chippings	470 g dry 560 g wet flot	just moist	clay with abundant wood fragments
1269.2	394	*	pit fill	f	moist	humic slightly sandy clay silt
1318	395	*	ditch fill	f (no f3)	moist	very humic clay silt
1324	396	*	pit fill?	780 g flot	moist	amorphous organic sediment
1333	397	*	soil layer	w/o (modified)	moist	abundant charcoal
1346	398	*	soil layer	w/o	moist	humic clay silt
1350	399	*	pit fill	f	moist	slightly humic sandy clay silt
1858.01	400	*	gulley fill	f	moist	very humic, slightly sandy clay silt
1858.02	401	*	gulley fill	f	moist	very humic clay silt
1865	402	*	soil layer?	NFA	dry	sandy clay
1870	403	*	soil layer	f	moist	amorphous organic sediment

CN	SN	EP	CT	Act	MS	Texture
1871	404	*	pit fill	f	just moist	clay sand
1876	405	*	gulley fill	f	moist	slightly humic, slightly sandy clay silt
1887	406	*	pit fill	f (extra f4)	moist	slightly sandy clay silt
1907	407	*	surface layer	NFA	dry	clay sand
1912	408	*	surface layer	w/o	dry	sandy clay
1914	409	*	ditch fill	w/o	moist	sandy clay
1918	410	*	soil layer	w/o	just moist	very humic clay silt
1920	412	*	soil layer	w/o	just moist	slightly sandy silty clay
1923	413	*	ditch fill	f	moist	humic very slightly sandy clay silt
1923	414	*	ditch fill	NFA	indurated	?clay sand
1936	415	*	soil layer	1 kg dry 1.2 kg wet flot	?	slightly humic sandy silt
1948	416	*	clay layer	NFA	indurated	n/a

TRENCH KLA-D

CN	SN	EP	CT	Act	MS	Texture
2	16		pit fill	1.16 kg flot (P1;f1 and P2;f1)	moist	sandy silty clay
464.2	2	*	pit fill	0.82 kg flot	moist	slightly sandy amorphous organic sediment and herbaceous detritus
464.3	3	*	pit fill	2.65 kg flot (P1;f1,f2 and P2;f1,f2)	moist	slightly sandy clay
480	4	*	surface layer?	2.22 kg dry 2.5 kg wet flot (no f3)	just moist	slightly sandy silty clay
511	5	*	soil layer	NFA	just moist	sandy clay

CN	SN	EP	CT	Act	MS	Texture
512	6	*	soil layer	2.84 kg dry 3.45 kg wet flot	just moist	slightly sandy clay
513	7	*	surface layer	NFA	just moist	sandy clay
514	8	*	surface layer	NFA	mostly dry	sandy clay
515	10	*	soil layer	2.37 kg flot	moist	slightly humic, slightly sandy clay
524.1	11	*	gulley fill	1.85 kg flot	moist	amorphous organic sediment and woody herbaceous detritus
524.2	12	*	gulley fill	NFA	very slightly moist	sandy clay; noticeably dense - boulder clay?
524.3	13	*	gulley fill	2.03 kg flot (no f3)	moist	slightly humic silty clay
531.1	14	*	gulley fill	1.84 kg dry 2.38 kg wet flot (no f3)	dry	sandy silty clay
531.2	15	*	gulley fill	1.69 kg dry 1.78 kg wet flot (P1;f1,f2 and P2;f1)	only just moist	sandy silty clay
538	9	*	soil layer	NFA	dry/dust	very stony sandy clay
540.2	17	*	ditch fill	1.81 kg flot (no f3)	moist	very humic, slightly sandy silty clay
540.5	18	*	ditch fill	1.98 kg dry 2.58 kg wet flot	totally dry	silty sand
546.1	19	*	pit fill	2.13 kg dry 2.95 kg wet flot	dry	silty sand
546.2	20	*	pit fill	NFA	dry	sandy silt

TRENCH LAL-B

CN	SN	EP	CT	Act	MS	Texture
163	17	*	soil layer	w/o	moist	very sandy clay; has distinct ped structure
171	18	*	soil layer	w/o	moist	slightly sandy silty clay
222	22	*	gulley fill	f	moist	amorphous organic sediment; has some sort of ped structure
257.1	23	*	pit fill	**?	dry	sandy clay silt
275	24	*	soil layer	**?	just moist	sandy silty clay
280	25	*	slot fill	**?	moist	slightly sandy silty clay
284	26	*	slot fill	**?	moist	sandy silty clay
286	27	*	slot fill	NFA	dry	ash

TRENCH LAL-C

CN	SN	EP	CT	Act	MS	Texture
168	10	*	soil layer	w/o	moist	humic clay/silt
262	14	*	soil layer	f	moist	humic clay silt
290	15	*	pit fill	f (extra f4)	moist	humic, slightly sandy clay silt with fine herbaceous detritus
295	16	*	pit fill	900 g flot (extra f4)	moist	very humic slightly silty amorphous organic sediment; fine herbaceous detritus in layers
302	17	*	pit fill	f	moist	humic slightly sandy silt
329	19	*	pit fill	f	moist	amorphous organic sediment with fine herbaceous detritus
334	21	*	pit fill?	f (extra f4)	just moist	slightly sandy amorphous organic sediment with fine herbaceous detritus
336	23	*	pit fill	f	?	fine charcoal with some pale flecks
375	26	*	gulley fill	f	moist	sandy clay silt
380	27	*	burnt soil	1 kg dry 1.08 kg wet f lot (zero in flot - no jar)	dry	silty sand

CN	SN	EP	CT	Act	MS	Texture
405	28	*	ditch fill	1 kg dry 1.22 kg wet washover	dry	sandy clay silt
413	29	*	soil layer	750 g flot	dry	humic sandy silt
419	30	*	gulley fill	1 kg dry 1.1 kg wet flot	dry	humic sandy silt
425	31	*	slot fill	790 g dry 900 g wet flot	dry	sandy silt
427	32	*	gulley fill	w/o	moist	humic slightly sandy silt
430	33	*	ditch fill	f	just moist	amorphous organic sediment
430	34	*	ditch fill	f	just moist	sandy clay silt
459	35	*	soil layer	w/o	dry	clay sand
460	36	*	soil layer	1 kg dry 1.27 kg wet washover	dry	sandy clay silt
462	37	*	soil layer	1 kg dry 1.14 kg wet washover	very dry	slightly sandy clay silt

TRENCH LAL-D

CN	SN	EP	CT	Act	MS	Texture
232.6	32	*	well fill	f	moist	humic sandy silt
232.12	37	*	well fill	f (no f3)	moist	amorphous organic sediment with fine and coarse herbaceous detritus
232.16	12	*	well fill	f	moist	humic sandy silt
232.17	13	*	well fill	f (extra f4)	moist	humic sandy silt

CN	SN	EP	CT	Act	MS	Texture
232.19	15	*	well fill	f (possible contamination from sample 13)	moist	humic sandy silt
232.20	16	*	well fill	880 g flot (extra f4)	wet	humic sandy silt
1016.7	45	P2	well fill	970 g flot (2 jars) (extra P2)	moist-wet	very humic silt
1017	29	*	turf layer	f	just moist	amorphous organic sediment
1021	30	*	soil layer	f	just moist	slightly sandy amorphous organic sediment
1086	4	*	destruction layer	w/o	just moist	indurated burnt sediment
1249	3	*	soil layer	f	moist	fine and coarse herbaceous detritus
1267	6	*	pit fill	f	moist to wet	amorphous organic sediment
1269	5	*	slot fill	f (extra f4)	moist	slightly sandy silty clay
1305	7	*	destruction layer	NFA	moist	sandy clay
1353	9	*	soil layer	f	moist	sandy silty clay
1357	8	*	pit fill	f	moist	coarse herbaceous detritus and amorphous organic sediment
1377	10	*	surface deposit?	f	dry-moist	very sandy clay silt
1382	39	*	surface deposit?	f	dry-moist	humic silt
1423.1	40	*	construction trench fill	?	moist	humic, slightly sandy silt
1423.3	41	*	construction trench fill	1 kg dry 1.29 kg wet washover	almost dry	sandy silty clay
1481	42	*	soil layer	3 kg flot	just moist	sandy clay silt
1504	43	*	post hole fill	w/o	dry	sandy clay

Table 5. Results of assessment of samples from Keays Lane and Laws Lane (in period and context number order respectively). Key: CN - context number; CT - context type; L (in P or T columns) - priority and times for assemblage from larger subsample; P - priority for assemblage from test subsample; Per - period; pp - polar plug; SN - sample number; T - recording time (hours). Times are for listing only and exclude other tasks. Preservation average to good for sites with anoxic waterlogging and flots normal unless noted.

TRENCH KLA-A

Per	CN	SN	CT	Flot	Squash	P	T
1-5	1096.01	239	pit fill	Many *?Heterodera* cysts; small insect group,subjectively with hints of stable manure. Much larger subsample needed for interpretation	Mostly inorganic, a little organic detritus and a few fungal hyphae	3 L?	0.75
1-5	1096.02	238	pit fill	Very small group; much larger subsample would probably give a distinctive group, and 2-3 kg might give useful number of puparia	Inorganic with a little organic detritus	3 L1	0.5 L: process * record 3.0 puparia *
7B	982	201	gulley fill	A few poorly preserved insect remains	Mostly inorganic, a little organic detritus, 1 spore and 2 pollen grains	3	0.25
7B	1020	205	gulley fill	A few very poorly preserved remains, mainly grain pests	-	3	0.25
7B	1064.2	244	gulley fill	Rather small group including grain pests and a variety of other ecological groups. Larger subsample desirable	Mostly inorganic, a little organic detritus and a few fungal hyphae	2 L1	2.0 L: process * record 6.0 puparia *
7B	1064.3	232	gulley fill	Very small group	-	3	0.25
8B	1031.1	212	pit fill	Few remains; ecologically mixed	Mostly inorganic, some organic detritus with a few pollen grains and fungal hyphae	3	0.5
8B	1031.2	217	pit fill	Fairly small group; grain pests and various others. Larger subsample would give useful group.	Mostly inorganic, much organic detritus and a few fungal spores. 2 ?parasite eggs	2 L1	0.5 L: process * record 1.5 puparia *
8B	1031.3	213	pit fill	Smallish group; grain pests, other components varied	Half inorganic and half organic detritus and a few fungal hyphae. *Trichuris* - 1pp (1), 0pp (1). Many pollen grains/spores	3 L1	0.5 L: process * record 1.5 puparia *

Per	CN	SN	CT	Flot	Squash	P	T
8B	1031.4	250	pit fill	Modest sized group; rather mixed ecologically, significance unclear	-	2	1.5 puparia *
8B	1052.2	214	pit fill	Small group of no clear significance	Mostly inorganic, much organic detritus, a few fungal hyphae and some *Polypodium* spores	3	0.75
8B	1055.01	245	pit fill	Small group; subjectively 'faecal', perhaps stable manure.	Mostly inorganic, a little organic detritus	2	sort 1 record 0.5
8B	1055.02	243	pit fill	Smallish group; substantial proportion of outdoor forms, no clear dominant ecological group, few synanthropes but human influence clear. Larger subsample might clarify	Mostly inorganic with a trace of organic detritus	2 L1	2.0 L: process * record 5.0 puparia *
8B	1055.03	246	pit fill	Modest-sized group; only puparia and beetle larvae numerous, remaining taxa mixed, with grain pests and decomposers	-	2 L1	2.0 puparia * L: process * record 6.0 puparia *
8B	1063.2	219	pit fill	Invertebrates rather abundant; mixed beetle group with a variety of 'outdoor' taxa. Hints of stable manure. Larger subsample desirable	Mostly organic detritus 1 *Polypodium* spore, many fungal spores, some pollen grains and some plant tissue	1	4.0 puparia * L: process * record 8.0 puparia *
8B	1063.4	220	pit fill	Smallish group but some fairly abundant taxa; *Aphodius* spp. Larger subsample desirable.	-	2 L1	2.0 puparia * L: process * record 6.0 puparia *
8B	1067.1	233	pit fill	Modest-sized group; ecologically mixed. Larger subsample desirable	Mostly inorganic with some organic detritus, one *Polypodium* spore and a few phytoliths	1	2.0 puparia * L: process * record 5.0 puparia *
10C	901	198	?pit fill	-	-		
10E-11A	879	195	pit fill	No insects observed	-	0	0

Per	CN	SN	CT	Flot	Squash	P	T
10E-11A	891	196	?pit fill	-	-		
?	605.1	181	?pit fill	-	-		
?	605.2	182	?pit fill	-	-		
?	605.3	183	?pit fill	-	-		
?	605.4	184	?pit fill	A few remains including several *Daphnia*	Mostly inorganic, some organic detritus, phytoliths (>15) and a few fungal hyphae	3	0.5
?	606	179	pit fill	-	-		
?	615	185	pit fill	-	-		
?	628	186	soil layer	-	-		
?	721	194	post hole fill	-	-		

TRENCH KLA-B

Per	CN	SN	CT	Flot	Squash	P	T
2	1230	218	soil layer	No invertebrates recorded	-	0	0
2	1231	204	soil layer	No invertebrates seen	-	0	0
5A	224	59	slot fill	Only a trace of arthropod remains	-	0	0
5B	1223	215	slot fill	No invertebrates seen	-	0	0
6	84	31	soil layer	No insects seen	-	0	0
6	219	54/T1	soil layer	A few insects; subjectively hints of stable manure	Inorganic mostly with some organic detritus a few ?pollen grains	3	0.5
6	219	54/T2	soil layer	No identifiable remains	Inorganic mostly with some organic detritus a few ?pollen grains	0	0
7B-8A	358.2	66	pit fill	Modest-sized group of insects; grain pests, hints of foul matter. ?Stable manure	Mostly inorganic, some organic detritus, a few fungal hyphae and a few spores/pollen	1	1.0 L: process * record 2.0
7B-8A	358.4	71	pit fill	Smallish group; ?stable manure. Process more if possible.	Mostly inorganic, a little organic detritus and 1 *Polypodium* spore	2 L: 1	0.5 L: process * record 2.0

Per	CN	SN	CT	Flot	Squash	P	T
7B	1282	235	gulley fill	Rather small group; larger subsample (>4 kg) needed	Mostly inorganic with a trace of organic detritus	2 L:?1	0.25 L: process * record 1.0 puparia *
9A	93.1	33	gulley fill	Only a trace of insect remains	-	3	0.25
9A	1186	203	soil layer	Trace of insect remains	-	3	0.25
9A	1234	208	charcoal layer	Modest-sized group; rather mixed ecologically, numerous puparia. Larger subsample desirable	-	1	1.0 puparia * L: process * record 2.5 puparia *
9A	1268	211	soil layer	Modest-sized group; rather mixed, grain pests present. Larger subsample required	-	1	1.0 L: process * record 2.5 puparia *
9A	1280	229	soil layer	Small group, perhaps of random origin. Subsample of 5 kg or more might produce useful assemblage	-	3 L: ?1	0.5 L: process records ?2.0
9C	97	51	post trench fill	Small group	-	3	0.5
9C	187	48	soil layer	A few insects only	-	3	0.25
9C	1204.2	222	post hole fill	Abundant insect remains; grain pests, foul decomposers. Larger subsample would be useful	-	1	2.0 L: process * record 4.0
9C	1220.2	224	pit fill	Small group; three *Aphodius*; ecologically mixed; larger subsample desirable	Mostly inorganic with a little organic detritus a few diatoms and one *Polypodium* spore. 15 eggs of *Trichuris* were present	2 L: 1	0.5 L: process * record 2.0
?10A	296	63	surface?	No invertebrates seen	-	0	0
10D	975	197	soil layer	No invertebrate remains seen	-	0	0
10D	1065	200	soil layer	Only a few insect fragments	-	3	0.25
12A	728	192	occupation silt	No insect remains seen	-	0	0

Per	CN	SN	CT	Flot	Squash	P	T
?	93.2	34	gulley fill	Only a few insects	Mostly inorganic with much organic detritus, many fungal spores, a few fungal hyphae and 1 very poorly preserved *Trichuris* egg	3	0.25
?	99.2	29	gulley fill	No insect remains seen	-	0	0
?	717	193	decayed wood	Modest-sized group of insects, abundant puparia. No grain pests. Foul open-textured material.	Mostly organic detritus with a little inorganic, many phytoliths, several plant tissue fragments and a few fungal spores and hyphae	1	1.0 puparia * L: process * record 2.0 puparia *

TRENCH KLA-C

Per	CN	SN	CT	Flot	Squash	P	T
2	1346	398	soil layer	Mass of 'earth balls'. A few insects but hard to assess	-	3	0.5
2	1918	410	soil layer	Preservation poor; few identifiable remains, implications not obvious	-	3	0.5
3	1318	395	ditch fill	Very few remains: puparia and some beetles	-	3	0.25 puparia *
4A	1249	393	layer of wood chippings	Very small number of invertebrates	-	3	0.25
4A	1914	409	ditch fill	Only a few poorly preserved and damaged remains	-	3	0.25
4A	1923	413	ditch fill	Remains moderately abundant but poorly preserved. Hints of grazing land turf; no strong synanthropes seen. Larger subsample needed for interpretation	-	2 L1	1.0 L: process * record 4.0
4A	1923	414	ditch fill	-	-		
4A	1948	416	clay layer	-	-		
5A-5B	1269.2	394	pit fill	Modest-sized group; grain pests, decomposers, a few puparia and some bug nymphs etc.	50% organic and 50% inorganic detritus with many phytoliths, several fungal spores, 2 *Polypodium* spores and a few pollen grains/spores	1	4 puparia *

Per	CN	SN	CT	Flot	Squash	P	T
5A-5B	1350	399	pit fill	Small but interesting group; dung beetles, *Phyllopertha*, ground beetles, a few decomposers, weevils, rare aquatics, bug nymphs. Ideally process more	Mostly inorganic with a trace of organic detritus and a few phytoliths	1	3 L: process * record 8
6	1920	412	soil layer	Much charcoal. Rather rotted insect remains in moderate numbers; ?outdoor dominated. Hard to work on but may be significant; process more	-	2 L1	2.0 L: process * record 6.0
7B	1324	396	pit fill?	Many puparia, beetle larva, grain pests. Larger subsample useful.	About half inorganic and half organic with a few ?diatoms and 2 *Trichuris* (0pp)	1	1 puparia * L: process * record 3 puparia *
7B	1333	397	soil layer	No obvious insect remains	-	0	0
7B	1858.01	400	gulley fill	A few remains only	-	3	0.5
7B	1858.02	401	gulley fill	Small group, hints of stable manure. A few puparia. Larger subsample desirable	Mostly inorganic with a trace of organic detritus, a few phytoliths, diatoms, and fungal spores and hyphae	2 L1	0.5 L: process * record 2 puparia *
7B	1865	402	soil layer?	-	-		
7B	1870	403	soil layer	Few remains; grain pests and a few others. Larger subsample essential for interpretation	-	2 L1	0.5 L: process * record 2.0
7B	1871	404	pit fill	A few remains but preservation good. Mostly synanthropes including grain pests; *Apion*. Conceivably stable manure. Some puparia. Larger subsample needed for reliable interpretation	Mostly organic detritus with much inorganic and a few fungal hyphae	1	1 L: process * record 2 puparia *
7B	1876	405	gulley fill	Abundant *Agrostemma* seeds. Small insect group, possibly stable manure but larger subsample needed for confirmation	-	2 L1	1 L: process * record 3 puparia *
7B	1887	406	pit fill	Modest number of insects, mostly grain pests but some synanthropes suggest possibly stable manure. Ideally process larger subsample	Inorganic with a little organic detritus	1	1.0 L: process * record 2.0

Per	CN	SN	CT	Flot	Squash	P	T
7B	1912	408	surface deposit	Few remains, poorly preserved	-	3	0.25
7B	1936	415	soil layer	Few remains, mostly synanthropes. Difficult flot; much larger subsample would be needed	-	3	1.0
8A	1907	407	surface deposit	-	-		
8B-9	1182	387	gulley fill	Abundant ?grass caryopses. Abundant grain pests; smallish group but requires recording; larger subsample useful; probably enough puparia to justify recording	Mostly organic detritus, much organic material, some diatoms, some plant tissue, fungal spores and a few pollen/spores	1	1 puparia * L: process sort 3 record 2 puparia *
8B-9	1189	390	pit fill	Large and difficult flot. Small number of insects of unclear significance. Would need larger subsample but probably not worthwhile	Mostly organic detritus with a little inorganic and a few pollen grains/spores	2	sort 2 record 0.5
8B-9	1205	391	pit fill	Small group of insects, subjectively stable manure; larger subsample needed	Mostly organic detritus with much inorganic, several phytoliths and a few fungal spores and hyphae. A single *Trichuris* egg was present	2 L1	1 L: process * record 2
10A-11E	1081	385	soil layer	Trace flot; only single insect seen	-	3	0.25
12A	851	380	hypocaust fill	Mostly charcoal; no waterlogged insects. A single millipede segment.	-	0	0
?	758	372	organic deposit	Rather large flot. Numerous and varied puparia. Rather small group of beetles; ?stable manure. Larger subsample needed	Mostly organic detritus and a little inorganic, several diatoms, many phytoliths, several-many fungal hyphae and spores and many plant tissue fragments	1	sort 2.0 record 0.5 puparia * L: process * sort 4.0 record 1.5 puparia *

Per	CN	SN	CT	Flot	Squash	P	T
?	759	373	pit fill	Fly puparia very numerous including ?Melophagus. Mixed group of beetles, very well preserved, some unusual taxa and larvae. Larger subsample desirable in view of diversity. Processing should be very gentle	Mostly organic detritus with a little inorganic, several diatoms and fungal spores, many phytoliths and a few plant tissue fragments. 10 *Trichuris* eggs were present	1	6.0 puparia * L: process * record 12.0 puparia *
?	811.01	376	pit fill	A mixed group including outdoor taxa and some ?stable manure decomposers and other synanthropes. *Scolytus* sp.; honeybee. Larger subsample desirable	-	1	3 L: process * record 6
?	811.02	377	pit fill	Abundant puparia. Modest-sized mixed group of beetles; decomposers and some others. Much larger subsample needed	Inorganic with a trace of organic detritus, a few phytoliths and fungal hyphae	2 L1	1 puparia * L: process * record 3 puparia *

TRENCH KLA-D

Per	CN	SN	CT	Flot	Squash	P	T
1-5	546.1	19	pit fill	Fairly small group of insects but strong indications of 'hayfield' vegetation; presumably hay or stable manure. Many puparia	mostly inorganic, a little organic detritus, 1 *Polypodium* spore, a few fungal spores and hyphae and 1 *Ascaris* egg	1	2.5 puparia *
1-5	546.2	20	pit fill	NFA	-		
3	540.2	17	ditch fill	Abundant mites and some puparia. Few beetles; interpretation not clear. Larger subsample might be useful	Mostly inorganic, some organic detritus, a few phytoliths (fragmentary), *Polypodium* spores and fungal hyphae	2 L1	0.5 mites * L: process * record 1.5 puparia *
6	515	10	soil layer	Small group of decomposers and outdoor forms. Larger subsample needed for interpretation	Half organic detritus and half inorganic, a few fungal hyphae and ?phytolith fragments	3 L2	0.75 L: process * record 2.0
7B	511	5	soil layer	NFA	-		
7B	512	6	soil layer	A few insects including several puparia; interpretation may be possible from much larger subsample	-	3 L2	0.5 L: process * record 2.0 puparia *

Per	CN	SN	CT	Flot	Squash	P	T
7B	513	7	surface deposit	NFA	-		
7B	514	8	surface deposit	NFA	-		
7B	538	9	soil layer	NFA	-		
7B	524.1	11	gulley fill	Smallish group of beetles; mixed, but hints of stable manure. Larger subsample needed for both beetles and puparia	Half inorganic and half organic detritus, many fungal spores and some fungal hyphae	2 L1	record 1.5 L: process * record 3.0 puparia *
7B	524.2	12	gulley fill	NFA	-		
7B	524.3	13	gulley fill	Small but subjectively distinctive group: perhaps cut vegetation and colonisers (no developed decomposer group)	Mostly inorganic, some organic detritus and a few phytoliths and fungal hyphae	1	2.0
8B	480	4	surface?	Small group including grain pests	Inorganic with a trace of organic detritus and a few ?phytoliths	3	0.5
8B	464.2	2	pit fill	A few grain beetles; other beetles rare. Many puparia.	Mostly organic detritus, much inorganic material, several phytoliths and a few each of: plant tissues, fungal hyphae, ?pollen, *Polypodium* spores	1	0.25 puparia *
8B	464.3	3	pit fill	Substantial assemblage of insects in large flot. Many puparia and mites. House fauna, grain pests and decomposers suggesting stable manure	Half organic detritus and half inorganic, 3 *Trichuris* eggs and a few fungal spores		sort 2.0 record 3.0 puparia * mites *
?	2	16	pit fill	Few remains; some bran	Matrix: mostly organic and much inorganic, very many ?diatoms and ?phytoliths, some fungal spores, a poorly preserved *Ascaris* egg, 2 *Trichuris* and 13 *?Trichuris*. Concretions: mostly inorganic, much organic detritus, 5 *Trichuris*, 7 *?Trichuris* and few ?diatoms and ?phytoliths	3	0.25
?	531.1	14	gulley fill	Very few insects	Mostly inorganic with a trace of organic detritus	3	0.25

Per	CN	SN	CT	Flot	Squash	P	T
?	531.2	15	gulley fill	Few insects; little potential but hints of aquatic influence. Much larger subsample needed for interpretation	Mostly inorganic, some organic detritus and a few phytoliths and diatoms	3	0.5
?	540.5	18	ditch fill	Many mites, several Aphodius and puparia. Larger subsample desirable	Mostly inorganic, a little organic detritus, 1 ?seed fragment, 4 *Polypodium* spores and a few fungal hyphae	2 L1	0.5 mites * L: process * record 2.0 puparia * mites *

TRENCH LAL-B

Per	CN	SN	CT	Flot	Squash	P	T
5A	280	25	slot fill	as Sample 25	-	3	1.0
5A	284	26	slot fill	as Sample 25	-	3	0.5
5A	286	27	slot fill	-	-		
6	275	24	soil layer	Charcoal and sand. A few identifiable insects. Preservation poor	-	3	1.0
8B	257	23	pit fill	Modest number of insects, some fragmented; ecologically mixed but probably worth identification	Mainly inorganic with a trace of organic detritus, a few phytoliths and a few plant tissue fragments	1	3.0 L: process * record 6.0
10C	222	22	gulley fill	Decayed plant matter including ?rootlets; trace of invertebrates	-	3	0.25
12A	163	17	soil layer	Charcoal, sand and earth balls. No invertebrates seen	-	0	0
?	171	18	soil layer	As 17, except some traces of cuticle and *?Heterodera*	-	0	0

TRENCH LAL-C

Per	CN	SN	CT	Flot	Squash	P	T
1-5	419	30	gulley fill	Very small flot, but some remains possibly identifiable	-	3	1.0
1-5	427	32	gulley fill	Charcoal, some hints of decayed cuticle; yellow and conceivably mineralised	-	0	0

Per	CN	SN	CT	Flot	Squash	P	T
2	459	35	soil layer	Sand, charcoal and lumps of sediment; trace of identifiable insect remains	-	3	0.5
2	460	36	soil layer	Charcoal, sand etc. but no invertebrates seen	-	0	0
2	462	37	soil layer	As Sample 36	-	0	0
4A	405	28	ditch fill	A few remains, some perhaps identifiable	-	3	0.5
4A	430	33	ditch fill	Rather fragmented remains in modest numbers; might produce some information	-	2	1.0
4A	430	34	ditch fill	A few remains; ?dung. Numbers borderline even if large subsample processed	-	2	1.0 L: process * record 3.0
5A	425	31	slot fill	Mostly charcoal and resistant plant remains; a few insect**	-	3	0.25
6	413	29	soil layer	A few beetles	-	3	0.5
7A-8B	375	26	gulley fill	Remains uncommon and oxidised. Grain pests and outdoor forms. Some puparia Larger subsample would be useful	-	1	2.0 L: process * record 6.0 puparia *
9A	380	27	burnt soil	-	-		
10A	290.1	15	pit fill	Small group of insects, perhaps stable manure; puparia. Larger subsample desirable	Mostly organic detritusa with some inorganic, many phytoliths, and a few diatoms and pollen grains/spores. One *Trichuris* egg was present	2 L1	1.0 puparia * L: process * record 2.0 puparia *
10A	295.1	16	pit fill	Rather large assemblage; many and varied puparia, mites, grain pests, synanthropic decomposers of rather foul matter. Various outdoor forms. Probably stable manure	Half organic and half inorganic with a few fungal spores and hyphae	1	4.0 puparia * mites *
10A	302	17	pit fill	Reminiscent of Sample 15. Interpretation uncertain; similar comments apply	50% organic and 50% inorganicwith a few diatoms and several phytoliths	2 L1	0.5 L: process * record 2.0 puparia *

Per	CN	SN	CT	Flot	Squash	P	T
10A	329	19	pit fill	As 15 and 17	50% organic and 50% inorganic with a few phytoliths, fungal hyphae and plant tissue fragments	2 L1	0.5 L: process * record 2.0 puparia *
10B	334	21	pit fill?	Modest numbers of remains; hints of natural community perhaps from moss or turf, plus 'stable manure' elements. Larger subsample desirable	Mostly organic detritus with some inorganicmatter and many fragments of plant tissue	1	2.0 L: process * record 4.5 Inspect residue for peat
10B	336	23	pit fill	Much fine plant debris, so hard to assess or record. Few insects	-	2	sort 3.0 record 1.0
10D	168	10	soil layer	Traces of cuticle, some identifiable; large washover so time-consuming to examine	-	3	1.0
10D	262	14	soil layer	Only scraps of insect cuticle, some identifiable	-	3	0.5

TRENCH LAL-D

Per	CN	SN	CT	Flot	Squash	P	T
2	1481	42	soil layer	Small number of fossils	-	3	0.5
3	1504	43	post hole fill	Charcoal and sediment balls; traces of cuticle, some perhaps identifiable	-	3	0.5
4A	1377	10	surface?	A few scraps of cuticle only	-	0	0
4A	1382	39	surface?	A few insects	-	3	0.5
4A	1423.1	40	construction trench fill	Very oxidised remains. Small ecologically mixed group. Further processing might produce useful group but low priority feature type	-	2	1.5
4A	1423.3	41	construction trench fill	Wood fragments, sediment balls; only scraps of invertebrate remains	-	0	0
4B	1086	4	destruction layer	Trace of cuticle in a mass of sediment balls	-	0	0
4B	1353	9	soil layer	Trace flot; 2-3 identifiable insects including a bug nymph	-	3	0.5

Per	CN	SN	CT	Flot	Squash	P	T
4C	1357	8	pit fill	Flot quite large. Small number of decomposers, with hints of foul matter, perhaps first colonisers. Grain pests, *Daphnia*. Larger subsample would be helpful	Half organic detritus and half inorganic. Many fungal spores, several phytoliths and a few diatoms. One ?modern arthropod, a single poorly preserved *?Trichuris* and a few fragments of plant tissue	1	sort 1.0 record 1.0 L: process * record 3.0
5A	1269	5	slot fill	Great variety of insects in small numbers; perhaps rapidly cleared stable manure?	-	1	4.0
6	1249	3	soil layer	Flot quite large, consisting of plant fibres so difficult to work with. *Cassida*; aquatics; soil or dung?	The matrix consisted mostly of organic detritus with much inorganic detritus, several phytoliths, a few diatoms, pollen grains/spores, fungal spores and hyphae. Two eggs of *Trichuris* and one of *Ascaris* were present. The concretion was mostly organic detritus with a little inorganic and a few fungal hyphae	1	sort 2.0 record 3.0
6	1267	6	pit fill	Modest-sized assemblage; grain pests, decomposers, hints of stable manure. Many puparia. Larger subsample would be helpful	Mostly inorganic, with much organic detritus, a few phytoliths and five eggs of *Trichuris*	1	2.0 puparia * L: process * record 4.0 puparia *
10A	1021	30	soil layer	Group of limited size, beetles rotted; puparia, elaterid larva. Perhaps soil and deserves study	-	1	3.0 puparia*
10B	1017	29	turf layer	Fragmented, rather rotted, remains in moderate numbers; subjectively resembles fossils in soil. *?Heterodera* cysts. Clearly worth examining carefully even if normal listing impossible	-	1	4.0
pre-11B	1016.7	45	well fill	Very large flot; chlorophyll products extracted into alcohol. Numerous puparia, modest group of beetles (only part examined)	75% organic, 25% inorganic, many fungal spores, some fungal hyphae, fragments of plant tissue, some pollen and a few *Polypodium* spores	1	sort 4.0 record 5.0 puparia *
11D	232.6	32	well fill	Insects quite abundant; grain pests and other synanthropes, with some decomposers and hints of imported vegetation. Larger subsample would be useful	Mostly inorganic with much organic detritus, a few fungal spores and hyphae, several phytoliths, a few diatoms and a few fragments of plant tissue	1	3.0 L: process * record 7.0 puparia *

Per	CN	SN	CT	Flot	Squash	P	T
11D	232.12	37	well fill	Grain pests, domestics and decomposers; *Palorus* unusually numerous. Some novel puparia. Perhaps stable manure. Larger subsample would be useful	-	1	3.0 puparia * L: process * record 6.0 puparia *
11D	232.17	12	well fill	Beetles rather numerous, but mostly grain pests; decomposers, house fauna (including *Blaps* and *Trox*)	-	1	6.0
11D	232.19	15	well fill	Grain pests, house fauna, many puparia, flea; substantial group	Mostly organic detritus with much inorganic, a few fungal spores and hyphae, two *Polypodium* spores and several plant tissue fragments	1	6.0 puparia *
11D	232.20	16	well fill	Abundant puparia; beetles suggest stable manure (including soft *Apion*). Chlorophyll extraction noted	Half organic and half inorganic, some fungal hyphae, a few fungal spores and some diatoms	1	5.0 puparia *

Table 6. Period summaries. Key: AQ - Archaeological questions (based on information provided by the excavator); FA - features from which assessed samples were taken; IP - interpretative potential; PD - period description (based on information provided by the excavator)

Period	**Date**	**PD**	**FA**	**AQ**	**IP**
1-5	1st century	various poorly-stratified features	2 pitfill 2 gulley fill (possibly pre-Roman)	any evidence of pre-Roman activity	pitfills could define depositional conditions; gulley fills no value
2	1st-early 2nd century?	?old ground surface	5 soil layer	manner of accumulation, ground conditions/local habitat at time of deposition	at best only a few insects
3	late first century	north-south ditch - possibly military (?marching camp)	2 ditch fill post-hole fill	manner of accumulation, ground conditions/local habitat at time of deposition	sparse assemblages from ditch fills; nothing significant from post-hole fill
4A	Hadrianic/early Antonine	large timber building - ?praetorium	5 ditch fill trench fill ?surface deposits	nature of occupation	some potential from some of the ditch fills; trench fill no potential. Possibly grazing land nearby
4B	Hadrianic/early Antonine	destruction of *praetorium* by fire	soil layer	?	no potential
4C	Hadrianic/early Antonine	immediately post-dating destruction of *praetorium*	pitfill	?	foul, possibly stable manure
5A	Hadrianic/early Antonine	complex of rectilinear timber buildings	5 slot fill	nature of buildings (?military)	little potential - only one had hints of stable manure
5B	Hadrianic/early Antonine	perhaps partial re-build of Period 5A complex	slot fill	?	no invertebrates found
5A-B	Hadrianic/early Antonine	4 pits and a couple of smaller features	2 pitfill	?	hint of stable manure, decomposers - odd mixture with some possibilities
6	Hadrianic/early Antonine	dark soils directly sealing Period 5 slots	6 soil layer pitfill	manner of accumulation ?dumping	interpretation not generally clear for soil layers but definitely worth pursuing; pitfill possibly contained stable manure
7A-8B	early Antonine?	a few stratigraphically isolated features	gulley fill	nature of micro-environment within this feature (wet/dry?)	some potential

Period	**Date**	**PD**	**FA**	**AQ**	**IP**
7B	early Antonine?	a few stratigraphically isolated features	gulley fills pit fills soil layers surface deposits	nature of micro-environment and manner of accumulation	some samples have considerable potential for determining ecological conditions in pits and ditches
7B-8A	early Antonine?	3 large intercutting pits and a few 'levelling deposits' over the pits	2 pitfill	character of fills (rubbish/cess-pits?) possibly associated with large (?high status) timber building	considerable potential (hints of stable manure)
7-9B	Antonine	large, timber building - *temple* or *mansio*	-	?	_
8A	Antonine?	soil accumulation over the Period 7B building followed by construction of metalled paths or lanes plus soils, gullies and other minor features	surface layer	?	no potential
8B	Antonine (2nd half 2nd century)	accumulation of soils, some pits, a gulley, ?land-drain and gravelled area (possibly forecourt of *temple/mansio*)	14 pitfill	character of fills (rubbish/cess-pits?) possibly associated with large (?high status) timber building	interpretation not clear but definitely potential for further work - rather mixed ecologically
8B-9	Antonine (2nd half 2nd century)	miscellaneous features - pits, gullies, soil layers	gulley fill pitfill	?	possibility of stable manure
9A	Antonine	levelling over pitted area of Period 8B, construction of 1 and probably 2 clay-floored timber structures	soil layer charcoal layer	character of gulley (wet/dry?) and of soil build-up over 8B pits (possibly dumped)	further work recommended on these deposits to define environment
9C	late Antonine (last quarter 2nd century?)	demolition of *temple/mansio* followed by cutting of various features	pitfill	?	ecologically mixed but some potential
10A	late 2nd century	construction of and primary occupation within, a timber "strip-building"	4 pitfill soil layer	character of fills and dark soil accumulation	pitfills probably worth pursuing; soil layer also useful
10B	late 2nd - ?early 3rd century	structural phase in both Period 10A buildings and re-surfacing of metalled area	2 pitfill turf layer	character of micro-environment, manner of accumulation of external soil deposits	possibilities for interpretation of pitfills include turf, stable manure and litter; turf layer also useful

Period	**Date**	**PD**	**FA**	**AQ**	**IP**
10C	late 2nd century +	rectangular building on clay and cobble post-pads	gulley fill	character of micro-environment	limited potential
10D	late 2nd century +	rectangular timber building, soils, metalled paths, continued use of two Period 10A/B buildings, disuse of Period 10C structure	2 soil layer	manner of accumulation of external soil deposits	no potential
10E-11A	late 2nd century +	poorly stratified pits	pitfill	character of micro-environment	barren
pre-11B	2nd century	barrel-lined well	well fill	character of micro-environment	very useful
11D	late 3rd-early 4th century	infilling of shaft of Period 11D stone-lined well	well fill	(?compare and contrast assemblages from each of 'spits' within well-fill)	very useful
12A	2nd half 4th century	accumulation of dark soils over latest floors in Keays Lane stone 'townhouse' and disuse of hypocaust	occupation silt hypocaust soil layer	manner of accumulation/ground conditions/possible nature of latest occupation	none of these samples had any potential
12B	2nd half 4th century +	similar to 12A, possible 'squatter' occupation in stone building, some metalled surfaces, accumulation of rubbly dark soils	?building debris	?	NFA
post-Roman	post-Roman	disturbed late Roman/post-Roman interface	pitfill gulley fill decayed wood organic deposit pitfill soil layer	?	gulley fill and soil layer were barren but other deposits have potential