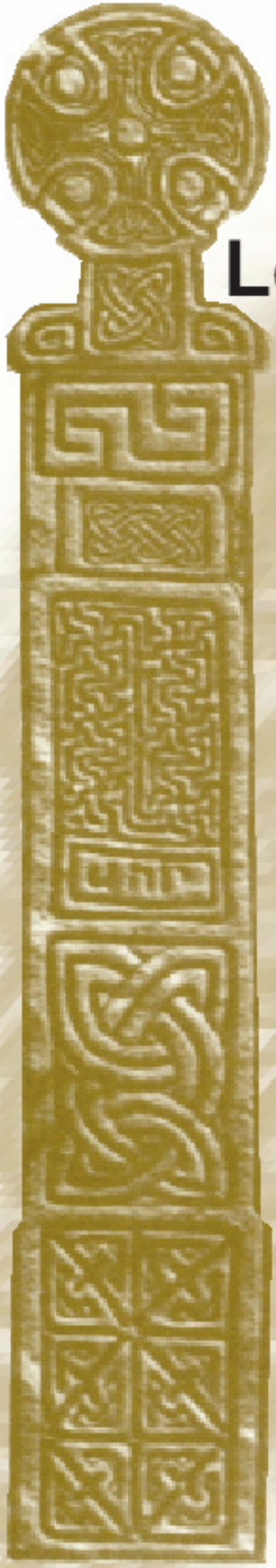


Ledbury Trunk Main

Archaeological Programme of Works

Appendices

PART FIVE: Appendices 1 - 16

- Appendix 1: DCWW/LOR Scheme maps
- Appendix 2: Results of open-cut trenching & directional drilling access pits observations
- Appendix 3: Context registers & accompanying Harris matrices for access pits (APs) 1-13
- Appendix 4: Pottery
- Appendix 5: Pottery drawings
- Appendix 6: Samian rubbings
- Appendix 7: Glass
- Appendix 8: Metalwork
- Appendix 9: Coins
- Appendix 10: Bone Artefacts
- Appendix 11: The Coffin
- Appendix 12: Flint
- Appendix 13: Shell & Bone
- Appendix 14: Wood Technology
- Appendix 15: Geoarchaeology
- Appendix 16: Plant macrofossil assessments & human bone analysis

APPENDIX 1 – DCWW/LOR Scheme Maps

Fig. 1.1: DCWW / LOR Scheme Map 1

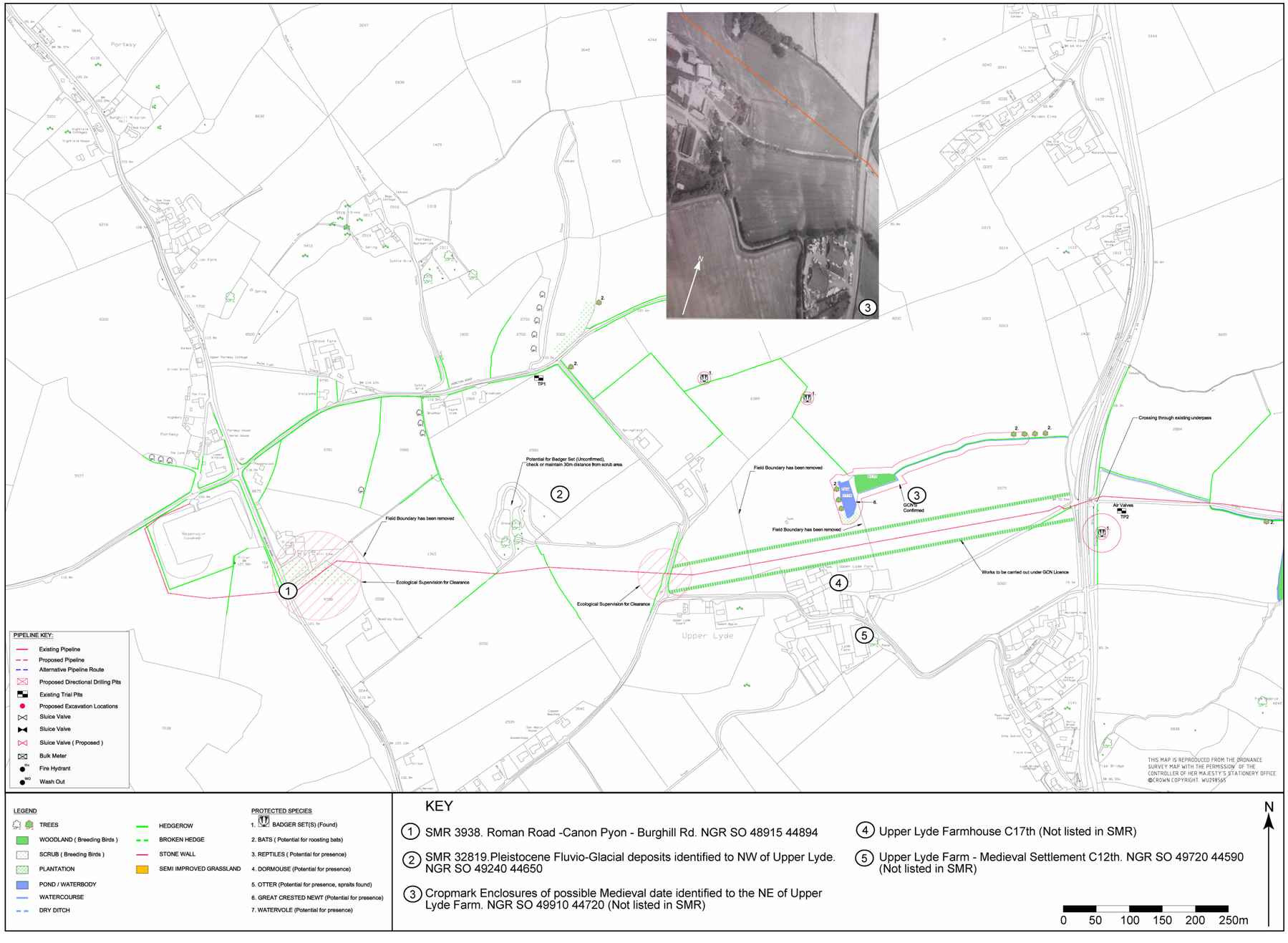


Fig. 1.2: DCWW / LOR Scheme Map 2

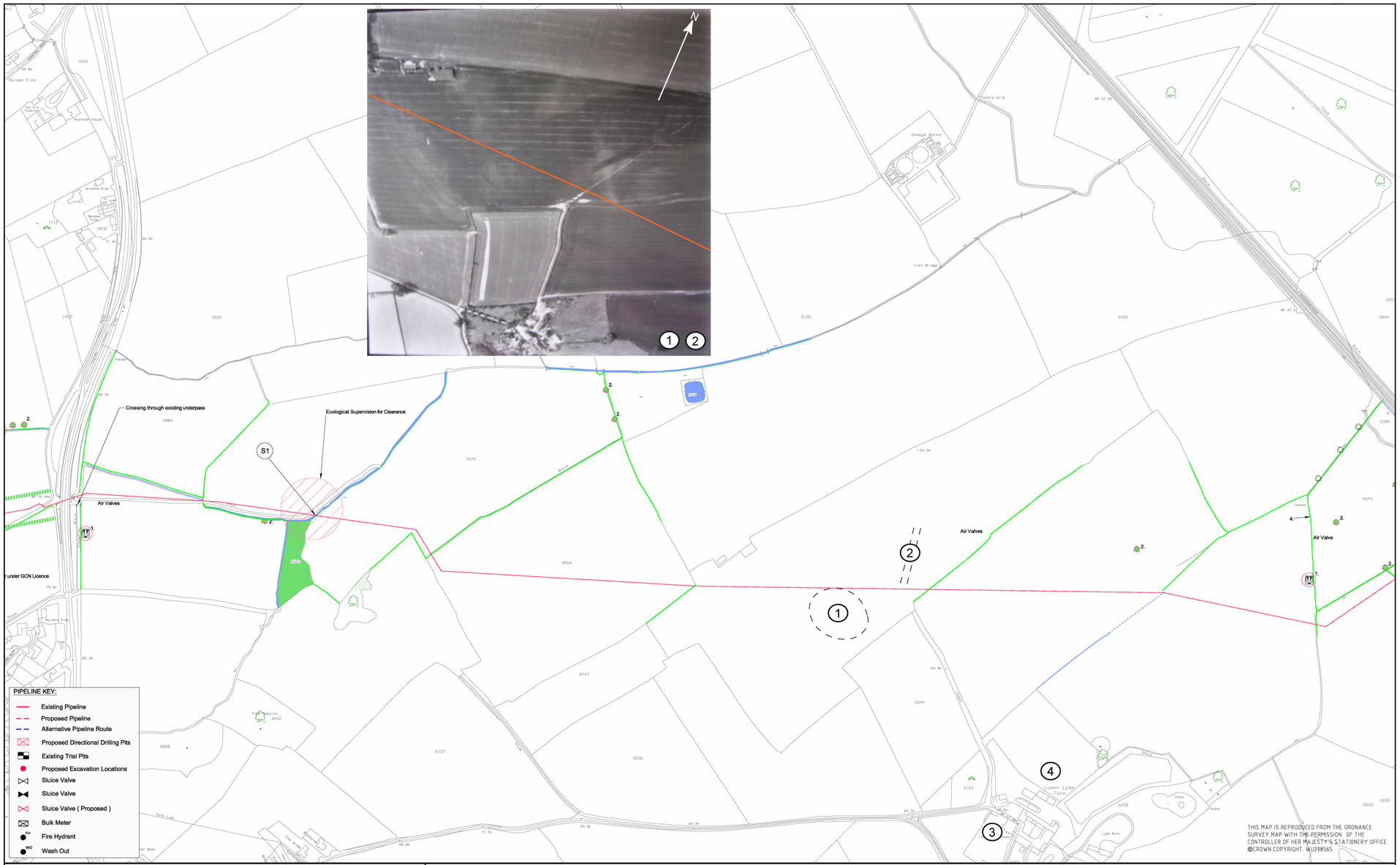


Fig. 1.3: DCWW / LOR Scheme Map 3

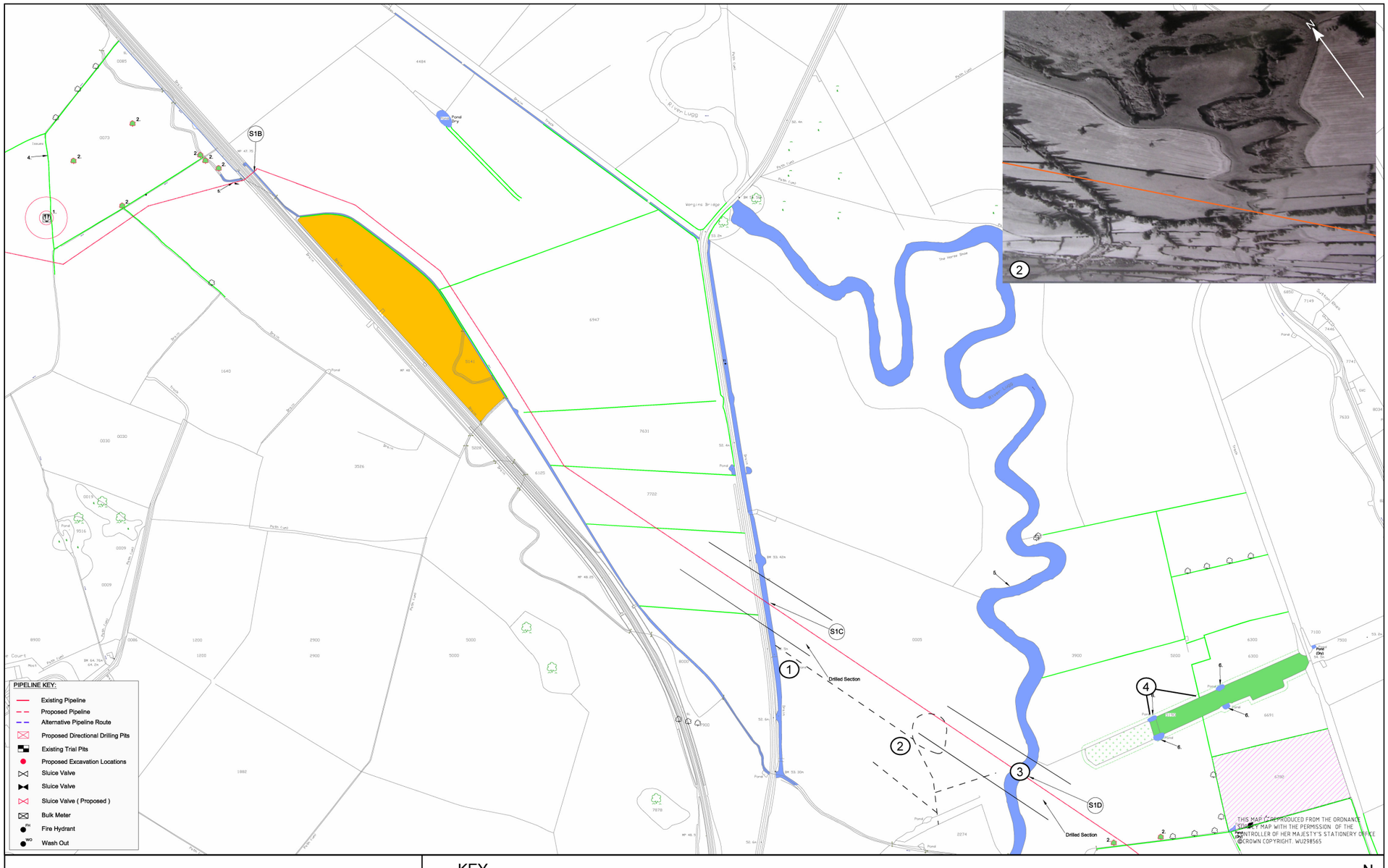


Fig. 1.4: DCWW / LOR Scheme Map 4

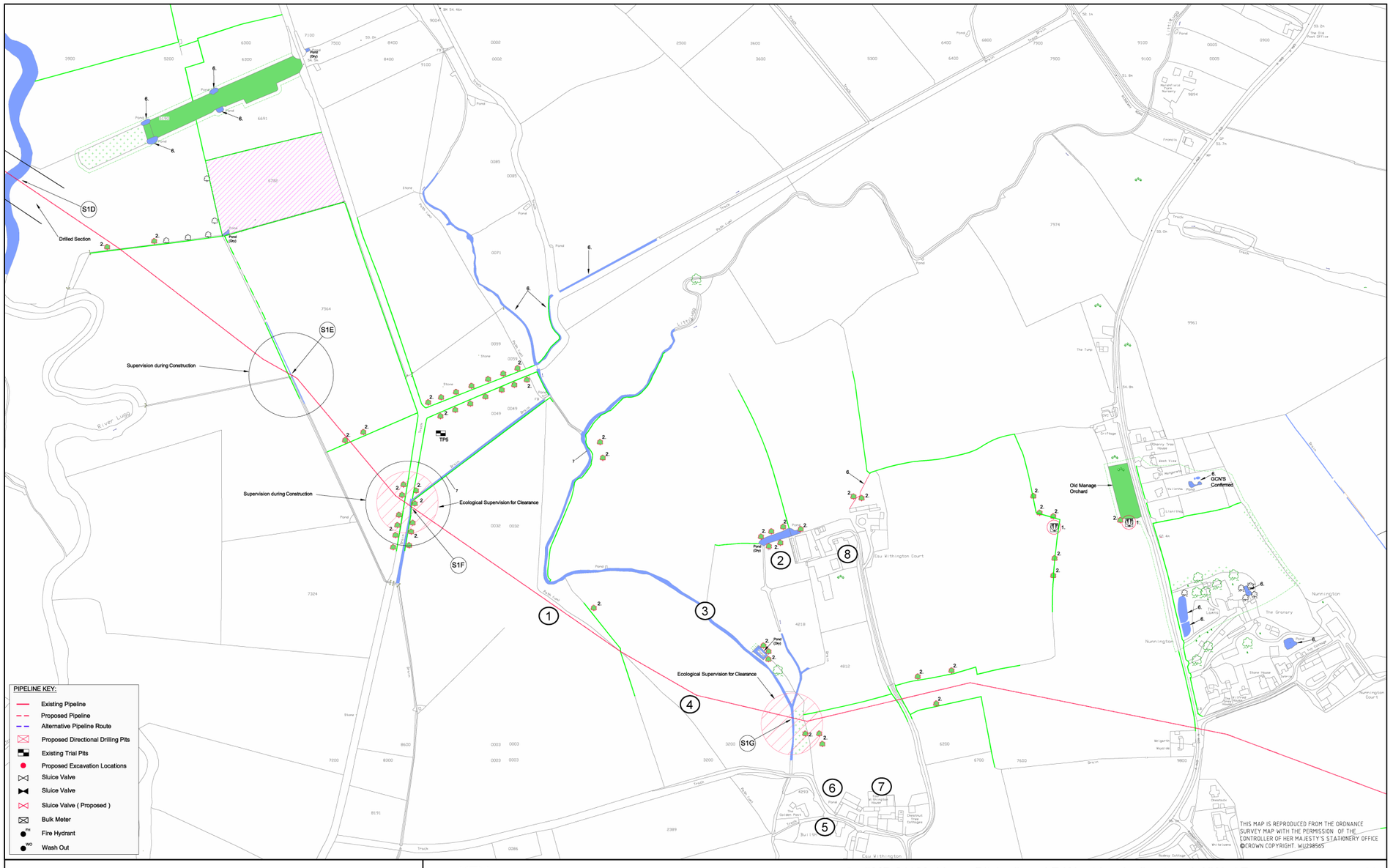
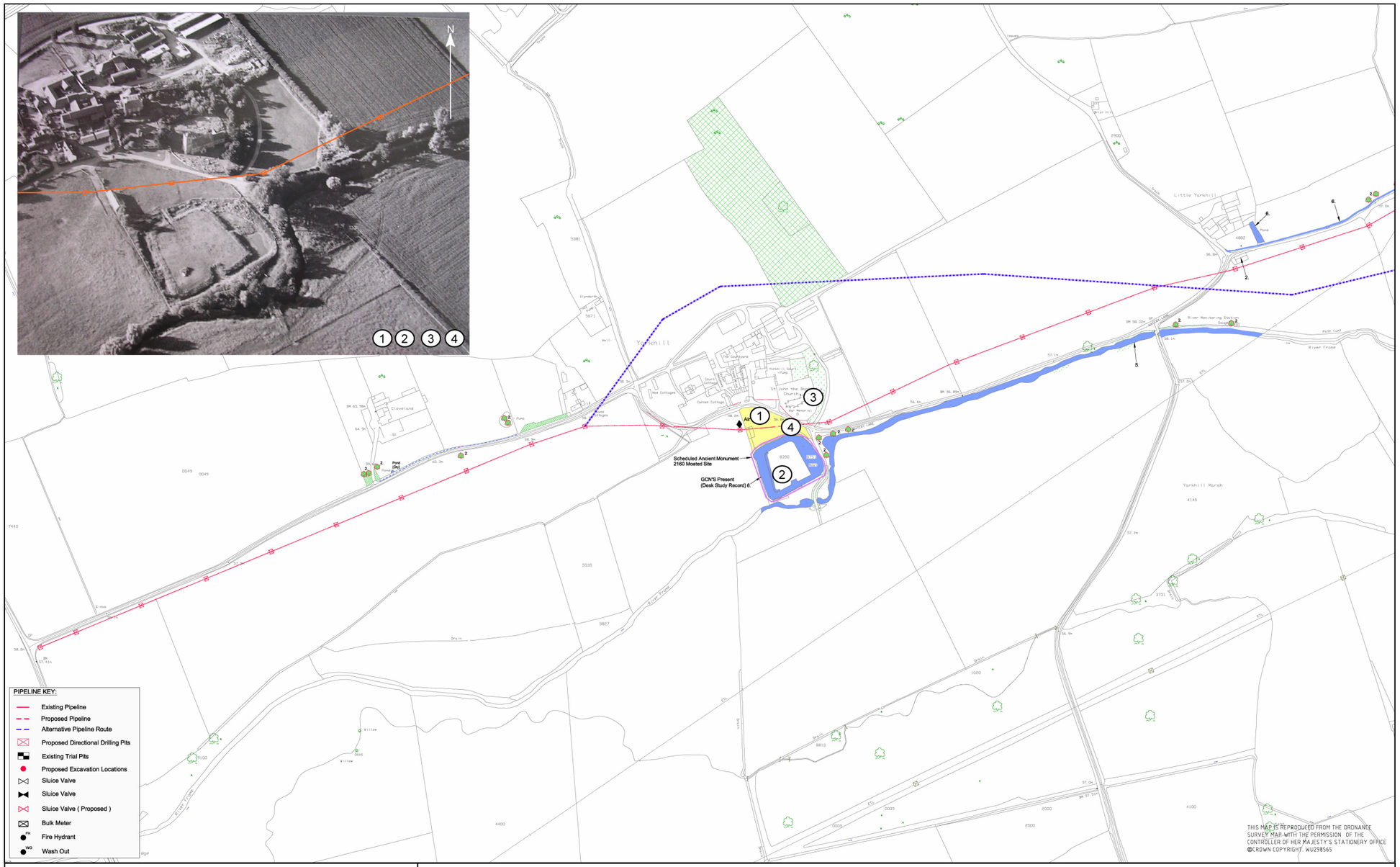


Fig. 1.5: DCWW / LOR Scheme Map 5

Fig. 1.6: DCWW / LOR Scheme Map 6



LEGEND

- TREES
- WOODLAND (Breeding Birds)
- SCRUB (Breeding Birds)
- PLANTATION
- POND / WATERBODY
- WATERCOURSE
- DRY DITCH
- HEDGEROW
- BROKEN HEDGE
- STONE WALL
- SEMI IMPROVED GRASSLAND
- SCHEDULED ANCIENT MONUMENT

PROTECTED SPECIES

1. BADGER SET(S) (Found)
2. BATS (Potential for roosting bats)
3. REPTILES (Potential for presence)
4. DORMOUSE (Potential for presence)
5. OTTER (Potential for presence, sprails found)
6. GREAT CRESTED NEWT (Potential for presence)
7. WATERVOLE (Potential for presence)

KEY

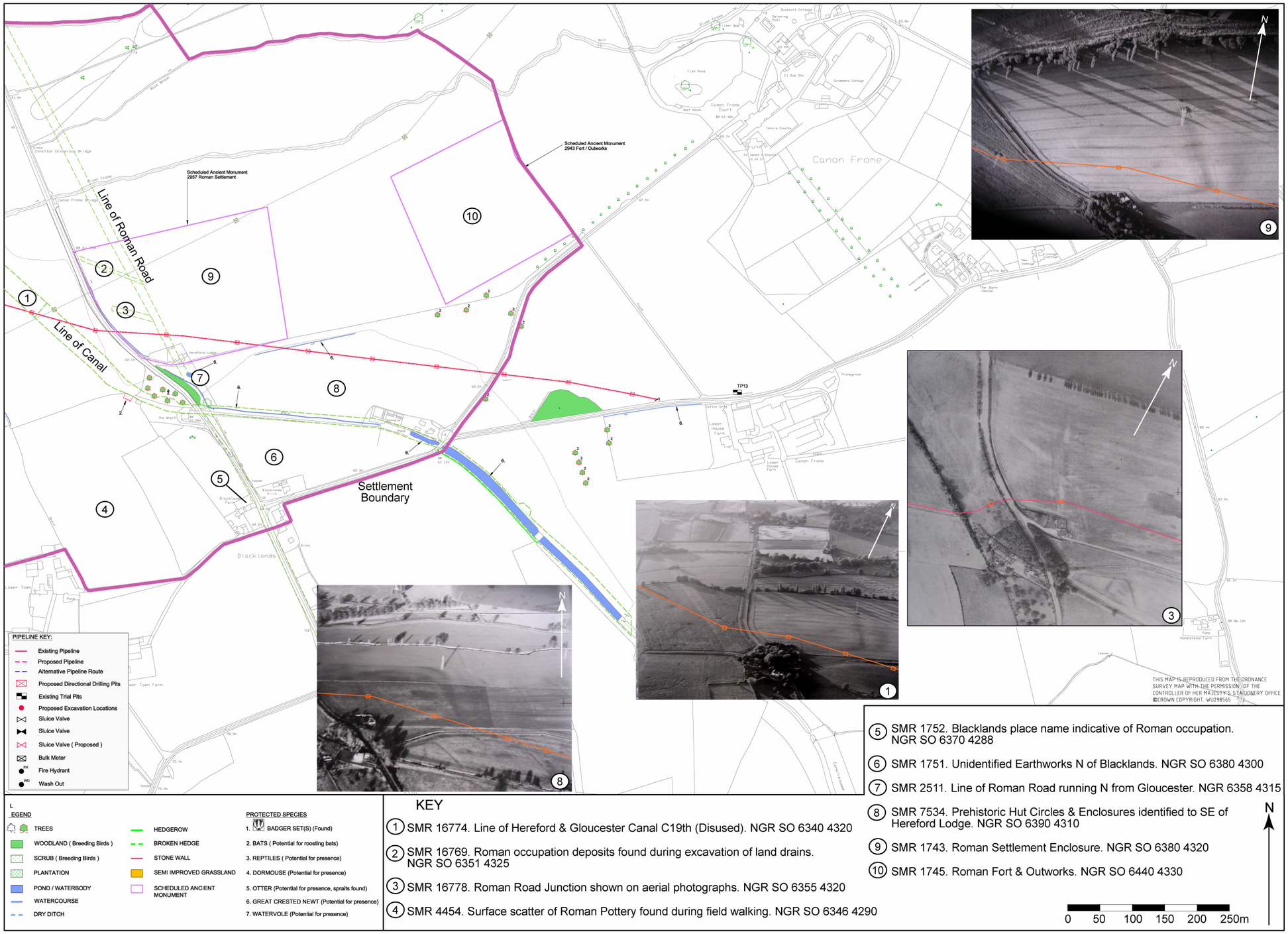
1. Earthworks identified in field to N of Moated site. NGR SO 6079 4255 (Not listed in SMR).
2. SMR 1581. Yarkhill Medieval Moated site C12th-13th. NGR SO 6083 4250. SAM Herefordshire 179
3. SMR 6858. Yarkhill St John the Baptist Church C12th-13th. NGR SO 6085 4259
4. SMR 1755. Romano-British occupation site at Yarkhill. NGR SO 6080 4250

N

0 50 100 150 200 250m

Fig. 1.7: DCWW / LOR Scheme Map 7

Fig. 1.8: DCWW / LOR Scheme Map 8



APPENDIX 2 – Results of open-cut trenching and directional drilling access pits observations

Table 2.1: DCWW / LOR Scheme Map 1

Date	Location	Grid ref/pit or section no.	Description	Results
15-05-07	A4110 road crossing (northbound carriageway) outside 'The Willows' Portway	SO 48898 44609 to SO 48904 44612	Tarmacadam road surface >> sub-base of large scalpings >> firm red sandy clay, frequent small and medium stones	NAI
16-05-07	A4110 road crossing (southbound carriageway) outside 'The Willows' Portway	SO 48904 44612 to SO 48917 44611	Tarmacadam road surface >> sub-base >> firm red sandy clay, frequent small stones	NAI
21-05-07	Road crossing, *c.* 50 S of 'Appletree Cottage'	SO 49493 44641 to 49502 44644	Tarmacadam road surface >> sub-base >> firm mid reddish-brown sandy clay, occasional large sandstone fragments >> moderately compact subangular stone	NAI
21-05-07	Immediately W of lane to Upper Lyde Farm, 80m S of 'Appletree Cottage'	SO 49487 44656 to SO 49485 44645	Loose to moderately compact mid reddish-brown sandy clay, frequent small & medium subangular stones, occasional pottery fragments >> band of degraded greenish sandstone >> moderately compact to firm reddish-brown sandy clay, frequent medium to large sandstone fragments	NAI
24-05-07	Bewdley Bank covered reservoir, adjacent to rear fence	SO 48695 44698	Topsoil >> moderately compact red sandy clay, frequent subangular stones >> moderately compact dark brown	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			sandy gravel, frequent small stones	
25-05-07	E-W trenching to N of Bewdley Bank reservoir, within compound, 12m of trenching running E	SO 48701 44706 to SO 48707 44718	Topsoil >> moderately compact red sandy, frequent small stones >> moderately compact reddish-brown clay, occasional small subangular stones	NAI
30-05-07	E-W trenching within reservoir compound running parallel to unclassified road leading to Burghill, 12 m of trenching running ENE	SO 48707 44718	Topsoil >> moderately compact red sandy clay, frequent small stones >> moderately compact red clay, occasional small stones	NAI
31-05-07	E-W trenching parallel to unclassified lane leading to Burghill, within reservoir compound, 12m of trenching running ENE	SO 48720 44720 to SO 48731 44727	Topsoil >> moderately compact red sandy clay, frequent small stones >> moderately compact red clay, occasional small subangular stones	NAI
01-06-07	E-W trenching parallel to unclassified lane to Burghill, within reservoir compound, 12m of trenching running ENE	SO 48731 44727 to SO 48737 44737	Topsoil >> moderately compact reddish sandy clay, frequent small stones >> moderately compact reddish-brown clay, occasional small stones	NAI
04-06-07	Trenching within reservoir compound running W from gates, 66m of trenching running E	SO 49491 44639 to SO 49408 44637	Topsoil >> moderately compact red sandy clay, frequent small stones >> moderately compact dark red sandy clay, occasional small stones	NAI
05-06-07	Trenching within compound running E from gates, 36m of trenching extending E	SO 49408 44637 to SO 49318 44644	Topsoil >> moderately compact red sandy clay, frequent small stones	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
06-06-07	Immediately to S of gravel pit, 102m of trenching extending E	SO 49282 44647 to SO 49182 44636	SO 49282 44647 to SO 49234 44634: Dark brown friable sandy clay >> moderately compacted mid red sandy clay, frequent large stones SO 49234 44634 to SO 49182 44636: Dark drown friable sandy clay >> moderately compacted mid red sandy clay >> sandstone	NAI
07-06-07	Approximately 50m W of gravel pit, 150m of trenching extending WNW	SO 49182 44636 to SO 49030 44651	Friable dark brown sandy clay >> moderately compacted mid red sandy clay, occasional small subangular stones	NAI
07-06-07	In field immediately SW of gravel pit & 100m E of A4110, 25m of trenching running E	SO 49145 44606 to SO 49169 44607	Loose mid reddish-brown sandy clay, frequent small and medium angular and subangular stones, occasional post-medieval ceramics >> moderately compact light to mid brown sandy clay, frequent small and medium angular and subangular stones >> moderately compacted to firm dark reddish-brown sandy clay, frequent small and medium angular and subangular stones	NAI
08-06-07	Field to rear of Bewdley House, *c.* 20m S of N field boundary & *c.* 80m E of A4110, 54m of trenching running W	SO 49030 44651 to SO 48977 44652	Friable dark brown sandy clay >> moderately compacted mid red sandy clay, occasional small subangular stones	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
11-06-07	Approximately 120m N of Bewdley House & 80m E of A4110, adjacent to NE-SW field boundary	SO 48977 44652	Friable dark brown sandy clay >> moderately compacted dark red sandy clay, occasional small subangular stones >> firm mid red sandy clay	NAI
11-06-07	Approximately 20m SW of above, adjacent to NE-SW field boundary, 24m of trenching running E	SO 48962 44638 to SO 48966 44634	Friable dark brown organic sandy clay, occasional CBM and small subangular stones >> moderately compacted mid red sandy clay, occasional small subangular stones	NAI
11-06-07	'Hill View' adjacent to entrance, 12m of trenching running ENE	SO 48916 44610 to SO 48926 44623	Friable dark brown sandy clay, frequent small subangular stones, occasional CBM >> cinder deposit >> moderately compacted mid red sandy clay, occasional large sandstone, CBM	NAI
12-06-07	'Hill View' adjacent to garden fence, 30m of trenching extending ENE	SO 48926 44623 to SO 48959 44641	Friable dark brown sandy clay >> soft dark reddish-brown silty clay, frequent CBM, Fe, slate, stone, asbestos pieces & bottles	NAI
13-06-07	To rear of covered reservoir, Bewdley Bank, 54m of trenching running ESE	SO 48688 44703 to SO 48700 44657	Moderately compacted mid red sandy clay >> friable dark brown silty clay >> moderately compacted dark reddish-brown sandy clay, occasional small subangular stones	NAI
13-06-07	Rear of Bewdley Bank reservoir, adjacent to metal perimeter fencing	SO 48631 44711	Friable mid red sandy clay, frequent small subangular stones >> moderately compacted dark	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			brownish-red sandy clay, occasional small stones	
14-06-07	To rear of covered reservoir, Bewdley Bank, 60m of trenching running SSE	SO 48700 44657 to SO 48721 44604	Moderately compacted reddish-brown sandy clay >> moderately compacted dark brown silty clay, frequent gravel inclusions >> firm dark reddish-brown sandy clay, occasional small rounded stones	NAI
14-06-07	In field at SW perimeter of covered reservoir, Bewdley Bank	SO 48720 44610	Firm mid reddish-brown sandy clay, occasional small rounded stones >> friable dark brown gravelly deposit >> firm dark red clayey sand	NAI
14-06-07	In field at SW corner of perimeter of covered reservoir, Bewdley Bank, 18m of trenching heading E	SO 48724 44604 to SO 48737 44602	Firm yellowish / brownish-red sandy clay, occasional small rounded stones >> loose gravel deposit >> firm dark red sandy clay	NAI
15-06-07	Continuation of previous section, 1.9m extension running N	SO 48738 44601	Firm yellowish / brownish-red sandy clay, occasional small rounded stones >> loose gravel deposit >> firm dark red sandy clay	NAI
18-06-07	Approximately 60m W of A4110 & 30m S of reservoir perimeter, 36m of trenching running E	SO 48738 44601 to SO 48830 44603	Friable dark brownish-red sandy clay, occasional small subangular stones >> moderately compacted mid red sandy clay, occasional small subangular stones	NAI
18-06-07	Approximately 100m W of A4110 & 25m S of reservoir perimeter, 30m of	SO 48794 44602 to SO 48830 44603	SO 48794 44602 to SO 48830 44603: Moderately compacted dark	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
	trenching extending E towards A4110		brownish-yellow sandy clay, occasional small rounded stones >> moderately compacted dark reddish-brown sandy clay SO 48830 44630 to SO 48830 44603: Moderately compact dark brownish-red sandy clay, occasional small subangular stones >> firm mid red sandy clay, occasional small subangular stones	
19-06-07	In field immediately to W of lay-by on A4110 & *c.* 50m S of reservoir, 54m of trenching running NNW	SO 48897 44608 to SO 48859 44663	Friable dark brownish-red sandy clay, frequent small subangular stones >> moderately compacted dark red sandy clay, frequent small subangular stones	NAI
20-06-07	Approximately 25m W of A49 & 50m N of underpass, 36m of trenching running WSW	SO 50108 44776 to SO 50088 44756	Moderately compacted mid red sandy clay, occasional small rounded stones >> moderately compacted light bluish-grey clay	NAI
21-06-07	Approximately 40m W of A49 & 50m N of track leading to Upper Lyde Farm, 108m of trenching extending W	SO 50088 44756 to SO 49975 44752	Moderately compacted mid red sandy clay, occasional small stones >> moderately compact light bluish-grey clay	NAI
22-06-07	Approximately 150m W of A49 & 50m N of trackway to Upper Lyde Farm, 60m of trenching running SW	SO 49975 44752 to SO 49909 44719	Friable mid red sandy clay, frequent small rounded stones >> moderately compacted dark orangey-red clay, occasional medium subangular stones	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
26-06-07	Approximately 220m W of A49 & 300m NE of Upper Lyde Farm, 54m of trenching heading WSW	SO 49909 44719 to SO 49808 44694	SO 49909 44719 to SO 49865 44708: Friable mid red sandy clay, frequent small subangular stones >> sandstone >> firm bluish-grey sandy clay, occasional small subangular stones SO 49865 44708 to SO 49808 44694: Friable mid red sandy clay, occasional small stones >> moderately compact orangey sandy clay, bluish-grey inclusions >> firm mid red sandy clay, no inclusions	NAI
27-06-07	Approximately 100m NE of Upper Lyde Farm farmhouse, 108m of trenching extending WSW	SO 49308 44694 to SO 49706 44662	Friable mid red sandy clay >> moderately compacted mid reddish-brown sandy clay, occasional small subangular stones	NAI
28-06-07	Approximately 25m N of Upper Lyde Farm farmhouse, 12m of trenching running W	SO 49706 44662 to SO 49603 44646	SO 49706 44662 to SO 49614 44649: Friable mid red sandy clay, frequent small rounded stones >> moderately compacted mid reddish-brown sandy clay, occasional small subangular stones. SO 49614 44649 SO 49603 44646: Friable mid red sandy clay, frequent small rounded stones >> sandstone >> moderately compacted mid reddish-brown sandy clay	NAI
29-06-07	Approximately 125m W of Upper Lyde	SO 49603 44646 to	Friable mid red sandy clay, frequent small	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
	Farm farmhouse, 36m of trenching extending W	SO 49562 44642	rounded stones >> moderately compacted reddish-brown sandy clay, occasional small subangular stones >> sandstone	
02-07-07	On lane *c.* 200m W of Upper Lyde Farm farmhouse, 48m of trenching running E	SO 49500 44641 to SO 49566 44647	Moderately compacted mid red sandy clay, frequent small stones >> moderately compacted orangey-red sandy clay, occasional small stones	NAI
03-07-07	In field immediately to E of A49, 72m of trenching extending E	SO 50172 44750 to SO 50246 44748	Moderately compacted reddish-brown sandy clay, occasional small rounded stones >> moderately compacted dark red sandy clay, greyish-blue inclusions, occasional small subangular stones	NAI
04-07-07	Approximately 50m E of A49 & 20m N of trackway running under A49, 48m of trenching extending E	SO 50246 44748 to SO 50284 44744	Moderately compacted reddish-brown sandy clay, occasional sandstone >> moderately compacted dark red sandy clay, light blue inclusions	NAI
05-07-07	On trackway *c.* 60m E of underpass, 36m of trenching heading E	SO 50284 44744 to SO 50318 44739	Firm reddish-brown clay, frequent small subangular stones, hardcore & CBM >> moderately compacted brownish-red clay, occasional small subangular stones	NAI
06-07-07	Pit located approximately 90m E of underpass on trackway near culvert	SO 50337 44740	Firm reddish-brown clay, frequent small subangular stones & hardcore >> moderately compacted brownish-	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			red clay, occasional large sandstone fragments	
09-07-07	On trackway *c.* 100m E of underpass, 6m of trenching running E	SO 50328 44739 to SO 50404 44731	Compact aggregate >> moderately compacted reddish-brown sandy clay, occasional small subangular stones >> moderately compacted yellowish-brown sandy clay	NAI

Table 2.2: DCWW / LOR Scheme Map 2

Date	Location	Grid ref/pit or section no.	Description	Results
10-07-07	Immediately N of trackway 125m E of underpass, 60m of trenching heading E	SO 50404 44731 to SO 50457 44724	Compact aggregate >> moderately compact reddish-brown sandy clay, occasional small subangular stones >> moderately compacted yellowish-brown sandy clay	NAI
11-07-07	Approximately 170m E of A49 underpass adjacent to brook, 84m of trenching running ESE	SO 50505 44715 to SO 50699 44707	Friable reddish-brown sandy clay, frequent small subangular stone >> friable mid red sandy clay with bluish-grey inclusions, frequent small subangular stones	NAI
12-07-07	In field to S of brook 70m SE of brook crossing, 84m of trenching running SW	SO 50699 44707 to SO 50655 44661	SO 50699 44707 to SO 50628 44703: Loose reddish-brown sandy clay, frequent small subangular stones >> friable yellowish-red sandy gravel with light bluish-grey deposits. SO 50628 44703 to SO 50655 44661: Compact aggregate, CBM & light brown sandy clay >> moderately	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			compacted dark brown sandy clay, occasional small subangular stone, CBM	
16-07-07	In field S of brook 200m SSE of brook crossing, 78m of trenching running ESE	SO 50655 44661 to SO 50736 44643	Moderately compact light yellowish-brown sandy clay, occasional small stones >> moderately compact mid reddish-brown sandy clay, frequent gravel inclusions	NAI
17-07-07	In field S of brook 250m SSE of brook crossing, 132m of trenching extending E	SO 50736 44643 to SO 50863 44639	Moderately compact light yellowish-brown sandy clay, occasional small stones >> moderately compact reddish-brown sandy clay, frequent gravel inclusions	NAI
18-07-07	Close to field boundary, 450m SE of brook crossing, 144m of trenching heading E	SO 50863 44639 to SO 51024 44643	Moderately compact light yellowish-brown sandy clay, occasional small stones >> firm reddish-brown sandy clay, no inclusions	NAI
19-07-07	Into adjacent field to SE, *c.* 650m SE of brook, trenching began at hedge boundary adjacent to drainage ditch, 126m excavated extending ESE	SO 51024 44643 to SO 51130 44627	SO 51024 44643 to SO 51036 44624: Moderately compact light brown sandy clay, frequent small stones >> moderately compact dark red sandy clay, frequent rounded stones. SO 51042 44628 to SO 51130 44627: Moderately compact light brown sandy clay, frequent small stones >> moderately compact dark red sandy clay, frequent small stones	NAI
31-07-07	Continuation of trenching, *c.* 50m E of field boundary,	SO 51222 44623 to SO 51360 44617	Moderately compact mid red sandy clay, frequent subangular	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
	132m excavated running ESE		stones >> moderately compact dark reddish-brown sandy clay, occasional small stones	
02-08-07	Approximately 30m of trenching, continuing W	SO 51155 44627 to SO 51222 44623	Moderately compact mid red sandy clay, frequent subangular stones >> sandstone >>moderately compacted reddish-brown sandy clay, occasional small stones	NAI
02-08-07	Approximately 150m of trenching, continuing W	SO 51360 44617 to SO 51507 44606	Moderately compact reddish-brown sandy clay, frequent small subangular stones >> moderately compact dark reddish-brown sandy clay, bluish-grey inclusions, occasional small stones	NAI
03-08-07	Approximately 60m of trenching, continuing W	SO 51507 44606 to SO 51597 44604	Moderately compact dark brown sandy clay, frequent small subangular stones >> moderately compact dark reddish-brown sandy clay, occasional small stones	NAI
08-08-07	Approximately 150m of trenching, continuing W	SO 51597 44604 to SO 51734 44588	SO 51597 44604 to SO 51653 44593: moderately compact dark brown sandy clay, frequent small subangular stones >> moderately compact dark reddish-brown sandy clay, occasional small subangular stones. SO 51653 44593 to SO 51664 44592: compact deposit of building debris (brick, concrete, sandstone) >> moderately compact dark	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			reddish-brown clay, occasional stones >> moderately compact brownish-red sandy clay, occasional large stones. SO 51664 44572 to SO 51734 44588: Moderately compact dark brown sandy clay >> friable reddish-brown silt-sand-clay, frequent small stones	
09-08-07	Approximately 150m of trenching continuing W	SO 51734 44588 to SO 51859 44579	Moderately compact dark brown sandy clay, frequent small subangular stones >> moderately compact dark reddish-brown sandy clay, occasional small rounded gravels	NAI
10-08-07	Approximately 70m of trenching, continuing W up to field boundary	SO 51859 44579 to SO 51905 44577	Moderately compact dark brown sandy clay, frequent small subangular stones >> moderately compact dark reddish-brown sandy clay, occasional gravels	NAI
14-08-07	In trackway, *c.* 300m E of A49 underpass, 27m of trenching extending E along track	SO 50456 44722 to SO 50490 44719	Compact hardcore >> moderately compact mid red sandy clay, frequent small & medium subangular stone >> moderately compact reddish-brown sandy clay, frequent rounded and subangular stones	NAI
15-08-07	In trackway, *c.* 350m E of A49 underpass, 6.8m excavated heading E	SO 50490 44719 to SO 50496 44720	Moderately compact dark reddish-brown sandy clay, frequent rounded stones >> moderately compact black organic material, occasional small rounded & subangular stones >>	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			moderately compact mid brown clay, no inclusions	
16-08-07	Approximately 350m E of A49 underpass, close to brook, 18m excavated extending W	SO 50508 44718 to SO 50496 44720	Moderately compact reddish-brown sandy clay, occasional small subangular stones >> moderately compact light yellowish-brown sandy clay, occasional small subangular stones >> moderately compact mid red sandy gravel	NAI
30-08-07	Approximately 120m W of railway line, starting close to field boundary & extending 39m SSE, 39m excavated extending ESE	SO 51904 44580 to SO 51946 44554	Friable brownish-red sand-silt-clay, frequent stones >> moderately compact dark brownish-red sandy clay >> moderately compact light grey clay, no inclusions	NAI
31-08-07	Approximately 150m W of railway line, extending 33m	SO 51946 44554 to SO 51996 44628	Friable mid brownish-red sand-silt-clay, frequent small stones >> moderately compact dark-reddish-brown, occasional small stones >> moderately compact light grey clay, no inclusions	NAI
03-09-07	Approximately 100m W of railway line, extending 27.5m E	SO 51996 44628 to SO 52026 44630	Friable mid brownish-red sand-silt-clay, frequent small stones >> moderately compact light yellowish/greyish-brown, no inclusions >> loose gravels, small rounded stones	NAI

Table 2.3: DCWW / LOR Scheme Map 3

Date	Location	Grid ref/pit or section no.	Description	Results
04-09-07	Approximately 100m W of railway line, 22m of trenching extending ENE	SO 52022 44630 to SO 52039 44641	Friable brownish-red sand-silt-clay, frequent small stones >> moderately compact light yellowish/greyish-brown clay, no inclusions >> loose gravels, small rounded stones	NAI
05-09-07	Approximately 75m W of railway line, 44m of trenching extending E	SO 52039 44641 to SO 52088 44640	Moderately compact brownish-red sand-silt-clay, frequent small stones >> light brownish/yellowish-grey clay, no inclusions >> loose gravels, small rounded stones	NAI
06-09-07	Approximately 50m W of railway line, 44m of trenching extending E	SO52088 44660 to SO 52123 446734	Moderately compact brownish-red sand-silt-clay, frequent small stones >> moderately compact light greyish-brown/yellow clay, no inclusions >> loose gravels, small rounded stones	NAI
10-09-07	Approximately 20m E of railway line, extending 11m E	SO 52241 44697 to SO 52254 44702	Moderately compact brownish-red sand-silt-clay, occasional small subangular stones >>moderately compact yellowish-green clay, frequent small stones >> loose reddish-brown gravels, small rounded stones	NAI
11-09-07	Approximately 50 E of railway line, 110m of trenching extending SE	SO 52254 44702 to SO 52347 44654	Moderately compact brownish-red sand-silt-clay, occasional small subangular stones >> moderately compact yellowish-grey clay, occasional small rounded stones >> loose reddish-	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			brown gravels, frequent small rounded stones	
17-09-07	Approximately 100m E of railway line, 104.5m of trenching extending SE	SO 52347 44654 to SO 52427 44588	Moderately compact brownish-red sand-silt-clay, occasional small subangular stone >> moderately compact yellowish-grey clay >> loose reddish-brown gravels, small rounded stones	NAI
18-09-07	Approximately 100m E of railway line, 115.5m of trenching running SE	SO 52427 44588 to SO 52497 44499	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compact yellowish-grey clay, no inclusions >> loose reddish-brown gravels	NAI
21-09-07	*c.* 75m E of railway line, 88m of trenching extending SE	SO 52529 44450 to SO 52574 44372	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compact light greyish-brown clay, occasional small rounded stones	NAI
24-09-07	*c.* 70m to E of railway line, *c.* 30m N of field boundary, 132m of trenching running SE, parallel with railway	SO 52574 44372 to SO 52647 44266	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compact greyish-yellow clay, no inclusions	NAI
25-09-07	*c.* 60m E of railway line adjacent to field boundary, 110m of trenching extending ESE towards the unclassified road running between Hereford and Sutton St Nicholas	SO 52647 44266 to SO 52745 44208	Moderately compact reddish-brown sandy clay, frequent small stones >> moderately compact light brownish-yellow sandy clay, occasional small stones >> loose mid	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			reddish-brown gravels, small rounded stones	
26-09-07	*c.* 160m E of railway line, *c.* 50m NW of MS on unclassified road running between Hereford and Sutton St Nicholas	SO 52883 44121	Moderately compact light yellowish-brown sandy clay >> friable reddish-brown sandy silt, dark grey inclusions, frequent small rounded stones	NAI
26-09-07	*c.* 120m E of railway, *c.* 220 NW of MS, 99m of trenching running SE towards road	SO 52745 44208 to SO 52830 44152	Moderately compact reddish-brown sandy clay, frequent small stones >> moderately compact light brownish-yellow sandy clay, occasional small angular stones >> loose reddish-brown sandy gravels, black/grey clayey inclusions	NAI
26-09-07	Wergins Meadow, *c.* 20m E of unclassified road running between Hereford and Sutton St Nicholas, *c.* 30m SE of MS	SO 52968 44065	Moderately compact reddish-brown sandy clay, frequent small stones >> moderately compact light yellowish-brown clay, occasional small subangular stones	NAI
27-09-07	*c.* 100m E of railway, *c.* 150 NW of MS, 22m of trenching extending SE towards road	SO 52830 44152 to SO 52845 44141	Moderately compact reddish-brown sandy clay, frequent small stones >> moderately compact light brownish-yellow sandy clay, occasional small subangular stone >> loose mid reddish-brown sandy gravels, black/grey inclusions	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
29-09-07	*c.* 125m E of railway line, 55m of trenching running SE	SO 52497 44499 to SO 52529 44450	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compact yellowish-grey clay, moderate small rounded stones >> loose reddish-brown gravels, small rounded stones	NAI
01-10-07	*c.* 160m E of railway, *c.* 50m NW of MS, 11m of trenching running SSW	SO 52880 44121 to SO 52873 44127	Moderately compact brownish-red sand-silt-clay, frequent small stones >> friable yellowish-brown sandy clay, frequent small stones >> friable dark greyish-red gravels, small rounded stones	NAI
02-10-07	*c.* 80m E of railway, *c.* 30m NW of MS, 33m of trenching extending ENE	SO 52873 44127 to SO 52842 44137	Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> friable yellowish-brown sandy clay, frequent small rounded stones >> friable greyish-red gravels, small rounded stones	NAI
03-10-07	Wergins Meadow, *c.* 30m E of unclassified road running between Hereford and Sutton St Nicholas, *c.* 100m N of Wergins Stone, 38.5m of trenching running ESE	SO 52972 44060 to SO 53002 44042	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compact greyish-yellow sand-silt-clay, frequent rounded & subangular stones >> friable bluish-grey sandy gravels, rounded stones	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
04-10-07	Wergins Meadow, *c.* 70m NNE of Wergins Stone, *c.* 55m E of road, 110m of trenching running SE	SO 53002 44042 to SO 53034 43982	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compacted greyish-yellow sand-silt-clay, frequent rounded and subangular stones >> friable grey sandy gravels	NAI
05-10-07	Wergins Meadow, *c.* 60m E of Wergins Stone, 38.5m of trenching running ESE	SO 53034 43982 to SO 53126 43957	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compact light yellowish-brown sand-silt-clay, frequent small rounded stones	NAI
05-10-07	Wergins Meadow, *c.* 60m W of R. Lugg, *c.* 300m SE of Wergins Stone	SO 53256 43860	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compact light brownish-yellow clay, occasional small stones	NAI
08-10-07	***Wergins Meadow, c. 60m W of R. Lugg, c. 300m SE of Wergins Stone, 22m of trenching running WNW***	***SO 53262 43862 to SO 53233 43880***	***SO 53262 43862 to SO 53254 43868: moderately compact reddish-brown sand-silt-clay, frequent small stones >> moderately compact light brownish-grey sand-silt-clay, occasional small stones >> loose black organic deposit*** ***SO 53254 43868 to SO 53237 43879: Moderately compact reddish-brown sand-silt-***	***SO 53262 43862 to SO 53254 43868: Trench depth 3.2m, sample of organic material removed*** ***SO 53254 43868 to SO 53237 43879: Trench depth 3.2m, sample of waterlogged wood removed***

Date	Location	Grid ref/pit or section no.	Description	Results
			clay, frequent small stones >> moderately compact dark grey/black clay, occasional small rounded stones <u>SO 53237 43879 to SO 53233 43880</u>: Moderately compact reddish-brown sand-silt-clay, frequent small stones >> moderately compact bluish-grey clay, no inclusions	
09-10-07	Wergins Meadow, *c.* 150m ESE of Wergins Stone, 115.5m of trenching extending SE towards R. Lugg	SO 53130 43956 to SO 53221 43894	Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> moderately compact yellowish-blue clay, occasional degraded sandstone inclusions	NAI
10-10-07	River crossing, *c.* 60m E of R. Lugg, 17.5m of trenching running ESE	SO 53365 43792 to SO 53380 43777	Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> moderately compact light greyish/yellowish-blue clay	NAI
11-10-07	River crossing, *c.*75m W of R. Lugg, *c.* 60m S of field boundary, 148.5m of trenching running ESE	SO 53380 43777 to SO 53503 43702	Moderately compact reddish-brown sand-silt-clay, frequent subangular stones >> moderately compact light greyish/yellowish-blue clay	NAI
12-10-07	*c.* 220m E of R. Lugg, *c.* 30m S of field boundary, 77m of trenching running ESE	SO 53503 43702 to SO 53564 43650	Moderately compact reddish-brown sand-silt-clay, frequent subangular stones >> firm light greyish/yellowish-blue clay	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
15-10-07	*c.* 140m E of R. Lugg, *c.* 90m S of field boundary, 99m of trenching extending SE	SO 53564 43650 to SO 53644 43589	Moderately compact reddish-brown sandy clay, frequent small stones >> moderately compact yellowish/bluish-brown sandy clay	NAI
16-10-07	*c.* 30m W of field boundary running NNW/SSE, *c.*55m N of field boundary, 71.5m of trenching running ESE	SO 53644 43589 to SO 53694 43562	Moderately compact reddish-brown sand-silt-clay, frequent small stones >> moderately compact yellowish/brownish-blue clay, occasional small subangular stones	NAI
17-10-07	*c.* 200m E of R. Lugg, 99m of trenching running SE	SO 53694 43562 to SO 53777 43473	Moderately compact reddish-brown sand-silt-clay, frequent subangular stone >> moderately compact yellowish/brownish-blue clay, occasional rounded pebbles	NAI
29-10-07	*c.* 250m ESE of Wergins Stone, *c.* 70m W of R. Lugg, 16.3m of trenching running ESE	SO 53220 43895 to SO 53235 43884	Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> firm bluish-grey clay	NAI
30-10-07	*c.* 250m ESE of Wergins Stone, *c.* 80m W of the R. Lugg, 3.5m of trenching	SO 53224 43884	Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> moderately compact bluish-grey clay, occasional large stones >> loose gravels, rounded stones	NAI

Table 2.4: DCWW / LOR Scheme Map 4

Date	Location	Grid ref/pit or section no.	Description	Results
18-10-07	*c.* 40m E of field boundary running NNW/SSE, *c.* 20m N of field boundary running ESE/WSW,	SO 53783 43455 to SO 53835 43401	SO 53783 43455 to SO 53788 43437: Firm dark reddish-brown silty clay >> firm reddish-brown	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
	c. 70m of trenching extending SE		silty clay >> firm reddish/greyish-brown silty clay SO 53788 43437 to SO 53835 43401: Firm dark reddish-brown silty clay >> firm reddish-brown silty clay >> firm light greyish-brown silty clay >> waterlogged firm mid blue clay	
19-10-07	*c.* 50m E of NNE/SSW drain & *c.* 170m W of Little Lugg	SO 53913 43335	Moderately compact mid red sand-silt-clay, frequent subangular stones >> moderately compact yellowish-brown clay, occasional large subangular stones	NAI
19-10-07	*c.* 170m W of Little Lugg, 17m of trenching running E	SO 53913 43335 to SO 53928 43325	Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> firm yellowish-brown clay bluish-grey inclusions, occasional rounded pebbles	NAI
22-10-07	*c.* 150m W of Little Lugg, 5.5m of trenching	SO 53928 43325 to SO 53933 43317	Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> firm yellowish-brown clay, bluish-grey inclusions	NAI
23-10-07	*c.* 150m W of Little Lugg, 5.5m of trenching	SO 53933 43317 to SO 53935 43316	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> firm yellowish-brown clay, greyish-blue inclusions	NAI
24-10-07	Pit excavated *c.* 350m SW of Eau Withington Court, close to field boundary	SO 54167 43178	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
24-10-07	Pit excavated *c.* 70m N of track to Builth Farm, *c.* 90m W of Little Lugg	SO 54324 43064	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones	NAI
24-10-07	*c.* 140m W of Little Lugg, 82.5m of trenching extending ESE	SO 53935 43316 to SO 54009 43278	Moderately compact yellowish-brown sand-silt-clay, frequent small subangular stones >> firm yellowish-brown clay, no inclusions	NAI
25-10-07	*c.* 50m W of Little Lugg, *c.* 70m N of NE/SW field boundary, 110m of trenching running SE	SO 54009 43278 to SO 54098 43222	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compact yellowish-brown clay, grey inclusions, small rounded pebbles	NAI
26-10-07	*c.* 40m SE of bend in Little Lugg, 83.5m of trenching extending SE	SO 54098 43222 to SO 54149 43194	Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> moderately compact greyish-blue clay, black inclusions >> loose dark brown/black gravels, rounded stones	NAI
31-10-07	***c. 150m SE of bend in Little Lugg, c. 350m WSW of Eau Withington Court, c. 80m of trenching running SE***	***SO 54145 43188 to SO 54218 43138***	***SO 54145 43188 to SO 54180 43165: Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> moderately compact yellowish-blue clay, occasional small stones >> loose gravels, rounded stones. SO 54180 43165 to SO 54218 43138: Moderately compact reddish-brown sand-silt-clay, frequent small***	***Large recumbent stone slab found at SO 54200 43154, c. 300m ESE of Eau Withington Court, at a depth of 1.7m. Measures 0.9m x 0.39m x 0.42m.***

Date	Location	Grid ref/pit or section no.	Description	Results
			subangular stones >> moderately compact yellowish-brown clay, bluish inclusions >> loose sandy gravels	
01-11-07	A4103 road crossing, *c.* 25m W of 'The Gables', 75m of trenching running NNW-SSE	SO53614 42642 to SO 55590 42728	SO 53614 42642 to SO 55601 42697: firm reddish-brown clay-silt-sand, very frequent small & very small gravels SO 55601 42697 to SO 55602 42704: tarmacadam road surface >> sub-base >> hardcore >> firm reddish-brown clay-silt-sand, occasional medium & large sandstone >> firm reddish-brown clay-silt-sand, very frequent small angular stones SO 55602 42704 to SO 55590 42728: firm reddish-brown clay-silt-sand, occasional medium & large sandstone fragments	NAI
01-11-07	In field, *c.* 150m W of Little Lugg, 200m N of trackway to Builth Farm, 77m of trenching extending SE	SO 54180 43165 to SO 54281 43061	Moderately compact reddish-brown san-silt-clay, frequent small stones >> moderately compact yellowish-grey clay, occasional large subangular sandstone >> moderately compact dark yellowish-brown gravels	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
02-11-07	In field, *c.* 125m W of Little Lugg, *c.* 80m N of trackway to Builth Farm, 22m of trenching running NE	SO 54281 43061 to SO 54315 43079	Moderately compact reddish-brown sand-silt-clay, frequent small stones >> moderately compact yellowish-brown clay, no inclusions >> loose gravels	NAI
05-11-07	*c.* 80m E of access to Eau Withington Court, 110m of trenching running SE	SO 54622 43165 to SO 54734 43107	Moderately compact light brownish-yellow sandy clay, gravel inclusions >> moderately compact reddish-brown sandy gravel, small rounded stones	NAI
06-11-07	*c.* 100m W of Little Lugg, 38.5m of trenching running SE	SO 54294 43085 to SO 54340 43051	Moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> moderately compact greyish-blue, yellow sandy clay, moderate small rounded stones >> friable greyish-yellow gravels	NAI
06-11-07	In field *c.* 35m S of A4103 crossing & 10 W of hedge line of 'The Gables', 5m of trenching	SO 55613 42648	Moderately compact orangey-brown clay-silt-sand >> firm light bluish-grey clay-silt-sand, very frequent stones >> firm reddish-brown clay-silt-sand, frequent small & very small angular stones & gravels	NAI
07-11-07	*c.* 170m E of access to Eau Withington Court, 110m of trenching running ESE	SO 54734 43107 to SO 54840 43074	Moderately compact reddish/brownish-yellow, frequent small stones >> moderately compact dark red sand-silt-clay, occasional small subangular stones	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
08-11-07	*c.* 130m W of unclassified road at Nunnington, 110m of trenching running E towards road	SO 54840 43074 to SO 54952 43060	Moderately compact reddish-yellow sand-silt-clay, frequent small stones >> moderately compact dark red silty clay, occasional small subangular stones	NAI

Table 2.5: DCWW / LOR Scheme Map 5

Date	Location	Grid ref/pit or section no.	Description	Results
05-11-07 to 06-11-07	Withington Lakes, immediately to S of 'Diamond Gables', 203.5m of trenching extending E to rear of car dealership	SO 55642 42599 to SO 55833 42621	Moderate to firm reddish-brown clay-silt-sand, patches of light bluish-grey degraded sandstone	NAI
07-11-07	Withington, field to rear of 'Black Barn' & 'The Kiln', to S of the A4103	SO 55833 42621 to SO 55924 42768	Moderately compact orangey-brown clay-silt-sand >> moderately compact to loose reddish-brown clay-silt-sand, occasional bluish-grey small & medium sandstone fragments, frequent very small stones	NAI – surface scatters of C19/C20 pottery & tile fragments
12-11-08	In field, opposite junction of A4103 and Withies Road	SO 55983 42848	Firm reddish-brown sans-silt-clay, frequent small subangular stones >> firm dark red marl, frequent large sandstone blocks >> sandstone	NAI
12-11-08	In field, opposite junction of A4103 and Withies Road, 55.5m of trenching running E	SO 55967 42841 to SO 56016 42844	Firm reddish-brown sand-silt-clay, frequent small stones >> compact dark red marl, frequent large stones	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
13-11-07	In field, *c.* 40m SE of junction of A4103 and Withies Road, 121m of trenching running E parallel to A4103	SO 56016 42844 to SO56135 42830	Firm reddish-brown sand-silt-clay, frequent small subangular stones >> sandstone >> firm greyish-brown clayey silt, frequent large subangular stones >> firm greyish-brown clayey silt, frequent large angular stones	NAI
14-11-08	Immediately S of A4103, *c.* 40m W of junction with private road, 44m of trenching running E	SO 56135 42830	Firm reddish-brown silt-sand-clay, frequent small subangular stones >> sandstone >> firm greyish / yellowish-brown silty clay, frequent large subangular stones	NAI
14-11-07	In private road, close to its junction with A4103	SO 56169 42824	Compact stone road surface >> friable deposit of ash, CBM, glass >> moderately compact reddish-brown silty clay, occasional small subangular stones	NAI
15-11-07	In field adjoining A4103 to E of private road, 90m of trenching extending E	SO 56124 42836 to SO 56238 42717	Moderately compact reddish-brown clay-silt-sand, occasional small angular sandstone >> moderately compact light grey sand-clay-silt >> firm orangey-grey silt-clay-sand	NAI
16-11-07	Continuation of the above, 3m of trenching extending E	SO 56238 42717 to SO 56240 42718	Moderately compact reddish-brown clay-silt-sand, occasional small angular sandstone >> moderately compact light grey clay, frequent small black sandstone flecks, occasional organic inclusions >> firm orangey-grey silt-clay-sand	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
19-11-07	Continuation of above, 17m of trenching heading E	SO 56240 42718 to SO 56385 42722	Moderately compact mid brown sand-clay-silt >> moderately compact mid grey sand-clay-silt, no inclusions >> moderately compact orangey-brown silt-clay-sand >> moderate to firm sand-clay-silt, frequent gravels >> firm orangey-grey silt-clay-sand, occasional medium & large sandstone fragments	NAI
19 & 21-11-07	Crossing of Whitestone to Bartestree road at junction with A4103, 12m of trenching running W from traffic island	SO 56432 42691 to SO 56437 42701	Tarmacadam road surface >> sub-base >> compact hardcore deposit >> firm reddish-brown clay-silt-sand with frequent small angular sandstone	NAI
20-11-07	In field adjoining A4103 to E of private road, 4m of trenching crossing ditch & concrete culvert, running ESE	SO 56385 42722 to SO 56386 42728	Dark blackish-brown clay-silt-sand, occasional 20th century debris >> moderately compact light grey sand-clay-silt >> firm orangey-grey silt-clay-sand >> moderate to firm sand-clay-silt, frequent gravels >> firm orangey-grey silt-clay-sand, occasional medium & large sandstone fragments	NAI
21-11-07	Continuation of above, 34.5m of trenching running ESE	SO 56386 42728 to SO 56397 42770	Moderately compact mid brown sand-clay-silt >> moderately compact mid grey sand-clay-silt, no inclusions >> moderately compact orangey-brown silt-clay-sand >> moderate to firm	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			sand-clay-silt, frequent gravels >> firm orangey-grey silt-clay-sand	
22-11-07	In field adjoining A4103 to E of private road, 27.5m of trenching running ESE across field	SO 56417 42742 to SO 56434 42714	Moderately compact yellowish-brown sand-silt-clay, occasional small subangular stones >> moderately compact reddish-brown sand-silt-clay, frequent small subangular stones >> sandstone	NAI
23-11-08	In field adjoining A4103 to E of private road, 11m of trenching running E	SO 56434 42714 to SO 56440 42767	Moderately compact yellowish-brown sand-silt-clay, occasional subangular stones >> sandstone >> firm reddish-brown sand-silt-clay, moderate subangular stones >> sandstone	NAI
29-11-07	In field *c.* 20m W of footpath, *c.* 60m S of A4103, 60.5m of trenching running NW along hedge-line to rear of property	SO 56470 42654 to SO 56449 42707	Moderately compact brownish-red sand-silt-clay, occasional small subangular stones >> moderately compact mid red sandy clay, occasional small stones	NAI
30-11-07	In field, *c.* 50m W of footpath, *c.* 90m S of A4103, 21.5m of trenching extending SE	SO 56445 42636 to SO 56452 42615	Moderately compact mid greyish-brown clay-silt-sand >> firm reddish-brown clay-silt-sand, frequent small & large subangular stones & gravels	NAI
03-12-07	In field, *c.* 20m W of footpath, *c.* 100m S of A4103, immediately N of E-W field boundary, 117.5m of trenching heading E	SO 56467 42627 to SO 56489 42624	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> moderately compact mid red sand-silt-clay, no inclusions	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
04-12-07	*c.* 70m S of A4103, adjacent to footpath, 9.5m of trenching running ENE across path	SO 56489 42624 to SO 56503 42633	Tarmacadam road surface >> sub-base >> moderately compact mid red sand-silt-clay, occasional small subangular stones	NAI
05-12-07	C. 60m S of A4103, immediately to E of footpath, 33m of trenching running E within triangle of land to NW of business park	SO 56505 42635 to SO 56542 42630	Moderately compact brownish-red sand-silt-clay, occasional small subangular stones >> moderately compact reddish/greyish-blue sand-silt-clay, occasional small stones	NAI
05-12-07	A4103, partial road crossing (eastbound carriageway), opposite N perimeter of Whitestone Business Park, 10m of trenching running N	SO 56676 42625 to SO 56687 42631	Tarmacadam road surface >> sub-base >> aggregate & concrete >> sandstone	NAI
06-12-07	*c.* 20m W of junction of unclassified road between Whitestone and Bartestree & A4103, 27.5m of trenching running W	SO 56593 42636 to SO 56568 42638	Moderately compact sand-silt-clay, frequent small subangular stones >> firm light grey sandy clay, frequent small stones >> sandstone	NAI
07-12-07	*c.* 20m S of A4103, 40m W of junction of unclassified road between Whitestone and Bartestree & A4103, within triangle of land to NW of business park, 22m of trenching running W	SO 56568 42638 to SO 56547 42637	Moderately compact reddish-brown sand-silt-clay, occasional small subangular stones >> firm light greyish-blue sandy clay, frequent small stones >> sandstone	NAI

Table 2.6: DCWW / LOR Scheme Maps 6, 7 & 8

Date	Location	Grid ref/pit or section no.	Description	Results
24/07-07	Yarkhill, near field entrance on E side of church	LT01 SO 60000 42000	Loose dark brown silty clayey sand >> moderately compact reddish-brown silt-clay-sand	NAI
25-07-07	***Yarkhill, field adjacent to moated manor site***	***LT02 SO 60000 42000***	***Loose dark brown silt-clay-sand >> moderately compact silt-clay-sand***	***Unstratified medieval pottery rim fragment***
27-07-07	Yarkhill, in field 60m W of LT02	LT03 SO 60000 42000	Firm dark brown silty sand >> loose greyish-brown sand >> moderately compact orangey-brown sandy clay	NAI
30-07-07	Approximately 100m W of Yarkhill, in field immediately S of Watery Lane	LT04 SO 60535 42571	Firm mid brown silty clay, fine sand inclusions in upper deposit >> firm mid to light brown silty clay >> firm reddish gritty silt clay, occasional inclusions of grey degraded stone	NAI
30-07-07	Immediately W of Yarkhill, in field near field entrance	LT05 SO 60609 42601	Firm mid brown silty clay >> firm reddish-brown silty clay >> friable red sandy clay, moderate degraded stone, frequent subangular & rounded sandstone	NAI
01-08-07	Approximately 300m W of Yarkhill, immediately S of Watery Lane, in field	LT06 SO 60343 42516	Firm mid brown silty clay, occasional pebbles >> firm orangey-red silty clay	NAI
02-08-07	Approximately 300m W of Yarkhill, to S of Watery Lane, in field on hedge line	LT07 SO 60350 42518	Firm mid brown silty clay >> firm light red silty clay, occasional degraded stone	NAI
06-08-07	W of Yarkhill, c. 100m S of Watery Lane & c. 220m E of field boundary	SO 60185 42432	Moderately compact dark brown sandy clay >> moderately compact dark	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			reddish-brown sandy clay >> moderately compact dark brownish-orange sandy clay, occasional small stones	
07-08-07	Approximately 350m E of T-junction, in field immediately S of Watery Lane	SO 60102 42399	Moderately compact dark brown sandy clay >> moderately compact reddish-orange sandy clay, frequent small stones	NAI
09-08-07	***Approximately 250m E of T-junction, in field immediately S of Watery Lane***	***LT08 SO 60014 42345***	***Firm mid brown silt-clay-sand > >firm light brown silt >> cut of possible ditch >> compact mid red sand, very frequent (50%) very small rounded stones***	***Post-medieval linear feature, probably a boundary or drainage ditch on E-W orientation***
13-08-07	In field, adjacent to N-S road between Shucknall & Stoke Edith	LT09 SO 60000 42000	Friable light brown sand, very frequent (35%) small stones & pebbles, moderate medium and large stones >> firm reddish-brown silty clay >> firm mid red silty clay, very frequent (50%) small stones, moderate degraded stone	NAI
14-08-07	*Yarkhill, in field to S of church*	*LT10 SO 60894 42571*	*Friable light brown sandy clay, very frequent (40%) small stones & pebbles >> firm red silty clay, degraded stone inclusions >> firm mid red clay, very frequent small & very small angular stones - grit & degraded stone*	*NAI - Occasional C19 CBM*
15-08-07	*Yarkhill, in field SE of church*	*LT11 SO 60959 42592*	*Moderately compact red silty clay >> firm mid brown silty clay >> firm mid grey silty*	*NAI - CBM, land drain fragments*

Date	Location	Grid ref/pit or section no.	Description	Results
			clay, very frequent (35%) angular degraded stone	
16-08-07	In field 180m to E of Yarkhill church, immediately N of Watery Lane	LT12 SO 61072 42612	Moderately compact mid brown silty clay > >firm mid red silt clay	NAI
17-08-07	Immediately N of road, c. 200m E of Yarkhill church	LT13 SO 61175 42651	Moderately compact mid brown silty clay >> firm reddish-brown silt clay	NAI
21-08-07	In field to E of Yarkhill, near field entrance opposite junction of Watery Lane & Tarrington road	LT14 SO 61352 42720	Loose - moderately compact mid brown reddish sandy silt, occasional small rounded stones >> firm red silty clay >> firm red sand, frequent degraded sandstone, very frequent (35%) small rounded stones	NAI
22-08-07	*In field to N of Watery Lane, c. 75m E of junction with Tarrington lane*	*LT15 SO 61424 42763*	*Loose mid brown sand >> firm mid red silty clay >> firm mid red sand, frequent small rounded stones & degraded sandstone*	*NAI - Occasional CBM*
23-08-07	*In field, c. 100m E of junction with Tarrington lane, near Little Yarkhill*	*LT16 SO 61436 42772*	*Loose mid brown silt >> firm reddish-brown silty clay >> compact red sand, very frequent (40%) small rounded stones, moderate degraded stone*	*NAI - Occasional CBM*
24-08-07	*Field S of Watery Lane near barn opposite Little Yarkhill*	*LT17 SO 61495 42792*	*Friable light to mid brown silt, frequent small stones & pebbles >> firm brownish-red silty clay >> firm red sand, moderate grey degraded stone >> firm bluish-grey sand, reddish in patches*	*NAI - Occasional C19 CBM*

Date	Location	Grid ref/pit or section no.	Description	Results
28-08-07	Field near Little Yarkhill Court	LT18 SO 61581 42829	Friable mid reddish-brown sandy clay, moderate very small rounded stones >>moderately compact orangey-red silty clay >> moderately compact light yellow gritty clay >> compact red sand, frequent small whitish stones	NAI
29-08-07	Field S of Watery Lane, on easternmost hedge line	LT19 SO 61659 42842	Firm dark brown silt >> firm mid red silt clay >> compact orangey-red sand, very frequent (45-50%) pebbles & gravel	NAI
30-08-07	Field immediately E of previous location	LT20 SO 61675 42862	Firm dark brown silt >> firm reddish-orange silty clay >> compact orange sand, very frequent (50%) pebbles & gravel	NAI
30-08-07	S of Watery Lane, c. 300m E of Little Yarkhill	LT21 SO 61750 42901	Firm dark greyish-brown sandy silt >> moderately compact orangey-brown sandy clay, moderate small stones >> compact / moderately compact mid red sand, very frequent (50%) gravel & small pebbles	NAI
03-09-07	Field S of Watery Lane near to 'The Willows'	LT22 SO 61901 43009	Moderately compact mid reddish-brown silt > firm dark reddish-brown silty clay, occasional small stones >> compact mid red sandy gravel, frequent pebbles	NAI
03-09-07	Field to S of Watery Lane, near hedge line	LT23 SO 61822 42963	Firm light reddish-brown sandy clay, occasional small stones >> firm mid brown silty clay >>	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			compact mid red sand, very frequent (50%) gravel & pebbles	
04-09-07	Extension to LT22	LT24 SO 61914 43017	Moderately compact reddish-brown silt >> firm reddish-brown silty clay, occasional small sandstone fragments >> compact red sand & gravel, frequent pebbles	NAI
04-09-07	In field opposite 'The Willows'	LT25 SO 61985 43031	Firm reddish-brown clayey-silt, moderate small sandstone fragments >> firm reddish-brown silty clay >> compact mid red sand & gravel, frequent pebbles	NAI
05-09-07	Field on hedge line between 'The Willows' & 'Covender House'	LT26 SO 62039 43039	Firm greyish-brown - reddish-brown silt, occasional small sandstone fragments >> firm dark red silty clay, occasional small stones >> moderately compact mid red sand & gravel, frequent pebbles	NAI
07-09-07	***In field opposite Covender Farm***	***LT27 SO 62151 43047***	***Firm greyish-brown silt >> firm reddish-brown silty clay, occasional medium stones >> friable reddish-brown gritty silt, very frequent (35%) small stones***	***Two sherds of Severn Valley ware***
10-09-07	In field directly opposite Covender Farm	LT28 SO 62240 43067	Firm greyish-brown silt, moderate small sandstone fragments >> firm mid red silty clay >> moderately compact mid red sand & gravel, very frequent (35%) pebbles >>	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			moderately compact mid brownish-yellow / light brown sand & gravel	
11-09-07	In field SE of Covender Farm	LT29 SO 62342 43058	Firm mid brown silt >> firm mid red silty clay >> waterlogged whitish sandy gritty clay	NAI
13-09-07	Field E of Covender Farm	LT30 SO 62432 43097	Firm reddish-brown silt, occasional to moderate very small stones >> firm reddish-brown silty clay >> moderately compact red sand & gravel frequent pebbles	NAI
18-09-07	***Field to rear of 'Ark Cottage'***	***LT31 SO 62590 43157 SO 62552 43140***	***Firm mid red silt, occasional small stones >> firm reddish-brown silty clay, occasional charcoal flecking >> plastic reddish-brownish-blue clay >> moderately compact greyish sand & gravel***	***Possible Neolithic wood probably natural in gravels***
19-09-07	Immediately S of 'Ark Cottage' in E bank of stream	LT32 SO 62542 43136	Friable light reddish-brown sandy silt, moderate small stones >> firm reddish-brown silty clay >> plastic reddish-blue clay >> moderately compact greyish sand & gravel, frequent pebbles	NAI
21-09-07	In field, c. 100m E of 'Ark Cottage', immediately west of drainage ditch	LT33 SO 62628 43199	Firm dark brown reddish silt >> firm mid red silty clay >> plastic reddish-blue clay (banded) >> moderately compact light grey degraded stone, sand, gravel, frequent pebbles	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
21-09-07	In field immediately to the S of 'Ark Cottage'	LT34 SO 62509 43100	Firm reddish-brown silt >> firm reddish-brown silty clay >> moderately compact light brownish-red sandy gravel, frequent pebbles	NAI
24-09-07	In field, c. 200m E of 'Ark Cottage' & c. 60m E of drainage ditch	LT35 SO 62704 43244	Firm brownish-red silt >> firm reddish-brown silty clay	NAI
24-09-07	Field 40m E of cross field drainage ditch	LT36 SO 62677 43231	Firm reddish-brown silt, occasional pebbles >> firm mid red silty clay	NAI
26-09-07	In field 100m W of AP1	LT37 SO 62803 43260	Firm dark brownish-red silt >> friable light orangey-brown silt >> firm mid red silty clay	NAI
27-09-07	In hedge line, c. 230m E of 'Ark Cottage'	LT38 SO 62704 43268	Firm reddish-brown silt >> firm mid red silty clay	NAI
26-10-07	***In field adjacent to drive to Canon Frome Court, c. 150m NE of lodge***	***LT39 SO 64110 43146***	***Moderately compact mid to dark brown silty clay, moderate pebbles >> firm light brown clay >> firm mid red clay sandy gravel >> moderately compact degraded stone***	***Roman pottery fragment***
30-10-07	*In field to S of Canon Frome Court, 25m E of driveway*	*LT 40 SO 64132 43133*	*Firm mid to dark brown clayey silt >> firm very light brown clay >> friable mid red silt, frequent degraded stone*	*NAI - C19 CBM*
30-10-07	In field to S of Canon Frome Court,, adjacent to copse	LT41 SO 64212 43067	Firm mid brown clay, occasional very small sand stone fragments >> compact mid red sand & gravel, frequent pebbles >> plastic dark red sandy clay >> friable	NAI

Date	Location	Grid ref/pit or section no.	Description	Results
			dark red silty clay, very frequent (35%) pebbles	
01-11-07	*In field to S of Canon Frome Court on hedge line by line (connection point)*	*LT42 SO 64267 43068*	*Firm dark reddish-brown silt, occasional pebbles & small stones >> firm dark greyish-brown silty clay >> firm mid red gritty clay, very frequent (30%) small sandstone, frequent pebbles*	*NAI - Modern glass & CBM*

APPENDIX 3 – Context Registers and accompanying Harris Matrices for Access Pits 1 – 13

Table 3.1: Access Pit 1

Context No	Description
(1001)	Friable mid reddish brown silty clay, very occasional small angular stones measuring >9m x >8m x 0.35m. Overlies: (1002).
INTERPRETATION:	*Modern ploughsoil/ topsoil.*
(1002)	Firm mid reddish brown sand silt clay with occasional small subangular stones measuring >9m x >8m x *c.* 0.90m. Underlies (1001). Overlies (1003).
INTERPRETATION:	*Subsoil/ alluvium*
(1003)	Firm mid pinkish brown silty clay, very occasional charcoal flecking, occasional ceramic sherds at base of deposit. Measures >7m x >6m x 0.10m. Underlies (1002). Overlies (1005).
INTERPRETATION:	*Thin Romano British occupation lens.*
(1004)	Firm mid greyish brown silty clay, very frequent charcoal flecking, moderate ceramic flecking, frequent ceramic sherds, one flint piece. Measures >7m x >7m x <0.40m. Cut by [1006]. Overlies (1019), (1021), (1023), (1025), (1009), (1035, (1011), (1033), (1015), (1013), (1016), (1031), (1029), and (1027).
INTERPRETATION:	*Romano British occupation layer. The thickness of this deposit and the frequency of the ceramic sherds within it suggests fairly intensive occupation over an extended period.*
(1005)	Loose light greyish brown clayey gravel measuring 0.90m x 0.85m x 0.07m. Underlies: (1003). Fills: [1006].
INTERPRETATION:	*Fill of shallow pit [1006].*
[1006]	Sub-circular cut, break of slope sharp at N otherwise gradual, sides; concave & steeply sloping at N otherwise very gradual slope, break of slope base gradual base irregularly shaped and slightly concave. Measures: 0.90m x 0.85m x 0.07m. Filled by (1005).
INTERPRETATION:	*Shallow pit of Romano British date but unknown function*
(1007)	Firm mid reddish brown silty clay, very frequent charcoal flecks, moderate ceramic sherds measuring >7m x >6m x 0.40m. Underlies (1016). Cut by [1018], [1020], [1022], [1024], [1008], [1043], [1010], [1032], [1014], [1012], [1030], [1028], [1026]. Overlies (1036).
INTERPRETATION:	*Romano British occupation deposit*
[1008]	Sub-circular cut measuring 0.80m E-W x 0.70m x 0.06m, break of slope top sharp, sides; gradually sloping, break of slope base gradual, base slightly concave, orientation E-W. Cuts (1007). Filled by (1009).
INTERPRETATION:	*Domestic refuse pit.*

Context No	Description
(1009)	Moderately compact dark greyish brown silty clay, frequent charcoal flecking, and occasional ceramic sherds; measures 0.80m E-W x 0.70m x 0.06m, lensing out to N. Underlies (1004). Fills [1008].
INTERPRETATION:	*Domestic fire waste associated with Romano British occupation*
[1010]	Sub-circular cut measuring 1.25m N-S x 0.90m x 0.17m, break of slope top moderate, sides; moderately sloping, break of slope base moderate, base sloping to south, orientation N-S. Cuts (1007). Filled by (1011).
INTERPRETATION:	*Domestic refuse pit.*
(1011)	Firm dark greyish brown silty clay, moderate ceramic sherds and charcoal fragments, frequent charcoal flecking and bone fragments, 3 × glass fragments; measures 1.25m x 0.90m x 0.17m. Underlies (1004). Fills [1010].
INTERPRETATION:	*Domestic fire waste associated with Romano British occupation.*
[1012]	Sub-circular cut measuring 1.45m NE-SW × 0.85m × 0.22m, break of slope top gradual, sides; moderately sloping, break of slope base gradual, base flat, orientation NE-SW. Cuts (1007). Filled by (1013), (1017).
INTERPRETATION:	*Domestic waste pit. The fills of this pit, (1013) and (1017), contained a small amount of clinker, indicating specific use for fire waste.*
(1013)	Firm mid brown silty clay, occasional bone fragments, clinker, moderate ceramic sherds, frequent charcoal, 2 x glass fragments; measures 1.45m x 0.85m x 0.12m. Underlies (1004). Overlies (1017). Fills [1012].
INTERPRETATION:	*Domestic fire waste associated with Romano British occupation. Secondary fill of [1012].*
[1014]	Circular cut measuring 0.38m (in diameter) x 0.10m, break of slope top sharp, sides concave, break of slope base gradual, base gradual. Cuts (1007). Filled by (1015).
INTERPRETATION:	*Shallow post hole or small pit.*
(1015)	Firm mid greyish brown silty clay, very occasional bone, moderate small rounded stones and charcoal flecks, occasional large ceramic sherds. Measures 0.38m (in diameter) x 0.10m. Underlies (1004). Fills [1014].
INTERPRETATION:	*Fill of probable posthole, with large sherds found in fill possibly used as packing material around post.*
(1016)	Firm pinkish brown clayey gravel, occasional bone, ceramic sherds, charcoal fragments, frequent charcoal flecking; measures (area protruding from section) 1.40m E-W x 0.90m N-S x 0.05m. Underlies (1004). Overlies (1007).
INTERPRETATION:	*Gravel surface of unknown provenance.*
(1017)	Firm mid pinkish brown gravelly clay, occasional mortar, clinker, ceramic sherds and charcoal flecking, frequent small rounded stones; measures 1.15m NE-SW x 0.85m NW-SE x 0.10m. Underlies (1013). Overlies [1012].

Context No	Description
INTERPRETATION:	*Primary fill of domestic fire waste pit [1012].*
[1018]	Ovoid cut measuring 0.24m NE-SW x 0.20m x 0.14m, break of slope top sharp, sides; slightly concave, break of slope gradual, base concave, orientation NW-SE. Cuts (1007). Filled by (1019).
INTERPRETATION:	*Probable posthole.*
(1019)	Firm mid greyish brown silty clay, moderate charcoal flecking; measures 0.24m x 0.20m x 0.14m. Underlies (1004). Fills [1018].
INTERPRETATION:	*Fill of probable posthole.*
[1020]	Ovoid cut measuring 0.20m NW–SE x 0.18m x 0.12m, break of slope top sharp, sides; concave, break of slope gradual, base concave, orientation NW-SE. Cuts (1007). Filled by (1021).
INTERPRETATION:	*Probable posthole*
(1021)	Firm mid greyish brown silty clay, moderate charcoal flecking; measures 0.20m x 0.18m x 0.12m. Underlies (1004). Fills [1020].
INTERPRETATION:	*Fill of probable posthole.*
[1022]	Sub-circular cut measuring 0.20m (in diameter) x 0.09m. Break of slope top gradual, sides sloping 45 degrees, break of slope base gradual, base tapered. Cuts (1007). Filled by (1023).
INTERPRETATION:	*Probable posthole.*
(1023)	Well compacted mid greyish brown silty clay, moderate charcoal flecking; measures 0.20m (in diameter) x 0.09m. Underlies (1004). Fills [1022].
INTERPRETATION:	*Fill of probable posthole.*
[1024]	Sub-circular cut measuring 0.12m (in diameter) x 0.05m. Break of slope top sharp, sides; concave, break of slope base gradual, base concave. Cuts (1007). Filled by (1025).
INTERPRETATION:	*Probable posthole.*
(1025)	Well compacted mid greyish brown silty clay, moderate charcoal flecking; measures 0.12m (in diameter) x 0.05m. Underlies (1004). Fills [1024].
INTERPRETATION:	*Fill of probable posthole.*
[1026]	Sub-circular cut measuring 0.17m (in diameter) x 0.09m. Break of slope top sharp, sides; near vertical slightly concave; break of slope base gradual, base concave. Cuts (1007). Filled by (1027).
INTERPRETATION:	*Probable posthole.*
(1027)	Well compacted mid greyish brown silty clay, moderate charcoal flecking; measures 0.17m (in diameter) x 0.09m. Underlies (1004). Fills [1026].
INTERPRETATION:	*Fill of probable posthole.*
[1028]	Irregular circular cut measuring 0.17m (in diameter) x 0.07m. Break of slope top gradual, sides gradually sloping 45 degrees, break of slope base gradual, base concave. Cuts (1007). Filled by (1029).

Context No	Description
INTERPRETATION:	*Probable posthole.*
(1029)	Well compacted mid greyish brown silty clay, moderate charcoal flecking; measures 0.17m (in diameter) x 0.07m. Underlies (1004). Fills [1028].
INTERPRETATION:	*Fill of probable posthole.*
[1030]	Linear cut measuring (visible) 0.70m NW-SE x 0.45m SW-NE x 0.06m. Break of slope top sharp, sides; gradually sloping 45 degrees NE vertical SW, break of slope base gradual, base concave. Cuts (1007). Filled by (1031).
INTERPRETATION:	*Shallow linear feature of unknown function*
(1031)	Moderately compact dark greyish brown silty clay, one glass fragment, occasional ceramic sherds, frequent small gravels; measures 0.70m NW-SE x 0.45m SW-NE x 0.06m. Underlies (1004). Fills [1030].
INTERPRETATION:	*Fill of shallow linear feature of unknown function*
[1032]	Circular cut measuring 0.28m (in diameter) x 0.20m. Break of slope top sharp, sides; near vertical slightly concave, break of slope base gradual, base concave. Cuts (1007). Filled by (1033).
INTERPRETATION:	*Probable posthole.*
(1033)	Firm mid greyish brown silty clay, moderate charcoal flecking; measures 0.28m (in diameter) x 0.20m. Underlies (1004). Fills [1032].
INTERPRETATION:	*Fill of probable posthole.*
[1034]	Sub-circular cut measuring 0.16m (in diameter) x 0.10m. Break of slope top sharp, sides; steeply sloping to tapering base. Cuts (1007). Filled by (1035).
INTERPRETATION:	*Probable posthole.*
(1035)	Firm mid greyish brown silty clay, moderate charcoal flecking; measures 0.16m (in diameter) x 0.10m. Underlies (1004). Fills [1034].
INTERPRETATION:	*Fill of probable posthole.*
(1036)	Firm light pinkish brown highly organic silty clay; measures >7m x >6m x 0.10m. Underlies (1007). Overlies (1037).
INTERPRETATION:	*Natural deposition.*
(1037)	Loose grey gravels; measures >7m x >6m x >0.50m. Underlies (1036).
INTERPRETATION:	*Natural gravels*

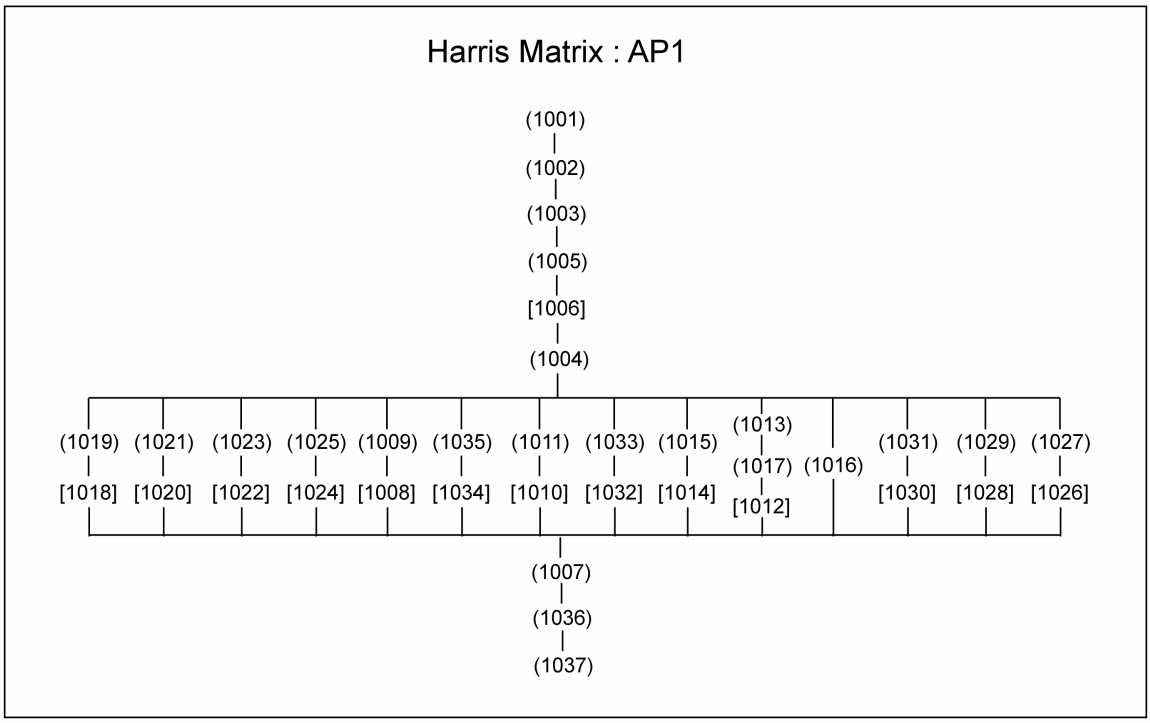


Fig. 3.1

Table 3.2: Access Pit 2

Context No	Description
(2001)	Loose orange brownish sand clay silt, very infrequent charcoal flecking; extends >9m x >8m x 0.45m. Overlies (2002)
INTERPRETATION:	*Modern ploughsoil.*
(2002)	Moderately compact reddish brown silty clay, occasional charcoal flecking; extends >9m x >8m x 0.70m. Underlies (2001). Overlies (2003).
INTERPRETATION:	*Seasonally deposited riverine silt.*
(2003)	Moderately compact reddish brown silty clay, occasional ceramic sherds and moderate to frequent charcoal flecking; extends >6m x >5m x 0.80m. Underlies (2003). Overlies (2004).
INTERPRETATION:	*Possible seasonal Romano British occupation layer.*
(2004)	Moderately compact orange brown clay silt, occasional charcoal flecking and degraded (terrestrial) mollusc shell; extends >6m x >5m x 0.10m. Underlies (2003). Overlies (2005).
INTERPRETATION:	*Waterlogged silty deposit possibly relating to marshland. This is supported by the presence of terrestrial mollusc shell, indicative of wet or waterlogged conditions. Evidence of wheat chaff and cereal grains also present.*
(2005)	Moderately compact to firm dark greyish brown sandy silt, moderate to frequent charcoal, wood fragments (including a small piece of worked oak, showing cut marks), degraded (terrestrial) mollusc shell and occasional bone and ceramic sherds; extends >3m x >2m x 0.22m. Underlies (2004). Overlies (2006).

Context No	Description
INTERPRETATION:	*Represents an early or pre-Romano British occupation or waterlogged deposit. Wet or waterlogged conditions are indicated by the presence of terrestrial mollusc shell.*
(2006)	Loose to moderately compact dark reddish brown waterlogged gravels, moderate shell and wood fragments. Measuring >3m x > 2m x >18m. Underlies (2005).
INTERPRETATION:	*Naturally deposited riverine gravels.*

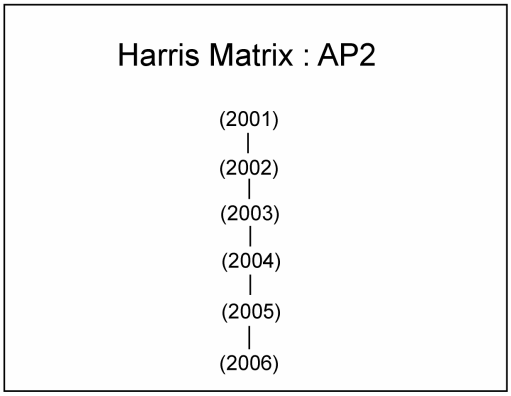


Fig. 3.2

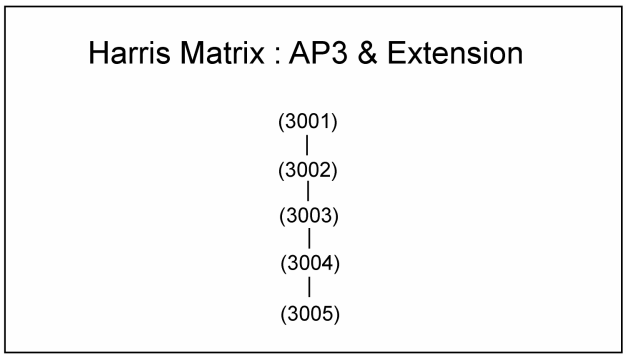


Fig. 3.3

Table 3.3: Access Pit 3

Context No	Description
(3001)	Loosely to moderately compacted orange brown sand clay silt with very occasional charcoal flecking. Measures >15m x >8m x 0.30m. Overlies (3002).
INTERPRETATION:	*Modern ploughsoil.*
(3002)	Moderately compacted reddish brown silt clay sand with occasional charcoal flecking. Measures >15m x >8m x 1m. Underlies (3001). Overlies (3003).
INTERPRETATION:	*Seasonal alluvium*
(3003)	Moderately compacted orangey brown sand clay silt, frequent ceramic sherds, moderate organic material, charcoal flecking, very occasional bone and Fe. Measures >13.40m x >5m x 0.50m. Underlies (3002). Overlies (3004).
INTERPRETATION:	*Accumulated Romano British occupation layer.*
(3004)	Firm light greyish brown silty clay with occasional charcoal flecking measuring >13.40m x >3.50m x 0.10 - 0.40m. Underlies (3003). Overlies (3005).
INTERPRETATION:	*Possible light occupation deposit.*
(3005)	Loose gravels within a grey silty sand matrix. Measures >13.40m x >4.80m x >0.10m. Underlies (3004).
INTERPRETATION:	*Natural gravels.*

Table 3.4: Access Pit 4

Context Number	Description
(4001)	Firm compact mid reddish brown silty clay with occasional medium subangular stones measuring >32m x >18m x 0.35m. Overlies (4002).
INTERPRETATION:	*Topsoil / alluvial ploughsoil.*
(4002)	Firm light to mid yellowish red silty clay with very rare small stones, measuring >32m x >18m to an average depth of 0.80m. Underlies (4001). Underlies (4001). Overlies (4046).
INTERPRETATION:	*Seasonal riverine silt deposition / alluvium*
(4003)	Moderately compact dark greyish brown silty clay, frequent ceramic sherds and charcoal flecking, moderate bone fragments and small rounded and subangular stones, one glass fragment and nails. Extends trench wide >32m x >18m to an average thickness of 0.15m. Cut by [4009] / [4087], [4010], [4012], [4014], [4016], [4035], [4040], [4048], [4051], [4054], [4076], [4097], [4100] and [4103]. Overlies (4026), (4033), (4027), (4044), (4058), (4060), (4062), (4068), (4070), (4072), (4075), (4090), (4092) and (4096). Physically underlies (4046). Same as (4047).
INTERPRETATION:	*Romano British occupation deposit, possibly relating to seasonal occupation. Same as (4047)*
(4004)	Sub-circular masonry shaft measuring 1.60m x 1m x >2m and tapering towards base. Sandstone construction consisting of 1) clay-bonded squared random blocks (0.35m x 0.15m x 0.15m) (upper 0.50m of shaft) and 2) random coursed sandstone (0.45m x 0.15m x 0.15m) (lower section of shaft). Underlies (4066). Fills [4005].
INTERPRETATION:	*Romano-British well*
[4005]	Sub-circular cut measuring 2.5m x 2m x >2m. Break of slope top sharp, sides; tapering, break of slope base unknown, base unknown. Cuts (4007). Filled by (4004), (4066), (4024), (4006) and deposit (4046).
INTERPRETATION:	*Cut for well (4004)*
(4006)	Moderately compact to firm dark orangey brown silty clay, frequent charcoal fragments, occasional CBM & ceramic sherds, occasional daub flecking and very occasional Fe nails; measures 0.90m x 0.45m x 0.16m. Overlies (4024). Underlies (4046) – possible same as (4046).
INTERPRETATION:	*Tertiary fill of well (4004).*
(4007)	Firm mid to dark reddish brown silty clay, occasional charcoal flecking, CBM and Fe, frequent ceramic sherds and animal bone; measures >32m x >18m x 0.48m. Physically underlies (4003)=(4047). Overlies (4019). Cut by [4005], [4025], [4029]?, [4032], [4043], [4057], [4059], [4061], [4063], [4069], [4071], [4074], [4089], [4091], [4095], [4106] and [4109].
INTERPRETATION:	*Romano-British occupation deposit.*
(4008)	Firm dark greyish brown silty clay, occasional Fe, CBM

Context Number	Description
	fragments and small subangular stones, frequent ceramic sherds, charcoal flecking and animal bone, measures 8m x 1m to an average depth 0.25m. Underlies (4046). Fill of (4009). Same as (4088)
INTERPRETATION:	*Fill of boundary ditch / linear [4009].*
NOTES	*(4008) refers to the section of the ditch fill identified in original engineering pit (AP4 – 9m x 8m); (4088) refers to section of the same ditch identified in the extension area – see plan for further clarification*
[4009]	Rectilinear cut orientated N–S measuring 8m x 1m to an average depth 0.25m. Break of slope top sharp, sides; moderate, base slightly concave. Filled by (4008). Same as [4087].
INTERPRETATION:	*Cut of boundary ditch / linear*
NOTES	*[4009] refers to the section of the ditch identified in original engineering pit (AP4 – 9m x 8m); [4087] refers to section of the same ditch identified in the extension area – see plan for further clarification*
[4010]	Circular cut measuring 0.13m in diameter x 0.03m. Break of slope top sharp, sides; vertical, break of slope base sharp, base flat. Cuts (4003)=(4047). Filled by (4011).
INTERPRETATION:	*Base of a small truncated posthole*
(4011)	Moderately compact to firm dark blackish brown silty clay, frequent charcoal flecking, occasional small subangular stones; measures 0.13m in diameter x 0.03m. Underlies (4046). Fill of [4010].
INTERPRETATION:	*Fill of posthole [4010].*
[4012]	Ovoid cut measuring 0.55m x 0.30m x 0.18m. Break of slope top sharp, sides; vertical, break of slope base sharp, base concave, bowl in SE end. Cuts (4003)=(4047). Filled by (4013).
INTERPRETATION:	*Cut of Post Romano-British domestic waste pit*
(4013)	Loose to moderately compacted yellow/greyish brown silty clay, frequent burnt wood and charcoal flecks (increasing in size towards base), moderate amounts of small rounded pebbles; measures 0.55m x 0.30m x 0.18m. Fill of [4012]. Cut by [4022].
INTERPRETATION:	*Fill of waste pit [4012].*
[4014]	Circular cut measuring 0.55 x 0.53 x 0.15m. Break of slope top sharp, sides; vertical / slightly concave, break of slope base sharp, base flat. Cuts (4003)=(4047). Filled by (4015).
INTERPRETATION:	*Cut of Post Romano-British domestic waste pit*
(4015)	Moderately compact light greyish brown silty clay, frequent small rounded and subangular stones and charcoal flecking, occasional charcoal fragments at base; measures 0.55m x 0.53m x 0.15m. Underlies (4046). Fill of [4014].
INTERPRETATION:	*Fill of waste pit [4014].*
[4016]	Circular cut measuring 0.60m x 0.55m x 0.35m. Break of slope top sharp, sides; steeply sloping, break of slope base sharp,

Context Number	Description
	base concave. Cuts (4003)=(4047). Filled by (4017), (4018).
INTERPRETATION:	*Cut of domestic waste pit.*
(4017)	Moderately compact reddish brown sandy clay, occasional small pebbles, charcoal flecking and daub; measures 0.60m x 0.55m x 0.30m. Underlies (4046). Overlies (4018). Fills [4016]
INTERPRETATION:	*Secondary fill of [4016].*
(4018)	Loose charcoal deposit measuring 0.50m x 0.45m x 0.04m. Underlies (4017). Fills [4016].
INTERPRETATION:	*Primary fill of [4016].*
(4019)	Firm dark grey to black silty clay with frequent charcoal flecking measuring >6m x >5m x 0.05m. Underlies (4007). Overlies (4020).
INTERPRETATION:	*Early Romano-British occupation deposit.*
(4020)	Firm orangey brown silty clay measuring >6m x >5m x 0.15m. Underlies (4019). Overlies (4094).
INTERPRETATION:	*Abandonment phase*
(4021)	Moderately compact bluish grey silty clay with occasional gravels, wood fragments and charcoal flecking measuring >6m x >5m 0.32m. Cut by [4093]. Overlies (4079).
INTERPRETATION:	*Alluvial deposition*
[4022]	Circular cut measuring 0.60m x 0.40m x 0.20m. Break of slope top sharp, sides; moderately sloping, break of slope base gradual, base concave. Cuts (4013). Filled by (4023).
INTERPRETATION:	*Cut of Post Romano-British domestic waste pit or posthole.*
(4023)	Moderately compact to firm mid reddish brown silty clay with frequent small subangular stones and charcoal flecking, occasional mortar flecking and bone; measures 0.60m x 0.40m x 0.20m. Underlies (4046). Fill of [4022].
INTERPRETATION:	*Fill of waste pit [4022].*
(4024)	Firm mid orangey brown silty clay with frequent mortar and charcoal flecking and very occasional Fe. Measures 1.40m x 0.80m x 0.40m. Underlies (4006). Overlies (4066). Fills [4005].
INTERPRETATION:	*Secondary fill of well (4004)*
[4025]	Linear cut measuring >3.75m x 1m x 0.16m. Break of slope top sharp, sides; gradually sloping slightly concave, break of slope base gradual, base concave. Cuts (4007). Filled by (4026).
INTERPRETATION:	*Romano-British (boundary) ditch / linear*
(4026)	Moderately compact light greyish brown silty clay with frequent charcoal flecking, animal bone and ceramic sherds and occasional larger charcoal fragments and flecks of daub; measures 3.75m x 1m x 0.16m. Underlies (4003)=(4047). Fill of [4025].
INTERPRETATION:	*Fill of linear [4025].*
(4027)	Articulated neonate skeleton oriented N-S with head to N, laid on left side in flexed position. Burial removed as single block, no grave cut identified on site or during subsequent laboratory excavation. Underlies (4003)=(4047). Overlies (4028).

Context Number	Description
INTERPRETATION:	*Romano-British inhumation. Relationship between interment and ditch [4025] could not be established. The discovery of a ceramic rim sherd near the right foot of the skeleton and cremated bone fragments and a ceramic sherd immediately SW of the remains suggests the interment had disturbed an earlier cremation burial.*
(4028)	Firm reddish brown sandy clay with occasional black burnished ware, Severn Valley ware and bone, measuring *c.*2m x >1m x 0.30m. Underlies (4027). Overlies (4031).
INTERPRETATION:	Fill of grave cut [4029]
[4029]	No grave cut was identified on site and none could be observed during laboratory excavation of the block containing the burial. Cuts (4047). Filled by (4027), (4028) and (4031).
INTERPRETATION:	*Hypothetical grave cut for (4027)*
(4030)	VOID
INTERPRETATION:	*N/A*
(4031)	Firm dark grey / black silty clay with very frequent charcoal flecking. Measuring *c.*2m x >1m x 0.30m. Underlies (4027) and (4028). Overlies (4007)
INTERPRETATION:	*Possibly same as (4019) but more charcoal rich. Underlies skeleton (4027)*
[4032]	Rectangular cut, corners sharp 90 degrees, measures 2.20m x 0.80m x 0.65m, break of slope top sharp, sides near vertical, break of slope base sharp, base flat, orientation N-S. Filled by (4033), (4038) and (4034) / (4039). Cuts (4007).
INTERPRETATION:	*Cut for Romano-British coffin burial*
(4033)	Firm mid orangey brown silty clay, occasional small sub-rounded stones, bone, charcoal fragments, one glass fragment and frequent charcoal flecks, measures 2.20m x 0.80m x 0.27m Underlies (4003)=(4047). Overlies (4038).
INTERPRETATION:	*Secondary fill of coffin.*
(4034)	Oak coffin measuring 2m x 0.40m x 0.18m, comprising two sides, a base and two end pieces, lid absent or not preserved, but fragmentary wood fused to some of the bone material probably represents the remains of a lid. Underlies (4038). Fills [4032]. Contemporary with (4039)
INTERPRETATION:	*Romano-British oak coffin*
[4035]	Rectilinear cut measuring 1.60m x 0.65m x 0.20m, break of slop at top sharp, sides; moderately sloping, break of slope at base gradual, base slightly concave, orientation N-S. Cuts (4003)=(4047). Filled by (4036) and (4037)
INTERPRETATION:	*Post Romano-British grave cut*
(4036)	Moderately compact dark blackish brown silty clay, occasional charcoal flecking, small white sandstone fragments, frequent Fe nails, measures 1.60m N-S x 0.65m E-W x 0.20m. Underlies (4046). Overlies (4037). Fills [4035].
INTERPRETATION:	*Fill overlying burial (4037)*

Context Number	Description
(4037)	Extended female adult inhumation, oriented N-S with head at S, skull on side facing W, body appeared to be on its side with arms crossed over chest. Underlies (4036). Fills [4035].
INTERPRETATION:	*Post Romano-British inhumation*
(4038)	Firm / plastic mid bluish grey silty clay, moderate charcoal fragments, one glass fragment, measures 2m x 0.60m x 0.35m. Underlies (4033). Overlies (4034) / (4039). Fills [4032].
INTERPRETATION:	*Primary fill overlying coffin (4034).*
(4039)	Extended supine inhumation of mature, probably male, adult (46+ years), oriented N-S with head at N, interred within well-preserved oak coffin (4034), remains disturbed, with some bones out of place, although probably articulated at time of interment. Evidence of pathological conditions, including DISH. Underlies (4038). Contemporary with (4034).
INTERPRETATION:	*Romano-British inhumation.*
[4040]	Cut not visible. Filled by (4041) and (4042). Cuts (4003)=(4047).
INTERPRETATION:	*Hypothetical grave cut for inhumation (4042)*
(4041)	Moderately compact reddish brown sand-silt-clay, moderate small gravel pebbles, occasional Fe nails & charcoal flecking. Extends approximately 0.60m x 0.20m x 0.12m. Underlies (4046). Overlies (4042). Fills [4040].
INTERPRETATION:	*Fill of hypothetical grave cut [4040].*
(4042)	Articulated leg and foot bones, oriented NW-SE with head at NW. Remains comprise L femur, tibia and fibula and R tibia and fibula plus one foot phalanx. Underlies (4041). Fills [4040].
INTERPRETATION:	*Heavily truncated remains of Post Romano-British inhumation*
[4043]	Circular cut measuring 0.37m x 0.25m x 0.09m, break of slope top sharp, sides; concave gradually sloping, break of slope base gradual, base slightly concave. Filled by (4044). Cuts (4007).
INTERPRETATION:	*Cut of cremation / neonate inhumation burial pit*
(4044)	Moderately compact dark greyish brown silty clay, frequent charcoal flecking, moderate ceramic sherds, disarticulated human bone. Measuring 0.37m x 0.25m x 0.09m. Underlies (4003)=(4047). Fill of [4043].
INTERPRETATION:	*Fill of cremation / neonate / inhumation burial pit [4043]*
(4045)	VOID
INTERPRETATION:	*VOID*
(4046)	Moderate to firm reddish grey silty clay, occasional charcoal flecking and small subangular stones, moderate ceramic sherds and animal bone, glass fragment, extends >32m x >18m to a maximum thickness of 0.21m. Underlies (4002). Same as (4006). Overlies (4008) / (4088), (4011), (4015), (4017), (4023), (4036), (4041), (4049), (4052), (4055), (4077), (4098), (4101) and (4104).
INTERPRETATION:	*Post-Romano-British deposit. Also uppermost fill of well (4004).*
(4047)	Moderately compact greyish brown silty clay with frequent very small rounded stones and charcoal flecking, moderate ceramic

Context Number	Description
	sherds and CBM fragments, occasional bone fragments and Fe objects, measuring >32m x >18m to a maximum thickness of 0.15m. Cut by [4009] / [4087], [4010], [4012], [4014], [4016], [4035], [4040], [4048], [4051], [4054], [4076], [4097], [4100] and [4103]. Overlies (4026), (4033), (4027), (4044), (4058), (4060), (4062), (4068), (4070), (4072), (4075), (4090), (4092) and (4096). Physically underlies (4046). Same as (4003).
INTERPRETATION:	*Romano British occupation deposit, possibly relating to seasonal occupation.*
[4048]	Sub-rectangular cut oriented E-W measuring *c.*1.80m x *c.*0.60m x 0.20m, rounded corners, break of slope top gradual, sides concave, break of slope base imperceptible, base concave. Cuts (4003)=(4047). Filled by (4050), (4049).
INTERPRETATION:	*Shallow poorly defined grave cut for inhumation (4050)*
(4049)	Moderately compact reddish grey brown silty clay with moderate gravel inclusions and charcoal flecking. One glass fragment. Measuring *c.*1.80m x *c.*0.60m x 0.20m. Underlies (4046). Overlies (4050). Fill of [4048].
INTERPRETATION:	*Fill of grave cut [4048]*
(4050)	Extended prone juvenile inhumation. AMS radiocarbon dates of Cal AD 550 to 660 (Cal BP 1400 to 1290) obtained. Stable isotope ratio analysis suggests a predominantly terrestrial based diet with marine fish / shellfish being absent or only forming a minor component of the diet. Evidence of injuries inflicted by a blade to the head, neck and right shoulder. Fill of [4050]. Underlies (4049).
INTERPRETATION:	*Late burial indicating continued or renewed use of the site during the Post-Romano-British period. Evidence of violent death.*
[4051]	Roughly elliptical cut oriented approximately E-W and measuring 1.3m x 0.45m x 0.14m, rounded corners, sharp break of slope top, concave sides, gradual break to concave base. Cuts (4003)=(4047). Filled by (4052), (4053).
INTERPRETATION:	*Grave cut. Appears to be relatively shallow, perhaps suggesting a hurried burial. The position of the inhumation possibly supports this interpretation.*
(4052)	Moderately compacted to firm dark brown silty clay, moderate charcoal flecking, occasional Fe nails, small stones and ceramic fragments. Measures 1.3m x 0.45m x 0.14m. Underlies (4046). Overlies (4053). Fills [4051].
INTERPRETATION:	*Fill of grave cut [4051]*
(4053)	Infant remains; comprise damaged unfused skull, L and R scapula, L and R humerus, radius and ulna. L and R femur, tibia and fibula. Feet are absent. Fills [4051]. Underlies (4052). Lies in very close proximity to infant remains (4056).
INTERPRETATION:	*This burial appears to be from a Post Romano-British phase of activity. The E-W orientation suggests there may have been fundamental shift in religious belief. The inhumation appears to have been forced into a cut of predetermined size*
[4054]	Roughly ovoid cut approximately 0.30m x 0.20m. Cuts

Context Number	Description
	(4003)=(4047). Filled by (4055), (4056).
INTERPRETATION:	*Grave cut for inhumation (4053) – unexcavated.*
(4055)	Firm reddish brown sand silt clay, moderate gravelly inclusions. Measures approximately 0.30m x 0.20m. Underlies (4046). Overlies (4056). Fills [4054].
INTERPRETATION:	*Fill of grave cut – unexcavated.*
(4056)	Infant remains. Head is absent but appears to have been roughly at the N. Majority of bones appear to be broken. Lower arms and legs are absent. Underlies (4055). Fills [4054]. Lies in close proximity to infant remains (4053).
INTERPRETATION:	*Disturbed Post Romano-British infant burial. Orientated approximately N-S.*
[4057]	Roughly circular cut measuring 0.80m x 0.78m x 0.22m. Break of slope top gradual to moderate, sides; concave, break of slope gradual to slightly concave base. Cuts (4007). Filled by (4058).
INTERPRETATION:	*Cut of domestic waste pit*
(4058)	Moderately compact dark reddish brown silty clay with frequent charcoal flecking and small white rounded stones, measuring 0.80m x 0.78m x 0.22m. Contained moderate ceramic sherds and one body fragment of blue/green glass of probable 1st to 3rd century date. Underlies (4003)=(4047). Fill of [4057].
INTERPRETATION:	*Fill of domestic waste pit [4057]*
[4059]	Sub-circular cut oriented N-S measuring 0.47m x 0.39m x 0.10m. Break of slope top sharp, sides; moderately sloping, break of slope base gradual, base slightly concave. Cuts (4007). Filled by (4060).
INTERPRETATION:	*Cut of pit*
(4060)	Moderately compacted blackish brown silty clay frequent charcoal, occasional very small rounded sandstone pebbles. Measuring 0.47m x 0.39m x 0.10m. Underlies (4003)=(4047). Fills [4059].
INTERPRETATION:	*Fill of [4059]*
[4061]	Sub-circular cut oriented E-W measuring 0.28m x 0.26m x 0.17m. Break of slope top sharp, sides; steeply sloping, break of slope base sharp, base slightly concave. Cuts (4007). Filled by (4062).
INTERPRETATION:	*Cut of pit*
(4062)	Firm dark reddish brown sandy clay, moderate small rounded sandstone and charcoal. Measuring 0.28m x 0.26m x 0.17m. Underlies (4003)=(4047). Fills [4061].
INTERPRETATION:	*Fill of [4061]*
[4063]	Linear cut running E-W, measuring >17.5m x average 0.98m, to an average depth of 0.30m, break of slope moderate at W sharp at E, sides gently sloping at W tapering at E, break of slope base gradual at W, base concave, v-shaped at E. Filled by (4064) & (4065). Cuts (4007). Cut by [4067]
INTERPRETATION:	*Boundary / drainage ditch.. Possibly same as [4106]*

Context Number	Description
(4064)	Moderately compacted mid greyish brown silty clay, frequent charcoal flecking, moderate ceramic sherds and bone, occasional mortar flecks and small stones. Measuring >17.5m x average 0.98m, to an average depth of 0.15m. Cut by [4067]. Overlies (4065). Possibly same as (4107).
INTERPRETATION:	*Secondary fill of boundary / drainage ditch.*
(4065)	Moderately compact mid grey clayey silt, occasional charcoal flecks, very occasional ceramic sherds including intact Black Burnished Ware pot, extends >17.5m x average 0.38m, to an average depth of 0.12m. Underlies (4064). Fills [4063].
INTERPRETATION:	*Primary fill of boundary ditch [4063]*
(4066)	Moderately compacted to firm mid greyish brown silty clay, frequent animal bone, occasional wood and leather fragments, sole and upper from right foot child's shoe with iron hobnails in sole. Domestic waste and dog skeleton present. Extends 2.5m x 2m x >0.30m. Underlies (4024). Fills (4004)/[4005].
INTERPRETATION:	*Primary? fill of well (4004)*
[4067]	Curvilinear cut extending 7m N-S, >13m E-W, average width 0.95m, average depth 0.20m, break of slope top sharp, sides tapering to base to give V-shaped profile. Cuts (4064). Filled by (4068) and (4083).
INTERPRETATION:	*Boundary / drainage ditch*
(4068)	Firm mid greyish brown silty clay, moderate gravels. Extending 7m N-S, >13m E-W, average width 0.95m, average depth 0.17m. Underlies (4003)=(4047). Overlies (4083). Fills [4067].
INTERPRETATION:	*Fill of ditch [4067]*
[4069]	Figure of eight cut oriented N-S measuring 2m x 0.70m x 0.20m. Break of slope top sharp, sides; steeply sloping and vertical at S end, break of slope base sharp, base slightly convex. Remains of masonry structure forming partition within feature with remains of possible channel. Concrete lining present at S end. Cuts (4007). Filled by (4070), (4082) and (4084).
INTERPRETATION:	*Pottery kiln*
(4070)	Moderately compacted to firm dark reddish brown gritty clay, frequent charcoal, moderate small sandstone fragments. Underlies (403)=(4047). Overlies (4082) and (4084). Fills [4069].
INTERPRETATION:	*Fill of [4069]*
[4071]	Rectilinear cut – unexcavated. Note: A short narrow curvilinear feature extended out to the E from the N (head) end of the grave cut. Filled by (4072) and (4073). Cuts (4007).
INTERPRETATION:	*Grave cut for inhumation (4073). The shallow curvilinear feature may have been associated with the Roman ritual practice of 'feeding the dead', in which case it would have accommodated a pipe down which food or drink could be poured directly onto the burial.*
(4072)	Firm reddish brown silty clay, moderate small gravel inclusions, occasional charcoal flecking. Note: Only partially excavated. Underlies (4003)=(4047). Overlies (4073). Fills [4071].

Context Number	Description
INTERPRETATION:	*Fill of grave cut associated with coffin burial (4073).*
(4073)	Extended supine adult inhumation oriented N-S with head at N. Note: The remains were interred within a coffin, which was represented by a soil stain. Part of the coffin lid appeared to have been cut away thereby exposing the skull.
INTERPRETATION:	*Romano-British inhumation. Removal of part of coffin lid may have been of ritual significance as outlined above.*
[4074]	Linear cut oriented E-W measuring (visible dimensions) *c.*13m x 0.70 – 1m to an average depth 0.38m. Break of slope top sharp, sides; moderately sloping to steep, break of slope base moderate to sharp, base slightly concave. Cuts (4110). Filled by (4075), (4108) and (4111).
INTERPRETATION:	*Ditch appears to be a re-cut of [4109] possibly redefining a boundary*
(4075)	Firm dark greyish brown silty clay, frequent charcoal patches. Extends *c.*13m x 0.92m to an average depth of 0.20m. Underlies (4003)=(4047). Overlies (4111). Fills [4074].
INTERPRETATION:	*Uppermost fill of possible boundary / drainage ditch [4074]*
[4076]	Roughly ovoid cut oriented E-W measuring 0.80m x 0.60m. Cuts (4003)=(4047). Filled by (4077).
INTERPRETATION:	*Unexcavated grave cut for Post Romano-British infant burial (4078).*
(4077)	Moderately compact reddish brown silty clay. Extent 0.80m x 0.60m. Depth unknown. Underlies (4046). Overlies (4078). Fills [4076].
INTERPRETATION:	*Unexcavated fill of grave cut [4076]*
(4078)	Heavily disturbed infant remains. Head appears to be at the E although very damaged. Evidence of other bones but difficult to distinguish between them. Underlies (4077). Fills [4076].
INTERPRETATION:	*This burial appears to be from a Post-Romano British phase of activity. The E-W orientation suggests there may have been fundamental shift in religious belief. Very heavily disturbed.*
(4079)	Loose greyish yellow sandy gravel extending >3m x >2m x 0.26m. Underlies (4021). Overlies (4080).
INTERPRETATION:	*Alluvial gravels*
(4080)	Moderately compacted to firm bluish grey gravels with pockets of organic material, occasional charcoal flecking and fragments measuring >3m x >2m x 0.60m. Underlies (4079). Overlies (4081).
INTERPRETATION:	*Alluvial gravels*
(4081)	Firm orangey yellow gravels, extending >3m x >2m x >0.10m. Underlies (4080).
INTERPRETATION:	*Alluvial gravels*
(4082)	Masonry remains consisting of uncoursed reddish coarse sandstone of differing size (maximum dimensions 210mm x 220mm), measuring 0.49m x 0.22m x 0.10m. Underlies (4070).

Context Number	Description
	Contemporary with (4084). Fills [4069].
INTERPRETATION:	*Flue channel relating to pottery kiln [4069]*
(4083)	Moderately compacted to firm greyish red silty clay, 2% charcoal flecking. Extending 7m N-S, >13m E-W, average width 0.25m, average depth 0.04m. Underlies (4068). Fills [4067].
INTERPRETATION:	*Slumped deposit visible at base of ditch [4067]. Probably represents collapse some time after the ditch was dug but before it began to fill up with (4068)*
(4084)	Indurated concrete deposit measuring 0.58m E-W x 0.45m N-S. Underlies (4070). Contemporary with (4082). Fills [4069]
INTERPRETATION:	*Concrete base in southernmost end of [4069]*
(4085)	VOID
INTERPRETATION:	*VOID*
[4086]	VOID
INTERPRETATION:	*VOID*
[4087]	Linear cut oriented N-S measuring >4m x 0.50m to an average depth of 0.15m. Break of slope base sharp, sides; vertical, break of slope base sharp, base flat. Cuts (4003)=(4047). Same as [4009]
INTERPRETATION:	*This ditch feature appears to be a continuation of [4009].*
NOTES	*[4009] refers to the section of the ditch identified in original engineering pit (AP4 – 9m x 8m); [4087] refers to section of the same ditch identified in the extension area – see plan for further clarification*
(4088)	Moderately compact dark greyish brown silty clay, moderate small gritty gravels, moderate charcoal flecking, ceramic sherds, animal bone, medium and large subangular stones, occasional Fe objects (nails). Measures >4m N-S x 0.50m E-W x 0.15m. Underlies (4046). Fill of [4087]. Same as (4008).
INTERPRETATION:	*Fill of boundary / drainage ditch of Post Romano-British date*
NOTES	*(4008) refers to the section of the ditch fill identified in original engineering pit (AP4 – 9m x 8m); (4088) refers to section of the same ditch identified in the extension area – see plan for further clarification*
[4089]	Sub-circular cut measuring 1m E-W x 0.57m x 0.25m. Break of slope top sharp, sides; vertical, break of slope base sharp, base flat. Filled by (4090). Cuts (4007).
INTERPRETATION:	*Romano-British pit of undefined function*
(4090)	Firm reddish brown silty clay, frequent charcoal, occasional shell. Extends 1m E-W x 0.57m x 0.25m. Underlies (4003)=(4047). Fills [4089].
INTERPRETATION:	*Fill of pit [4089].*
[4091]	Roughly ovoid cut measuring 1.20m x 0.50m x 0.18m. Break of slope top gradual, sides gradually sloping, break of slope base

Context Number	Description
	gradual, base flat, oriented NW-SE. Filled by (4092). Cuts (4007).
INTERPRETATION:	*Possible cut of pit, natural depression or root bole.*
(4092)	Firm mid brown silty clay, frequent charcoal flecking and pieces, moderate animal bone and shell, measures 1.20m x 0.50m x 0.18m. Underlies (4003)=(4047). Fills [4091].
INTERPRETATION:	*Fill of pit [4091]*
[4093]	Linear cut, extent not fully defined, visible dimensions 0.62m E-W x 0.40m N-S x 0.13m, break of slope top sharp, sides steeply sloping, break of slope base sharp, base flat. Filled by (4094). Cuts (4021).
INTERPRETATION:	*This feature appears to represent the earliest activity on the site; however, due to limited exposure it could not be established whether this was in fact a cut feature rather than a palaeochannel.*
(4094)	Moderately compact greyish brown clay, occasional charcoal flecking, measuring 0.62m E-W x 0.40m N-S x 0.13m. Underlies (4020). Fills [4093].
INTERPRETATION:	*Fill of [4093].*
[4095]	Elongated ovoid cut oriented E-W measuring 0.97m E-W x 0.48m N-S x 0.08m. Break of slope top moderate (irregular), sides steep on S gradual to moderate on N, break of slope base gradual to moderate N to S, base irregular slightly concave. Filled by (4096). Cuts (4007).
INTERPRETATION:	*Shallow pit of uncertain function, although possible natural depression filled with occupation debris.*
(4096)	Moderately compact mid grey silty clay, occasional ceramic sherds and animal bone, frequent small rounded gravelly sandstone, measuring 0.97m E-W x 0.48m x N-S x 0.08m. Underlies (4003)=(4047). Fills [4095].
INTERPRETATION:	*Fill of [4095]*
[4097]	Probable ovoid cut, unexcavated. Filled by (4098) and (4099). Cuts (4003)=(4047).
INTERPRETATION:	*Supposed grave cut for burial (4099); however, no evidence of cut identified.*
(4098)	Firm mid reddish brown silty clay, frequent fragmentary human bone, extent unknown as no clear evidence of a cut was identified. Underlies (4046). Fills [4097]
INTERPRETATION:	*Fill of grave cut [4097]*
(4099)	Inhumation of probable neonate oriented E-W. No skull present but head presumably was at the W, arms outstretched and legs bent, appears to be lying on its left side. Very fragmentary remains of limbs, no hand / foot bones present, partial remains of pelvis, some vertebrae present. Fills [4097]. Underlies (4098).
INTERPRETATION:	*Neonate inhumation of Post Romano-British date*

Context Number	Description
[4100]	Circular cut measuring 0.30m in diameter, unexcavated thus depth not established. Filled by (4101) and (4102). Cuts (4003)=(4047).
INTERPRETATION:	*Grave cut for (4102)*
(4101)	Moderately compact mid greyish brown silty clay, moderate charcoal, mortar flecking, occasional small gravels, measures 0.30m x 0.30m, not excavated. Underlies (4046). Overlies (4102). Fills [4100]
INTERPRETATION:	*Fill of grave cut [4100]*
(4102)	Neonate skeleton oriented E-W, laid on side in flexed (foetal) position. Head separated from body and located near feet, it may thus be part of another interment; however, both head and body appear to be within the same grave cut. Underlies (4101). Fills (4100).
INTERPRETATION:	*Remains of Post Romano-British infant burial*
[4103]	Cut of very indistinct form measuring >0.35m x 0.20m, depth unknown as unexcavated, corners roughly rounded. Filled by (4104) and (4105). Cuts (4003)=(4047).
INTERPRETATION:	*Grave cut for (4105)*
(4104)	Moderately compacted mid greyish brown silty clay, occasional mortar, charcoal flecks, thickness and extent uncertain as form of cut was highly degraded. Underlies (4046). Overlies (4105). Fills [4103].
INTERPRETATION:	*Fill of feature of unknown function*
(4105)	Extremely degraded (neonate) inhumation possibly oriented E-W with head at W, comprising limited disarticulated limb bones and possibly part of skull. Overlies [4103]. Underlies (4104).
INTERPRETATION:	*Remains of Post Romano-British infant burial*
[4106]	Linear cut running roughly E-W measuring >5m x 1.05m to an average depth 0.35m. Break of slope top sharp, sides gradually sloping. Break of slope base gradual, base concave. Filled by (4107). Cuts (4007).
INTERPRETATION:	*Appears to be a continuation of boundary / drainage ditch [4063]*
(4107)	Moderately compact mid greyish brown silty clay, frequent shell fragments, occasional small stones, animal bone, ceramic sherds. Extends >5m x 1.05m to an average depth 0.35m. Underlies (4003)=(4047). Fills [4106]. Possible same as (4064)
INTERPRETATION:	*Fill of [4106]. Possibly same as (4064)*
(4108)	Firm mid orangey brown silty clay, occasional charcoal flecking, measures *c.*13m x 0.70 – 1m to an average depth 0.08m. Underlies (4111). Fills [4074]
INTERPRETATION:	*Primary fill of Ditch [4074].*
[4109]	Linear cut oriented roughly E-W measuring 9m x average 0.50m x average 0.25m. Break of slope top sharp, sides; steeply

Context Number	Description
	sloping, break of slope moderate to sharp, base slightly concave. Filled by (4110). Cuts (4007).
INTERPRETATION:	*Cut of boundary / drainage ditch*
(4110)	Moderately compact mid greyish brown silty sand, occasional ceramic sherds, charcoal and bone, measures 9m x 0.50m x 0.25m. Fills [4109]. Cut by [4074].
INTERPRETATION:	*Fill of boundary ditch [4109].*
(4111)	Moderately compact mid grey silty sand, occasional charcoal and daub flecking. Measures *c.*13m x 0.70 – 1m to an average depth 0.20m. Underlies (4075). Overlies (4108). Fills [4074]
INTERPRETATION:	*Secondary fill of ditch [4074]*

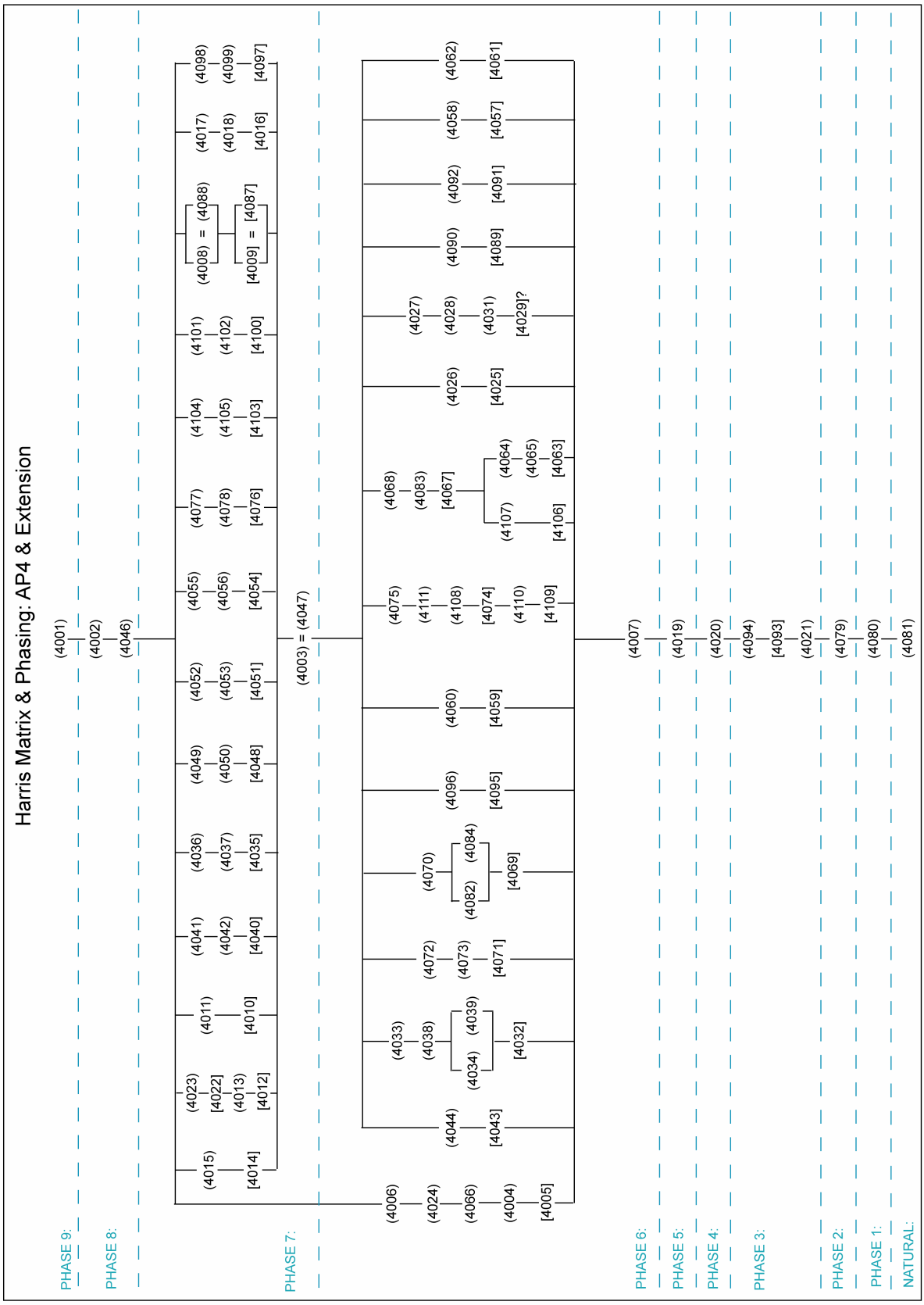

Harris Matrix & Phasing: AP4 & Extension
PHASE 9:
PHASE 8:
PHASE 7:
PHASE 6:
PHASE 5:
PHASE 4:
PHASE 3:
PHASE 2:
PHASE 1:
NATURAL:
(4001)
(4002)
(4046)
(4003) = (4047)
(4007)
(4019)
(4020)
(4094)
[4093]
(4021)
(4079)
(4080)
(4081)
(4006)
(4024)
(4066)
(4004)
[4005]
(4015)
[4014]
(4023)
[4022]
(4013)
[4012]
(4011)
[4010]
(4041)
(4042)
[4040]
(4036)
(4037)
[4035]
(4049)
(4050)
[4048]
(4052)
(4053)
[4051]
(4055)
(4056)
[4054]
(4077)
(4078)
[4076]
(4104)
(4105)
[4103]
(4101)
(4102)
[4100]
(4008) = (4088)
[4009] = [4087]
(4098)
(4099)
[4097]
(4017)
(4018)
[4016]
(4044)
[4043]
(4033)
(4038)
(4034)
(4039)
[4032]
(4072)
(4073)
[4071]
(4070)
(4082)
(4084)
[4069]
(4096)
[4095]
(4060)
[4059]
(4075)
(4111)
(4108)
[4074]
(4110)
[4109]
(4068)
(4083)
[4067]
(4107)
(4064)
(4065)
[4063]
[4106]
(4027)
(4028)
(4031)
[4029]?
(4026)
[4025]
(4090)
[4089]
(4092)
[4091]
(4062)
(4058)
[4057]
[4061]

Fig. 3.4

Table 3.5: Access Pit 5

Context Number	Description
(5001)	Firm mid reddish brown silty clay extending >9m x >8m x 0.30m, occasional medium subangular stones. Overlies (5002).
INTERPRETATION:	*Modern topsoil/ plough soil.*
(5002)	Firm light reddish brown silty clay extending >9m x >8m x 0.25m. Underlies (5001). Overlies (5003).
INTERPRETATION:	*Seasonal riverine flooding/alluvial deposit.*
(5003)	Firm mid reddish brown silty clay extending >9m x >8m x 0.95m. Underlies (5002). Overlies (5004).
INTERPRETATION:	*Seasonal riverine flooding/ alluvial deposit.*
(5004)	Firm mid bluish grey silty clay with occasional ceramic sherds and animal bone. Extends >6m x >5m x 0.48m. Underlies (5003). Overlies (5005).
INTERPRETATION:	*Romano British occupation layer, possibly seasonal due to flooding.*
(5005)	Friable light pinkish grey silty clay, very frequent gravel inclusions, frequent charcoal flecks and lumps, occasional small ceramic sherds and occasional animal bone. Extends 2.85m x 2.50m x 0.05m. Underlies (5004). Overlies (5008), (5013) & (5011).
INTERPRETATION:	*Romano British occupation deposit.*
(5006)	Well compacted dark reddish brown silty clay measuring >6m x >6m x 0.45m, occasional charcoal flecks. Overlies (5014). Cut by [5007], [5012] & [5010].
INTERPRETATION:	*Light occupation deposit.*
[5007]	Ovoid cut orientated NE–SW measuring 0.70m x >0.30m x 0.23m. Break of slope top moderate, sides; steeply sloping, break of slope base gradual, base concave. Filled by (5008) & (5009). Cuts (5006).
INTERPRETATION:	*Cut of Romano British pit or posthole.*
(5008)	Firmly reddish brown silty clay measuring 0.70m x >0.30m x 0.18m, moderate ceramic sherds and frequent small rounded and subangular stones. Fills [5007]. Overlies (5009). Underlies (5005).
INTERPRETATION:	*Secondary fill of [5007].*
(5009)	Moderately compacted to firm dark greyish brown silty clay measuring 4m x >0.30m x 0.06m, frequent charcoal flecking and fragments. Moderate fired/heated clay. Fills [5007]. Underlies (5008).
INTERPRETATION:	*Primary fill of [5007].*
[5010]	Semicircular (partially under section) cut measuring 1.4m x >0.40m x 0.12m. Break of slope top gradual to moderate, sides concave E gently sloping W, break of slope base gradual, base concave. Orientation appears to be E–W. Filled by (5011). Cuts (5006).
INTERPRETATION:	*Romano British pit or terminus of linear feature.*

Context No	Description
(5011)	Firm mid greyish brown silty clay measuring 1.4m x >0.40m x 0.12m, frequent charcoal flecks and moderate charcoal fragments, occasional mollusc shells. Fills [5020]. Underlies (5005).
INTERPRETATION:	*Fill of pit [5010].*
[5012]	Elliptical cut oriented NE–SW measuring 1m x 0.50m x 0.16m. Break of slope top moderate, sides; moderately sloping, break of slope base gradual, base concave. Filled by (5013). Cuts (5006).
INTERPRETATION:	*Pit of Romano-British date*
(5013)	Moderately compacted to firm dark greyish brown silty clay measuring 1m x 0.50m x 0.16m, orange mortar. Flecking, frequent charcoal fragments and flecking. Moderate baked clay, and moderate ceramic sherds. Fills [5012]. Underlies (5005)
INTERPRETATION:	*Fill of pit [5012].*
(5014)	Moderately compacted bluish grey silty clay extending >4.50m x >5m to a maximum thickness of > 0.42m. Underlies (5006). Overlies (5015).
INTERPRETATION:	*Riverine deposit.*
(5015)	Loose to moderately compacted yellowish grey fine gravels extending >3m x >2m to a maximum thickness of 0.15m. Underlies (5014). Overlies (5016).
INTERPRETATION:	*Riverine deposits.*
(5016)	Soft dark brown moist to wet slightly silty highly humified amorphous organic sediment, frequent wood fragments (*Alnus glutinosa*) (see below (5018)) and occasional gravel patches, covering base of trench (>3m x >2m) to a thickness of 0.48m. Underlies (5015). Overlies (5017).
INTERPRETATION:	*Pre-Romano British organic deposit, possibly relating to marshland deposition.*
(5017)	Loose yellowish brown fine gravels extending trench wide (>3m x >2m) to a thickness of > 0.10m. Underlies (5016).
INTERPRETATION:	*Pleistocene gravels.*
[5018]	Assemblage of 30–40 wood (*Alnus glutinosa*) fragments, a number of which appeared to have been worked. These comprised rectangular and circular pieces of varying length and width, the maximum length being 0.06m. No pattern in terms of the distribution of the fragments could be discerned. Some revealed traces of compression and distortion characteristic of having been woven to form panels. Underlies (5006). Overlies (5014).
INTERPRETATION:	*Fragmentary remains of possible alder panels or hurdles. Radiocarbon date ranges of Cal BC 3930 to 3870 (Cal BP 5880 to 5820) and Cal BC 3810 to 3640 (Cal BP 5760 to 5590) were obtained from one of the worked fragments.*

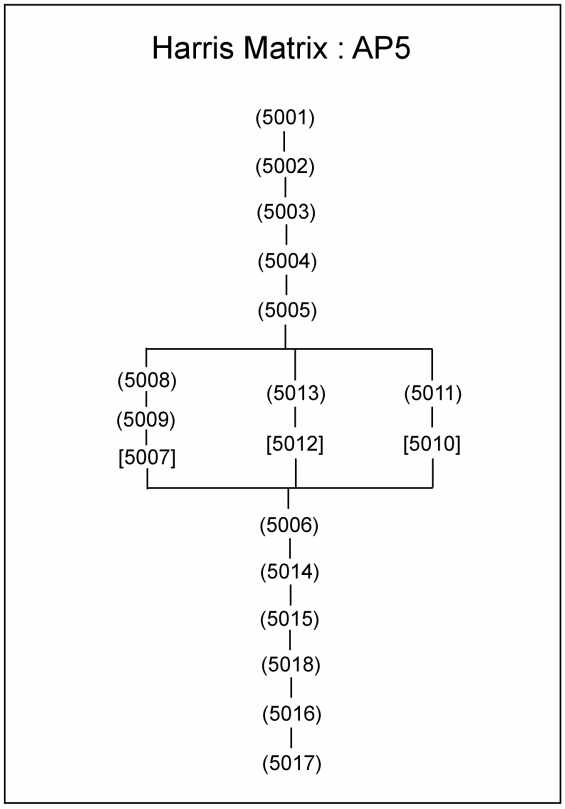


Fig. 3.5

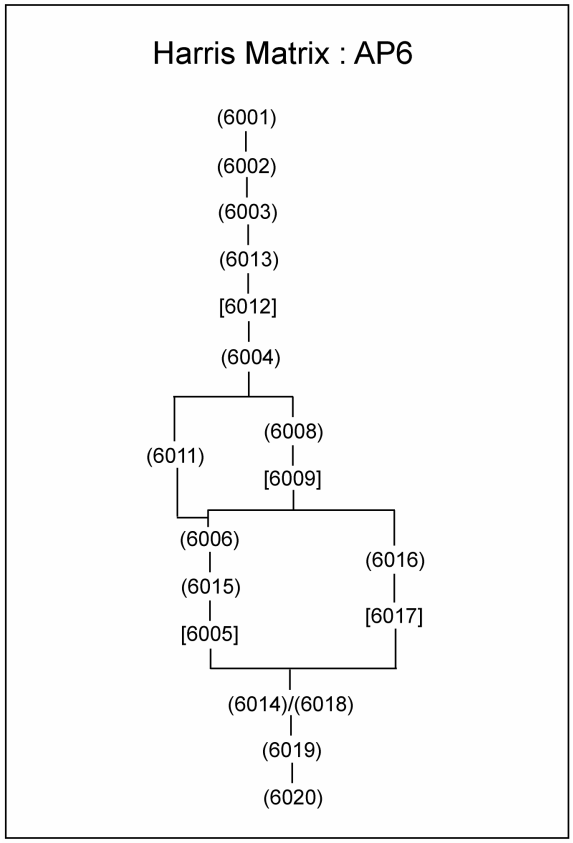


Fig. 3.6

Table 3.6: Access Pit 6

Context Number	Description
(6001)	Moderately compacted mid reddish brown sandy clay measuring >11.10m x >8m x 0.33m, occasional medium sub-angular stones. Overlies (6002).
INTERPRETATION:	*Modern topsoil/ plough soil.*
(6002)	Moderately compacted to firm light reddish brown sandy clay measuring >11m x >8m x 0.36m, very occasional charcoal flecking. Underlies (6001). Overlies (6002).
INTERPRETATION:	*Seasonal riverine flooding/ alluvial deposit.*
(6003)	Firm mid orangey brown silty clay measuring >11m x >5m x 1m, occasional medium sub-angular stones. Underlies (6002). Overlies (6013).
INTERPRETATION:	*Seasonal riverine flooding/ alluvial deposit.*
(6004)	Firm mid bluish grey silty clay measuring >9m x >5m x 0.23m, occasional ceramic sherds and animal bone, frequent charcoal flecking. Cut by [6012]. Overlies (6011), (6008).
INTERPRETATION:	*Late / post-Romano British occupation deposit.*
[6005]	Linear cut orientated N-S measuring >6m x 0.80m x 0.30m. Break of slope top sharp, sides; concave, break of slope base moderate to sharp, base concave to V-shaped. Filled by (6006) and (6015). Cuts (6014)/ (6018).

Context No	Description
INTERPRETATION:	*Cut of Romano British linear ditch.*
(6006)	Firm dark greyish brown silty clay measuring >6m x 0.80m x 0.25m, frequent charcoal flecking, moderate small rounded stones and ceramic sherds, occasional medium angular stones. Underlies (6011). Cut by [6009]. Fills [6005].
INTERPRETATION:	*Secondary fill of ditch [6005].*
[6007]	Linear cut oriented E–W measuring >6m x 1.40m x 0.10. Break of slope top moderate, sides moderately sloping, break of slope base gentle, base undulating. Filled by (6008). Cuts (6006), (6016).
INTERPRETATION:	*Romano British linear feature.*
(6008)	Firm dark greyish brown silty clay measuring 6m x 1.40m x 0.10m, occasional ceramic sherds, charcoal flecks, animal bone and small angular stones. Underlies (6004). Fills [6007].
INTERPRETATION:	*Fill of Romano British linear [6007].*
(6009)	Void
INTERPRETATION:	*Void*
(6010)	Void
INTERPRETATION:	*Void*
[6011]	Group context representing a group of roughly teardrop shaped cuts oriented E-W & measuring *c.* 0.50m x 0.12 - 0.15m x 0.03m - 0.05m. Corners sharp at W. Break of slope top sharp, sides; slightly concave, break of slope base gentle, base slightly concave and undulating. Filled by (6004). Cuts (6006).
INTERPRETATION:	*Possible Romano British or post Roman plough marks.*
[6012]	Linear cut measuring >2.50m x >1.50m x >0.05m. Break of slope top gentle. Depth unknown as not excavated.
INTERPRETATION:	*Not excavated as feature lay beyond excavation depth in this area.*
(6013)	Firm orangey-brown silty clay with no inclusions measuring >2.50m × >1.50m x >0.05m. Depth unknown as not excavated,
INTERPRETATION:	*Un-diagnostic feature due to lack of investigation.*
(6014)	Same as (6018). Cut by [6005], [6017]. Overlies (6019).
INTERPRETATION:	*Possible Romano British activity deposit.*
(6015)	Mid reddish brown silty sandy clay with frequent charcoal flecking and occasional bone fragments. Measures >6m x 0.18m x 0.05m. Underlies (6006). Fills [6005].
INTERPRETATION:	*Primary fill of [6005].*
(6016)	Firm dark greyish brown gravel and clay measuring 5m x 0.45m x 0.20m. Cut by [6009]. Fills [6017].
INTERPRETATION:	*Fill of [6017]*

Context No	Description
[6017]	Linear cut oriented N-S measuring 5m × 0.45m × 0.20m. Break of slope top sharp, sides; slightly concave, break of slope base gradual, base undulating. Filled by (6016). Cuts (6014)/ (6018).
INTERPRETATION:	*Cut of Romano British or pre-Roman ditch.*
(6018)	Firm brownish orange sandy clay measuring 5m x 3m x 0.60m, with no inclusions. Same as (6014). Cut by [6005], [6017]. Overlies (6019).
INTERPRETATION:	*Alluvial deposit.*
(6019)	Loosely compacted light grey gravel, decayed sandstone within a silty sand matrix measuring 3m x 2m x 0.10m. Underlies (6014)/ (6018). Overlies (6020).
INTERPRETATION:	*Natural deposition*
(6020)	Loose purplish brown clayey sand measuring 3m x 2m x >0.50m. Underlies (6019).
INTERPRETATION:	*Natural sandstone derived material.*

Table 3.7: Access Pit 7

Context No	Description
(7001)	Moderately compacted mid reddish brown silty sand measuring >9m x >8m x 0.33m. Overlies (7002).
INTERPRETATION:	*Modern topsoil/ plough soil.*
(7002)	Moderately compacted mid orangey brown sandy clay measuring >9m x >8m x 0.15m, frequent small angular stones. Underlies (7001). Overlies (7003).
INTERPRETATION:	*Alluvial deposit.*
(7003)	Friable light greyish brown sandy clay measuring >9m x >8m x 0.17m, frequent gravel inclusions. Underlies (7002). Overlies (7004).
INTERPRETATION:	*Alluvial deposit.*
(7004)	Firm reddish brown silty clay measuring >9m x >8m x 0.80m. Underlies (7003). Overlies (7014).
INTERPRETATION:	*Alluvial deposit*
(7005)	Firm light reddish brown silty clay measuring >6m x >5m x 0.45m, frequent degraded sandstone and occasional ceramic flecking and sherds. Underlies [7009]. Overlies (7008).
INTERPRETATION:	*Possible Romano British occupation.*
[7006]	Linear cut orientated N–S measuring >6.75m N-S x >2.50m x 0.30m. Break of slope top gradual, sides; moderately sloping, break of slope base gradual, base concave. Filled by (7007). Cuts (7012).

Context No	Description
INTERPRETATION:	*Cut of Romano British ditch or linear.*
(7007)	Firm bluish grey silty clay, occasional ceramic sherds and medium sub-angular sandstone inclusions. Visible dimensions >6.75m x >2.50m x 0.30m. Underlies (7014). Fills [7006].
INTERPRETATION:	*Fill of Romano British ditch/linear [7006].*
(7008)	Moderately compacted to firm reddish brown sandy gravel measuring 6m x 5m x 0.80m, frequent bluish grey degraded sandstone inclusions. Underlies (7005). Overlies (7008).
INTERPRETATION:	*Alluvial deposit.*
[7009]	Linear cut oriented N–S measuring 1.84m N-S x 0.85m x 0.35m. Break of slope top sharp, sides concave, break of slope base moderate, base concave. Truncated by [7011]. Filled by (7010). Cuts [7005].
INTERPRETATION:	*Cut of possible Romano British ditch/linear.*
(7010)	Moderately compacted to firm mid greyish brown silty clay extending 1.84m x 0.85m x 0.35m, frequent small mollusc shells and occasional small to medium sub-angular stones. Cut by [7011]. Fills [7009].
INTERPRETATION:	*Fill of Romano British ditch [7009].*
[7011]	Linear cut oriented N–S measuring 0.93m N-S x 0.65m x 0.44m (visible dimensions). Corners right angled on visible N end. Break of slope top sharp, sides; moderately sloping, break of slope base sharp, base flat. Filled by (7012). Cuts (7010).
INTERPRETATION:	*Cut of Romano British ditch/linear*
(7012)	Moderately compacted to firm mid greyish brown silty clay extending 0.93m x 0.65m x 0.44m, occasional medium sandstone fragments. Cut by [7006]. Fills [7011].
INTERPRETATION:	*Fill of ditch [7011].*
(7013)	Indurated reddish brown sandstone extending >3.00m x >2.00m x >0.10m. Underlies (7016).
INTERPRETATION:	*Bedrock*
(7014)	Moderately compacted orangey brown silty sand extending 6.70 x 5.75 x 0.10- 0.12m, occasional charcoal flecking. Underlies (7004). Overlies (7007).
INTERPRETATION:	*Romano British occupation deposit.*
(7015)	Moderately compacted light purple gravelly sand extending 3.50 x 2.75 x 0.30m. Underlies (7008). Overlies (7016).
INTERPRETATION:	*Natural rock derivative.*

Context No	Description
(7016)	Moderately compacted mid orange sandy clay extending 3.50 x 2.75 x 0.10m. Underlies (7015). Overlies (7013).
INTERPRETATION:	*Natural / alluvial silts*

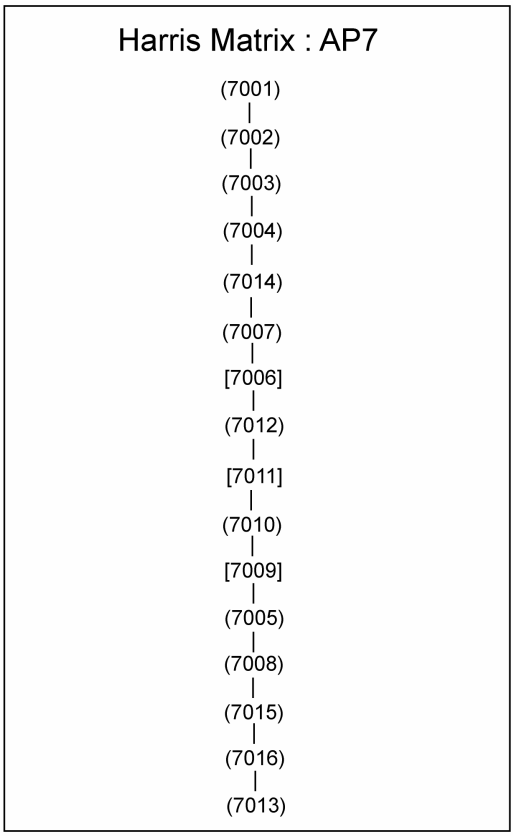


Fig. 3.7

Table 3.8: Access Pit 8

Context No	Description
(8001)	Friable mid greyish brown silty sand, moderate small sub-angular stones, ceramic sherds and occasional CBM fragments, extending >9m x >5m, to a maximum depth of 0.34m. Overlies (8022).
INTERPRETATION:	*Topsoil deposit*
(8002)	Moderately compact mid reddish brown sandy clay, occasional small sub-angular stones and ceramic sherds, *c.* 2% charcoal flecking, extending >9m x >5m to a maximum depth 0.46m. Underlies (8001), overlies (8006), (8008), (8010), (8016), (8018), (8019) and (8020). Cut by [8023].
INTERPRETATION:	*Subsoil deposit*

Context No	Description
(8003)	Friable reddish brown fine sandy gravel, occasional ceramic sherds, extent confined to NE corner of pit, >2.30m N-S x >3.55m E-W x 0.14m thick. Underlies (8016). Overlies (8014)
INTERPRETATION:	*Gravel lens*
(8004)	Moderately compacted light –mid reddish brown silty clay, moderate small to medium angular and sub-angular stones, ceramic sherds, occasional animal bone, and occasional *c.* 2% charcoal flecking. Extends >9m × >5m × 0.34m. Underlies (8019), (8020). Cut by [8005], [8013], [8015], and [8017]. Overlies (8025).
INTERPRETATION:	Romano Britisho-British occupation deposit
[8005]	Sub-circular cut measuring 1.40m x 1.20m x 0.85m deep. Break of slope top sharp, sides; near vertical (breaking at *c.* 0.5m to a shallower slope & sharper again from 0.7m), break of slop base sharp, base gently sloping N to S. Physically cuts (8004). Filled by (8006).
INTERPRETATION:	*Large well-defined pit containing frequent ceramic sherds and animal bone, possibly part of a composite structure with [8007] and [8009].*
(8006)	Moderately compact dark greyish brown silty clay, frequent charcoal flecking, ceramic sherds, animal bone and charred plant remains (including oat, barley, wheat & hazelnut shell), also 1 glass fragment, a bone toggle and metal objects present. Underlies (8002). Fill of [8005].
INTERPRETATION:	*Composition of deposit suggests domestic waste*
[8007]	Sub-circular cut measuring 1.20m NE-SW × 1.05m NW-SE × 0.80m. Break of slope top sharp, sides; steeply sloping, break of slope base sharp, base slightly concave. Underlies (8008). Cuts (8011). Filled by (8008) and (8012).
INTERPRETATION:	*Large pit of Romano-British date, possibly part of a composite structure with [8005] and [8009].*
(8008)	Loose dark blackish brown silty clay, very frequent charcoal, including moderate charcoal fragments, frequent ceramic sherds, moderate small rounded and sub-rounded stones, moderate medium sub-angular stones, occasional animal bone and Fe nails, frequent large sandstone blocks. Underlies (8002). Fill of [8007].
INTERPRETATION:	*Upper fill of large pit of Romano-British date*
[8009]	Linear cut measuring 0.38m (N-S) × 0.23m (E-W) × 0.16m. Break of slope top sharp, sides moderately sloping, break of slope base gradual, base concave, orientation E-W. Filled by (8010). Cuts (8011).
INTERPRETATION:	*Shallow gully linking [8005] and [8007]*
(8010)	Moderately compact mid greyish brown silty clay, moderate ceramic sherds, one glass fragment frequent wheat grains, *c.* 2% charcoal flecking. Underlies (8002). Fill of [8009]
INTERPRETATION:	*Fill containing abundant wheat grains, which may indicate feature [8009] formed part of a corn drier.*

Context No	Description
(8011)	Loose to moderately compact dark blackish brown silty clay, frequent ceramic sherds and animal bone, charred cereal grains, 2 × glass fragments. Extending 1.90m x 1.80m x 0.75m. Fill of [8013]. Cut by [8007]
INTERPRETATION:	*Upper fill of well [8013].*
(8012)	Firm reddish brown sandy gravel, frequent large angular sandstone blocks, 0.75m (E-W) × 0.50m (N-S) × 0.25m. Underlies (8008). Fill of [8007].
INTERPRETATION:	*Possible stone lining for pit [8007]*
[8013]	Sub-circular cut measuring 1.90m N-S x 1.80m E-W, x >2.45m. Break of slope top sharp, sides; vertical, base unknown. Cuts (8004). Filled by (8011) and (8024).
INTERPRETATION:	*Possible well*
(8014)	Loose to moderately compacted mid greyish brown silty clay, occasional ceramic sherds, animal bone and cereal remains, moderate *c.* 5% charcoal flecking, 0.49m in diameter × 0.17m deep. Underlies (8003). Fill of [8015].
INTERPRETATION:	*Fill of pit [8015]*
[8015]	Sub-circular cut measuring 0.49m in diameter × 0.17m In depth. Break of slope top sharp, sides; steeply sloping, break of slope base moderate/sharp, base flat. Cuts (8004). Filled by (8014).
INTERPRETATION:	*Small pit located in NE corner of access pit.*
(8016)	Moderately compact mid/dark reddish brown sandy clay with frequent gravels and degraded sandstone fragments, and moderate charcoal flecking, measures >1.7m N-S x >3.65m E-W x 0.14m thick. Underlies (8002). Overlies (8003).
INTERPRETATION:	*Thin layer of gravel in NE corner of access pit.*
[8017]	Cut measuring 0.68m wide and 0.26m deep, shape in plan not determined. Break of slope top sharp (W) gradual (E), sides; steep (W) gradual (E), break of slope base sharp (W) gradual (E), base convex, orientation not determined. Cuts (8004). Filled by (8018).
INTERPRETATION:	*Small pit observed in S-facing section*
(8018)	Moderately compact dark/mid greyish brown sandy silt, frequent small stones and charcoal flecking. Underlies (8002). Fill of [8017].
INTERPRETATION:	*Fill of small pit in S-facing section*
(8019)	Firm light red sandy silt, occasional charcoal flecking, moderate small stones, 1.20m wide, 0.70m deep. Underlies (8002). Overlies (8004).
INTERPRETATION:	*Thin poorly delineated deposit observed in S-facing section*
(8020)	Loose/moderately compact mid grey fine sand, silt and ash deposit, occasional charcoal flecking, moderate very small stones, measures 0.46m wide, 0.10m deep. Underlies (8002). Overlies (8004).
INTERPRETATION:	*Fairly poorly delineated ashy deposit in S-facing section*

Context No	Description
(8021)	Well compacted dark reddish brown degraded sandstone measuring >6m × >2m × >0.80m. Underlies (8004).
INTERPRETATION:	*Natural heavily degraded sandstone*
(8022)	Moderately compact reddish brown sandy silt with frequent large fragments of stone rubble & occasional roughly worked stone, Extends >3m × 0.68m × 0.56m. Underlies (8001). Fill of [8023].
INTERPRETATION:	*Fill of robber trench*
[8023]	Linear cut measuring >3m x >0.68m x >0.56m, orientated NE-SW. Roughly U-shaped in profile. Break of slope top sharp, sides; steeply sloping, break of slope base moderate to sharp, base not known. Cuts (8002). Filled by (8022).
INTERPRETATION:	*Cut of Romano-British rubble-filled robber trench.*
(8024)	Moderately compacted dark greyish brown gleyed clay silt with moderate charcoal flecking. Extended 1.90m x 1.80m x >1.70m. Underlies (8011). Fills [8013]
INTERPRETATION:	*Primary fill of well [8013]*
(8025)	Moderate – well compacted dark reddish brown silty clay, extending >9m x > 2m to an average depth of 0.65m. Underlies (8004), overlies (8021).
INTERPRETATION:	*Alluvial deposit*

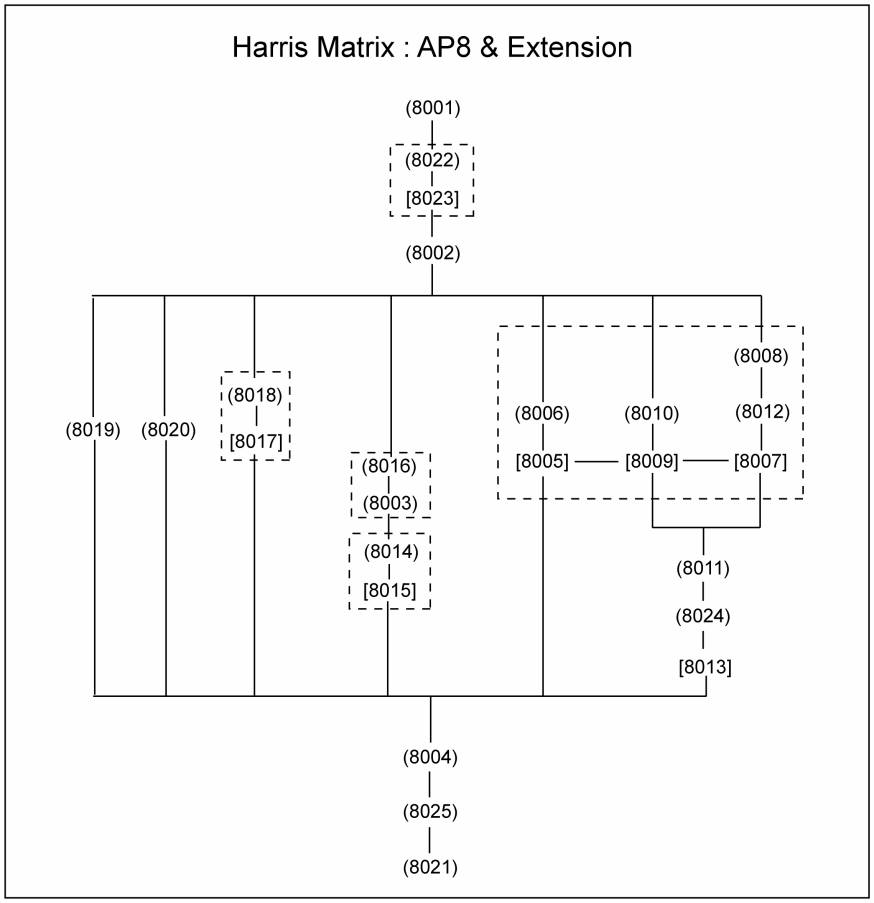


Fig. 3.8

Table 3.9: Access Pit 8b

Context No	Description
(8101)	Moderately compact dark brown sandy silt, frequent small sub-angular stones, moderate ceramic sherds and occasional CBM fragments, extending >2.90m x >2.70m to a depth of 0.24m. Overlies (8102), (8103).
INTERPRETATION:	*Topsoil deposit.*
(8102)	Well compacted light reddish brown silty clay with occasional small rounded stones extending >2.90m x >2.70m x >0.25m. Underlies (8101). Overlies (8104).
INTERPRETATION:	*Subsoil deposit.*
(8103)	Well compacted dark reddish brown sandy silt measuring 1.70m × 0.90m with frequent small rounded stones and occasional ceramic sherds. Underlies (8101). Overlies (8106).
INTERPRETATION:	*Possible floor surface.*
(8104)	Uncoursed linear masonry structure of worked sandstone, variable sized stone. Running 2.55m x 0.92m N-S, and 1.15m x 0.60m E-W, with a further return at the E end running 1m x 0.25m N-S. Roughly forming a H-shaped structure. Underlies (8102) and (8107).
INTERPRETATION:	*Remains of masonry wall.*
[8105]	Void.
INTERPRETATION:	*Void.*
(8106)	Moderately compacted mid to dark brown silty sand with occasional gravels and small and medium stones, measuring 1.05m × 0.90m × 0.28m. Underlies (8103). Overlies (8107).
INTERPRETATION:	*Fill of space between walls in NE corner of access pit.*
(8107)	Well compacted mid reddish brown sandy clay with frequent rounded stones measuring 0.96m x 0.79m, thickness not determined. Underlies (8106).
INTERPRETATION:	*Fill of space between walls in NE corner of access pit.*

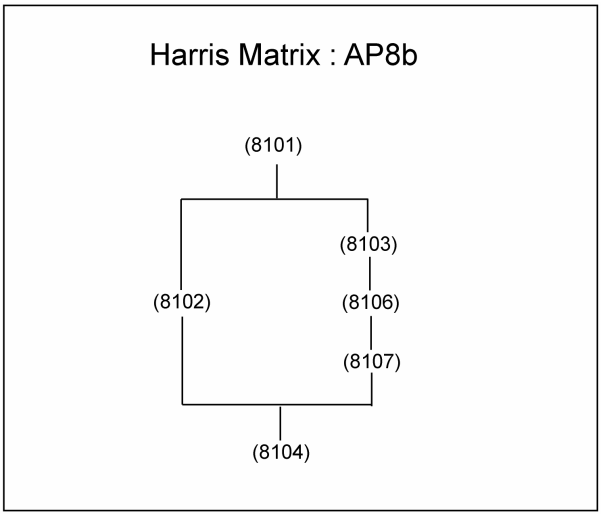


Fig. 3.9

Table 3.10: Access Pit 9

Context No	Description
(9001)	Moderately compact dark greyish brown silty clay with occasional small stones extending >6m x >5m to a maximum depth of 0.25m. Overlies (9002).
INTERPRETATION:	*Topsoil*
(9002)	Moderately compact greyish brown silty clay with frequent gritty inclusions extending >6m x >5m x 0.14m. Underlies (9001). Overlies (9003), (9004).
INTERPRETATION:	*Subsoil deposit.*
(9003)	Moderately compact to firm reddish brown silty clay *c.* 1% charcoal flecking, extending 4m E-W x 0.42m N-S x 0.10m (maximum thickness). Underlies (9002). Overlies (9007)
INTERPRETATION:	*Alluvial deposition.*
(9004)	Moderately compact mid yellowish brown silty clay with occasional charcoal flecking extending 5.50m x 5.50m x 0.25m. Underlies (9002). Overlies (9007).
INTERPRETATION:	*Alluvial deposition.*
(9005)	Moderately compact to firm reddish brown silty clay with very occasional charcoal flecking in upper part of deposit, patches of grey degraded sandstone towards base; extends 5.50m x 5.50m x 0.70m. Underlies (9016). Overlies (9019)
INTERPRETATION:	*Alluvial deposition.*
(9006)	Moderately compact light red gritty silty clay with very occasional shell fragments extending >2.30m E-W x >1.90m (N-S) x 0.05m. Underlies (9008). Overlies (9009), (9014).
INTERPRETATION:	*Occupation deposit.*
(9007)	Loose to moderately compact dark greyish brown silty clay with occasional small stones extending 3.50m E-W × 1.75m N-S × 0.15m (maximum thickness). Present within the deposit were charred cereal remains moderate amounts of ceramic sherds and one glass fragment. Underlies (9003), (9004). Overlies (9008).
INTERPRETATION:	*Occupation deposit.*
(9008)	Moderately compact yellowish- brown silty clay with occasional charcoal flecking extending 2.20m E-W x 1m x 0.12m (maximum thickness). Underlies (9007). Overlies (9006).
INTERPRETATION:	*Alluvial deposition.*
(9009)	Moderately compact yellowish brown silty clay with occasional charcoal flecking and ceramic sherds and extending >5.50m x >5m x 0.30m. Underlies (9006). Overlies (9010).
INTERPRETATION:	*Occupation deposit or alluvial build up.*
(9010)	Moderately compact to firm pinkish orange silty clay with moderate gritty sandstone fragments & *c.* 2% charcoal flecking extending >5.50m E-W x >1.90m N-S x 0.10m. Underlies (9009), (9014). Overlies (9011), (9013).
INTERPRETATION:	*Occupation deposit.*

Context No	Description
(9011)	Moderately compact dark grey to black silty clay with frequent charcoal extending >1.20m x >1m x 0.06m. Underlies (9010). Contemporary with (9013). Overlies (9012).
INTERPRETATION:	*Occupation deposit.*
(9012)	Moderately compact yellowish brown silty clay with occasional ceramic sherds and animal bone, *c.* 5% charcoal flecking; extends 5.50m x 5.50m x 0.30m. Underlies (9011), (9013). Overlies (9015), (9017).
INTERPRETATION:	*Alluvial deposition.*
(9013)	Spongy black peaty deposit extending 1.90m N-S x 0.40m E-W x <0.10m. Underlies (9010). Overlies (9012). Contemporary with (9011).
INTERPRETATION:	*Alluvial flooding deposit*
(9014)	Moderately compacted greyish brown sandstone rubble extending 0.68m N-S x 0.21m E-W x 0.10m. Underlies (9006). Overlies (9010).
INTERPRETATION:	*Demolition layer*
(9015)	Hard orangey brown silty clay with frequent small angular stones extending 3.30m E-W x 1.95m N-S x 0.15m. Underlies (9012). Overlies (9016).
INTERPRETATION:	*Metalled surface probably representing minor internal settlement road*
(9016)	Friable dark grey to black ash deposit measuring >4m E-W x 3m N-S x 0.10m. Underlies (9015), (9005). Overlies (9005).
INTERPRETATION:	*Occupation deposit*
(9017)	Hard orangey brown silty clay with frequent angular stones & *c.* 2% charcoal flecking extending 2.60m E-W x 1.25m N-S x 0.08m. Underlies (9012). Overlies (9016).
INTERPRETATION:	*Metalled surface probably representing minor internal settlement road*
(9018)	Void
INTERPRETATION:	*Void*
(9019)	Firm reddish brown silty clay with occasional bluish-grey patches and frequent gravels extending >5.50m E-W x 4.80m N – S x >0.20m. Underlies (9005).
INTERPRETATION:	*Natural deposition*

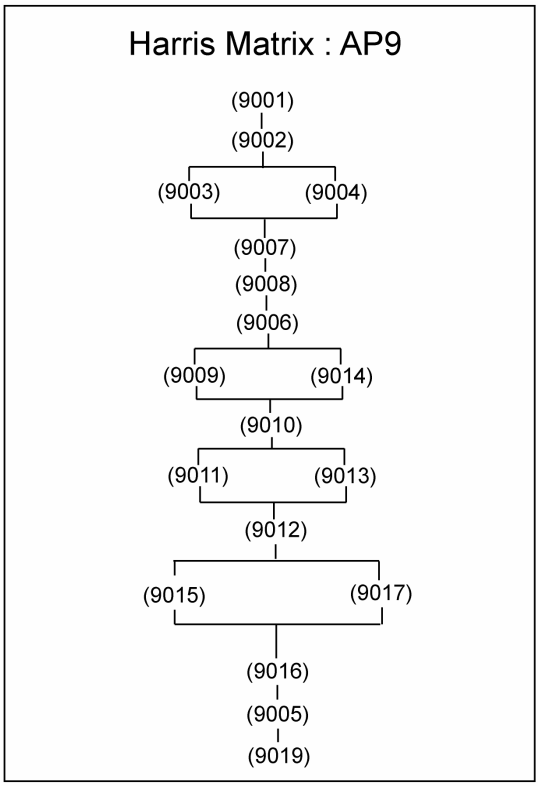


Fig. 3.10

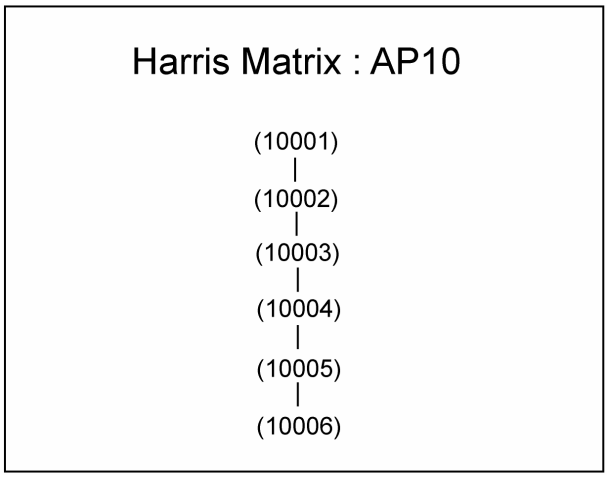


Fig .3.11

Table 3.11: Access Pit 10

Context No	Description
(10001)	Moderately compact dark brown sandy clay with occasional post-medieval CBM fragments, *c.* 1% charcoal flecking extending >5m x >4m x 0.15m. Overlies (10002).
INTERPRETATION:	*Topsoil deposit.*
(10002)	Moderately compact to firm gravels consisting of small to medium sized rounded and sub-angular stones with occasional post-medieval CBM fragments, extending >5m x >0.80m x <0.30m. Underlies (10001). Overlies (10003).
INTERPRETATION:	*Former driveway leading to Canon Frome Court.*
(10003)	Moderately compact greyish/orangey brown silty clay with very occasional charcoal flecking extending >4.90m x >3.90m x 0.18m. Underlies (10002). Overlies (10004).
INTERPRETATION:	*Subsoil comprising of alluvial build up.*
(10004)	Firm light greyish brown silty clay extending >4.90m x >3.90m x 0.33m. Underlies (10003). Overlies (10005)
INTERPRETATION:	*Alluvial build-up.*

Context No	Description
(10005)	Plastic greyish brown silty clay with occasional degraded sandstone fragments and charcoal flecking extending >4.90m x >3.90m x 0.48m. Underlies (10004). Overlies (10006).
INTERPRETATION:	*Romano-British occupation deposit, similar to occupation deposits identified on W side of A417.*
(10006)	Firm reddish brown silty clay with very frequent gravels extending >4.90m x >3.90m x >0.65m. Underlies (10005).
INTERPRETATION:	*Natural gravels.*

Table 3.12: Access Pit 11

Context No	Description
(11001)	Friable mid greyish brown sandy clay with very occasional small sub-angular stones measuring >8.75m x >8m x 0.27m. Overlies (11002).
INTERPRETATION:	*Topsoil deposit*
(11002)	Moderately compact to firm mid reddish-brown silty clay, very occasional charcoal flecking & small sub-angular stones, measuring >8.75m x >8m x 0.48m. Underlies (11002). Overlies (11003)
INTERPRETATION:	*Subsoil deposit.*
(11003)	Moderately compact to firm mid yellowish grey silty clay with frequent degraded sandstone flecking extending >8.75m x >8m x 0.20m. Underlies (11002). Overlies (11006)
INTERPRETATION:	*Alluvial deposits.*
(11004)	Firm mid reddish brown sandy gravels with patches of clay and occasional degraded sandstone fragments, measuring >8.75m x >8m x 0.26m. Cut by [11005].
INTERPRETATION:	Alluvial deposits.
[11005]	Sub-circular cut oriented E-W and measuring 0.37m E-W x 0.30m x 0.12m. Break of slope top sharp, sides; vertical (E) gradual (W), break of slope base moderate, base irregular. Cuts (11004). Filled by (11006), (1107).
INTERPRETATION:	*Pit / posthole.*
(11006)	Moderately compact bluish grey silty clay with frequent charcoal fragments measuring 0.37m E-W x 0.30m x 0.05m. Underlies (11003). Overlies (11007). Fill of [11005].
INTERPRETATION:	*Secondary fill of pit / posthole*

Context No	Description
(11007)	Moderately compact light greyish brown silty clay with occasional charcoal flecking measuring 0.37m E-W x 0.30m x 0.07m. Underlies (11005). Overlies [11005].
INTERPRETATION:	*Primary fill of pit / posthole*
(11008)	Firm reddish brown silty clay with frequent degraded sandstone flecking & small subangular stones measuring >6m x >5m x >1.80m. Underlies (11004).
INTERPRETATION:	*Natural.*

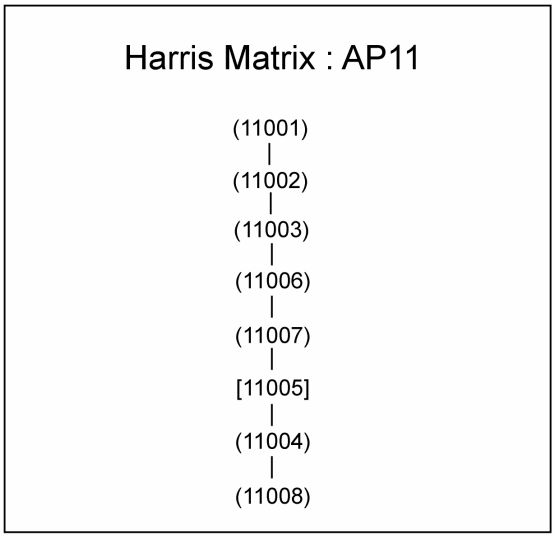


Fig. 3.12

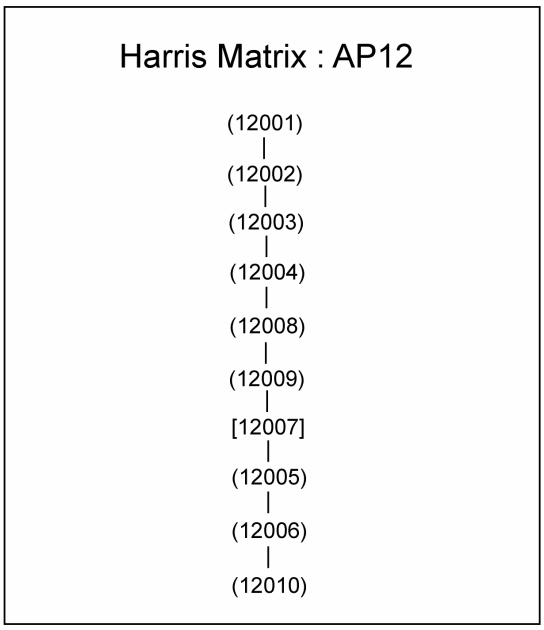


Fig. 3.13

Table 3.13: Access Pit 12

Context No	Description
(12001)	Friable mid greyish brown silty clay with occasional small angular stones (more gravelly towards base of deposit) extending >9m x >8m x 0.25m. Overlies (12002).
INTERPRETATION:	*Topsoil/ plough soil.*
(12002)	Friable light orangey brown silty clay with frequent degraded sandstone & small sub-rounded stones extending >9m x >8m x 0.30m. Underlies (12001). Overlies (12003).
INTERPRETATION:	*Subsoil deposit.*
(12003)	Firm/plastic light greyish brown silty clay with occasional degraded sandstone & small angular stones extending >9m x >8m x 0.25m. Underlies (12002). Overlies (12004).
INTERPRETATION:	*Subsoil deposit.*

Context No	Description
(12004)	Friable mid brownish red silty clay with moderate small angular stones extending >9m x >8m x 0.12m. Underlies (12003). Overlies (12008).
INTERPRETATION:	*Riverine deposition.*
(12005)	Friable mid greyish brown sandy clay with frequent gravels, occasional ceramic sherds & very occasional tile fragments extending >9m x >8m x 0.20m. Cut by [12007]. Overlies (12006).
INTERPRETATION:	*Shallow Romano-British occupation deposit.*
(12006)	Firm dark reddish brown clay with frequent gravels extending >9m x >8m x 0.24m. Underlies (12005). Overlies (12010).
INTERPRETATION:	*Natural gravels.*
[12007]	Curvilinear cut running NW/SE and turning NE at SE end; visible extent measures >9m x 0.97m x 0.30m (maximum depth). Break of slope top sharp, sides; vertical and concave at NW, break of slope base sharp, base flat. Cuts (12005). Filled by (12008), (12009).
INTERPRETATION:	*Curvilinear ditch of Romano-British date, possibly a section of enclosure ditch.*
(12008)	Firm mid reddish brown silty clay with occasional small sub-rounded stones, shell and charcoal flecking; visible extent >9m x 0.97m x 0.17m. Underlies (12004). Overlies (12009).
INTERPRETATION:	*Secondary fill of possible enclosure ditch.*
(12009)	Firm mid brownish red sandy silt with frequent shell extending (maximum visible) >9m x 0.97m x 0.13m. Underlies (12008). Fills [12007].
INTERPRETATION:	*Primary fill of possible enclosure ditch.*
(12010)	Firm dark reddish brown silty clay with frequent greyish brown fine gravels and degraded sandstone, occasional large subangular stones towards base of deposit; compaction increasing towards base; measures >6m x >5m x >0.80m. Underlies (12006).
INTERPRETATION:	*Natural deposition.*

Table 3.14: Access Pit 13

Context No	Description
(13001)	Friable mid greyish brown sandy clay with very occasional small rounded stones extending >9m x >8m x 0.30m. Overlies (13002).

Context No	Description
INTERPRETATION:	*Topsoil deposit.*
(13002)	Firm mid/dark orangey brown silty clay with very occasional charcoal flecking and occasional small to medium rounded stones extending >9m x >8m x 0.30m. Underlies (13001). Overlies (13003)
INTERPRETATION:	*Subsoil deposit.*
(13003)	Firm/plastic mid orangey brown silty clay with frequent very small sub-rounded stones/gravels measuring >9m x >8m x 1.40m. Underlies (13002). Overlies (13005).
INTERPRETATION:	*Alluvial deposit.*
(13004)	Firm mid reddish brown silty clay with frequent gravels and sandstone measuring >6m x 5.40m x 1.50m. Underlies (13005).
INTERPRETATION:	*Natural geology.*
(13005)	Loose turquoise/light blue gley with frequent gravels measuring >6m x >5.40m x 0.03m. Underlies (13003). Overlies (13004).
INTERPRETATION:	*Narrow band of material inclining to SE and lying between (13003) and (13004), which appears to be a natural deposition.*

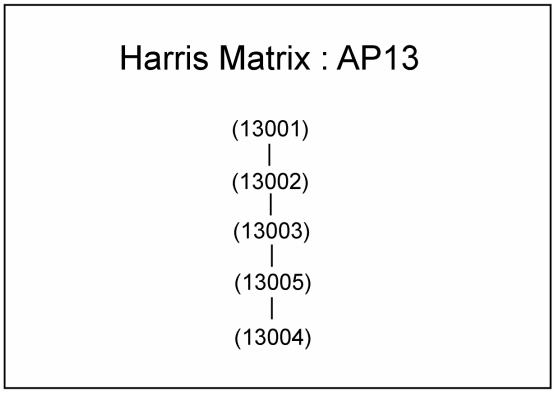


Fig. 3.14

APPENDIX 4 – Pottery

By Jane Timby with a samian report by Felicity Wild

Introduction and Methodology

The archaeological work carried out at Stretton Grandison resulted in the recovery of 3618 sherds of Roman pottery weighing 53 kg. In addition 16 medieval/post-medieval sherds were recovered from surface collection, which are not discussed further.

In general terms the assemblage is in fairly good condition, reflected in the overall average sherd weight of 14.7 g. The vessels include at least two complete burial urns, one reconstructed, and a number of other vessels with multiple sherds present. Surface preservation of the sherds is not as good and in many cases the surface finish, for example, slips or colour-coats have been lost. Many of the sherds, including those of the complete reconstructed vessel (pot 1 Fig. 5.9)) from (4007), have worn or water abraded edges, a reflection of the soft nature of the fabrics and slightly hostile soil conditions. Included in the data are a number of very small sherds recovered from sampling some of which were too small to identify.

Pottery was recovered from 86 contexts, individual assemblages ranging from single sherds up to 513 sherds from context (4003). The assemblage was sorted into broad fabric groups based on inclusions present, the frequency and grade of the inclusions and the firing colour. For the Roman sherds known regional or traded wares were coded following the system advocated for the National Roman reference collection (Tomber and Dore 1998). The codes have been cross-referenced into the Hereford and Worcestershire fabric reference series (*cf* Hurst and Rees 1992; http://www.worcestershireceramics.org).

The sorted assemblage was quantified by sherd count and weight for each recorded context. The percentage present of each rim was measured for estimated vessel equivalence (EVE). The data was entered onto an MS Excel spreadsheet a copy of which is deposited with the site archive.

In the following report the assemblage is first described by fabric and associated forms. This is followed by a discussion of the assemblage in terms of the site and in its local and regional context. The samian has been reported on separately by Felicity Wild.

Description of forms and fabrics (Table 4.1)

	H&W code	NRFRC	Archive code	Description	No	No %	Wt	Wt %	EVE	EVE%
LPRIA-ERO	3	MAL RE A	MAL RE A	Malvernian metamorphic	58	1.6	1172	2.2	159	4.0
	4.1	MAL RE B	MAL RE B	Malvernian limestone	20	0.6	388	0.7	5	0.1
	16.2		GROG	hm grog-tempered	34	0.9	419	0.8	0	0.0
SVW types	12	SVW OX	SVW OX	Severn Valley ware oxidised	1922	53.0	32338	61.0	1742	44.3
	12.1	SVW RE	SVW RE	Severn Valley ware reduced	286	7.9	2828	5.3	205	5.2

	H&W code	NRFRC	Archive code	Description	No	No %	Wt	Wt %	EVE	EVE%
Local	3.1		Glos TF 19C	Handmade Roman Malvernian	4	0.1	108	0.2	0	0.0
	19		Glos TF 19	wm Malvernian	62	1.7	835	1.6	78	2.0
Regional	20		WSOXID/GY	white-slipped oxidised/reduced	6	0.2	68	0.1	35	0.9
	22	DOR BB1	DOR BB1	Dorset black burnished ware	438	12.1	3644	6.9	508	12.9
	32	MAH WH	MAH WH	Mancetter-Hartshill whiteware	18	0.5	246	0.5	0	0.0
	32	MAH WH	MAH WH	Mancetter-Hartshill mortaria	3	0.1	267	0.5	27	0.7
		NFO CC	NFO CC	New Forest colour-coat?	2	0.1	7	0.0	0	0.0
	29	OXF RS	OXF RS	Oxfordshire colour-coat	12	0.3	136	0.3	42	1.1
	33.3	OXF RS	OXF RS	Oxon colour-coated mortaria	5	0.1	84	0.2	29	0.7
	38	OXF WH	OXF WH	Oxon whiteware	10	0.3	49	0.1	0	0.0
	151	SOW WS	SOW WS	South-west white slipped	3	0.1	9.5	0.0	0	0.0
			WMID MORT	West Midlands mortaria	1	0.0	116	0.2	0	0.0
		WRX WH	WRX WH	Wroxeter whiteware mortaria	3	0.1	193	0.4	15	0.4
			GLAZE	British glazed ware	2	0.1	6	0.0	12	0.3
Continental	43.1	LGF SA	SGSAM	South Gaulish samian	34	0.9	381	0.7	82	2.1
imports	43.2	LEZ SA	CGSAM	Central Gaulish samian	95	2.6	803	1.5	149	3.8
	43.3		EGSAM	East Gaulish samian	1	0.0	42	0.1	0	0.0
	42.1	BAT AM	BAT AM	Baetican amphorae	50	1.4	3198	6.0	0	0.0
	42.3	GAL AM	GAL AM	Gallic amphorae	2	0.1	198	0.4	0	0.0
	44	MOS BS	MOS BS	Moselle black slip	2	0.1	22	0.0	0	0.0
Unknown	13		OXID	Sandy oxidised	11	0.3	134.5	0.3	34	0.9
	14		GYF/GYFMIC	Fine grey ware	14	0.4	85	0.2	10	0.3
	15		GREY; GY/BW	Medium grey sandy ware	252	7.0	2796	5.3	454	11.5
	15/149		BW	Back wares	120	3.3	1854	3.5	262	6.7
	98		BWF/BWFMIC	Fine black ware	24	0.7	132	0.2	55	1.4
	98		MISCCC; OXIDCC	Mis***C.*** colour-coated wares	25	0.7	233	0.4	32	0.8
	98		MISC	Misc	3	0.1	9	0.0	0	0.0
	98		OXIDF	Fine oxidised ware	2	0.1	9	0.0	0	0.0
	114		MICASL	Mica-slipped ware	1	0.0	5	0.0	0	0.0
	41		BUFF/BUFFMIC	buff/palewares	4	0.1	45	0.1	0	0.0
	41		WWMORT	Unknown whiteware mortaria	1	0.0	21	0.0	0	0.0
	98		OO	Unclassified crumbs	94	2.6	172	0.3	0	0.0
TOTAL					**3624**	100.0	**53052**	100.0	**3935**	100.0

Table 4.1: Description of forms and fabrics

Local wares

Malvernian metamorphic ware (MAL RE A) (Tomber and Dore 1998, 147). This handmade rock-tempered ware formed a fairly modest component of the assemblage at 1.6% count, 2.2% weight. The ware is a long-lived one with pre-Roman origins but often features well in to the 2nd century AD. Forms: Mainly handmade tubby jars generally with some burnishing. Also present are handmade everted rim jars with simple or rolled rims, bowls and a lid.

Malvernian limestone-tempered ware (MAL RE B). Only a few sherds of this ware are present with a single rim from a bowl. Dating from the pre-Roman period vessels continue to feature in the early Roman period but have generally disappeared by the 2nd century AD.

Severn Valley wares (SVW OX; SVW RE) (Tomber and Dore 1998, 148-9). These fabrics are by far the commonest present accounting for 61% by sherd count, 65.3% by weight of the total assemblage. Most occur on the oxidised variant (SVW OX), the greyware version (SVW RE) being less common. Forms: a diverse range of forms is present spanning the 1st/2nd to early 4th centuries. Jars and to a lesser extent tankards dominate. In the oxidised ware the former include both wide-mouthed and narrow-mouthed varieties including Webster (1976) forms W1-3, 5, 7, 9-11, 15, 16, 19, 21-25, 27, 29 and 31. Other forms include bowls (eg. Webster W45, 47, 50-1, 53, 55 and 57), a lid, shallow dishes (Webster W69), beakers and a single perforated colander sherd. Posthole [1014] produced several large sherds from a single storage jar. At least three of the burial vessels are in SVW OX (*cf* Fig. 5.8, 5.9). One sherd from layer (3003) has been deliberately holed. The greyware variant has a less diverse range of forms, largely everted rim, necked jars, storage jars, tankards and dishes.

Roman Malvernian wares. This group includes both handmade and wheel made vessels, which collectively account for 1.8% by count and generally date to the mid-later Roman period. Forms: Vessels here mainly include simple necked or flared rim jars, a single tankard, plain-rimmed dishes and a single lid knob.

Regional wares

White-slipped oxidised/ reduced wares. A small group of unknown source but probably local or regional. Forms: The only featured sherd is from a small jar (Fig. 5.22).

Dorset black burnished ware (DOR BB1) (Tomber and Dore 1998, 127). By count this is the second commonest fabric on the site. Forms: the forms present date from the 2nd through to the 4th century. Most of the sherds are from jars variously decorated with acute to oblique burnished lattices, flat-rimmed bowls, plain-sided dishes and flanged conical bowls. A typical 2nd century jar from pit [8005] is shown in Fig. 5.12) with another from pit [8007] (Fig. 5.21). By contrast a semi-complete late jar missing the base fragments came from boundary ditch [4063] (Fig. 5.2).

Mancetter-Hartshill white ware (MAH WH) (ibid. 189). Eighteen sherds of whiteware which are probably Mancetter-Hartshill flagon along with three sherds of *mortaria* are present.

New Forest colour-coated ware? (NFO CC) (ibid. 141). Two very small colour-coated sherds may be from the New Forest kilns but identification is very tentative.

Oxfordshire wares (OXF RS; OXF WH) (ibid. 175-6). Seventeen sherds of colour-coated wares, five from *mortaria* and ten sherds of whiteware are present. Forms: The colour-coated wares include beakers (Young 1977, form C22), one vessel decorated with barbotine scales (ibid. form C28), bowls and dishes (ibid. C45, C51 and C83), and *mortaria* (C97).

South-west white-slipped ware (SOW WS) (Tomber and Dore 1998, 192). Three unfeatured sherds.

West Midlands *mortaria*. A single bodysherd from layer (4007) with quartzite trituration grit may be from the West Midlands or South Wales (eg. Caerleon).

Wroxeter whiteware *mortaria* (WRX WH) (ibid. 179). Three sherds probably from Wroxeter white ware mortaria are present. One broken flange has part of an illegible stamp (Fig. 5.1), which is similar to examples published from the 2nd -century levels at Wroxeter (Hartley 2000. fig. 4.99.80).

British glazed wares. Two sherds are present with a green glaze. One piece is from a small jar/beaker (Fig. 5.26). The hard, fired fabric is grey with sparse inclusions of limestone up to 2 mm in size. The exterior has a thin olive green glaze.

Continental Imports

The Samian by Felicity Wild

The excavations produced 124 sherds of samian ware from about 100 vessels in all, mostly in small pieces. Excluding scraps of unidentifiable form, origins and vessel numbers were as follows:

South Gaul: 29 (3), 30 (2), 37 (3); 27 (7), 15/17 (2), 18 (2), 36 (1), Curle 11? (1)
Central Gaul (Les Martres-de-Veyre): 37 (3); 27 (1), 18 (1), 18/31 (1), 18 or 18/31 (2), dish (1)

Central Gaul (Lezoux): 30 (1), 37 (18); 27 (2), 33 (8), 18/31 (2), 18/31 or 31 (2), 18/31R (3), 18/31R or 31R (1), 31 or R (1), 38 (2), 35 (1), 35/36 (1), 36 (2), 45? (1), bowl (4)
East Gaul: 37 (1)

Based on these figures, about 26% of the material was South Gaulish, from La Graufesenque, 73% Central Gaulish, (of which about 18% was probably from Les Martres-de-Veyre) and 1% (one sherd, no. 15 below)) from Blickweiler in East Gaul.

The sherds ranged in date from the Flavian to the Antonine period, though with the majority dating to the earlier part of the second century. There are three examples of form 29, a form which ceased to be made *c.*AD 85, and two of form 15/17, which came to an end during the Flavian period, but the forms and styles of decoration characteristic of the pre-Flavian period are absent. The later material appears to date to around the middle of the second century, though a small scrap of gritted *mortarium*, probably form 45, dated *c.*AD 170-200, suggests the import of samian ware until the end of the second century AD.

The exact proportion of decorated ware from the site is difficult to assess. Decorated forms are, obviously, easier to identify than plain forms, however small the sherd, by reason of their decoration, and form 37 bases are highly distinctive. This may lead to an over-

estimate of the number of decorated bowls in comparison to plain vessels. Where sherds do not join, it is not always possible to tell whether or not they come from the same bowl. The estimate of 36% of decorated bowls, based on the figures given above, may seem unduly high. Nevertheless, it is clear that over the century represented in the date range, a significant proportion of decorated bowls was reaching the site, suggesting, if not the presence of the military, then at least the presence of persons of wealth and status.

Although the quantity of material recovered from neither site is large enough to be statistically reliable, the assemblage makes for interesting comparison with Dymock (Wild 2007), the next station south on the road towards Gloucester. Although the group analysed was smaller than that discussed here, Dymock, too, produced a high proportion of decorated ware. In view of the fact that a fort is known from Stretton Grandison (Buteux 1996, 1-4) but still not, as yet, at Dymock (Catchpole et al. 2007, 134-5), it is interesting to note that the material from Dymock appears to start marginally earlier than that from Stretton Grandison. The proportion of form 29 to South Gaulish form 37 is higher (Dymock 5:2, Stretton Grandison 3:3) and, unlike Stretton Grandison, one or two of the pieces from Dymock are undoubtedly of pre-Flavian date. This may, perhaps, suggest that proximity to Gloucester was the main influence in the acquisition of prestige goods in the pre-Flavian period. It must be stressed, however, that the quantities of samian involved are far too small for any reliable conclusions to be drawn. The samian ware can help to answer these questions, but to do so would require considerably more extensive excavation at both sites than has yet taken place.

The material is summarised below by Access Pit, along with description of the decorated ware. Figure types are quoted from Oswald 1936-37 (O.), Central Gaulish motifs from Rogers 1974 (Rogers) and parallels from Stanfield and Simpson 1958 (S&S).

Access Pit 1

The samian ware was all South Gaulish and Flavian or Flavian-Trajanic apart from one scrap (1004/56) in the fabric of Les Martres-de-Veyre, Trajanic-Hadrianic. It comprised form 29 rim, 37 base, 27, 15/17 and 18 (2 examples).

Access Pit 3

Form 33 and two scraps, all Central Gaulish, Antonine.

Access Pit 4

A predominantly Central Gaulish group of early to mid-Antonine date. Of about 40 vessels, five were from South Gaul. A quantity of samian ware was found in early Roman (1st-2nd century) contexts, however the majority was recovered from late Roman occupation deposit (4003=4047) and was presumably residual in context. The scrap of gritted *mortarium* (form 45?), the latest samian sherd from the site, came from a filling of the masonry well (4006 <21>). The three decorated sherds were all from late Roman occupation deposit (4003=4047).

Fig. 6.1 - Form 37, Central Gaulish, showing freestyle decoration with the horseman (O.246) and the snake-on-rock ornament (O.2155). The snake-on-rock was used, as here, as a space filler by Attianus and also, later, by Criciro. The horseman was used by Sacer, though not attested for his associate Attianus. The style is likely to be that of the Sacer-Attianus group, *c.*AD 125-145. (4047/29)

Fig. 6.2 - Form 37, Central Gaulish. Two non-joining sherds, both with rivet-holes and likely to be from the same bowl. One sherd shows the ovolo (Rogers B144) used on the early work of Cinnamus in association with Cerialis, and part of an animal (?); the other, their warrior (O.207A), *c.*AD 135-165. (4047/41, 27)

Fig. 6.3 - Form 37, Central Gaulish. Panel decoration shows a single wide festoon containing an animal, possibly the bear (O.1627), above a panther (O.1521). The festoon and types were all used by Cinnamus. The bar below the type in the festoon may be part of his tab-stamp CINNAMI in the mould, although no lettering is visible here (*cf* Rogers 1999, pl. 29, 2, for the festoon, bear and stamp). The stamp occurs on bowls both in his early style with Cerialis and in his middle style. *c.* AD 135-165. (4003/111)

Access Pit 5

Two sherds: form 27, South Gaulish, Flavian and form 33, Central Gaulish, Antonine.

Access Pit 6

6.4 - Form 29, South Gaulish, showing the central band with bead rows and traces of scroll in the upper zone. Too little of the decoration survives for a precise date, but the form ceased to be made *c.*AD 85. (6004/75, not illustrated)

Access Pit 8

A significant group of samian ware, 41 sherds from 35 vessels, including most of the decorated ware, came from Access Pit 8 and its extensions. The material ranged in date from the Flavian period to the mid-second century AD, with ten vessels from South Gaul, 24 from Central Gaul and one from Blickweiler in East Gaul. Much of the material came from the fills of the two pits (8006, 8008). These were clearly contemporary, as in two cases (Nos. 5 and 7 below), sherds from the two fills came from the same bowls.

Fig. 6.5 - Form 37, South Gaulish. Two joining sherds of bowl with zonal decoration. The upper zone contains festoons with birds (O.2247, O.2290) and a horizontal impression of a bush; the lower contains a motif with the same bush together with a hare (O.2074) and hound (O.1925). It is not possible to assign the bowl to a particular potter, as the types and motifs were all common in the Flavian period, when few potters signed their work. The ovolo is associated with work signed by Sulpicius, as was the four-pronged pendant (Mees 1995, Taf. 193, 2). The hare, hound, bush and grass motifs were all used by M. Crestio (Mees 1995, Taf. 48, 1) and on bowls in the style of Mercator, while the squat gadroons around the base were a speciality of Frontinus (Mees 1995, Taf. 60, 1, 2). *c.* AD 80-100. (8006/7, 8008/58)

6.6 - Form 30, South Gaulish, showing a largely anonymous ovolo (Dannell et al. 1998, SF) known on form 30 from Catterick Racecourse. It was used by potters at the minor South Gaulish pottery at Espalion, and also probably by T. Iulius Aplastus at La Graufesenque (Mees 1995, Taf. 8, 1). No other decoration survives. *c.*AD 90-110. (8008/103, not illustrated)

Fig. 6.7 - Form 37, Central Gaulish. Two non-joining sherds in the style of Drusus i of Les Martres-de-Veyre, with vine scroll and basal bead row (S&S, pl. 11, 134). *c.*AD 100-120. (8006/32, 8008/56)

Fig. 6.8 - Form 37, Central Gaulish. Small fragment of a thin, fine bowl with smooth orange-red slip, showing a distinctive single-bordered ovolo above an arcade or medallion. The ovolo appears to be Rogers B77, which he associates with two little-known potters, Curmillus and Prisci(a)nus, both of whom he dates *c.* AD 120-140. There is no indication of a potter here, but the general fabric and style suggest a Hadrianic date. (8008/103)

Fig. 6.9 - Form 37, Central Gaulish, showing panel decoration with vine-scroll (Rogers M10) and Hercules (O.756). The style is that of X5/Silvio II, who used both types with wavy-line borders and the distinctive corded junction motif. *c.* AD 125-145. (8006/45)

Fig. 6.10 - Form 37, Central Gaulish. Two joining sherds of rather thick bowl showing the sea-bull (O.42) in a festoon. The ovolo (Rogers B17) was used by potters such as Attianus and Cinnamus, who both used the sea-bull. The festoon (probably Rogers F22) does not appear to be attested for either potter, though was used by Docilis (S&S. pl. 92, 12). *c.* AD 130-160. (8006/9, 15)

6.11 - Form 37, Central Gaulish. Small scrap showing ovolo (Rogers B28) of Drusus i, with beaded borders and dot rosette at the junction. *c.* AD 100-120. (8010, not illustrated)

Fig. 6.12 - Form 37, Central Gaulish, showing ovolo (Rogers B14) used by X13 and Sacer, with traces of a bead row above it, characteristic of X13. There are very faint traces of rouletting on the plain rim, probably caused accidentally during the finishing process. Possibly in the fabric of Les Martres-de-Veyre. *c.* AD 100-120. (8001/33)

Fig. 6.13 - Form 37, Central Gaulish, showing a panel containing a lion (O.1501). The leaf tip space filler is a common feature of the Cerialis-Cinnamus style (Rogers 1999, pls. 29, 6; 31, 34). There is no evidence that these potters used the lion, which occurs on a freestyle bowl with the stamp of Illixo beneath the decoration (Rogers 1999, pl. 48, 16). *c.* AD 135-165. (8101/35)

Fig. 6.14 - Form 37, Central Gaulish. Base sherd of small bowl showing panels containing Venus (slightly smaller version of O.325?) and a leaf (close to Rogers J119) with a short, diagonal bead row beneath it. The fabric suggests origin at Lezoux and the general style, with neat bead rows and narrow basal ridge, suggests an early to mid-Antonine date. The Venus appears on the work of Hadrianic-early Antonine potters such as Geminus and Pugnus and a smaller version of it (O.326) was in use in East Gaul. Although close to J119, used by Paternus v (S&S pl. 104, 2, 3), the leaf here is less curved and has a thinner stalk. The potter must remain in doubt, but a mid-second-century date seems probable. (8004/39)

Fig. 6.15 - Form 37, East Gaulish. The ovolo, with very narrow core and beaded tongue, stamped in pairs, was used at Blickweiler (Knorr and Sprater 1927, Taf. 82, 32). It occurs on bowls with similarly large beads (ibid., Taf. 52, 2; 56, 1, 2), though not on the work of any named potter. The abraded type beneath the bead row is not identifiable. Antonine. (8004/39).

Access Pit 9

Five sherds, including three of rim, probably all from the same form 29, South Gaulish, *c.*AD 70-85. The rest of the group is Central Gaulish: form 18 or 18/31 in the fabric of Les Martres-de-Veyre, Trajanic-Hadrianic, and 33 (2 examples), 18/31R, and 37 (scraps from at least one example), all Hadrianic-early Antonine.

Other continental imports

Baetican *amphorae* (BAT AM) (Tomber and Dore 1998, 84-5). Fifty bodysherds from *amphorae*, imported from Baetica, southern Spain, are present. Most, if not all are probably from the globular *amphora* Dressel 20, used for transporting olive oil and the commonest type to be found on British sites. Two sherds from ditches [6005] and [6017] are burnt suggesting secondary use.

Gallic *amphorae* (GAL AM) (ibid. 93). Two sherds were recovered one large piece from pit [8007], the second from shallow pit [1012]. These *amphorae* were imported between the 1st-3rd centuries and contained wine.

Moselkeramik black slipped ware (MOS BS) (ibid. 60). Two sherds are present, one from ditch [4087] from an indented beaker. This ware was imported into Britain in the later 2nd-3rd centuries.

Unknown sources, probably local

Sandy oxidised ware. A medium to fine sandy ware. Mainly sherds from flagons or beakers. It is possible that some sherds were once colour-coated.

Fine grey ware. A small group of 14 sherds, five of which are a micaceous variant. Sherds are mainly from beaker with rouletted decoration along with a single jar and reeded rim bowl.

Grey sandy ware. A moderately large group of wares contributing 7% to the assemblage. The group includes a number of jars with rare examples of lids, shallow dishes and plain rimmed dishes and of particular note a number of short everted rim beakers or jars decorated with rustication or rouletting. Some sherds are decorated with combed wavy lines. Two sherds from pit [8007] have post-firing incised graffiti (Fig. 5.20).

Black wares. Various black sandy wares contribute a further 3.3% of the assemblage. Featured sherds include jars, beakers and curved wall dishes.

Fine black ware. A total 24 sherds of fine black ware are present of which 18 are of a distinctly micaceous variant. Vessels include a flask, everted rim beaker and flared rim jars.

Miscellaneous colour-coated wares. A small group of unfeatured mainly oxidised, colour-coated sherds from unknown source or sources.

Mica-dusted ware. A single sherd was recovered from pit [8005].

The assemblage comprises a mixture of handmade wares and wheel made Roman wares. The latter mainly comprise local wares but there are a few imported continental and regional wares represented.

Discussion of fabrics

The earliest fabrics present include Palaeozoic limestone (MAL RE B), Malvernian rock-tempered (MAL RE A), and handmade grog-tempered ware. These all have their origins in the mid-later Iron Age but continue to feature in assemblages up to the end of the 1st

century AD/early 2nd century, and in the case of MAL RE A well into the 2nd century, and later, basically using the same technology. Fabric MAL RE A is the dominant ware present in this group with tubby jars and rolled rim jars some with a burnished finish. The other two wares are only present in minor amounts.

The Roman wares proper are dominated by Severn Valley wares, mainly oxidised but with some reduced wares, which effectively account for 60.9% of the total assemblage by sherd count. Although a range of forms is present including a few tankards, a colander, bowls and storage jars, the group is dominated by wide-mouthed jars with pendant rims.

Continental imports include both fine tablewares and *amphorae*. Samian is moderately well represented with vessels from both South Gaul and Central Gaul. In total there are 124 sherds of samian, 3.5% of the total assemblage. A particularly unusual feature of the samian assemblage is the moderately high proportion of decorated to plain vessels, not a feature normally associated with a standard domestic repertoire. There are no surviving potter's stamps present. Two sherds, both from (4047) have rivet repair holes. The only other fine ware import is an indented Moselle beaker from ditch [4087] dating to the later 2nd-3rd century.

Amphorae account for 1.5% of the total assemblage and mainly comprise sherds of Baetican *amphorae* from Southern Spain used primarily for transporting olive oil. This is the commonest *amphorae* to be found in British sites and usually occurs as the Dressel 20 form. In addition there are a small number of sherds from Gallic wine *amphorae*.

Regional imports are dominated by products of the Dorset black burnished ware industry, which account for 12.1% of the assemblage. This includes a range of bowls and jars spanning the 2nd to 4th centuries. Other imports present include a few vessels from the Oxfordshire colour-coated and whiteware industries including a beaker with barbotine scale decoration, a stamp decorated bowl, plain bowls and mortaria which all date to the later Roman period. Also present are non-local whiteware *mortaria*, Wroxeter *mortaria*, West Midlands mortaria, Mancetter-Hartshill whiteware, South-west white-slipped ware and two possible sherds of New Forest colour-coated ware. One *mortaria* flange from (6016) has the edge of a grid stamp. Of unknown source but probably not local, are various other colour-coated sherds, two Romano-British glazed wares and a mica-slipped ware.

Amongst the probable more local products are numerous grey and black wares, several with rusticated or rouletted decoration typologically dating from the early 2nd century. Two sherds from (8008) have lines incised onto the sherds after firing although two little remains to determine the overall scheme of the graffiti (Fig. 5.20).

Forms (Table 4.2)

In terms of forms, as might be expected jars dominate accounting for 62.4% of the assemblage by rim estimated vessel equivalence (EVE). In most domestic assemblages bowls and dishes would normally be the second commonest form to be recorded but here drinking vessels (cups, beakers and tankards) collectively account for 17.7% followed by bowls/dishes at 17.1%. The remainder of the assemblage is made up of *mortaria* (1.8%), flagons/jugs (0.3%) and lids at 0.7%. Also present but not represented in the rimsherds are *amphorae* and colanders.

Forms	EVE	EVE %
Jars	2451	62.4
bowls/dishes	672	17.1
mortaria	71	1.8
flagons/jugs	12	0.3
cups	123	3.1
beakers	372	9.5
tankards	201	5.1
lids	29	0.7
TOTAL	**3931**	**100.0**

Table 4.2: Forms

Site distribution

Apart from 16 sherds of medieval and post-medieval date largely recovered from surface collection the entire assemblage dates to the Roman period, specifically it spans the later 1st/ 2nd to 4th centuries. The samian includes several 1st -century pieces largely redeposited in later horizons which intimates some earlier activity difficult to pick up from the coarsewares, which show little change in the Flavian-Trajanic period.

Access pit 1

Access pit 1 produced a total 497 sherds weighing 7020 g. Pottery was recovered from 14 contexts the largest groups coming from occupation layer (1004) with 145 sherds, pit [1010] with 126 sherds and 123 sherds from pit [1012]. Surprisingly the material from layer (1004) is slightly better preserved than those from the pits, with an average sherd weight of 13.5 compared to 11.5 and 9.2 respectively. It is possible that the former represents dispersed midden material. The assemblage from Access pit 1 was particularly focussed on the early Roman period with no late Roman pottery present.

Looking at the overall assemblage from Access pit 1 (Table 4.3a) vessels from the Severn Valley industries dominate accounting for 72.1% by count. 82.7% by weight. The samian predominantly comprises South Gaulish sherds, which account for 2% by count and several sherds of Dressel 20 *amphorae* are also present. Native wares (Malvernian and grog-tempered wares) account for 12%.

Pit [1012] appears to be one of the earliest groups probably dating to the late 1st century with several sherds of Malvernian rock and limestone-tempered ware, two sherds of Flavian South Gaulish samian, single sherds of Dressel 20 and Gauloise *amphorae*, and 30% Severn Valley wares. Linear [1031] and postholes [1015] and [1033] are also probably of later 1st -century date. The other features in the trench including pits [1008] and [1010] to produce pottery could be later 1st or early 2nd century on date. Occupation deposit (1004) contained a single sherd of Dorset BB1 suggesting that this extended into the early 2nd century.

Access pit 2

Access pit 2 produced a small assemblage of just 28 sherds weighing 349 g from three contexts. The group mainly comprised unfeatured Severn Valley wares and three pieces of Malvernian rock-tempered ware, which are difficult to date closely but might suggest an earlier rather than later Roman focus.

Table 4.3a – Access pits 1 and 3

		Access pit 1				Access pit 3			
	Description	**No**	**No %**	**Wt**	**Wt %**	**No**	**No %**	**Wt**	**Wt %**
LPRIA-ERO	Malvernian metamorphic	10	2.0	124	1.8	3	2.1	10	0.7
	Malvernian limestone	17	3.4	216	3.1	1	0.7	44	2.9
	hm grog-tempered	33	6.6	369	5.3	0	0.0	0	0.0
SVW types	Severn Valley ware oxidised	314	63.2	5315	75.7	108	76.6	1015	66.5
	Severn Valley ware reduced	44	8.9	488	7.0	11	7.8	75	4.9
Local	handmade Roman Malvernian	0	0.0	0	0.0	0	0.0	0	0.0
	wm Malvernian	1	0.2	5	0.1	0	0.0	0	0.0
Regional	white-slipped oxidised/reduced	0	0.0	0	0.0	0	0.0	0	0.0
	Dorset black burnished ware	1	0.2	6	0.1	1	0.7	6	0.4
	Mancetter-Hartshill whiteware	0	0.0	0	0.0	0	0.0	0	0.0
	Mancetter-Hartshill mortaria	0	0.0	0	0.0	0	0.0	0	0.0
	New Forest colour-coat?	0	0.0	0	0.0	0	0.0	0	0.0
	Oxfordshire colour-coat	0	0.0	0	0.0	0	0.0	0	0.0
	Oxon colour-coated mortaria	0	0.0	0	0.0	0	0.0	0	0.0
	Oxon whiteware	0	0.0	0	0.0	0	0.0	0	0.0
	South-west white slipped	0	0.0	0	0.0	0	0.0	0	0.0
	West Midlands mortaria	0	0.0	0	0.0	0	0.0	0	0.0
	Wroxeter whiteware mortaria	0	0.0	0	0.0	1	0.7	81	5.3
	British glazed ware	0	0.0	0	0.0	0	0.0	0	0.0
Continental	South Gaulish samian	10	2.0	110	1.6	0	0.0	0	0.0
imports	Central Gaulish samian	1	0.2	4	0.1	3	2.1	11	0.7
	East Gaulish samian	0	0.0	0	0.0	0	0.0	0	0.0
	Baetican amphorae	13	2.6	155	2.2	4	2.8	231	15.1
	Gallic amphorae	1	0.2	26	0.4	0	0.0	0	0.0
	Moselle black slip	0	0.0	0	0.0	0	0.0	0	0.0
Unknown	sandy oxidised	1	0.2	67	1.0	1	0.7	10	0.7
	fine grey ware	0	0.0	0	0.0	0	0.0	0	0.0
	medium grey sandy ware	9	1.8	72	1.0	3	2.1	26	1.7
	black wares	1	0.2	5	0.1	5	3.5	18	1.2
	fine black ware	0	0.0	0	0.0	0	0.0	0	0.0
	mis*C.* colour-coated wares	0	0.0	0	0.0	0	0.0	0	0.0
	misc	0	0.0	0	0.0	0	0.0	0	0.0
	fine oxidised ware	2	0.4	2	0.0	0	0.0	0	0.0
	mica dusted ware	0	0.0	0	0.0	0	0.0	0	0.0
	buff/palewares	0	0.0	0	0.0	0	0.0	0	0.0
	unknown whiteware mortaria	0	0.0	0	0.0	0	0.0	0	0.0
	unclassified crumbs	39	7.8	56	0.8	0	0.0	0	0.0
TOTAL		**497**	**100.0**	**7020**	**100.0**	**141**	**100.0**	**1527**	**100.0**

Table 4.3a: Access pits 1 and 3

Access pit 3

Slightly more pottery was recovered from Access pit 3 with a total 141 sherds weighing 1527 g from a single deposit. Severn Valley wares again dominate accounting for 84.7% by count of the overall group (Table 4.3a). The assemblage appears to date to the second half of the 2nd century.

Access pit 4

This pit produced one of the larger assemblages with some 1857 sherds weighing *c* 24.6 kg and with a wider chronological range compared with pits 1-3. As with the other assemblages Severn Valley wares dominate accounting for 61.2% by count followed by Dorset BB1 at 20.3% by count (Table 4.3b).

On the basis of the pottery present the features can be divided into early, mid and late Roman. It is possible with some of the smaller groups, and perhaps the grave-fills that the pottery is all redeposited. The earliest group of features dating to the 2nd century include linears [4025], [4106], grave fill (4027), well [4005], pits (4057), (4090) and deposit (4028). Curvilinear [4067] produced an assemblage of 52 sherds the latest of which appear to be mid-later 2nd century. Grave fill (4038) appears to date after the later 2nd or 3rd century on the basis of the sherds in the backfill.

Well [4005] produced 41 quite fragmentary sherds with an average sherd size of just below 6 g. The material is mixed chronologically with 1st to possibly early 3rd-century wares, which probably represents largely redeposited material.

Placed later in the Roman period are ditch [4109] with 3rd century or later sherds and ditch [4074], and possible grave fill [4071] which produced material typical of the 4th century. Kiln [4069] which produced just eight sherds and a large amount of very fragmented fired clay. The sherds where it can be determined are 2nd century and are thus probably residual. Ditch [4063] yielded a large assemblage of 196 sherds with a range of material dating from the mid 2nd onwards. However, the presence of at least two 4th-century DOR BB1 jars, one semi-complete (Fig. 5.2) would suggest the ditch was finally abandoned in the 4th century.

These features were cutting deposit (4007) containing a large quantity of pottery; of particular note are some semi-complete or complete cremation urns from within the deposit. These include a restored SVW OX burial urn (pot 1) (Fig. 5.9); the lower two-thirds of a second SVW OX jar (pot 2), bodysherds from a third SVW OX-type jar (pot 3) intermixed with a Dorset black burnished ware jar and another almost intact everted rim SVW OX jar (pot 4) (Fig. 5.8). These vessels are difficult to date closely as the Severn Valley ware industry is long-lived and quite conservative; such forms tend to feature from the 2nd to 4th centuries.

The features were all sealed by deposit (4003/4047) which produced just over 50% of the pottery from Pit 4, that although slightly mixed would suggest a tpq in the later 3rd-early 4th century.

Cut into this deposit (4003/4047) were five pits and a ditch [4009]/[4087].Two of the pits contained pottery, [4012] and [4016] but in the former a tiny sherd and the latter just two sherds not datable other than Roman. Ditch [4009]/[4087] produced later 3rd- 4th-century material, notably an Oxfordshire colour-coated *mortarium* (Young 1977, C97) and beaker sherds and sherds from a Moselle indented beaker.

The post-Roman deposits produced a further 108 sherds weighing 1448 g with a mixture of mainly 2nd-3rd –century material.

Table 4.3b – Access pits 4 and 8

		Access pit 4				Access pit 8			
	Description	**No**	**No %**	**Wt**	**Wt %**	**No**	**No %**	**Wt**	**Wt %**
LPRIA-ERO	Malvernian metamorphic	9	0.5	208	0.8	27	3.7	667.5	4.6
	Malvernian limestone	1	0.1	10	0.0	1	0.1	118	0.8
	hm grog-tempered	0	0.0	0	0.0	1	0.1	50	0.3
SVW types	Severn Valley ware oxidised	988	53.2	16581	67.5	259	35.2	6437	44.3
	Severn Valley ware reduced	151	8.1	1271	5.2	22	3.0	305	2.1
Local	handmade Roman Malvernian	4	0.2	108	0.4	0	0.0	0	0.0
	wm Malvernian	45	2.4	626	2.5	4	0.5	72	0.5
Regional	white-slipped oxidised/reduced	0	0.0	0	0.0	8	1.1	99	0.7
	Dorset black burnished ware	377	20.3	2699	11.0	26	3.5	630	4.3
	Mancetter-Hartshill whiteware	18	1.0	246	1.0	0	0.0	0	0.0
	Mancetter-Hartshill mortaria	3	0.2	267	1.1	0	0.0	0	0.0
	New Forest colour-coat?	2	0.1	7	0.0	0	0.0	0	0.0
	Oxfordshire colour-coat	6	0.3	89	0.4	1	0.1	16	0.1
	Oxon colour-coated mortaria	2	0.1	34	0.1	3	0.4	50	0.3
	Oxon whiteware	0	0.0	0	0.0	0	0.0	0	0.0
	South-west white slipped	1	0.1	4	0.0	1	0.1	0.5	0.0
	West Midlands mortaria	1	0.1	116	0.5	0	0.0	0	0.0
	Wroxeter whiteware mortaria	0	0.0	0	0.0	1	0.1	54	0.4
	British glazed ware	0	0.0	0	0.0	1	0.1	2	0.0
Continental	South Gaulish samian	8	0.4	44	0.2	12	1.6	208	1.4
imports	Central Gaulish samian	49	2.6	284.5	1.2	28	3.8	410	2.8
	East Gaulish samian	0	0.0	0	0.0	1	0.1	42	0.3
	Baetican amphorae	23	1.2	1286	5.2	6	0.8	1100	7.6
	Gallic amphorae	0	0.0	0	0.0	1	0.1	172	1.2
	Moselle black slip	2	0.1	22	0.1	0	0.0	0	0.0
Unknown	sandy oxidised	6	0.3	20.5	0.1	2	0.3	30	0.2
	fine grey ware	11	0.6	54	0.2	1	0.1	3	0.0
	medium grey sandy ware	72	3.9	363	1.5	202	27.5	3109	21.4
	black wares	0	0.0	0	0.0	42	5.7	735	5.1
	fine black ware	1	0.1	3	0.0	22	3.0	127	0.9
	mis***C.*** colour-coated wares	18	1.0	175	0.7	3	0.4	46	0.3
	misc	1	0.1	4	0.0	2	0.3	5	0.0
	fine oxidised ware	2	0.1	9	0.0	0	0.0	0	0.0
	mica dusted ware	0	0.0	0	0.0	1	0.1	5	0.0
	buff/palewares	2	0.1	14	0.1	0	0.0	0	0.0
	unknown whiteware mortaria	0	0.0	0	0.0	1	0.1	21	0.1
	unclassified crumbs	54	2.9	24.5	0.1	56	7.6	28	0.2
TOTAL		**1857**	100.0	**24569**	100.0	**735**	100.0	**14542**	100.0

Table 4.3b: Access pits 4 and 8

Access pit 5

This pit yielded a small assemblage of just 82 sherds recovered from three pits and an occupation layer. The presence of an OXF RS bowl and beaker with barbotine scale decoration (Young 1977, form C83, C22) from occupation layers (5004) and (5005) suggests these accumulated in the 4th century or later. The pits are not closely datable but (5012) must date after the mid 2nd century.

Access pit 6

A further small assemblage was recovered from access pit 6 amounting to some 142 sherds, 1688 g in weight. Pottery was associated with occupation deposit (6004) and three ditches [6005], [6007] and [6017]. Context (6004) contained a mixture of 1st to early 4th-century material. The ditches yielded moderately small groups of material. Ditches [6007] and [6017] can only be dated from the 2nd century onwards; ditch [6005] contains later 2nd-3rd -century wares.

Access pit 7

Just six sherds of SVW OX were recovered from two contexts from this pit broadly of later 2nd-3rd-century date.

Access pit 8

A significantly larger assemblage was recovered from access pit 8 comprising some 748 sherds weighing 15452 g (Table 4.3b). Most of the material was recovered from a number of pits, a well and a gully. The earliest features appear to be the well shaft [8013], pit [8015] and gully [8009] all with pottery typical of the early 2nd century. Most of the pottery came from [8013] with 100 sherds with 22 from the gully and 15 from [8015]. Of particular note is the absence of any DOR BB1 from these groups suggesting they predate the distribution of this ware from *c* 120 onwards. Gully [8009] had a very small scrap of British glazed ware. Pit [8005] produced a large assemblage of 242 sherds, 5587 g. This is largely a 2nd-century group with the latest samian dating to AD 160-90, with a number of Hadrianic-Antonine pieces. Samian of both South, Central and East Gaulish origin are well represented in this pit accounting for 9% by count of the assemblage which may signal a special deposit of some nature. A single mica-slipped ware is present as are several sherds of Malvernian rock-tempered ware and a sherd with a post-firing graffiti (Fig. 5.20). A similarly large group of pottery was recovered from pit [8007] with 290 sherds (6028 g), which shows many similarities to pit [8005]. Samian although again well represented only forms 5% of the group by count although this is still quite high and again both South and Central Gaulish sherds are present. However, the chronological range of the overall group is greater with 1st-2nd-century fine and coarsewares but also sherds of Oxfordshire colour-coated ware (Young 1977, forms C51, C97) and a burnt flanged rim bowl in DOR BB1 giving a tpq in the later 3rd-early 4th century at the earliest. Further pottery was recovered from the topsoil and occupation layer (8004). Of note from the former is a cordoned SVW OX bowl (Fig. 5.10) of early Roman date.

Access pit 9

A moderately small collection of 137 sherds of pottery weighing 51592 g was recovered from alluvial and occupation deposits. The latest datable material appears to be mid-later 2nd century.

Conclusion

This is a valuable assemblage of pottery from an area, which has seen little previous material of this date recovered from controlled archaeological work and as such makes a useful contribution to pottery studies in this area. It bears many comparisons with unstratified assemblages recently documented from the Bredon Hill-Nettlebed area catalogued as part of the Aggregates landscape project (Worcester County Council) (Timby 2008) in terms of the range of forms and fabrics present. Other comparable groups

have recently been analysed from south-east of Tewkesbury (Timby 2004a), Childswickham (Timby 2004b), Longdon (Timby 2006a), and Coughton (Timby 2006b).

The assemblage is very typical for the region largely in that it largely comprises Severn Valley wares and other local wares, with a mixture of non-local material. Most of the sites noted above produced between 43% and 50% Severn Valley wares. The proportions of DOR BB1 across these sites is slightly variable ranging from just 3.2% at Longdon to 6% at Childswickham to around 15% at Tewkesbury but Stretton Grandison at 12.1% is thus within the expected range. Although it could be argued that the other non-local wares raises the site profile above that of an isolated rural settlement these are small scale and other similar wares have been noted at Tewkesbury and Childswickham. The complete absence of any Midlands shelly ware and other particular late forms might suggest that the Stretton Grandison was abandoned from early on in the 4th century. However, it would seem that Stretton Grandison differs in function from these other sites, which are mainly of a domestic nature. The level of samian at 3.5% from Stretton Grandison is slightly higher than one might expect for a rural occupation site, which normally averages around 1-2%. Childswickham had c 2%, Coughton and Longdon less than 0.5% and Tewkesbury 1.5%.

The high concentration of samian sherds in pit [8005] also suggests that this is not a standard domestic assemblage. The high incidence of drinking vessels from the site is also atypical and together these two observations suggest an assemblage, which may be connected with the use of the site as a cemetery and perhaps with festivities and ceremonies connected to the action of burial. They may also reflect a sacred area or nearby shrine. Similar patterns of higher levels of samian and drinking vessels have been noted in the temple precinct at Higham Ferrers (Timby in prep). Willis (2004, section 12.2) has collated several noteworthy examples where samian has been found in association with religious foci suggesting a possible specific link with religious activities. Amongst these are two shrines at Brigstock, Northants and the temple at Great Chesterford, Essex.

Recent work at Barton Street, Manchester investigated a potential shrine area (structure/enclosure G) where again the deposits contained a number of unusual vessels including a higher proportion of beakers and vessels with graffiti or incised marks (Leary 2008). Evans (1993) in his study of pottery function and finewares in the north has noted particularly high numbers of beakers at the mithraeum at Carrawburgh (ibid. Appendix 1) and Catterick Racecourse adjacent to a cemetery, the implication being their use in religious rituals.

Fired clay

Well in excess of 140 fragments of fired clay was recovered, a total weight of 1409 g. Many of samples were too fine to undertake a count, mainly that recovered from kiln (4069). Most pieces comprised very small, abraded fragments with no diagnostic features to suggest original purpose. None of the pieces showed evidence of high temperatures to suggest kiln or furnace construction. Some fragments may well be abraded pottery or ceramic building material. In terms of distribution 63% by weight was recovered from access pit and 17.5% from access pit 8. The remaining 19.5% was distributed across the other pits and as such represents a low background scatter.

Ceramic building material

Some 74 pieces of ceramic building material (CBM) were present weighing 4.86 kg. With the exception of a possible post-Roman piece from (8104) this all appears to be Roman. A few pieces were made in the local Malvernian-type fabric but most were the standard red-orange sandy fabric. Over half the pieces recovered, 58%, came from access pit 4 with 19 fragments from occupation deposit (4003=4047). Nine pieces came from ditch [4009]. Most appear to be fragments of roofing tile (*tegulae* and *imbrices*) but of particular note is a fragment of box flue from layer (4029). The remaining tile was distributed across the other access pits with four fragments from pit 1, five from pit 6 and seven from pit 8. In all cases this seems to be roofing tile with a probably *pila* (flat tile) from pit [8007]. Generally this seems to represent quite a sparse distribution but clearly indicates a building of some quality in the neighbourhood with a clay tiled roof and internal heating.

Bibliography

Buteux, V. 1996, *Archaeological Assessment of Stretton Grandison Roman Settlement, Hereford and Worcester*, Central Marches Historic Towns Survey, typescript rep.

Catchpole, T., Copeland, T., and Maxwell A. 2007, 'Roman Dymock: Archaeological Investigations 1995-2002', *Transactions of the Bristol and Gloucestershire Archaeological Society* 125, 131-245.

Dannell, G., Dickinson, B. and Vernhet, A. 1998, 'Ovolos on Dragenforff form 30 from the collections of Frédéric Hermet and Dieudonné Rey' in J. Bird (ed.), *Form and Fabric: Studies in Rome's material past in honour of B.R. Hartley*, Oxbow Monograph 80, 69-109.

Evans, J, 1993 Pottery function and finewares in the Roman north, *J Roman Pottery Stud* **6**, 95-118

Hartley, K, 2000, Stamped *mortaria*, in P. Ellis (ed) *The Roman Baths and* Macellum *at Wroxeter. Excavations by Graham Webster 1955-85*, English Heritage, 302-5

Hurst, J D, and Rees, H, 1992 Pottery fabrics: a multi-period series for the County of Hereford and Worcestershire, in S G Woodiwiss (ed), *Iron Age and Roman salt production and the medieval town of Droitwich,* CBA Res Rep **81**, 200-9

Knorr, R. and Sprater, F. 1927, *Die westpfälzischen Sigillata-Töpfereien von Blickweiler und Eschweilerhof*, Speyer.

Leary, R S, 2008, 'Romano-British coarse pottery', in R.A. Gregory (ed.), *Roman Manchester - The University of Manchester's excavations within the vicus: 2001-2005*, Oxford

Mees, A.W. 1995, *Modelsignierte Dekorationen auf südgallischer Terra Sigillata*, Forschungen und Berichte zur Vor- und Frühgeschichte in Baden-Württemburg, Band 54, Stuttgart.

Oswald, F. 1936-37*, Index of Figure Types on Terra Sigillata*, University of Liverpool Annals of Archaeology and Anthropology, Supplement.

Peacock, D P S, 1967 Romano-British production in the Malvern district of Worcestershire, *Trans Worcestershire Archaeol Soc* 3rd series, **1**, 15-28

Rogers, G.B. 1974, *Poteries Sigillées de la Gaule Centrale I : les motifs non figurés*, Gallia Supplement 28.

Rogers, G.B. 1999, *Poteries Sigillées de la Gaule Centrale II : Les Potiers*, premier Cahier du Centre Archéologique de Lezoux.

Stanfield, J.A. and Simpson, G. 1958, *Central Gaulish Potters*, London.

Timby, J R, 2004a Romano-British pottery, 66-75, in G. Walker, A. Thomas and C. Bateman, Bronze Age and Romano-British sites south-east of Tewkesbury: evaluations and excavations 1991-7, *Trans Bristol Gloucestershire Archaeol Soc* **122**, 29-94

Timby, J R, 2004b The Pottery (from Childswickham, Hereford and Worcester). Publication report prepared for Worcestershire County Council Archaeol Service

Timby, J R, 2006a The Pottery (from Hillcourt Farm, Longdon, Worcs). Report prepared for Oxford Archaeology

Timby, J R, 2006b The Pottery (from Coughton, Ross-on-Wye). Report prepared for Border Archaeology

Timby, J R, 2008 Antiquarian Romano-British pottery collections from Bredon Hill, Overbury Park, Elmont Coppice and Nettlebeds. Manuscript report prepared for Worcestershire County Council Archaeol Service

Timby, J R, in prep. The pottery (from Higham Ferrers)

Tomber, R, and Dore, J, 1998 *The National Roman fabric reference collection: a handbook*, Museum of London / English Heritage/ British Museum

Webster, P V, 1976 Severn Valley wares, *Trans Bristol & Gloucestershire Archaeol Soc* **94**, 18-46

Wild, F. 2007, 'Samian' in Catchpole *et al*. 2007, 155-161.

Willis S J, 2004 http://intarch.ac.uk/journal /issue 17/1

Young, C J, 1977 *Oxfordshire Roman pottery*, BAR 43, Oxford

APPENDIX 5 – Pottery Drawings

By Jane Timby

Catalogue of illustrated sherds

5.1 - Everted rim beaker. Fabric: GREY. Occupation layer (4007).
5.2 - Jar decorated with an oblique burnished line lattice. Fabric: DOR BB1. (4064) fill of boundary ditch [4063].
5.3 - Flanged rim hemispherical bowl. Fabric: SVW OX. (4064) fill of boundary ditch [4063].
5.4 - Wide-mouthed jar. Fabric: SVW OX. (4064) fill of boundary ditch [4063].
5.5 - Necked, cordoned jar. Fabric: SVW OX (organic-tempered variant). (4026) fill of linear [4025].
5.6 - Bowl. Fabric: SVW OX. Occupation deposit (4003).
5.7 - Narrow-mouthed jar. Fabric: SVW OX. Occupation deposit (4047).
5.8 - Almost complete everted bifid rim jar. Part of the rim had broken off but was found in the fill. Fabric: SVW OX. Occupation deposit (4007), pot 4.
5.9 - Complete everted rim jar used as a cremation urn Restored. Fabric: SVW OX. Occupation deposit (4007), pot 1.
5.10 - Flared rim cordoned bowl. Fabric: SVW OX. Topsoil (8001).
5.11 - Everted rim beaker with rouletted decoration. Fabric: GYF. (8006) fill of pit [8005].
5.12 - Handmade jar, slightly burnt. Fabric: DOR BB1. (8006) fill of pit [8005].
5.13 - Hemispherical bowl. Fabric: SVW OX. (8006) fill of pit [8005].
5.14 - Handmade beaded rim jar with an abraded outer surface. Fabric: MAL RE A. (8006) fill of pit [8005].
5.15 - Shallow dish. Fabric: SVW OX. (8006) fill of pit [8005].
5.16 - Wide-mouthed large jar. Fabric: SVW OX. (8006) fill of pit [8005].
5.17 - Tankard. Fabric: SVW OX. (8008) fill of pit [8007].
5.18 - Carinated cup. Fabric: SVW OX. (8008) fill of pit [8007].
5.19 - Shallow dish. Fabric: SVW OX. (8008) fill of pit [8007].
5.20 - Bodysherd from a closed form with a post-firing graffiti. Fabric: SVW RE. (8008) fill of pit [8007].
5.21 - Everted rim jar. Fabric: DOR BB1. (8008) fill of pit [8007].
5.22 - Small jar. Fabric: WSOXID. (8008) fill of pit [8007].
5.23 - Everted rim jar with a bulged shoulder and rusticated decoration. Fabric GREY. (8008) fill of pit [8007].
5.24 - Sharply everted rim beaker. Fabric: GREY. (8008) fill of pit [8007].
5.25 - Wide-mouthed jar. Fabric SVW OX. (8011) upper fill of pit [8013].
5.26 - Small rim sherd from a jar or beaker in a hard grey fabric with sparse limestone. Thin olive green glaze. Fabric: GLAZE. Pit WL02.
5.27 - *Mortarium* stamp. Fabric: WRX WH. (6016) upper fill of pit [6017].

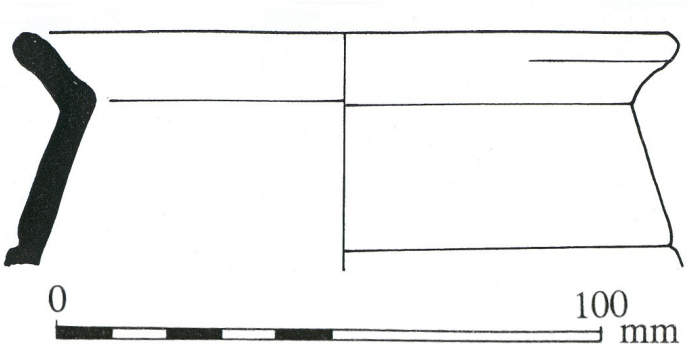


Fig. 5.1

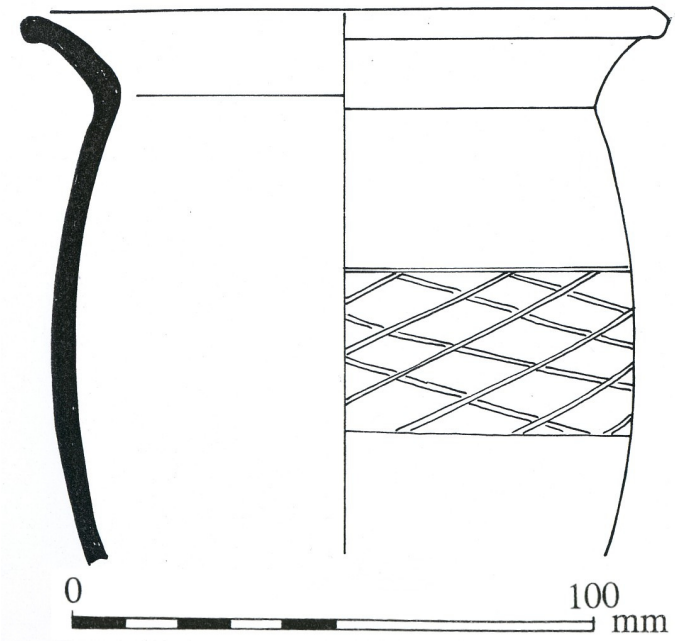


Fig. 5.2

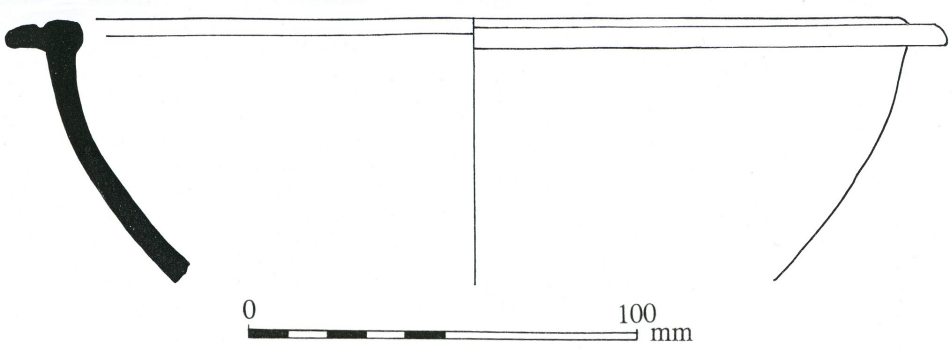


Fig. 5.3

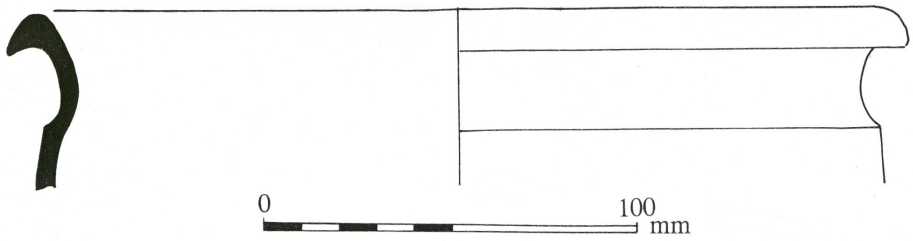


Fig. 5.4

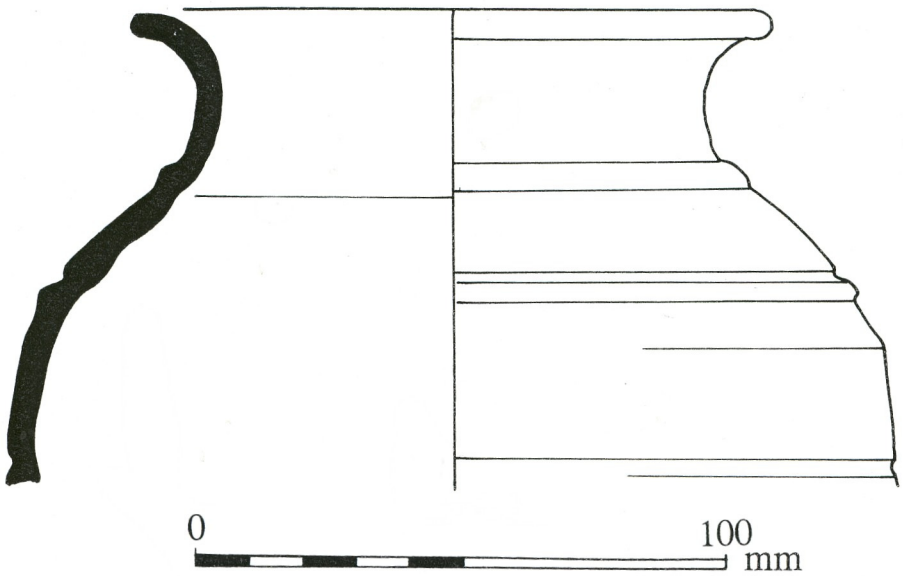


Fig. 5.5

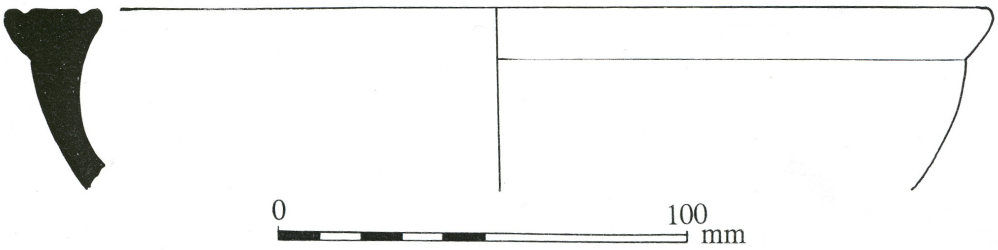


Fig. 5.6

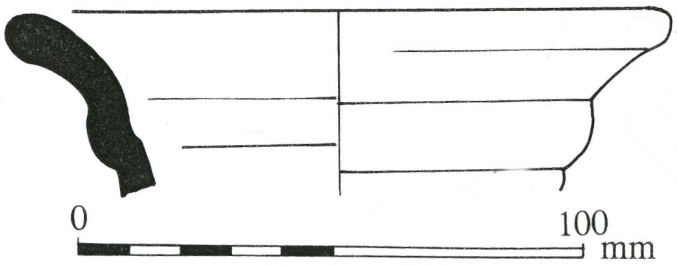


Fig. 5.7

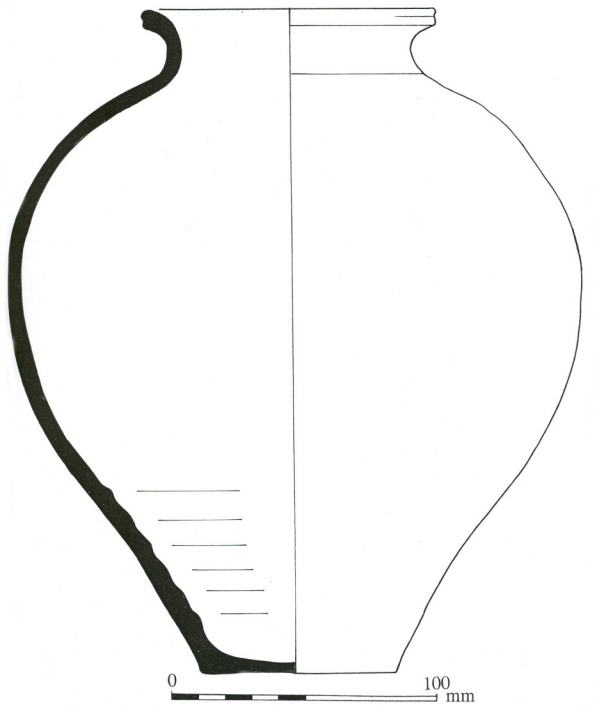


Fig. 5.8

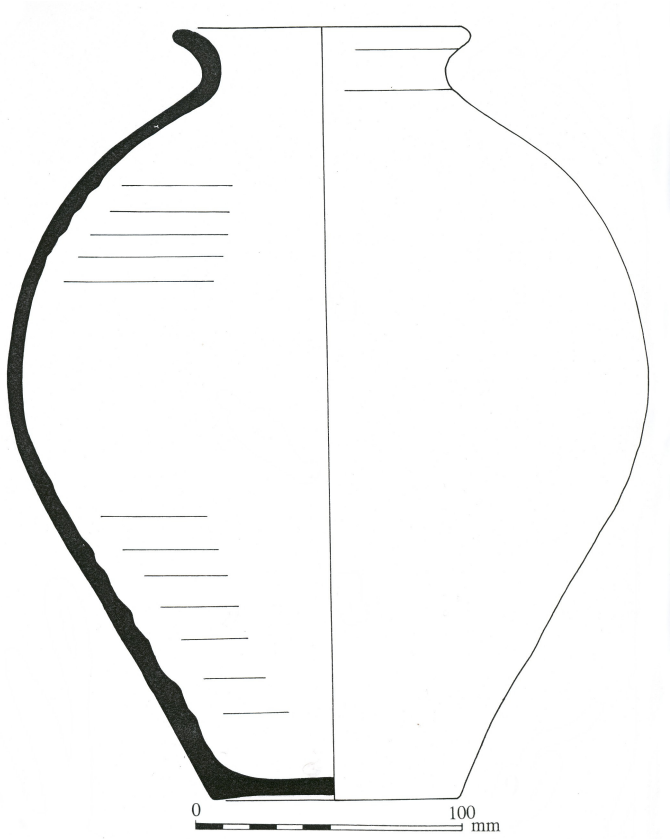


Fig. 5.9

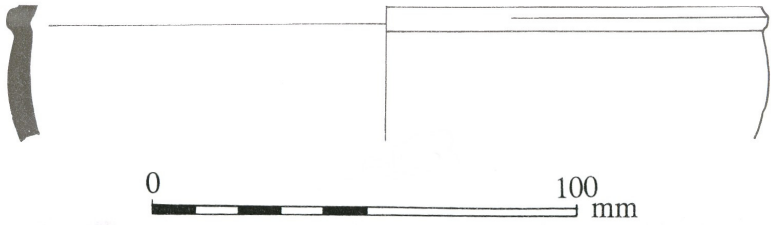


Fig. 5.10

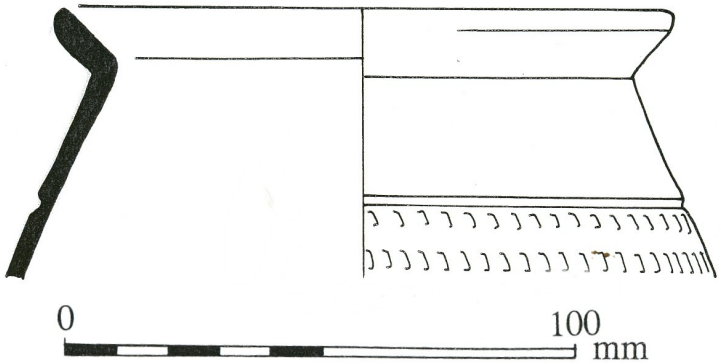


Fig. 5.11

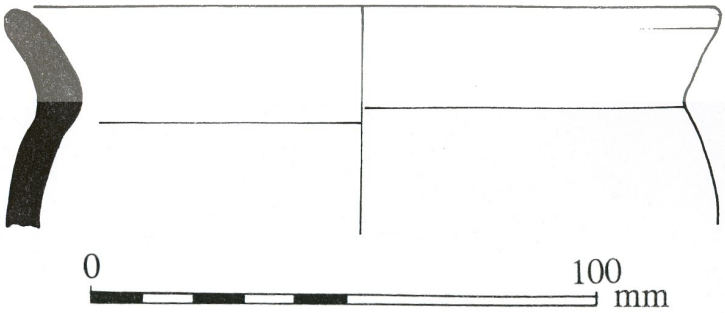


Fig. 5.12

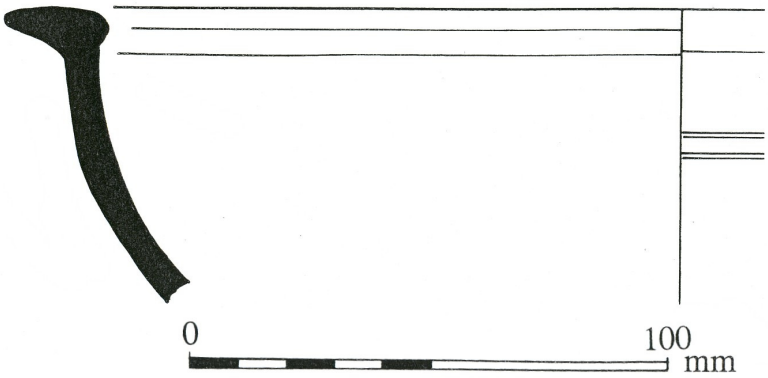


Fig. 5.13

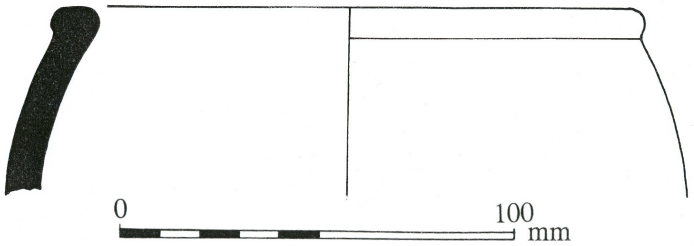


Fig. 5.14

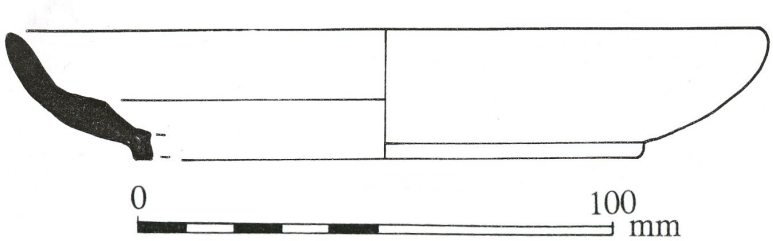


Fig. 5.15

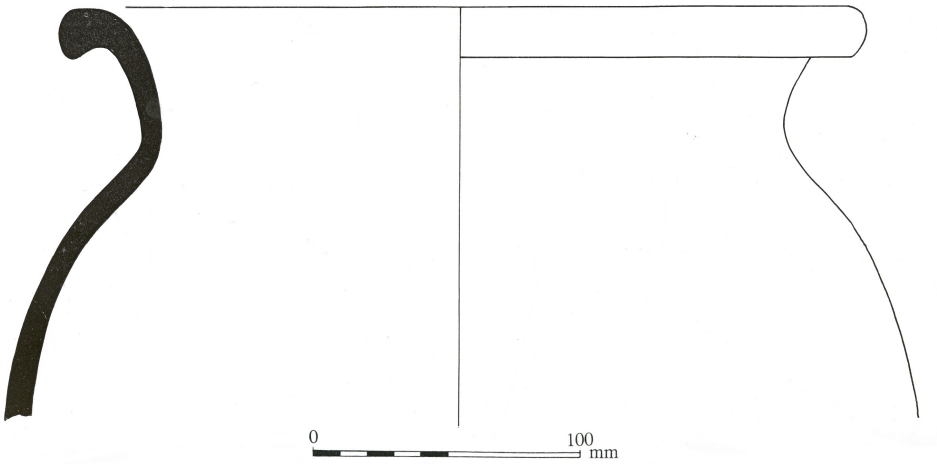


Fig. 5.16

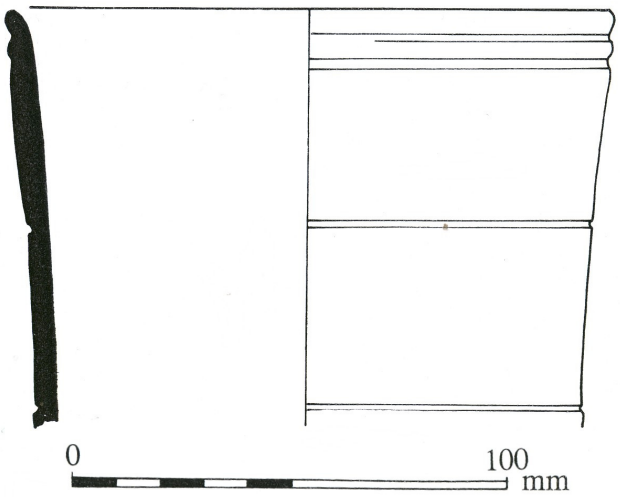


Fig. 5.17

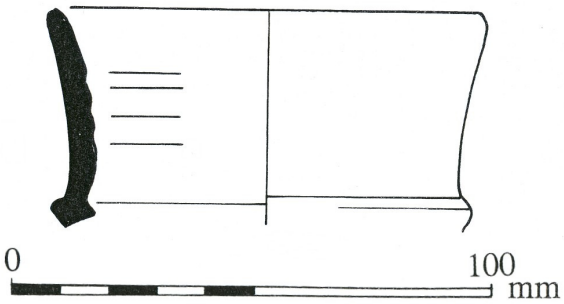


Fig. 5.18

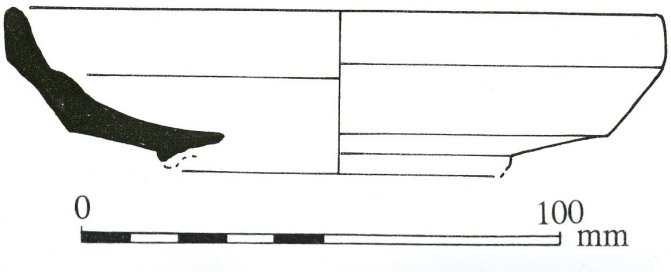


Fig. 5.19

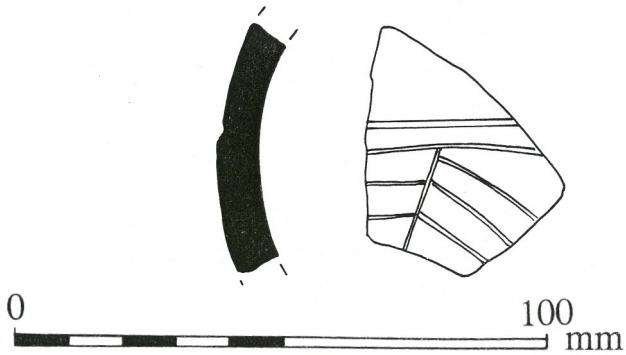


Fig. 5.20

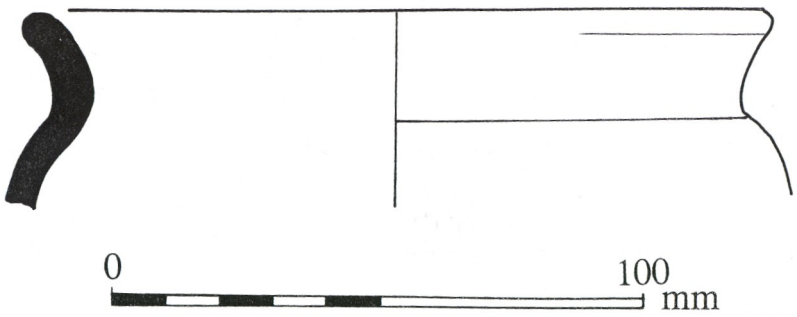


Fig. 5.21

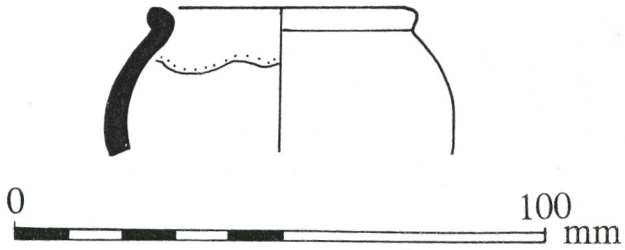


Fig. 5.22

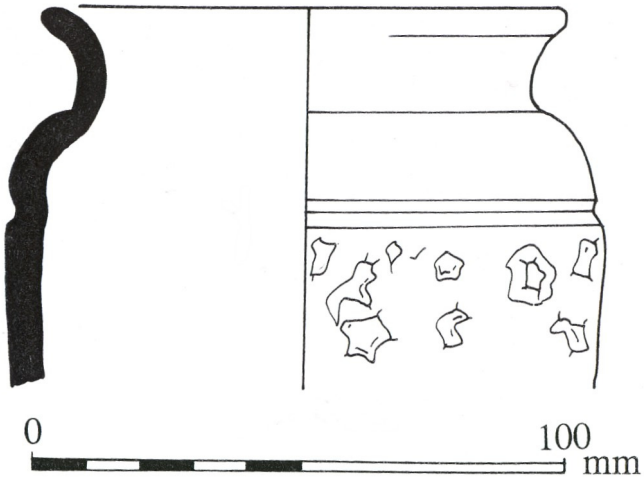


Fig. 5.23

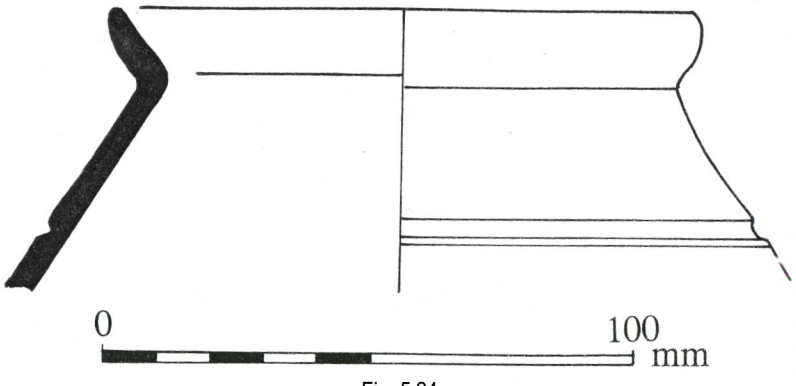


Fig. 5.24

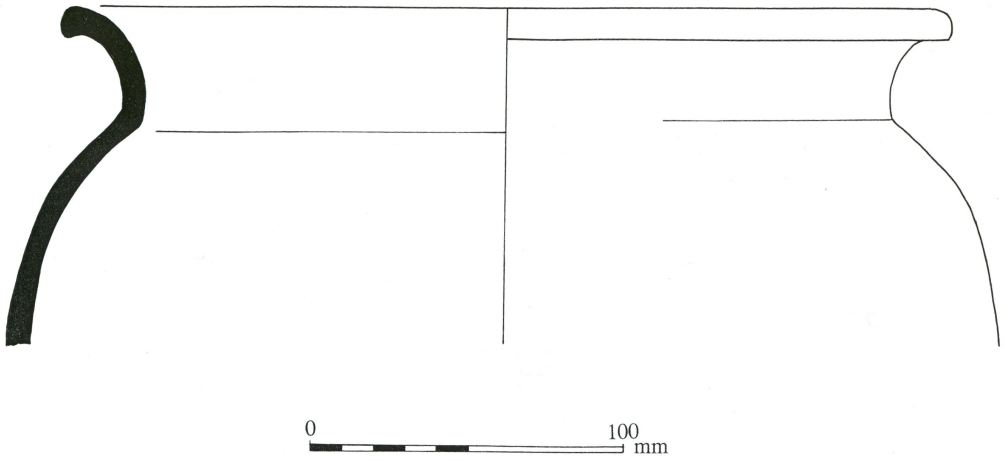


Fig. 5.25

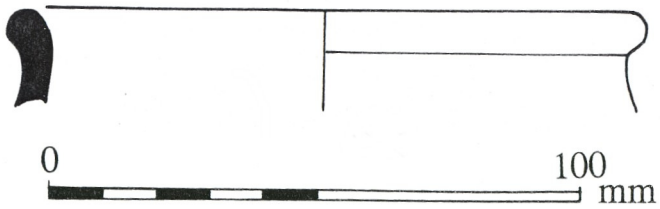


Fig. 5.26

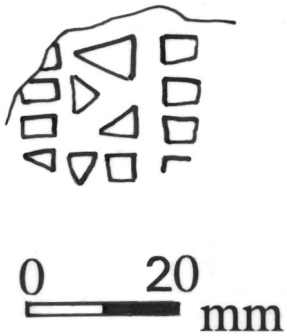


Fig. 5.27 - *Mortaria* stamp

APPENDIX 6 – Samian Rubbings

By Felicity Wild

Fig. 6.1

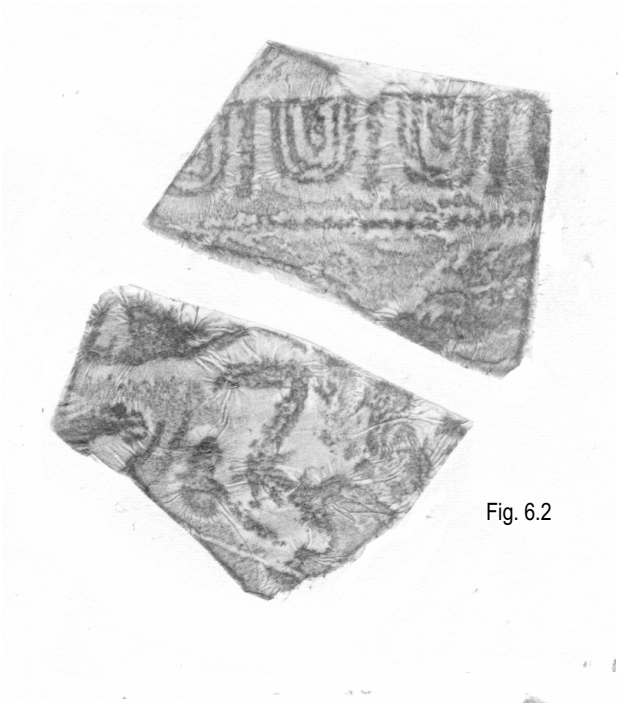


Fig. 6.2

Fig. 6.3

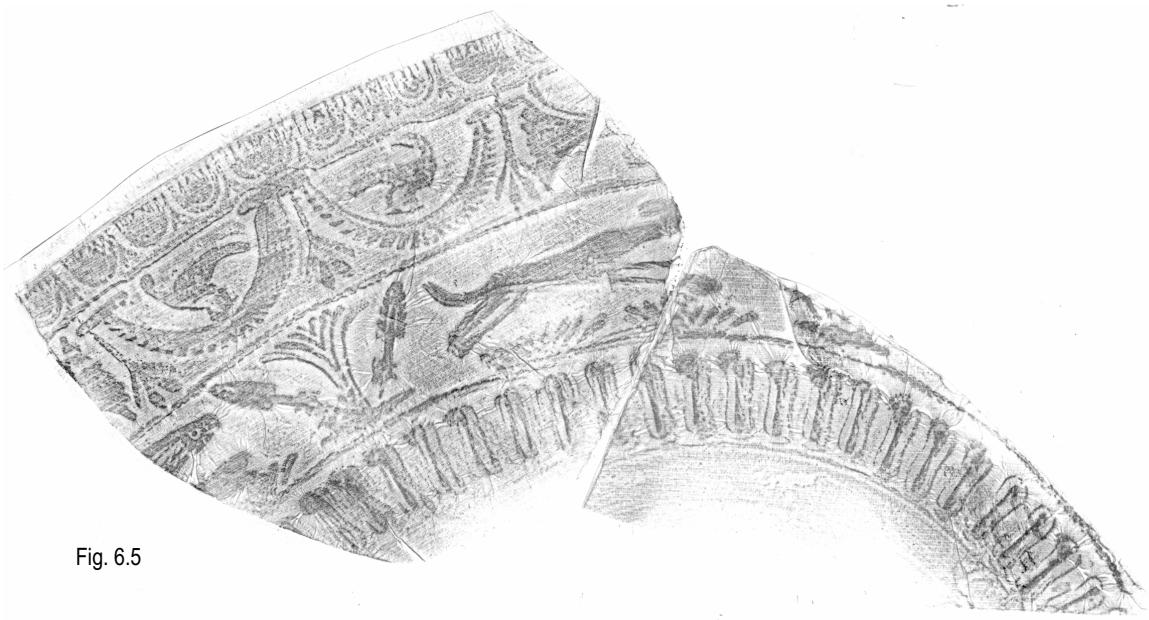


Fig. 6.5

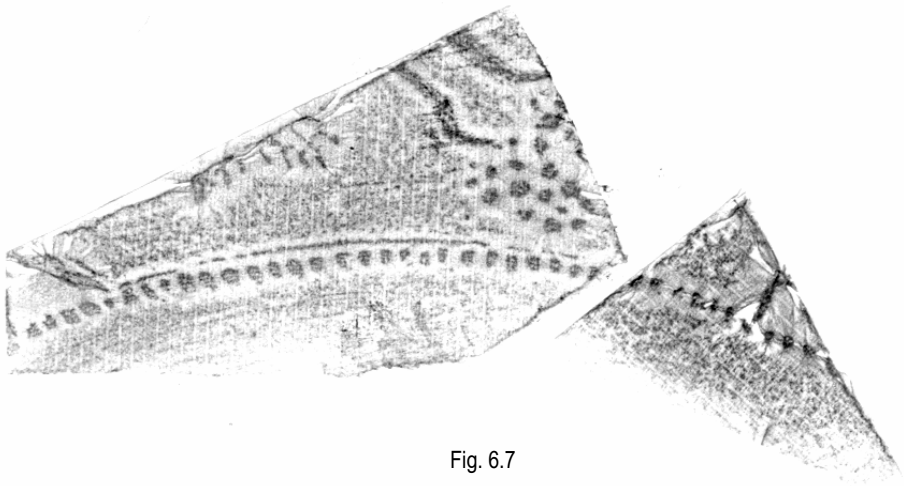


Fig. 6.7

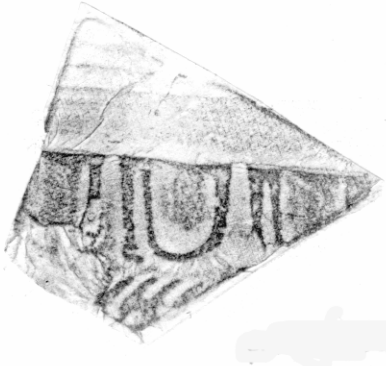


Fig. 6.8

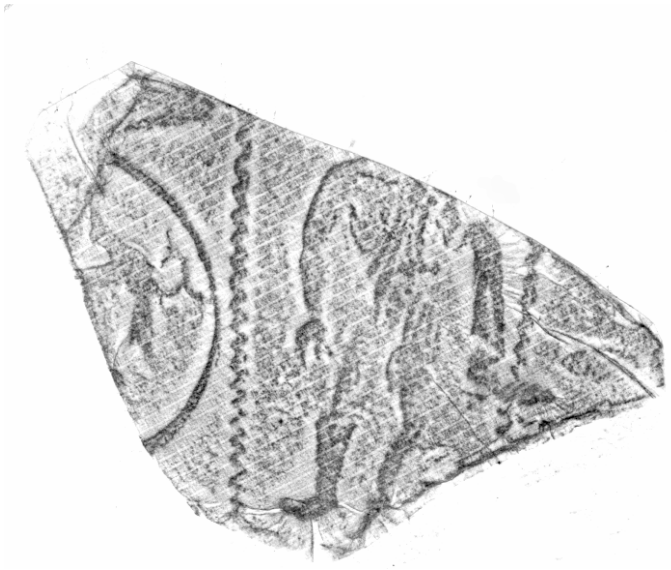


Fig. 6.9

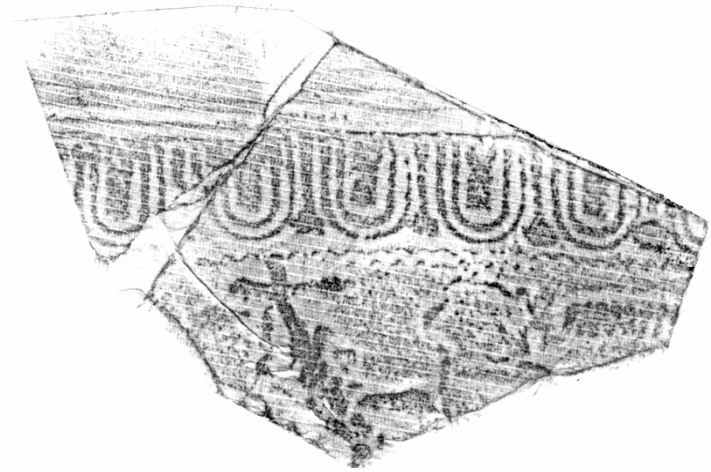


Fig. 6.10

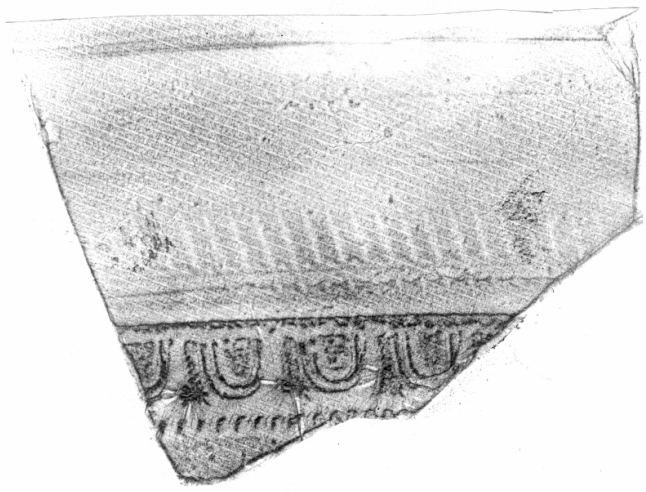


Fig. 6.12

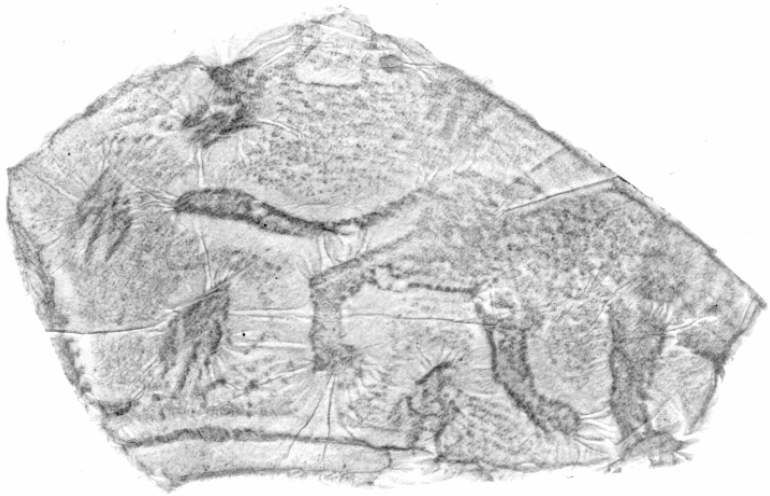


Fig. 6.13

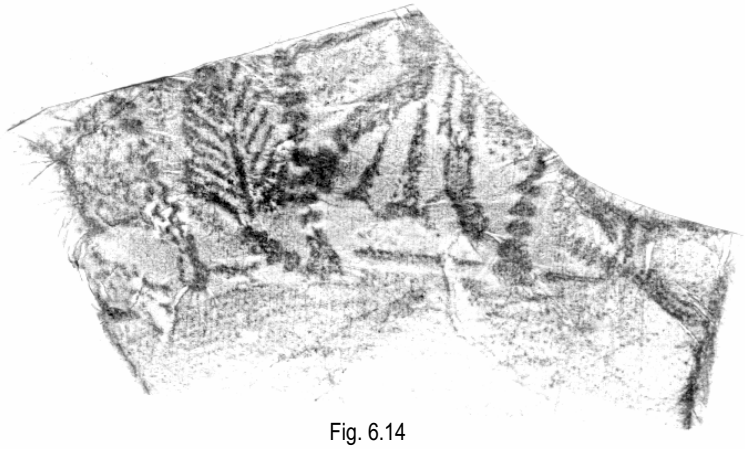


Fig. 6.14

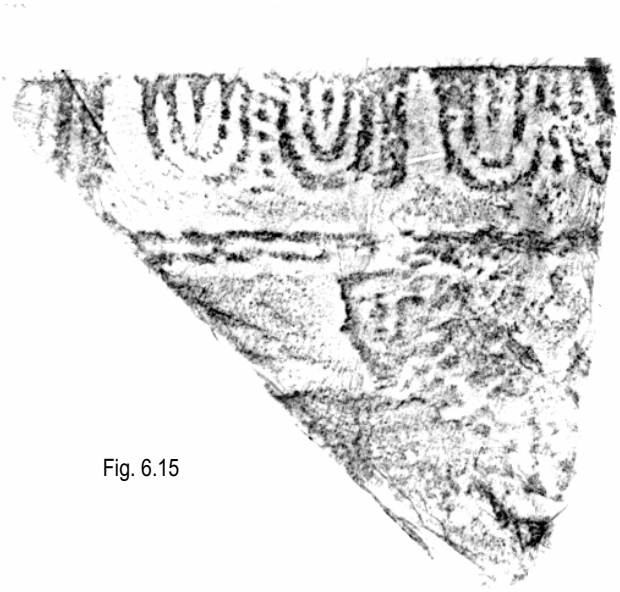


Fig. 6.15

APPENDIX 7 – Glass

By H.E.M. Cool

The commonest vessel form identified amongst these fragments is the blue/green bottle (nos. 3-7). Cylindrical examples such as no. 3 here were common from the later first to early second centuries (Price and Cottam 1998, 191-4). Square and other prismatic forms (nos. 4-7) continued in use to the end of the second century with some still in use in the third century (Price and Cottam 1998, 194-201).

The only other form that can be identified with any certainty is a fragment from a polychrome pillar moulded bowl (no. 1). Though it is a small fragment lacking the diagnostic wheel-polished inner surface, the identification is reasonably secure as the combination of dark yellow/brown ground with opaque spirals or speckles is a common one and the exterior retains part of a rib. This is the earliest fragment in this small group as polychrome bowls such as this were going out of production about the time of the Claudian conquest and are only found in any numbers on Claudio-Neronian sites. They become much less common by the last third of the first century (Cool and Price 1995, 16).

The other vessel glass fragments can only be dated by their colour. Good quality colourless glass such as no. 2 was used mainly in the second and third centuries, whilst blue/green glass (nos. 8-9) was the common colour of the first to third centuries. The pale green fragment no. 10 has some small bubbles but these are not numerous enough for it to be a typical example of the type light green bubbly glass in use in the fourth century, and so a first to second century date is more likely.

The assemblage is too small for the forms present to be used to characterise the nature of the assemblage, but it may be noted that assemblages dominated by bottles and bowls in the first to second centuries are typical of military and rural sites rather than urban ones. The presence of a polychrome pillar moulded bowl is also noteworthy as it is indicative of vessel glass arriving at the site at an early date.

The two objects recovered cannot be securely identified as being or Roman date. The chip from a faceted bead (no. 11) might possibly come from a diamond and triangle faceted bead of the late Roman period (Guido 1978, 99). Against this identification, however, are the facts that it is made of opaque glass rather than the translucent glass that is normal for these, that the bead it came from would have been smaller than usual, and that the types of facets preserved do not correspond closely to those on the late Roman form. Given that it came from a post Roman context, the probability that it is of relatively recent date must be high.

The other item, the sphere no. 12, is possibly crystal rather than glass. I am not aware of any Roman *comparanda* and again a later date is to preferred.

Vessel glass

1 Pillar moulded bowl; body fragment. Dark yellow brown with opaque white speckles. Chip from outer surface retaining part of rib. Dimensions 16 x 9mm. Also one very small chip of dark yellow brown lacking any original surfaces, plausibly from the same vessel. LTM07 1013 <5>

2 Colourless body fragment. Dimensions 13 x 12mm, wall thickness 1mm. AP4 4038/1 S112

3 Cylindrical bottle; body fragment. Blue/green. Straight side beginning to curve over to shoulder. Vertical scratch marks. Dimensions 69 x 31mm, wall thickness 4mm. AP8 8006/1 S145.

4 Square bottle; body fragment. Blue/green. Straight side beginning to curve over to shoulder and retaining junction with second side at 90°. Dimensions 63 x 60mm, wall thickness 2mm. AP1 1031/1 S64

5 Prismatic bottle; body fragment. Blue/green. Straight side beginning to curve over to shoulder. Dimensions 23 x 23mm, wall thickness 5mm. AP9 9007/1 S123

6 Prismatic bottle; body fragment. Blue/green. Slightly heat affected. Dimensions 16 x 14mm, wall thickness 6mm. AP8B 8104/1 s178

7 Prismatic bottle; body fragment. Blue/green chip, lacking one surface. Dimensions 22 x 15mm. AP4 4033/1 S113

8 Body fragment. Blue/green. Dimensions 37 x 19mm, wall thickness 3mm. AP4 4003/1 S01

9 Body fragment. blue/green; many small bubbles. Dimensions 37 x 17mm, wall thickness 2mm.AP4/4058/1 S17

10 Body fragment. Pale green; some small bubbles. Dimensions 28 x 14mm, wall thickness 1mm. LTM07 8010 <49>

Chips from sample

LTM07 1011 <3>	2 blue/green, 1 possibly colourless or very pale green
LTM07 1031 <7>	colour not ascertainable
LTM07 4049 <56>	1 colourless
LTM07 8006 <47>	1 colourless
LTM07 8011 <50>	1 blue/green

Objects

11 Bead. Opaque mid blue. Chip from exterior retaining parts of five facets of triangular and pentagonal outline. Edge of cylindrical perforation on interior. Dimensions 6 x 4 x 1.5mm. AP4 4046/1 S29

12 Sphere. Ovoid outline. Colourless and crystal clear. Length 5mm, section 4.5mm. LTM07 4047 – soil around pot 3

Bibliography

Cool, H. E. M. and Price, J. 1995. *Roman Vessel Glass from Excavations in Colchester 1971-85*, Colchester Archaeol. Rep. 8, (Colchester)

Guido, M. 1978. *The Glass Beads of the Prehistoric and Roman Periods in Britain and Ireland*, Rep. Res. Comm. So*c.* Antiq. Lond. 35, (London)

Price, J. and Cottam, S. 1998. *Romano-British Glass Vessels*: *a Handbook* CBA Practical Handbook in Archaeology 14 (York)

APPENDIX 8 – Metalwork

By Jennifer Jones, Conservation Services, Dept of Archaeology, Durham University

Assessment and condition

131 bags of metal objects were received for examination, conservation assessment, selective X-radiography and re-packing. The material had been stored in unpierced polythene bags since excavation. All of the ironwork was found to be highly corroded, with many objects stable, but some evidence of continuing corrosion was observed, with cracking and spalling of the iron corrosion surfaces. Copper alloy material was moderately to highly corroded and stable. The silver and lead objects, the daub fragment and the industrial residues were found to be stable.

Highly corroded metallic material is defined as having both the form and the surface detail of the object obscured by corrosion, and/or having little or no metal remaining in its core.

X-Radiography

The objects were briefly visually examined to assess their condition and stability, to determine the material from which they were made, and to look for surface and technological detail. After examination, 38 bags of non-nail objects were selected for X-radiography. The objects were X-radiographed in plan and side view, as appropriate. Objects not X-radiographed are all thought to be nails or nail fragments.

Details of the X-radiographed artefacts have been entered into a database (Table 8.1) which includes their context, an identification of the material and of the object, where possible, the condition of the object when examined, its XR plate number, and any technological or other observations.

When viewing the XR plate, it should be orientated with the bright spot (a lead marker) in the top left hand corner, to correspond to the annotated XR sleeve.

Results and recommendations

Many of the X-radiographed objects were found to be examples of nails or nail fragments. Further investigative conservation has been recommended for 23 objects.

Work on the silver pin and four copper alloy objects including toilet articles and a complete brooch, would reveal details of form and decoration, some currently obscured by corrosion products. Surface EDXRF (energy dispersive X-ray fluorescence) analysis would detect the composition of the alloys used.

Further investigative conservation of the 18 selected non-nail iron objects, including a complete stylus, a complete knife and a possible saw, would reveal details of form and surface currently obscured by corrosion products, and allow the objects to be studied and identified by specialists. Objects recommended for further conservation work are indicated by ~~ in Table 8.1.

Re-packing

All material has been packed in suitably sized, pierced polythene bags, with a foam support insert. Some fragile objects have been packed in small polystyrene boxes with foam or acid-free tissue support.

The bags are packed in airtight polythene boxes with silica gel, to create a low relative humidity (RH) micro-environment. The objects should continue to be stored in the airtight containers at a stable temperature with active silica gel, to control the RH and inhibit further corrosion. The silica gel should be regularly monitored and regenerated as necessary.

AP	Context	Stock no	Material	No	Condition	XR no	Identification and Comments
1	1011 <3>		Fuel ash slag	1	st	none	Probably domestic in origin
1	1011 <3>		Lead	1	mc/st ;	none	Drip
4	4064/1	5155 1/1	Silver	1	lc/st	none	Pin -complete ~~
4	4026 <20>		Fuel ash slag	5	st	none	Probably domestic in origin
6	6004 2		Copper alloy	1	mc/st	none	Complete brooch ~~
8	8006 <47>		Copper alloy	~2	hc/st	none	Toilet set fragments ~~
8	8006 10		Copper alloy	1	hc/st	none	Tweezers ~~
4	4003/1 12	S10 5/5	Copper alloy	1	hc/st	none	?Pin shank
8	8008/1	S38 4/4	Iron	1	hc/st	5730	?Pruning saw with perforation for folding handle ~~
4	4064/1	S25 5/5	Iron	1	hc/st	none	Knife with possible mineralized organics on surface ~~
4	4064/1	S04 5/5	Iron	1	hc/cr/st	5730	Key
4	4007/1	S36 2/2	Iron	1	hc/st	5730	?Wall hook
4	4064/1	S03 7/7	Slag	1	st	5730	Possible ironworking slag
4	US/1 13	S151 1/1	Iron	1	hc/st	5731	Pierced object
4	4047/5	S08 4/5	Iron	5	hc/cr/st	5731	3 nails, triangular frag, complete buckle ~~
9	9007/3	S125 4/6	Iron	3	hc/st	5731	2 nails and almost complete stylus ~~
4	4070/1	S52 2/2	Iron	1	hc/st	5732	Object fragment ~~

AP	Context	Stock no	Material	No	Condition	XR no	Identification and Comments
4	4075/2	S32 4/5	Iron	2	hc/st	5732	Nail & loop
4	4074/1	S158 1/1	Iron	1	hc/st	5 732	Ring ~~
9	9009/1	S13 3/3	Iron	1	hc/st	5732	Nail
1	1013/1	S61 1/1	Iron	1	hc/st	5732	Object with looped top ~~
4	4003/4	S90 3/3	Iron	4	hc/st	5732	3 nails & 1 curved bar fragment ~~
4	4110/1	S166 5/5	Fuel ash slag	1	st	5732	Probably domestic in origin
8	8006/2	S129 3/4	Iron	2	hc/st	5733	Staple & nail
4	4110/1	S166 4/5	Iron	1	hc/st	5733	Bar fragment ~~
8	8008/1	S07 3/4	Iron	1	hc/st	5733	Part of tool or weapon ~~
3	3003 bag 14F	S74	Iron	2	hc/cr	5733	Highly corroded nails ~~
6	6006/3	S106 4/5	Fuel ash slaw	4	st	5734	Probably domestic in origin
8	8006 <47>		Iron	5	hc/st	5734	4 nails plus bar fragment ~~
6	6006/4	S106 5/5	Iron	4	hc/cr/st	5734	Nails
4	4003/6	S119 4/4	Iron	6	hc/st	5734	5 Nails plus bar frag ~~
4	4046/2	S172 3/3	Iron	2	hc/st	5734	Nails
4	4046/2	S294/5	Iron	2	hc/st	5734	?Nail frag plus? ~~
8	8006 <47>		Iron	6	hc/st	5735	Nails
4	4007/l	S02 3/3	Iron	1	hc/st	5735	Nail
4	4003/15	SO1 4/6	Iron	14	hc/cr/st	5735	11 nails plus 3 bar frags ~~
8	8008/5	S39 3/3	Iron	4	hc/cr/st	5735	Nails
4	4026/1	S98 4/4	Iron	1	hc/cr	5736	Nail shank
	8011 <50>		Copper alloy	1	hc/st	5736	?Sheet frag ~~
4	4003/1	S79 3/4	Iron	1	hc/st	5736	?Bar frag ~~
4	4003 <55>		Iron	1	hc/st	5736	Nail frag
4	4058/1	S17 2/5	Daub	1	st	5736	Fragment
6	6017 <37>		Iron	2	hc/st	5736	Nails
4	4006/3	S91 3/3	Iron	3	hc/st	5736	Nails
4	4066 <53>		Iron	1	hc/st	5736	Curved sheet frag ~~
1	1013 <5>		Fuel ash slag	1	st	5736	Probably domestic in origin
4	4024 <22>		Iron	1	hc/st	5736	Nail

Table 8.1: X-radiographed objects

Key
hc – highly corroded
mc – moderately corroded
orroded
cr – cracking

APPENDIX 9 – Coins

By Adrian Popescu, Senior Assistant Keeper, Dept. of Coins & Medal, Fitzwilliam Museum, Cambridge

- Elagabal
  AR denarius XII 1.83g; 17.6mm
  BMC V, p. 565, no 232, Rome, 220-222.
  AP4/unstrat/2; SF 019

- Gallienus?
  AE ? 2.68g; 19.8mm
  Illegible type, 266-268?
  AP4/unstrat/2; SF 020

- Illegible emperor
  AE copy VII 0.32g; 9.9mm
  GLORIA EXERCITVS (2 standards), illegible mint-mark, 330-335.
  AP4/4046/1; SF 023

- Vrbs Roma
  AE VI 1.08g; 15.9mm
  She-wolf and twins, illegible mint-mark, 330-335.
  AP4/4062/1; SF 024

- Victorinus
  AE VI 1.48g; 16.7mm
  Cunetio, p. 150, no 2577, Mint II, issue V.
  AP4/4003/1; SF 027

- Silver coin/disc?
  AR 0.93g; 14.1mm; hole in centre
  AP8b/8104/1; SF 029

- Pop Romanus
  AE XII 0.75g; 13.6mm
  RIC VIII, p.448, no 22, Constantinople, off. A, AD 330
  AP4/4064/1; SF 021

Plate 9.1

Plate 9.2

- Constantius II or Constans
  AE VI fragmentary 0.67g; 11.5mm
  VIRTVS AVGG NN, Trier, 337-340, obverse with unbroken legend, laureate.
  AP4/4047/1; SF 022

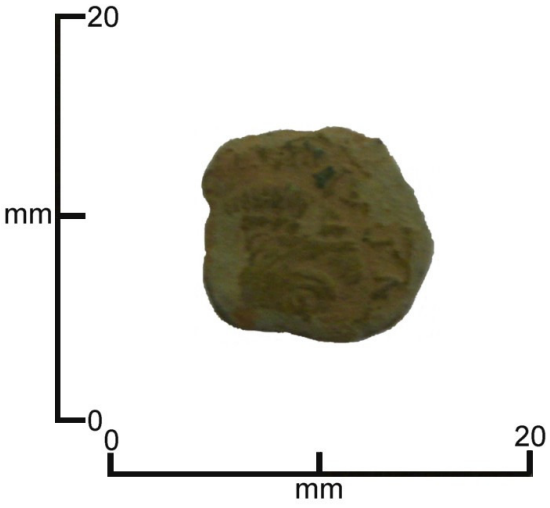


Plate 9.3

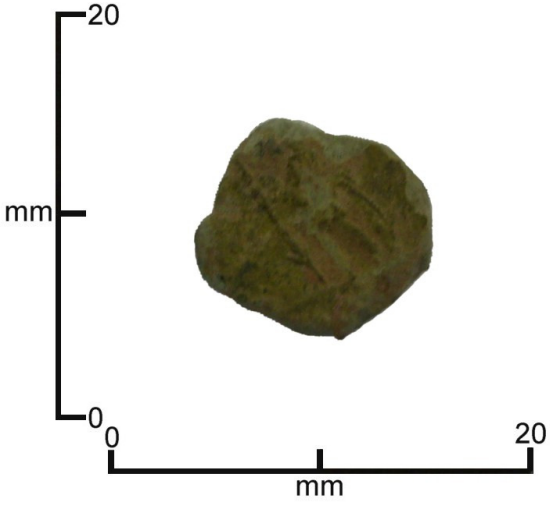


Plate 9.4

- Constantine I
  AE XII 1.82g; 16.6mm
  RIC VII, p. 373, no 87, Ticinum, off. P, 318-319.
  AP4/4064/1; SF 025

Plate 9.5

Plate 9.6

- Constantine I
  AE VI 2.66g; 20.7mm
  RIC VII, p. 239, no 57, Arelate, off. ?, 315-316.
  AP4/4075/1; SF 026

Plate 9.7

Plate 9.8

- Constantius II
  AE VI 0.88g; 14.6mm
  RIC VIII, p. 145, no 108, Trier, off. S, after April 340.
  AP4/4003/1; SF 028

Plate 9.9

Plate 9.10

APPENDIX 10 – Bone Artefacts

By Nina Crummy

Of the two bone objects, one, a fragment of a hairpin (SF 16), is a common artefact type dating from the mid 1st century to *c.* AD 200. Although the top of the head is missing, the single groove just below the break, combined with the plain tapering shaft, points to the pin having been either a Type 2, with a plain conical head above one or more grooves, or a Type 2 variant, such as those with bead-and-reel-shaped heads or latticed collars between grooves from, for example, Wroxeter, Wanborough in Wiltshire, and Shakenoak (Crummy 1983, 21; Mould 2000, fig. 4.10, 98-100; Vaughan 2001, fig. 113, 127-130; Brodribb *et al.* 1971, fig. 53, 24-5).

The second object is more unusual. A simple bone toggle or button, carved in a cursory manner but well polished from use, it is a devolved form of the dumb-bell buttons that occur in metal, glass, bone and horn (MacGregor 1976, 134, fig. 8, 13-19). That the bone examples were made in imitation of those in metal is shown by their generally flattened form, such as those from South Shields and Wroxeter, with the rotund terminals that gave the type its name occasionally reduced to a mere hint, as on the piece from Archerfield, East Lothian, and on this example from Stretton Grandison (Allason-Jones & Miket 1984, 38, no. 2.21; Mould 2000, 129, fig. 4.10, 111; MacGregor 1976, fig. 8, 17).

Dumb-bell toggles often have a military association, such as the examples from South Shields and Newstead (MacGregor 1976, 134). The two plain toggles on the cloak of the *beneficiarius consularis* depicted in relief on a fragment of a Trajanic tombstone from Camomile Street, London, may be devolved bone pieces like that from Stretton Grandison

(Bishop 1983; Henig 1995, 46; Sumner 2002, 13, 44, pl. B3). He wears a *paenula*, a hooded cloak shown fastened at the front by two round and two toggle-shaped fastenings (Bishop & Coulston 1993, 100), while a soldier of the Hadrianic period on a relief in the collection of Chatsworth House, Derbyshire, wears a *paenula* fastened by four toggles (Sumner 2002, 13, pl. F3).The uppermost round fasteners on the Camomile Street relief may be bone or metal buttons or small button-and-loop fasteners with round heads, examples of both forms being found in military contexts on Hadrian's Wall and on the German *limes* (Oldenstein 1976, 167-76, 185-6, Tafn 46-51, 55; Mikler 1997, 17-18, Taf. 6, 5-13, Taf. 7, 1-9; Wild 1970, fig. 1, Classes IV-V, fig. 2, Class X). The two lower fastenings appear to be of a size with the Stretton Grandison toggle, which would have been attached to a garment by a thong or strip of fabric passed around the circumference and secured within the reduced central element. However, given that the round fastenings may be button-and-loop fasteners, the Camomile Street toggles, and those on the Chatsworth relief, may also belong to that group of fittings, as there is a bar-like form represented on the *limes* and in Wales (Wild 1970, Class IX; Chapman 2005, 161, no. Xe01).

Whether or not the Stretton Grandison toggle came specifically from a military *paenula*, there is a possibility, given the association of dumb-bell toggles with military establishments, that it derives from the nearby fort of Canon Frome. However, without direct evidence this can only be speculation.

Plate 10.1 SF 019. AP 8. Context 8006. BELOW. Bone toggle with blunt tapered end. Length 26 mm, width 7 mm, thickness 6 mm. The underside is more or less flat, but has been cut through rough cancellous tissue. A fragment of bone split away from one end of the underside in antiquity, but the damage is slight and did not cause the toggle to be discarded as the broken surface is polished from use. The central section of the upper side is reduced in thickness to allow the toggle to be attached to a garment. This area is quite irregular, but is highly polished from wear so that all the surfaces and edges are smooth.

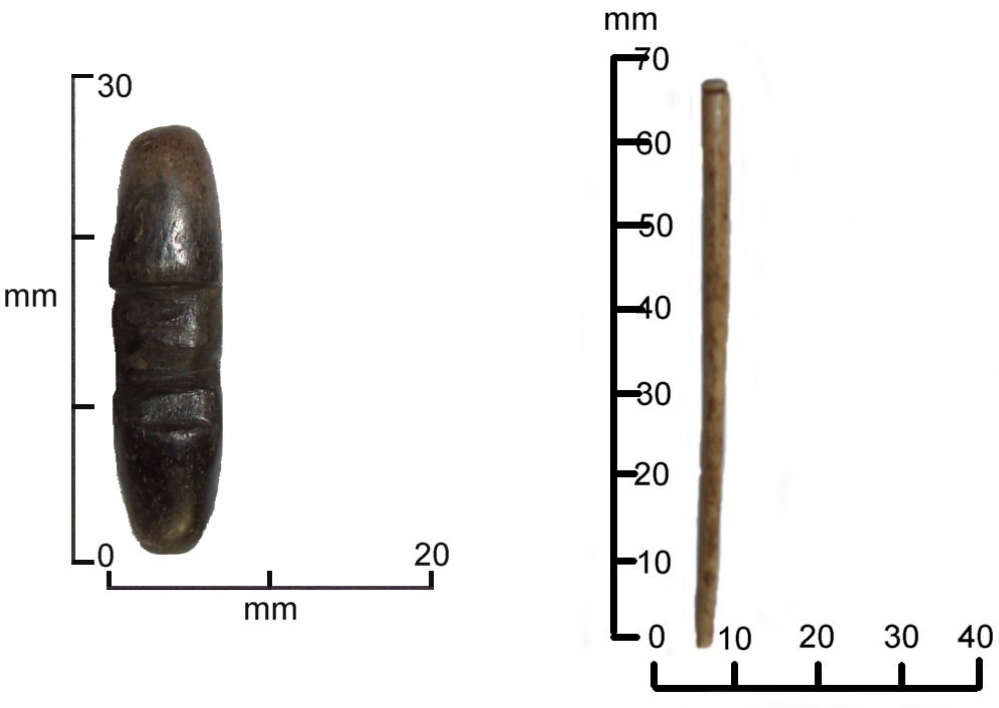


Plate 10.2 SF 016. AP 9. Context 9010. ABOVE. Bone hairpin with plain tapering shaft, lacking both the top of the head and the tip. Length 68 mm, maximum diameter below head 3 mm. There is a single groove below the point where the head has broken.

References

Allason-Jones, L. and Miket, R., 1984 *The catalogue of small finds from South Shields Roman fort* (Newcastle upon Tyne)

Bishop, M.C. 1983 'The Camomile Street soldier reconsidered', *Trans London Middlesex Archaeol Soc* 34, 31-48

Bishop, M.C. and Coulston, J.C.N., 1993 *Roman military equipment: from the Punic Wars to the fall of Rome* (London)

Brodribb, A.C.C., Hands, A.R. and Walker, D.R., 1971 *Excavations at Shakenoak Farm, near Wilcote, Oxfordshire, II* (Oxford)

Chapman, E., 2005 *A catalogue of Roman military equipment in the National Museum of Wales*, BAR Brit Ser 388 (Oxford)

Crummy, N., 1983 *The Roman small finds from excavations in Colchester 1971-9*, Colchester Archaeol Rep 2 (Colchester)

Henig, M., 1995 *The art of Roman Britain* (London)

MacGregor, M., 1976 *Early Celtic art in north Britain* (Leicester)

Merrifield, R, 1965 *The Roman City of London* (London)

Mikler, H., 1997 *Die römischen Funde aus Bein im Landesmuseum Mainz*, Monographie Instrumentum 1 (Montagnac)

Mould, Q., 2000 'The small finds' in P. Ellis (ed.), *The Roman baths and macellum at Wroxeter; excavations by Graham Webster 1955-85*, EH Archaeol Rep 9 (London), 108-44

Oldenstein, J., 1976 'Zur Ausrüstung römischer Auxiliareinheiten', *Bericht der Römisch-Germanischen Kommission* 57, 49-284

Sumner, G., 2002 *Roman military clothing (1)* (Oxford)

Vaughan, S., 2001 'Objects of bone and related materials', in A.S. Anderson, J.S. Wacher, and A.P. Fitzpatrick, *The Romano-British 'small town' at Wanborough: excavations 1966-1976*, Britannia Monograph 19 (London), 322-32

Wild, J.P., 1970 'Button-and-loop fasteners in the Roman provinces', *Britannia* 1, 137-55

APPENDIX 11 – Coffin

By Steven J Allen and Ian Panter, York Archaeological Trust Conservation Laboratories

Introduction

Following a site visit made by I Panter on 12th July 2007, a wooden coffin of Romano-British date was excavated and safely lifted by staff of Border Archaeology under the direction of George Children and Neil Shurety. The coffin components were delivered to York Archaeological Trust on the 9th of August for recording, study and conservation.

Aims and objectives

This report aims to meet the requirements of MAP2, Phase 3, Assessment of Potential for Analysis, (English Heritage, 1991). The work carried out has included the cleaning and assessment of the technology and condition of the coffin elements.

Methodology

The timbers had been individually lifted and packaged on site and were delivered to the Walmgate Warehouse in that condition. Each timber was supported on a scaffold plank or plywood board as appropriate and wrapped in cling film, which served to keep the archaeological timbers in place on their supporting planks. Each timber was removed from its packaging and washed with sponges under cold running tap water to remove the extensive clay burial deposits adhering to the surface. Following visual examination, a copy of the wood record sheet supplied by Border Archaeology was completed, so far as was possible, for each timber. An unobtrusive fragment was detached to confirm wood species identification. Each timber was then wrapped in perforated polythene layflat tubing on its supporting plank and placed in a tank of water pending stabilisation treatment.

Description

Site records are still with the client and consequently, the labelling which follows conforms to the handwritten labels on the timbers in terms of their relative positions. Timber numbers have been temporarily assigned for reference purposes in this report and for the conservation treatment. Wood species identifications follow Schweingruber (1982).

ST 01. Base plank of coffin. The timber was laid horizontally on face in the ground, aligned approximately North-South. It has an approximately sub rectangular cross section and is tangentially faced. There are faint hewing marks on the better preserved lower face, especially at the south end, which has been slightly bevelled. The plank is tangentially faced, consisting of a slice near to the centre of the parent log but does not extend far enough to incorporate any identifiable sapwood. There is some damage to the corners at the south end, part of which may be represented by the detached fragment ST 06. Overall dimensions are 2.075m long, 384 mm wide, 88mm thick. Wood identified as *Quercus spp*.

ST02. Eastern side plank of coffin. The timber was laid horizontally on edge in the ground, aligned approximately North-South. It has an approximately sub rectangular cross section and is tangentially faced. There are three roughly hewn sockets in the outer (east facing) face along the lower edge through which holes for Fe nails have been cut. The plank is tangentially faced, being an off centre slice from the parent log, almost box quartered, but does not extend far enough to incorporate any identifiable sapwood. There is some damage to the south end. Overall dimensions are 1.982m long, 233 mm wide, 51mm thick. Wood identified as *Quercus spp*.

ST03. Western side plank of coffin. The timber was laid horizontally on edge in the ground, aligned approximately North-South. It has an approximately sub rectangular cross section and is tangentially faced. There are two certain and one probable cut holes for Fe nails in the outer (west facing) face along the lower edge. The plank is tangentially faced, being an off centre slice from the parent log, almost box quartered, but does not extend far enough to incorporate any identifiable sapwood. There is some damage to the south end which is in several partially refitting fragments. Overall dimensions are 2.027m long, 210 mm wide, 59 mm thick. Wood identified as *Quercus spp*.

ST04. Northern end board of coffin. The timber was laid horizontally on edge in the ground, aligned approximately East-West. It has an approximately sub rectangular cross section and is radially faced. The board does not extend far enough to incorporate any identifiable sapwood. Both ends are somewhat eroded. Overall dimensions are 304 mm long, 79 mm wide, 26 mm thick. Wood identified as *Quercus spp*.

ST05. Southern end board of coffin. The timber was laid horizontally on edge in the ground, aligned approximately East-West. It has an approximately sub rectangular cross section and is radially faced. The board does not extend far enough to incorporate any identifiable sapwood. Both ends are somewhat eroded and the board is in three refitting sections. Overall dimensions are 298 mm long, 69 mm wide, 19 mm thick. Wood identified as *Quercus spp*.

ST06. Detached fragment from coffin. Possibly part of the base board, detached from its damaged southern end. The timber has an approximately sub triangular cross section and is radially faced, but this does not preclude its being broken off an otherwise tangentially faced piece. Overall dimensions are 81 mm long, 57 mm wide, 34 mm thick. Wood identified as *Quercus spp*.

Discussion

The coffin is fastened together with iron nails which have square cross section shanks and hammered flattened heads. These are driven through pre cut holes in the face of the side planks into the edge of the base plank. It appears that it was intended to have three nails joining each side plank, but one of the nail holes in ST 02 has two such nails present, implying that at that point, for whatever reason, one nail was not sufficient to hold the timbers together.

The method of fixing the end boards is uncertain. No nail holes have been identified at present and no housings in the side planks or base planks are present. It is hoped that more information will appear once the site records have been analysed, to define how the boards were physically related to the rest of the coffin.

All of the side elements have suffered some damage to their upper edges. These are the closest to the upper limit of the local water table and thus the more vulnerable to rot and

decay. Some fragmentation has occurred at the more vulnerable ends of the various planks/boards with the loss of some small fragments, but this will not detract from the study and understanding of the coffin, nor from the appearance of the object when conservation has been completed.

No evidence for a lid appears to have been identified during the excavation. Whilst it is possible that a lid has entirely rotted away, the low surviving height of the sides might reflect the original height. What is here described as a coffin might perhaps have been more like a bier, used to carry the body to the grave and place it there.

Conditions assessment

Standard methods for assessing the degree of preservation of the wood were employed (Panter and Spriggs, 1996). Suitable fragments were weighed submerged in water and in air in order to calculate both maximum water content and density, using the PEGCON software (Cook and Grattan, 1990).

Wood decay results in the loss of cellulose and other shorter-chained sugar molecules from the wood cell walls. This loss of "wood substance" leads to a reduction in the density of the wood as well as an increase in the maximum amount of water that the cell structure can hold (due to an increase in void space within the cell structure). Hence determination of density and water content are effective techniques at quantifying the level of decay of a sample of waterlogged wood.

The "actual" density of the wood sample is compared with the density of undecayed wood of the same species (termed the "normal" density) which, for English oak is 0.56g/cc (although density of wood will vary due to a number of factors including growth rates, location of sample in "parent" tree, location of living tree and climate factors et*c.*). The difference in the two values, when expressed as a percentage of the "normal" density, provides a good measure of the amount of material that has been lost through decay from the wood cell structures, and is called the percentage loss in wood substance (%LWS).

The maximum water content is termed μmax and is defined as weight loss upon drying of the sample, expressed as a percentage of the dry weight. Water content determinations were derived from the density calculations using the PEGCON software. Values in excess of 100% are therefore possible as increasing decay leads to increasing void space within the wood cell structure and hence an increasing water content. A three-class system (de Jong 1975) can then be used to classify the wood depending upon the maximum water content value:

- Class 1 – the wood has a μmax value greater than 400% and is considered severely decayed with isolated pockets of harder wood.
- Class 2 – the wood has μmax values between 185% - 400% and the wood is considered to be moderately decayed with a well preserved inner core, but softer decayed outer zones.
- Class 3 – the wood has a μmax value of less than 185% and the wood is considered to be well preserved with much of the wood substance still present.

The result of the condition assessment is shown below:

Sample Description	Weight in water (g)	Weight in air (g)	Maximum Water Content (%)	Actual Density (g/cc)	Loss in Wood Substance (%)
Base Plank fragment	90	850	215	0.355	37
E. side detached fragment #1	20	480	700	0.130	77
E. side detached fragment #2	10	340	1033	0.091	84
South End	20	250	317	0.261	53
North End	30	470	422	0.205	63

Table 11.1

The best preserved section of the coffin is the base, which has lost 37% of its cell wall structure, and has an average maximum water content of 215% making it a Class 2 wood. The east side of the coffin has undergone the severest level of decay, with upwards of 84% of cell loss and very high maximum water contents (Class 1). Both ends have also suffered decay. Oak exhibits a heterogeneous decay pattern whereby severely decayed zones exist adjacent to well preserved zones. Furthermore, a fluctuating water table will have contributed to the overall level of decay of the coffin, with the lowermost sections such as the base plank being less affected than the uppermost parts.

Further work recommendations

Further Recording:

Wood record sheets supplied by Border Archaeology have been completed for each timber. Photographs will be taken in the course of the conservation treatment. It is recommended however that scale drawings of the timbers be made at 1:10 to pick up details which will not be apparent on the photographs and to allow a full record of the coffin to be made.

Conservation:

The coffin is a significant discovery and should be conserved. The proposed conservation treatment is to impregnate the wood with two grades of polyethylene glycol (PEG) wax followed by accelerated freeze-drying. The two grades of wax to be used are PEG 200 which acts as a “cryoprotectant” during the freeze-drying process (by preventing the volume change brought about when liquid water freezes to form ice) and PEG 3350 which acts as a “scaffold” supporting the lost areas of the wood cell walls. The data derived from the condition assessment suggests the following treatment regime:

10% PEG 200 + 30% PEG 3350

The wood is initially treated with PEG 200, increasing the concentration incrementally until the required concentration is reached and then additions of PEG 3350 are made to the same tank, again increasing the concentration gradually over time. Remaining water is then removed using the freeze-drier. Once dry, excess surface wax will be removed and pieces can be re-joined using wooden dowels and conservation grade adhesive. Finally the coffin will be repacked for transport back to Border Archaeology. Duration of treatment will be in the region of 12 – 18 months.

References

Cook C. & Grattan D.W., (1990) 'A method for calculating the concentration of PEG for freeze-drying waterlogged wood' in Hoffman P. (Ed) Proceedings of the 4th ICOM Group on Wet Organic Archaeological Materials conference, Bremerhaven.

de Jong J (1977) 'Conservation Techniques for Old Waterlogged Wood from Shipwrecks found in the Netherlands' in A.H. Walters (Ed) Biodeterioration Investigation Techniques London

Panter, I. & Spriggs J. (1996) ' Condition Assessments and Conservation Strategies for Waterlogged Wood Assemblages' in Hoffman P. et al (Eds) Proceedings of the 6th ICOM Group on Wet Organic Archaeological Materials Conference, York

Schweingruber, FW (1982) Microscopic Wood Anatomy Zurich

APPENDIX 12 – Flint

By Adrian A. Evans and Randolph E. Donahue Lithic Microwear Research Laboratory Division of AGES University of Bradford Bradford

Introduction

Six large pieces and six small fragments of flint were submitted for identification and analysis to the Lithic Microwear Research Laboratory, University of Bradford. Context information provided identified that three of the pieces were recovered during field walking and the remainder were from contexts associated with Romano-British occupation.

Method

The technological and morphological attributes of the flakes were observed, measured using digital calipers, and recorded. These data were used to assess whether the flakes were the result of human modification and, if so, technologically classif[y,] them following Andrefsky (1998) and draw any cultural inferences.

Results

Table 12.1 summarises the data collected from the specimens

Item	Length (mm)	Breadth (mm)	Thickness (mm)	Material	Cortex	Platform	Identification
1004	33.7	16.3	7.1	Grey flint	> 2/3	Cortical	Poss. Natural
1011	n/a	9		Grey flint	None	Missing	Thermally damaged unmodified flake
1013	n/a	n/a	n/a	Mixed	None	n/a	Poss. Natural
4024	3.1	2.5	1.5	Grey flint	None	n/a	
4046	24.2	19.5	5.7	Brown flint	< 1l3	Missing	Unmodified flake
8006	9.9	7.8	3.3	Grey flint	< 1/3	Missing	
5220	26.9	15.1	8	Grey flint	< 1/3	E Missing (part of bulb of percussion present)	
5205	37.7	25.7	13.4	Grey flint	1l3 – 2/3	Missing	Poss. Natural
5215	26.8	18.7	10.1	Grey flint	None	Flat	
S220	10.1	27.1	9.4	Grey flint	<113	n/a	Pass. Natural
S205	22.81	28.61	9.9	Grey flint	1	flat	Poss. Natural
S215	19.3	26.41	9.4	Grey flint	0	n/a	Poss. Natural

Table 12.1. A summary of the lithic finds from Stretton Grandison

Brief description of each specimen

S215
The formation of this flake is unclear as it is heavily modified from multiple directions. The majority of surfaces have frequent flake scars which are generally less than 2mm in size. There is little evidence to suggest this piece was deliberately formed and it is probably natural.

S220
This piece has a clear ventral surface but the proximal end is missing_ There is little evidence to suggest this piece was deliberately formed and it is probably natural.

S205
This piece is from a nodule which was clearly heavily water rolled and many of the flake scars and incipient cones exposed around the edges of the piece are the result of this process. The piece has a flat platform and the point of flake initiation is clear. However, the characteristics of this piece are all features which could be produced easily by natural processes.

4046
This flake is from a small core where at least one previous flake has been removed. There is a small amount of cortex an the left margin. Modifications to the right margin are natural snaps that give the appearance of denticulation. This type of flake can be produced by natural processes but it is more likely that this was anthrapogenically produced.

1004
The characteristics of patination and cortication on this piece suggest that it has been modified more than once. In the first instance the left flat facet was produced which since has patinated before the final flake was produced, exposing an unpatinated ventral surface. The platform has an incipient cone. This type of flake can be produced by natural processes and the lack of modification makes any further interpretation hard.

1011
This is a piece which has undergone heavy thermal modification and though distal facets can be distinguished it is not possible to make any further interpretation,

8006
This chunk has no features that allow its distinction from natural processes.

1013
Two of these pieces could be retouch debitage but the lack of lithic tools to support this it is hard to distinguish these from production by non-archaeological processes.

Discussion and conclusion

Analysis and characterisation of the lithic material from Stretton Grandison has identified two prehistoric flakes, six pieces of flint, which are probably natural, and a few flakes that appear to have been recently struck off artefact no. 1011. None of the field collected material shows adequate technological characteristics to consider that they are from human manufacture and many of their fracture scars probably result from their original deposition onto these fields and from recent the agricultural practices. The burnt artefact, no. 1011, stands out clearly as being a flake of human manufacture that was later bumt, probably from accidental association with the RomanaBritish hearth feature. The sharpness of the edges of the small flakes sugges that they were struck off no. 1411 very recently, possibly during the archaeological excavation.

References

Andrefsky,W. (1998) *Lithics: Microscopic Approaches to Analysis*. Cambridge University Press, UK.

APPENDIX 13 – Shell and Bone

By Deborah Jaques and John Carrott (PRS 2008/40)

Summary

An archaeological excavation was carried out by Border Archaeology, to the south of Stretton Grandison, Herefordshire in advance of water pipeline works. Thirteen access pits (APs) were excavated, revealing evidence of early occupation of Neolithic date in AP2, AP4 and AP5. Romano-British occupation was encountered in most of the APs, with a cemetery containing 18 burials encountered in AP4. Shell and bone recovered by hand-collection and from pre-processed sediment samples were submitted for an assessment of their bioarchaeological potential.

The quantity of shell recovered from the site was relatively small and of only limited interpretative value. Records of terrestrial snails were few and almost exclusively identified as common catholic taxa of no value for ecological reconstruction. The two small mollusc assemblages from AP2 were dominated by freshwater species commonly found in large bodies of slow-moving, well-oxygenated hard water. The small quantities of edible marine shellfish recovered, chiefly oyster, almost certainly represented human food waste, implying importation of coastal resources to the site, but of no further interpretative value. Additional analysis of the shell is not warranted..

Vertebrate remains were recovered from most of the areas excavated, with the bulk of the material concentrated in AP4 and AP8. Preservational conditions were more favourable in these areas, although the largest body of material from AP4 was generally in poorer condition and showed a higher degree of fragmentation than the remains from AP8. This is likely to relate to the presence of a cemetery in the area and the probability that the deposits had been disturbed during grave digging. Most of the identified fragments represented the main domestic mammals, with cattle bones being prevalent. Roe deer and fish remains (the latter from the samples) hint at the exploitation of wild resources but these formed a very minor component of the assemblage. Much of the material from AP4 represented primary butchery waste, whilst refuse from secondary butchery activities was more common from AP8. Further analysis of the vertebrate remains would be of value provided a tighter chronology could be established and issues concerning residuality addressed.

Introduction

Archaeological excavations were carried out by Border Archaeology to the south of Stretton Grandison, Herefordshire in advance of water pipeline works (NGR SO 63530 43160 to SO 63710 43150) during 2007.

The excavations took the form of 13 engineering access/test pits (APs). Access pits AP2, AP4 and AP5 revealed a sequence of floodplain deposits and provided evidence of early occupation in the form of preserved alder ‘stakes’ of Neolithic date. Evidence of Romano-British occupation was revealed in most of the APs, with a cemetery containing 18 burials (cremations and inhumations) encountered in AP4. The burials included an adult skeleton found within the waterlogged remains of an oak coffin and a number of infant skeletons. The cemetery appears to have been enclosed by a series of ditches and was of two phases. There was also a stone-lined well, associated with the second phase of usage,

which yielded a dog skeleton and a leather shoe. The latest in the sequence of burials was dated as 6th/7th century AD, indicating continued use of the site well into the post-Roman period.

Shell and vertebrate remains recovered from the processing of sediment samples ('GBA'/'BS' sensu Dobney et al. 1992), together with small quantities of similar hand-collected material, were submitted to Palaeoecology Research Services Limited (PRS), County Durham, for an assessment of their bioarchaeological potential.

Methods

Sample processing

The sediment samples were processed by Archaeological Services Durham University and only the shell and bone sorted from the resultant residual fractions was submitted to PRS for assessment in conjuction with the corresponding hand-collected assemblages.

Shell

All of the shell remains were examined, using a low-power binocular microscope (x7 to x45) where necessary, and identified as closely as possible within the constraints of an assessment.

For land and freshwater snails and bivalves, identifications were made with reference to published works – main sources Cameron 2003, Cameron and Redfern 1976, Ellis 1969, Kerney 1999, Kerney and Cameron 1979. Nomenclature for mollusc *taxa* follows Kerney (1999).

Brief notes were made on the preservational condition of the marine shell present and the remains identified to species where possible. The weight (in grammes) of shell from each context was recorded. For oyster (Ostrea edulis L.) shell, additional notes were made regarding: numbers of left and right valves; evidence of having being opened using a knife or similar implement; measurability of the valves (i.e. the possibility of obtaining useful biometrical data rather than simply fragment size); damage from other marine biota (e.g. polychaet worms and dog whelks); encrustation by barnacles. Preservation was recorded using two, subjective, four-point scales for erosion (e) and fragmentation (f) —scale points were: 0 – none apparent; 1 – slight; 2 – moderate; 3 – high. Nomenclature for marine *taxa* follows Hayward and Ryland (1995).
Vertebrate remains

For the vertebrate remains, data were entered directly into a series of tables using a purpose-built input system and Paradox software. Subjective records were made of the state of preservation, colour of the fragments, and the appearance of broken surfaces ('angularity'). Brief notes were made concerning fragment size, dog gnawing, burning, butchery and fresh breaks where applicable.

Where possible, fragments were identified to species or species group using the PRS modern comparative reference collection. Fragments not identifiable to species were described as the 'unidentified' fraction. Within this fraction fragments were grouped into a number of categories: large mammal (assumed to be cattle, horse or large cervid), medium-sized mammal (assumed to be caprovid, pig or small cervid), unidentified bird and totally unidentifiable.

Most of the hand-collected bone assemblage was submitted and examined unwashed, but where bones were dirty and wet, these were washed and dried before being recorded.

Results

Shell

Small quantities of shell with a total weight of no more than 630 g were recovered from samples and by hand-collection from 32 contexts (two from test pit AP2, 19 from AP4, one from AP5, one from AP6, one from AP7, four from AP8, two from AP9 and two from AP12). Of these, one deposit from AP4 was unstratified, and a small number (those from AP2 and AP5 and possible Context 9003 in AP9) were early or pre-Roman, but the vast majority were of Romano-British date. None of the individual deposits gave substantial amounts of remains; the largest quantity came from the sample from Context 4092 (fill of pit 4091) and was only 126 g, with no other deposit yielding more than 100 g. Preservation was variable ranging from extremely poor to fair, but generally poor. Details of the remains submitted are presented in Tables 13.1 and 13.2; the former showing records of the material from sediment samples and the latter the hand-collected remains. In some instances, remains from the same deposit and/or sample were submitted bagged separately. The material has been recorded as bagged and, hence, there are sometimes multiple table entries representing records with a single context/sample of origin.

Most of the shell was either of oyster or of one of two catholic land snail taxa; Helix or Cepaea/Arianta sp. The oyster remains were recovered from a range of deposit types but most were from pit fills located within AP4 and, to a lesser extent, AP8. The exceptions to the above were the samples from two shell-bearing contexts from AP2, Contexts 2004 and 2005. These deposits each gave small assemblages of freshwater molluscs dominated by Bithynia tentaculata and, for Context 2004, a few records of waterside and terrestrial snails (these last were too few for interpretation, however).

Where remains of marine shellfish were recovered, they were almost exclusively of oyster shell (the exception being a tiny quantity of mussel shell recovered from Context 8011, fill of possible well 8013 in AP8). The oyster shell was of rather poor preservation and most often represented by small fragments but there were some more complete valves (Contexts 4003, 4007, 4047, 4066, 4090, 4092 from AP4, Context 8006 from AP8 and Contexts 9003 and 9007 from AP9) some of which could still be identified as being either left or right (lower or upper) valves. However, there were only 20 valves, and a further 13 relatively large fragments, in total and no more than five of the valves for which 'side' could be determined were measurable (measurements were not taken as part of this assessment). Evidence of the oysters having been opened using a knife or similar implement (as shown by 'V'- or 'W'-shaped notches on the shell margins) was noted on up to five of the valves (Contexts 4090, 4092, 8008, 9003 and 9007)—though most of the remains were so poorly preserved that any such evidence may well have been lost through deterioration of the shell in the ground. Nineteen of the valves and larger valve fragments showed some fresh breakage, presumably caused during recovery of the remains (much of the material being very fragile), and this too may have destroyed evidence of opening (some of the bags of shell from individual contexts also contained small flakes of shell showing that the valves had disintegrated further post excavation and, indeed, during recording). There was no evidence of damage to the valves (e.g. by polychaet worms or dog whelks) or encrustation (e.g. by barnacles) by other marine biota; although, again, this may have been lost to surface erosion and fragmentation of the remains.

Vertebrate remains

Of the 13 engineering access pits excavated at Stretton Grandison, all bar one (AP11) produced varying quantities of animal bone. Hand-collected remains amounted to 1099 fragments (Table 13.3), most of which were concentrated in just two of the test pits, AP4 and AP8, with deposits from AP4 in particular being rich in bone. Preservation of the vertebrate material was, on the whole, fairly good, with bones from Context 4066 (the primary fill of well 4004) being in exceptionally good condition. Overall, 89 of the fragments were measurable and 14 were mandibles with teeth *in situ* of use for providing biometrical and age-at-death data.

Vertebrate material from sediment samples representing 55 deposits, again from most of the access pits, was also examined. Some notes from these investigations are included in the following text sections, but full details of the bone recovered from the samples can be found in Table 13.4.

AP1

Preservation of the bone assemblages from this access pit was somewhat poor, and there was a clear bias in favour of fragments which survive better where preservational conditions are poor i.e. teeth and burnt bones. Most bone fragments were of battered appearance and those from the samples had eroded surfaces and rounded edges.

Hand-collected vertebrate remains from AP1 amounted to just six fragments recovered from Context 1013 (probable domestic fire waste associated with Roman occupation). Identified remains were restricted to three pig tooth fragments and two cattle maxillary molars. The teeth were of reasonable preservation, but a large mammal pelvis fragment, which was also present, was rather soft, with a 'chalky' texture.

Samples from this access pit represented seven of the deposits, including Context 1013 and three other fills of the domestic fire waste pit (Contexts 1009, 1011, and 1017), together with Context 1015 (post-hole fill), Context 1016 (probable edge of occupation surface) and Context 1031 (fill of shallow linear feature). Quantities of bone fragments (347) were recovered from the fire waste deposits, although these were invariably small (many less than 10 mm in maximum dimension) and mostly burnt. Few of these remains were identifiable, and most of those which were could only be assigned to broad categories, such as medium-sized mammal or bird. The burnt remains were primarily white in colour, suggesting that they had been heated to high temperatures or that they were subjected to prolonged burning. Few bones came from the other sampled contexts and identified remains from these deposits included several caprovid teeth and a caprovid metacarpal from Context 1016.

AP2

The deposits in this area were mostly flood plain deposits and possible seasonal occupation layers of pre-Roman and possible Roman date and vertebrate remains were very few in number. Six bones were recovered [by hand-collection] from Contexts 2003, 2005 and 2006, whilst samples from Contexts 2004 and 2006 gave a further five fragments. The vertebrate remains were of reasonable preservation, although only two were identifiable – a single cattle phalanx was identifiable from the hand-collected assemblage (Context 2003) and one pig lower canine (from a male individual) from a sample from Context 2006.

AP3

Seven of the ten fragments collected by hand from occupation deposit (Context 3003) in this access pit were pieces of large mammal tooth enamel which probably represented a single cattle tooth. The other three bones were shaft fragments but could not be identified more closely.

AP4

The hand-collected vertebrate assemblage from this access pit was recovered from 28 deposits and amounted to a total of 724 fragments. A range of context types gave bone, but most of the assemblage came from Context 4003 (=Context 4047), a Roman occupation deposit which appeared to extend across the whole test pit, and from fills of ditches, mostly from those enclosing the cemetery, e.g. Contexts 4064 and 4075. The primary fill of well 4004, Context 4066, produced some very well preserved remains by hand-collection but many more fragments from this deposit were recovered from the samples; most of these represented the skeleton of a dog. Preservation of the remains other than those from the well was mostly quite good but material from some of the deposits showed a high degree of fragmentation (e.g. Contexts 4003, 4064 and 4075), whilst extensive fresh breakage was noted for the remains from Contexts 4003 and 4047. Generally, the larger accumulations of bone had a somewhat battered appearance and dog gnawing was also evident thoughout. A number of human or possible human bone fragments were found in eight of the deposits (Contexts 4003, 4006, 4007, 4038, 4044, 4047 and 4075); these mostly represented babies or infants.

Evidence of butchery was present, although the unwashed state of much of the assemblage may have obscured some knife marks. The most commonly encountered practice was the longitudinal splitting of cattle limb bones, in particular metapodials and radii. Cattle scapulae also showed some evidence for having been trimmed around the glenoid cavity and having the spine chopped, both along its length and at its base.

Cattle were by far the most numerous species represented, with caprovid, pig and horse remains also present. Preliminary investigations suggest that Contexts 4003 and/= 4047 were dominated by cattle isolated teeth and by terminal limb elements, particularly astragli, calcaneii and metapodials. A similar picture could be seen from the boundary ditch fills, and overall, there was a general emphasis on head and lower limb elements, with relatively few major meat-bearing bones present. This was also the case for the caprovid remains, whilst pigs were mostly represented by mandibles and isolated teeth. The horse bones included a varied selection of skeletal elements, with a bias in favour of the more robust fragments (e.g. teeth, phalanges, distal humerii, radii, tibiae and metapodials). Four horse incisors, from Contexts 4047, 4075 and 4110, represented animals that were at least 12 years old when they died. Additionally, there were two fragments identified as roe deer (Capreolus capreolus (L.)) from Contexts 4026 and 4028 and a small collection of dog bones. Most of the latter were part of the skeleton from well fill 4066, but there were also a few fragments from Contexts 4047, 4049 and 4064. Three of the four bones from Context 4064 were from a single small individual, whereas other dog bones from this area represented larger animals.

The unidentified component of the hand-collected assemblage was primarily composed of large mammal fragments, including shaft, rib and vertebrae.

AP4 was extensively sampled and bone was recovered from 31 of the sampled deposits. In general, these provided little additional identifiable material and often comprised very many small (typically less than 25 mm in maximum dimension), unidentified pieces of

bone (e.g. Contexts 4003, 4026, 4064, 4072 and 4075). Some deposits included varying numbers of burnt remains, most of which were white in colour. In addition to the few fragments identified as the major domestic mammals (i.e. caprovid, cattle, pig and horse), there were also a small number of cat bones (Contexts 4058, 4090 and 4092) and remains of small mammals were found in seven of the deposits (Contexts 4024, 4026, 4036, 4047, 4066, 4075 and 4090). Dog remains were identified from Context 4066; these were associated with the part skeleton identified from the hand-collected assemblage. An addition dog fragment (an upper molar) was recovered from Context 4036. Several fish bones, including Cyprinidae remains and an ?eel vertebra were present in the assemblage from Context 4026, whilst amphibian remains were found in seven contexts (Contexts 4003, 4024, 4026, 4031, 4047, 4058 and 4064).

One group of bones worthy of note were the remains recovered from Context 4060, the identified fragments of which were all caprovid. Almost half of the fragments had been burnt or scorched and the fragility of these bones had resulted in much fresh breakage. Proximal radii fragments indicated the presence of at least two individuals, although, on this brief initial examination, the rest of the material seemed to represent just one. Head and fore limb elements and cervical vertebrae were prevalent.

AP5

Twenty-seven hand-collected bone fragments were recovered from three deposits, Contexts 5004, 5005 and 5011, in this access pit. Only a cattle maxillary molar and a caprovid radius and metatarsal, all from Context 5005, were identified. The other 24 bones were assigned to the unidentified category and were mostly fragments of medium-sized mammal cranium and pieces of large mammal shaft and rib. Preservation of the remains was fairly good, although material from Context 5004 was rather poorly preserved and fresh breakage damage was noted for the bones from Context 5005.

Three of the sampled deposits (Context 5005, 5011 and 5013) gave bone, amounting to 142 fragments. Over half (80 fragments) came from the Roman occupation deposit, Context 5005, but few bones were identifiable. Overall, most of the fragments were small (to 36 mm, but many less than 10 mm) and of somewhat battered appearance. Burnt remains were common from Context 5013, but also noted in the other deposits. Identified (at least in part) fragments were restricted to Context 5005 and included a ?pig premolar (scorched), a shrew (Sorex araneus L.) mandible and and two small mammal shaft fragments.

AP6

AP6 produced 54 fragments of bone from four deposits, Contexts 6004, 6006, 6008 and 6015. Most fragments were recovered from the first two contexts, of which Context 6004 (late/post Roman occupation deposit) gave 12 fragments and Context 6006 (a Roman ditch fill) yielded 40. The bones were fairly well preserved, although some surface erosion was noted and fresh breakage was evident. Dog gnawing was also present but was not extensive, whilst a high degree of fragmentation was apparent for the remains from Context 6006. The main domestic mammals were identified, with cattle remains being prevalent. Horse, pig and caprovid remains were mostly isolated teeth, whilst cattle fragments included head and a few fore limb shaft bones. The unidentified component mainly comprised large mammal shaft and vertebra fragments.

Three of the deposits from this access pit were sampled (Contexts 6006, 6008 and 6016) producing a further 167 fragments, of which a mouse mandible, a caprovid second phalanx (burnt) and an amphibian bone could be identified. Most other fragments were

small, and, in general, less than 25 mm in maximum dimension, and provided little useful information.

AP7

A total of seven bones was recovered by hand-collection from two deposits. The six fragments which came from Context 7005 (a possible Roman occupation deposit) included two cattle teeth (P4 and M1) and four mandible fragments, almost certainly associated with the teeth. Context 7012 (a ditch fill) produced a single caprovid metatarsal shaft fragment. A sample from the same ditch fill gave a further three fragments; none were identifiable and two were burnt. Overall, this small collection of remains was well preserved.

AP8

This access pit was relatively rich in bone producing a total of 225 fragments by hand-collection from eight deposits and a further 844 bones from five sampled deposits. The largest accumulations were recovered from Contexts 8006 and 8008, both of Romano-British date. The former was the fill of pit 8005, whilst the latter was the fill of pit 8007. These two features from which most of the vertebrate material derived were possibly part of a composite structure associated with a corn drier.

Remains from this access pit were of good preservation, with little evidence of dog gnawing or heavy fragmentation. Butchered bones were recorded, mainly from Context 8006, and included split cattle long bones as seen in AP4. Cattle scapulae also showed chop marks trimming to the glenoid cavity, removal of the spine, and chopping at the base of the spine. In at least one instance, the glenoid cavity had been completely removed.

As seen from assemblages from the other access pits, a restricted suite of species was represented, with cattle remains predominant. In contrast to the corresponding remains from AP4, cattle scapulae were prevalent (almost all from Context 8006), accounting for 18 of the 30 fragments identified as cattle, whilst mandible fragments were also quite numerous. Mandibles were the most commonly occurring skeletal element for caprovids and these were largely confined to Context 8008. Pig and horse bones were present but far less numerous.

Bird fragments were scant, as seen throughout the material from this site, and only a single chicken tarsometatarsus (representing a large but unspurred individual) was noted from Context 8008 and the proximal humerus of a wader type bird which showed greatest similarities with the reference skeleton of a lapwing (Vanellus vanellus L.).

Vertebrate material from the samples (representing five deposits) was somewhat fragmented and relatively few identifiable bones were recorded. Mostly these represented remains of the main domestic mammals but there were also several bird bones, including chicken,?wader and Turdidae (blackbird/thrush family) from Contexts 8006 and 8011. A collection of 50 small mammal bones, which included a range of skeletal elements, was also noted from Context 8006. The mandibles were identified as mouse (murine) and suggested that the minimum number of individuals represented was five. This deposit also produced four fish bones, three of which were Cyprinidae (carp family) and one Salmonidae, whilst another Salmonidae vertebra was noted from Context 8011.

AP9

Hand-collected remains from AP9 amounted to 27 fragments (from two deposits), with most (25) being recovered from Context 9009 (alluvial deposit). Preservation of these bones was good, although some fresh breakage damage was noted. The assemblage included the remains of cattle and caprovids, with the unidentified fraction mainly representing large mammal shaft, rib and vertebra fragments. One cattle metacarpal shaft had been split longitudinally, probably for the extraction of the marrow.

Two samples, from Contexts 9007 and 9016, produced an additional 34 fragments, but most of these were small and of rather battered appearance, with some of the fragments from Context 9016 being burnt and brittle. Several bones represented medium-sized mammals and there was a ?pig carpal/tarsal.

AP10

A single riverine alluvial deposit, Context 10004, produced three fragments of large mammal tooth enamel, probably part of a cattle tooth. Preservation was somewhat poor and clearly conditions within deposits in this area were not conducive to the preservation of bone.

AP12

Two deposits, 12005 and 12008, gave a total of ten bones. The former produced a single fragment, a dog upper molar, whilst fragments from Context 12008 (fill of possible enclosure ditch) included the terminal limb bones (metatarsal, lateral metapodial, and the first and second phalanges) of a horse, together with a cattle metacarpal and several large mammal shaft fragments. Three further bones were recovered from a sediment sample from the same ditch fill (i.e. Context 12008), two of which were unidentified and the third was a caprovid calcaneum of rather battered appearance.

Discussion and statement of potential

The quantity of shell recovered from the site was relatively small and, consequently, of only limited interpretative value.

Records of terrestrial snails were few and almost exclusively of either Helix (some, and perhaps all, of which were almost certainly Helix aspersa) or Cepaea/Arianta sp. These are common catholic *taxa* and, consequently, of no value for ecological reconstruction.

The two small mollusc assemblages from deposits in access pit AP2, Contexts 2004 and 2005, provided a little information regarding the depositional environment. Both were dominated by freshwater *taxa* and in particular Bithynia tentaculata, which is a species common in large bodies of slow-moving, well-oxygenated hard water (e.g. in lowland rivers, canals and lakes). It also favours muddy substrates and areas with dense aquatic vegetation and some of the other records from these deposits provided a little supporting evidence for these; Valvata piscinalis having a preference for mud/silt substrates and Oxyloma pfeifferi and Planorbis planorbis are usually indicative of well-vegetated areas. The record of the river limpet, Ancylus fluviatilis, from Context 2005 is somewhat anomalous as this species inhabits clean (i.e. avoiding mud-bottomed areas) quick-flowing, sometimes turbulent, water; here the shell has, perhaps, been transported from a more suitable habitat upstream by flood waters.

The small quantities of edible marine shellfish, chiefly oyster, recovered from the samples and by hand-collection, almost certainly represented human food waste. The remains were too few and too poorly preserved to be of any great interpretative value but do indicate the importation of this coastal food resource to the site during the Romano-British period. The most likely (certainly the closest) sources for the oysters were perhaps beds in Swansea Bay (the oyster beds of Mumbles were among the most prolific in Britain by the late 17th century) or Cornwall, but they were traded widely during the Roman period so sources further afield (e.g. the Kent, Essex or Sussex coasts) cannot necessarily be ruled out.

Although vertebrate remains were recovered from most of the areas excavated, the bulk of the material was concentrated in two of test pits, AP4 and AP8 (with AP6 and AP9 providing a small quantity of additional identifiable material). Preservational conditions were also more favourable in these areas, with bones from AP8 and the well fill 4066 in AP4 being well preserved. The largest body of material from AP4 was generally in a poorer condition and showed a higher degree of fragmentation than the remains from AP8. This is likely to relate to the presence of a cemetery in this area and the probability that the deposits had been disturbed during grave digging. Some of the bones in these contexts may, therefore, represent reworked or residual material. The inclusion of human bones throughout the deposits (not just within grave fills) in this test pit supports this. Dog gnawing was also noted more frequently on fragments from AP4, suggesting that some of the bones were left exposed and readily accessible to scavengers.

The boundary ditches of the cemetery were likely to have been convenient places for the disposal of noxious rubbish. The practice of dumping refuse in cemeteries has been seen elsewhere. For example, quantities of animal bones recovered from the Roman Eastern cemetery in London, were, for the most part, interpreted as waste, possibly from industrial processes involving the rendering of animal carcasses, that had been 'casually disposed of' (Barber and Bowsher 2000). It was suggested that the location of the cemetery on the periphery of the Roman settlement made it an ideal place for dumping foul waste as the area was already considered 'unclean'. This was also the case at the Moss Street depot site at York (situated on the edge of The Mount Roman cemetery), where much of the vertebrate assemblage represented primary butchery waste and refuse from secondary butchering activities, such as kitchen and consumption waste (Jaques 2006). Similarly, at Stretton Grandison, most of the vertebrate remains from AP4 were refuse from the butchering of carcasses, mainly cattle, with secondary butchery activites, such as the splitting of limb bones (radii and metapodials, in particular) for the extraction of marrow also being recorded. Cattle remains from AP8 were dominated by mandibles and scapulae; some of the latter showing trimming around the glenoid cavity and removal of the spine. This type of butchery is typical of assemblages of Roman date and many examples were seen in large assemblages of bone recovered from excavations at Lincoln, particularly from 1st century deposits at Holmes Grainwarehouse and 4th century deposits at the waterfront site (Dobney et al. 1996).

For the most part, bone recovered from the samples provided little additional information, with few fragments being identifiable. However, the fish represented in Contexts 4026, 8006, 8008 and 8011 were of some interest, given that such remains are somewhat scant from sites of Roman date. Here, the identified fragments represented freshwater (Cyprinidae) or migratory (Salmonidae and eels) fish, giving some evidence for the utilisation of riverine resources. The collection of small mammal bones from Context 8006 are probably a natural death assemblage indicating that at some time the feature was open and acting as a pit fall trap; further examination of the fragments would be necessary to rule out their presence as the remains of an owl/bird of prey pellet, however.

Overall, the value of this vertebrate assemblage is dependant upon the refinement of the dating framework – material broadly dated to the 'Roman' period is of little merit when examining changes through time or comparing data from other sites. Additionally, since the composition of the assemblage from AP4 has probably been influenced by post-depositional taphonomic processes, issues concerning residuality would need to be resolved prior to the commencement of any further study of these remains.

Recommendations

No further work on the shell is warranted.

For the vertebrate assemblages, providing that the issues of dating and residuality can be addressed satisfactorily, a basic archive of all well-dated material, including the collection of biometrical and age-at-death data, should be undertaken. This would provide valuable comparanda with which to enhance our understanding of economic activities in this part of Herefordshire during the Roman period.

Retention and disposal

The recovered remains should be retained as part of the physical archive for the site.

Archive

All material is currently stored by Palaeoecology Research Services (Unit 8, Dabble Duck Industrial Estate, Shildon, County Durham), along with paper and electronic records pertaining to the work described here.

Acknowledgements

The authors are grateful to Neil Shurety, Nicola Hancox and George Children, of Border Archaeology, for providing the material and the archaeological information, and to the staff of Archaeological Services Durham University for the processing and sorting of the samples.

References

Barber, B. and Bowsher, D. (2000). The Eastern cemetery of Roman London excavations 1983-1990. Museum of London Archaeology Service Monograph 4. London.

Cameron, R. (2003). Keys for the identification of Land snails in the British Isles. Field Studies Council Occasional Publication 79. Shrewsbury: FSC Publications.

Cameron, R. A. D. and Redfern, M. (1976). British Land Snails. Synopses of the British Fauna (New Series) 6. London: Academic Press.

Dobney, K., Jaques, D. and Irving, B. (1996). Of butchers and breeds. Report on vertebrate remains from various sites in the City of Lincoln. Lincoln Archaeological Studies 5, vi + 215 pp.

Dobney, K., Hall, A. R., Kenward, H. K. and Milles, A. (1992). A working classification of sample types for environmental archaeology. Circaea, the Journal of the Association for Environmental Archaeology 9 (for 1991), 24-6.

Ellis, A. E. (1969). British Snails: A guide to the non-marine gastropoda of Great Britain and Ireland – Pleistocene to recent. Oxford: Oxford University Press.

Hayward, P. J. and Ryland, J. S. (eds) (1995). Handbook of the Marine Fauna of North-West Europe. Oxford: Oxford University Press.

Jaques, D. (2006). Technical report: vertebrate remains from Roman deposits recovered from excavations at Moss Street Depot, York. PRS 2006/66.

Kerney, M. (1999). Atlas of the land and freshwater molluscs of Britain and Ireland. Colchester: Harley Books.

Kerney, M. P. and Cameron, R. A. D. (1979). A field guide to the land snails of Britain and North-West Europe. Glasgow: Collins.

Table 13.1. Shell remains recovered from sediment samples from Stretton Grandison, Herefordshire. Key: 'wt /g' = weight of shell in grammes (* denotes that the figure includes the weight of adhering sediment); 'mni' = minimum number of individuals represented. For oysters: 'e' = erosion on a 4-point scale (0 – none apparent; 1 – slight; 2 – moderate; 3 – high); 'f' = fragmentation on a 4-point scale (see that used for erosion); 'fb' = number of valves showing fresh breakage; 'm' = number of valves able to provide biometrical data; 'kn' = number of valves showing evidence of having been opened using a knife or similar implement.

Test pit	Context	Sample	Context/Date information	Notes	wt /g
AP2	2004	31	Waterlogged silty deposit possibly relating to marshland	Small assemblage of land and freshwater mollusc remains, with some additional unidentified shell fragments. Freshwater taxa: four *Bithynia tentaculata* (L.) (including one operculum), one planorbid apex of ?*Anisus vortex* (L.), one *Valvata piscinalis* (Müller), four bivalve valves including one or more of *Pisidium* ?*amnicum* (Müller) Taxa of waterside or emergent vegetation: two small succineids – ?*Oxyloma pfeifferi* (Rossmässler) Terrestrial taxa: one *Cochlicopa* ?*lubricella* (Porro) and at least one other unidentified land snail species	2
AP2	2005	30	Early or pre-Roman occupation or waterlogged deposit	Small assemblage of freshwater mollusc remains, with some additional unidentified shell fragments. Freshwater taxa: one *Ancylus fuviatilis* Müller, one planorbid apex of ?*Planorbis planorbis* (L.), four *Lymnaea peregra* (Müller), ten *Bithynia tentaculata* (L.), one indeterminate bivalve valve fragment (possibly ?*Sphaerium* sp.)	2
AP4	4003	55	Roman occupation deposit, possibly relating to seasonal occupation.	One left oyster valve fragment (to 53 mm), with a few other flakes of oyster shell – e: 3, f: 3, fb: 1, m: 0	17
AP4	4013	19	Fill of waste pit 4012	One tiny unidentified shell fragment to 3 mm	<1
AP4	4013	19	Fill of waste pit 4012	A few tiny unidentified shell fragments to 2 mm	<1
AP4	4027	Spit 2	Romano-British inhumation. Relationship between interment and ditch 4025 could not be established. Finds suggested that the interment had disturbed an earlier cremation burial	One unidentified snail shell – fragments held together by encasing sediment	3*
AP4	4058	60	Fill of circular pit 4057	Approximately 30 fragments of land snail shell, mostly unidentified but including one ?*Trichia* sp. and some fragments of *Cepaea*/*Arianta* sp.	1
AP4	4064	57	Secondary fill of boundary ditch 4063	Approximately 15 small fragments of unidentified shell – probably land snail – to 10 mm	<1
AP4	4064	75	Secondary fill of	Many (~50) small flakes of unidentified shell	<1

Test pit	Context	Sample	Context/Date information	Notes	wt /g
			boundary ditch 4063	(to 4 mm)	
AP4	4065	74	Primary fill of boundary ditch 4063	Very many (200+) small fragments of unidentified ?land snail shell (to 8 mm)	~1
AP4	4066	53	Primary fill of well 4004	Fifteen fragments of land snail shell, mostly unidentified but including one *Cepaea*/*Arianta* sp. and one other unidentified land snail	<1
AP4	4066	53	Primary fill of well 4004	One right oyster valve fragment (to 70 mm) and three other smaller oyster valve fragments (to 33 mm) – e:2, f: 3, fb: 1, m: 0, kn: 0	17
AP4	4072	72	Fill of grave cut associated with coffin burial 4073	One large-ish oyster valve fragment of indeterminate side (to 30 mm), with numerous (~30) smaller fragments (to 8 mm)	3
AP4	4075	77	Fill of possible enclosure ditch 4074	Approximately 20 fragments of unidentified land or freshwater snail shell (to 7 mm)	<1
AP4	4090	69	Fill of pit 4089	One left oyster valve (to 73 mm) – e: 3, f: 2, fb:1, m: 0, kn; ?1	35
AP4	4092	71	Fill of pit 4091	Two left and four right oyster valves (to 76 mm), with approximately ten larger flakes of shell and some mm-flakes too – e: 3, f: 3, fb: 4, m: 1/?2; kn: ?2	126
AP4	4094	81	Fill of 4093	One *Cepaea*/*Arianta* sp.	~1
AP4	4096	83	Fill of 4095	Three fragments of unidentified marine shell (to 26 mm), the largest of which was probably oyster	2
AP4	4101	84	No information	Many (~30) small flakes of unidentified shell (to 3 mm); also one small mammal, ?vole, tooth	<1
AP5	5016	27	Pre-Roman organic deposit, possibly relating to marshland deposition	Six unidentified shell fragments to 12 mm	<1
AP6	6016	37	Fill of 6017	Many small flakes of unidentified land snail shell, some perhaps of *Cepaea*/*Arianta* sp.	<1
AP7	7010	34	No information	Three unidentified shell fragments	<1
AP8	8008	79	Fill of pit of Romano-British date	Two left oyster valves and a few mm-flakes of shell (to 65 mm; 48 g) – e: 3, f: 3, fb: 2, m: ?1, kn: 1 Many hundreds of land snail shell fragments, mostly unidentified but some of ?*Helix* (~10 g, including a little sediment) and one of *Cepaea*/*Arianta* sp.	58*
AP8	8010	49	Fill containing abundant wheat grains, which may indicate feature 8009 formed part of a corn drier	Three unidentified fragments; also one burnt bone fragment (calcined to white)	<1
AP8	8011	50	Fill of possible well 8013	Twelve fragments of land snail shell	1

Test pit	Context	Sample	Context/Date information	Notes	wt /g
AP8	8011	50	Fill of possible well 8013	Eight fragments of mussel (*Mytilus edulis* L.) shell (to 24 mm; mni = 1), a few additional fragments of unidentified marine shell (to 26 mm, possibly oyster) and a few of unidentified land snail shell; also one burnt bone fragment and one ?cyprinid fish scale	4
AP8	8011	50	Fill of possible well 8013	One *Helix aspersa* Müller and a few fragments of unidentified land snail shell	4
AP12	1209	40	Primary fill of possible enclosure ditch	Six fragments of unidentified land snail shell and one of unidentified ?freshwater snail	<1

Table 13.2. Shell remains recovered by hand-collection from Stretton Grandison, Herefordshire. Key: 'wt /g' = weight of shell in grammes (* denotes that the figure includes the weight of adhering sediment). For oysters: 'e' = erosion on a 4-point scale (0 – none apparent; 1 – slight; 2 – moderate; 3 – high); 'f' = fragmentation on a 4-point scale (see that used for erosion); 'fb' = number of valves showing fresh breakage; 'm' = number of valves able to provide biometrical data; 'kn' = number of valves showing evidence of having been opened using a knife or similar implement.

Test pit	Context	Stock no.	bag	Context/Date information	Notes	wt /g
AP4	unstrat	S14	4 of 4	-	Two fragments of left oyster valve (to 45 mm) – e: 3, f: 3, fb: 1	5
AP4	4003	S104	5 of 5	Roman occupation deposit, possibly relating to seasonal occupation.	One fragment of indeterminate side oyster valve (to 32 mm) – e: 3, f: 3	4
AP4	4007	S37	3 of 3	Roman occupation deposit	Two right oyster valves and one right oyster valve fragment (to 70 mm) – very soft and flaking – e: 3, f : 3, fb: 3, m: ?1	43
AP4	4008	S93	5 of 7	Fill of ditch / linear 4009	One fragment of oyster valve of indeterminate side (to 44 mm)	4
AP4	4008	S93	6 of 7	Fill of ditch / linear 4009	One crushed unidentified land snail – shell fragments held together by encasing sediment	3*
AP4	4047	S33	3 of 3	Roman occupation deposit, possibly relating to seasonal occupation	One left and one right oyster valve (to 67 mm) – both soft and flaking – e: 3, f: 3, m: 0	46
AP4	4047	S08	5 of 5	Roman occupation deposit, possibly relating to seasonal occupation	Four larger fragments of oyster valve (to 42 mm) and many mm-flakes – probably all representing one indeterminate side oyster valve – e: 3, f: 3, m: 0	5
AP4	4058	S17	4 of 5	Fill of circular pit 4057	One crushed land snail, ?*Cepaea*/*Arianta* sp. – shell fragments held together by encasing sediment	2*
AP4	4064	S03	5 of 7	Secondary fill of boundary ditch 4063	One fragment of indeterminate side oyster valve (to 40 mm) – e: 2, f: 3	4

Test pit	Context	Stock no.	bag	Context/Date information	Notes	wt /g
AP4	4064	S03	6 of 7	Secondary fill of boundary ditch 4063	One ?*Helix* sp. land snail – crushed, with fragments held together by encasing sediment	15*
AP4	4064	S05	3 of 4	Secondary fill of boundary ditch 4063	Two crushed unidentified land snails – shell fragments held together by encasing sediment	20*
AP4	4075	S32	5 of 8	Fill of possible enclosure ditch 4074	One ?*Helix* sp. land snail – crushed, with fragments held together by encasing sediment	12*
AP4	4107	S161	3 of 8	Fill of 4106	One left oyster valve (to 60 mm) – e: 3, f: 2, fb: 1, m: 0	14
AP8	8004	S141	4 of 4	Romano-British occupation deposit	Four *Helix* ?*aspersa* Müller – shells coated and filled with sediment	37*
AP8	8006	S129	4 of 4	Fill of 8005. Composition of deposit suggests domestic waste	One right oyster valve (to 56 mm) – e: 3, f: 3, fb: 1, m: 0	9
AP8	8006	S133	3 of 3	Fill of 8005. Composition of deposit suggests domestic waste	One *Cepaea*/*Arianta* sp. – shell coated and filled with sediment	3*
AP8	8006	S143	4 of 4	Fill of 8005. Composition of deposit suggests domestic waste	One left oyster valve (to 69 mm) – heavily coated with sediment – e: 2, f: 3, fb: 1, m: 0	29*
AP8	8008	S07	4 of 4	Fill of pit of Romano-British date	One *Helix* ?*aspersa* Müller – shell coated and filled with sediment	8*
AP8	8008	S11	4 of 4	Fill of pit of Romano-British date	One left oyster valve fragment (to 60 mm) – heavily coated with sediment – e: 2, f: 3, fb: 1, kn: ?1	12*
AP9	9003	S124	2 of 2	Alluvial deposition	One right oyster valve (to 74 mm) – slightly coated with sediment – e: 2, f: 1, fb: 1, m: 1, kn: ?1	21*
AP9	9007	S125	6 of 6	Occupation deposit	One left and two indeterminate side oyster valve fragments (to 68 mm) – slightly coated with sediment – e: 1, f: 3, fb: 0, m: 0, kn: ?1	35*
AP12	12008	S111	4 of 4	Secondary fill of possible enclosure ditch	One right oyster valve fragment (to 53 mm) – soft and flaking – e: 3, f: 3, fb: 1, m: 0	8

Table 13.3. Hand-collected vertebrate remains recovered from excavations at Stretton Grandison, Herefordshire, by access pit.

Species		AP1	AP2	AP3	AP4	AP5	AP6	AP7	AP8	AP9	AP10	AP12	Total
Canis f. domestic	dog	-	-	-	20	-	-	-	-	-	-	1	21
Equus f. domestic	horse	-	-	-	21	-	2	-	1	-	-	4	28
Sus f. domestic	pig	3	-	-	38	-	3	-	9	-	-	-	53

Species		AP1	AP2	AP3	AP4	AP5	AP6	AP7	AP8	AP9	AP10	AP12	Total
Capreolus capreolus (L.)	roe deer	-	-	-	2	-	-	-	-	-	-	-	2
Bos f. domestic	cow	2	1	-	186	1	7	2	42	5	-	1	247
Caprovid	sheep/ goat	-	-	-	31	2	3	1	24	9	-	-	70
Homo sapiens	human	-	-	-	11	-	-	-	-	-	-	-	11
Gallus f. domestic	chicken	-	-	-	-	-	-	-	1	-	-	-	1
Charadriidae	plovers and lapwings	-	-	-	-	-	-	-	1	-	-	-	1
Unidentified		1	5	10	415	24	39	4	147	13	3	4	665
Total		**6**	**6**	**10**	**724**	**27**	**54**	**7**	**225**	**27**	**3**	**10**	**1099**

Table 13.4. Vertebrate remains recovered from sediment samples from Stretton Grandison, Herefordshire. Key: Frags = total number of bone fragments.

Test pit	Context	Sample	Context details	Frags	Notes
AP1	1009	1	Domestic fire waste associated with Roman occupation	4	*Unidentified*: 4 burnt fragments (to 10 mm), white in colour
AP1	1009	1		17	*Unidentified*: 17 miniscule fragments (less than 5 mm), all burnt
AP1	1011	3	Domestic fire waste associated with Roman occupation	15	*Unidentified:* 15 small (to 10 mm) burnt fragments
AP1	1011	3		185	*Unidentified:* 185 small fragments (to 20 mm but vast majority less than 10 mm), very fragmented, 2 medium-sized mammal metapodial shaft fragments, medium-sized mammal vertebra and rib fragments. Many burnt fragments, most white in colour but some black/blue hue
AP1	1013	5	Domestic fire waste associated with Roman occupation	16	*Unidentified*: 16 small (to 17 mm, most less than 5 mm) fragments, most are burnt and white in colour
AP1	1013	5		82	*Unidentified bird*: 1 burnt phalanx, chicken-sized *Unidentified*: 81 small (to 22 mm but most less than 15 mm in maximum dimension) fragments, mainly burnt, with some fresh breakage damage
AP1	1015	2	Fill of probable post-hole	9	*Unidentified*: 9 burnt fragments, to 16 mm in maximum dimension
AP1	1016	4	?Edge of occupation surface protruding from north facing section	1	*Caprovid*: 1 metacarpal shaft fragment, eroded and rounded
AP1	1016	4		18	*Caprovid*: 1 dP4, 1 dP3 *Unidentified*: 16 small (to 20 mm) fragments, including several medium-sized mammal mandible fragments. 1 burnt fragment Overall some bones eroded and of battered appearance

Test pit	Context	Sample	Context details	Frags	Notes
AP1	1017	6	Domestic fire waste associated with Roman occupation	3	*Unidentified*: 3 rather battered fragments, to 25 mm, fresh breakage damage
AP1	1017	6		10	*Caprovid*: 1 deciduous incisor *Unidentified*: 9 small fragments, to 18 mm
AP1	1031	7	Fill of shallow linear feature of unknown function	8	*Unidentified*: 8 small fragments, to 12 mm
AP12	1208	39	Secondary fill of possible enclosure ditch	2	*Caprovid*: 1 calcaneum, rather eroded surface *Unidentified*: 1 fragment Overall to 42 mm
AP12	1208	39		1	*Unidentified*: 1 fragment, 8 mm
AP2	2004	31	Waterlogged silty deposit possibly relating to marshland	1	*Unidentified*: 1 fragment, 20 mm in maximum dimension
AP2	2006	25	Naturally deposited riverine gravels	4	*Pig*: 1 mandibular canine, male individual represented *Unidentified*: 1 large mammal humerus shaft fragment, 2 medium-sized mammal shaft fragments Preservation quite good, to 91 mm
AP4	4003	18	Roman occupation deposit, possibly relating to seasonal occupation.	18	*Unidentified*: 18 small unidentified fragments, to 20 mm
AP4	4003	55		32	*Cattle*: 1 first phalanx fragment, 1 mandibular P2 *Unidentified*: 30 fragments of bone, to 42 mm, but most less than 25 mm
AP4	4003	55		208	*Cattle*: 1 pelvis fragment, 1 radius shaft fragment, 1 ulna fragment (associated with radius) *Caprovid*: 1 maxillary deciduous premolar *Pig*: 1 molar fragment *Unidentified bird*: 1 scapula fragment of ?wader, similar in size and morphology to bones of woodcock (*Scolopax rusticola* L.) *Unidentified*: 201 fragments, to 34 mm, but most less than 20 mm, primarily medium-sized mammal bones, but a few large mammal fragments
AP4	4006	21	Tertiary fill of well 4004	16	*Unidentified:* 16 small (to 25 mm, most less than 10 mm) fragments, two burnt
AP4	4006	21		48	*Unidentified:* 48 small (to 22 mm) fragments, three burnt
AP4	4008	18	Fill of ditch/linear 4009	29	*Unidentified*: 29 small fragments, to 44 mm, but most less than 20 mm, included medium-sized mammal rib and cranium fragments, two
AP4	4008	18		52	*Small mammal*: 2 upper incisors, 1 shaft fragment Unidentified: 49 fragments, one burnt, to 38 mm, but most less than 20 mm Battered appearance overall
AP4	4013	19	Fill of waste pit 4012	4	*Unidentified*: 4 small (to 20 mm) fragments, two burnt

Test pit	Context	Sample	Context details	Frags	Notes
AP4	4013	19		3	*Unidentified*: 3 small (to 14 mm) fragments, one burnt
AP4	4024	22	Secondary fill of well 4004	23	*Amphibian*: 1 fragment *Small mammal*: 1 incisor *Unidentified*: 21 small (to 12 mm) fragments
AP4	4026	20	Fill of linear 4025	31	*Caprovid*: 1 patella, 1 upper premolar *Small mammal*: 1 humerus, 1 metapodial *Unidentified*: 27 unidentified fragments, including 1 large mammal cranium fragment, 1 medium-sized mammal rib fragment, 8 burnt Overall, to 65 mm, but most less than 15 mm in maximum dimension
AP4	4026	20		~500	*Caprovid*: 2 deciduous incisors, 1 upper premolar, 1 upper molar *Pig*: 2 metapodials, 1 lateral phalanx *Horse*: 1 deciduous incisor *Fish*: 1 cyprinid pharyngeal bone, 1 ?eel (*cf. Anguilla anguilla* (L.)) vertebra, 5 indeterminate spines *Small mammal*: 2 murine mandibles (1 burnt), 1 murine maxilla fragment, 1 microtine molar, 2 small mammal incisors, 1 humerus shaft fragment *Unidentified*: mostly medium-sized mammal fragments, but few large mammal fragments also present Many small fragments, to 60 mm, but most considerably smaller – 25 mm or less. Few burnt fragments, white in colour, few blue/black. Preservation fair
AP4	4031	23	Underlies skeleton 4027	3	*Unidentified*: 3 small burnt fragments, to 20 mm
AP4	4031	23		5	*Amphibian*: 1 fragment *Unidentified*: 4 small (to 16 mm) fragments
AP4	4036	54	Fill overlying burial 4037	18	*Cattle*: 1 incisor fragment *Dog*: 1 upper molar *Small mammal*: 1 incisor *Unidentified*: 15 fragments, to 19 mm Preservation fair, slightly battered appearance
AP4	4042	144	Heavily truncated remains of Romano-British inhumation	6	*Pig*: 1 incisor, *Unidentified*: 5 fragments, including large mammal mandible, rib and medium-sized mammal shaft, to 55 mm
AP4	4045	46	Material extending from beneath coffin	2	*Unidentified*: 1 medium-sized mammal shaft fragment (47 mm), 1 ?rib fragment (16 mm)
AP4	4047	58	Roman occupation deposit, possibly relating to seasonal occupation	17	*Unidentified*: 17 fragments, to 60 mm, but most less than 20 mm, 1 medium-sized mammal astragalus fragment acid-etched and dog chewed
AP4	4047	58		41	*Amphibian*: 1 fragment *Unidentified*: 40 small fragments, to 30 mm

Test pit	Context	Sample	Context details	Frags	Notes
AP4	4049	65	Fill of grave cut 4048	1	*Cattle*: 1 metacarpal shaft fragment, heavily dog gnawed, but also shows some extra bone growth around proximal articulation. Approximately 120 mm in maximum dimension
AP4	4058	60	Fill of circular pit 4057	29	*Unidentified*: 29 fragments, few larger pieces (to 75 mm) and some very small ones (less than 17 mm), mostly burnt
AP4	4058	60		42	*Amphibian*: 1 fragment *Cat*: 2 phalanges *Caprovid*: 1 upper deciduous premolar *Unidentified*: 38 small fragments
AP4	4060	64	Fill of 4059	126	*Caprovid*: 3 mandible fragments, 1 scapula fragments, 3 proximal radius fragments, 3 distal humerus fragments, maxillary and mandibular teeth (some scorched), distal femur, 1 carpal, 1 atlas, several cervical vertebrae, phalanges. Minimum number of individuals = 2 Large amount of bone, some burnt (56). Wide variation in colour.
AP4	4062	59	Fill of 4061	3	*Unidentified bird*: 1 shaft fragment *Unidentified*: 2 fragments, to 14 mm
AP4	4064	57	Secondary fill of boundary ditch 4063	18	Unidentified: 18 fragments, to 31 mm, but most less than 11 mm, battered appearance
AP4	4064	57		85	*Caprovid*: 1 deciduous incisor *Pig*: 1 incisor *Small mammal*: 1 femur shaft fragment, 1 phalanx *Amphibian*: 3 fragments *Unidentified*: 78 small fragments
AP4	4064	75		~240	*Caprovid*: 2 upper molars, 1 scapula fragment, 1 sesamoid *Pig*: 1 distal metapodial, 1 femur (?neonatal individual) *Chicken*: 1 digit *Unidentified bird*: 1 tarsometatarsus, 1 coracoid, 1 femur, 1 radius *Small mammal*: 1 tibia shaft fragment, 1 pelvis fragment *Amphibian*: 6 fragments *Fish*: 1 unidentified opercular Very many small (to 49 mm, but many less than 25 mm) pieces of bone, a high degree of fragmentation, rather battered appearance, couple of burnt fragments (black/blue)
AP4	4065	61	Primary fill of boundary ditch 4063	11	fair, bird vert, eroded phal ?bird, mm rib frag, to 26 mm
AP4	4065	74		38	*Pig*: 1 tooth fragment, ?incisor, eroded *Unidentified bird*: small bird coracoid (Turdidae sized) *Unidentified*: 36 fragments, to 24 mm, of variable colour, few burnt, preservation variable
AP4	4066	53	Primary fill of well 4004	265	*Cattle*: 1 first phalanx fragment *Caprovid*: 1 acid-etched tarsal/carpal, first phalanx, proximal unfused *Pig*: 1 small canine enamel fragment

Test pit	Context	Sample	Context details	Frags	Notes
					Dog: 73 fragments representing a dog skeleton. Including carpals/tarsals, metapodials, phalanges, ulna, rib and vertebra fragments. More of this individual identified in hand-collected remains. Adult, medium to large in size *Small mammal*: 1 vole mandible, small mammal phalanx, pelvis and tibia *Amphibian*: 11 fragments ?Human: 2 fragments *Unidentified bird:* 1 ?woodcock (cf. *Scolopax rusticola* L.) digit , 3 shaft fragments *Unidentified*: 169 fragments, including a collection of large mammal cranium fragments, probably from one skull, probably cattle
AP4	4068	73	Fill of ditch 4067	84	*Small mammal*: 1 incisor *Amphibian*: 2 fragments *Unidentified*: 81 fragments, to 22 mm (very fragmented), battered and eroded in appearance, few burnt
AP4	4068	82		15	*Unidentified*: 15 fragments, to 40 mm, but all bar 1 less than 16 mm
AP4	4070	76	Fill of 4069	6	*Unidentified*: 6 small fragments, to 19 mm
AP4	4070	76		169	*Unidentified*: 169 fragments, to 35 mm, but many less than 20 mm, some fresh breakage damage. Many fragments burnt, range of colours recorded from black (scorching) to blue to white. Includes cranium fragments and large mammal vertebra fragments
AP4	4072	72	Fill of grave cut associated with coffin burial 4073	~200	*Cattle*: 1 calcaneum (90 mm in maximum dimension), dog gnawed *Caprovid*: 1 deciduous P2, 1 carpal/tarsal, 1 patella fragment *Pig*: 1 metapodial fragment *Small mammal*: 1 ulna, 1 distal tibia fragment *Amphibian*: 2 fragments *Fish*: 1 small unidentified vertebra *Unidentified*: large number of fragments, most of which less than 10 mm in maximum dimension
AP4	4075	68	Fill of possible enclosure ditch 4074	62	*Pig*: 2 premolar tooth fragments, 1 upper canine (male individual) *Unidentified*: 59 small (to 36 mm but most less than 20 mm), battered and eroded fragments, some fresh breakage damage
AP4	4075	77		79	*Caprovid*: 1 third phalanx *Pig*: 1 premolar *?Rabbit*: 1 incisor fragment *Small mammal*: 1 femur fragment *Amphibian*: 4 fragments *Unidentified*: 71 unidentified fragments, to 42 mm, but most less than 25 mm, rather battered appearance
AP4	4080	70	Alluvial gravels	1	*Red deer*: 1 tibia fragment

Test pit	Context	Sample	Context details	Frags	Notes
AP4	4090	69	Fill of pit 4089	39	*Small mammal*: 1 femur shaft *Unidentified*: 38 fragments, to 93 mm, but most less than 30 mm. Includes large mammal rib fragments, and medium-sized mammal shaft (few burnt) and rib fragments, fresh breakage damage
AP4	4092	71	Fill of pit 4091	1	*Fish*: 1 unidentified fragment
AP4	4092	71		115	*Cattle*: 1 metatarsal, upper molar, 2 second phalanges *Caprovid*: 1 distal humerus fragment *Pig*: 1 upper incisor *Cat*: 1 incisor *Unidentified*: 111 fragments, some larger fragments to 155 mm, with 20 to 50% of all fragments greater than 50 mm, a little dog gnawing and fresh breakage damage
AP4	4094	81	Fill of 4093	7	*Unidentified*: 7 fragments, preservation good, to 17 mm
AP4	4096	83	Fill of 4095	36	*Cat*: 1 phalanx *Unidentified*: 35 small fragments, to 25 mm, most less than 10 mm, battered appearance
AP4	4107	85	Fill of 4106	33	*Unidentified*: 33 fragments, to 48 mm, most less than 20 mm.
AP4	4110	86	Fill of linear ditch 4109	25	*Unidentified bird*: 1 fragment *Unidentified*: 24 small fragments to 18 mm
AP4	Sk4037			7	*Pig*: 1 incisor *Small mammal*: 1 incisor *Unidentified*: 5 fragments
AP4	Sk4042			1	Cattle: 1 third phalanx, fresh breakage damage, bit eroded
AP4	Sk4050			2	?*Dog*: 1 ulna fragment *Unidentified*: 1 fragment
AP5	5005	12	Roman occupation deposit	29	*Unidentified*: 29 fragments, to 35 mm,1 burnt white in colour
AP5	5005	12		51	*Pig*: 1 unworn, scorched premolar *Small mammal*: 1 shrew (*Sorex araneus* L.) mandible fragment, 2 small mammal shaft fragments, 1 incisor, 1 vertebra *Unidentified*: 45 fragments, battered appearance and a little eroded, to 34 mm, but most less than 10 mm
AP5	5011	13	fill of pit 5010	17	*Unidentified*: 17 fragments, to 36 mm
AP5	5011	13		21	*Unidentified*: 21 small fragments, rather battered appearance, to 15 mm, 1 burnt
AP5	5013	14	fill of pit 5012	6	*Unidentified*: 6 tiny burnt fragments, white with a bluish tinge, to 6 mm
AP5	5013	14		18	*Unidentified*: 18 burnt fragments, mostly white in colour, to 9 mm
AP6	6006	32	Secondary fill of Roman ditch 6005	34	*Small mammal*: 1 murine mandible *Unidentified*: 33 fragments, to 38 mm, but many fragments smaller
AP6	6008	36	Fill of Roman linear 6007	39	*Unidentified*: 39 small fragments, to 25 mm, of battered appearance

Test pit	Context	Sample	Context details	Frags	Notes
AP6	6008	36		40	*Caprovid*: 1 second phalanx, burnt *Amphibian*: 1 fragment *Unidentified*: 38 fragments, to 62 mm, but most less than 20 mm
AP6	6016	37	Fill of 6017	28	*Unidentified*: 28 fragments, to 78 mm, includes large mammal scapula fragments
AP6	6016	37		26	*Unidentified*: 26 fragments, to 67 mm (large mammal rib fragment), rest less than 21 mm, 4 burnt
AP7	7012	35	Fill of ditch 7011	3	*Unidentified*: 3 fragments, 2 burnt, to 17 mm
AP8	8006	47	Fill of 8005	34	*Unidentified bird*: 1 phalanx (?chicken), 1 shaft fragment *Unidentified*: 32 fragments, 10 burnt, to 71 mm
AP8	8006	47		302	*Caprovid*: 7 premolars (including deciduous), 1 M3, 1 maxillary molar, 1 burnt radius fragment, *Pig*: 1 deciduous incisor *Small mammal*: 50 small mammal bones, the mandibles represent mice. MNI of five mice (from mandibles), also 3 femora, 4 pelves, 5 ulnae, 1 radius, 1 humerus, 2 tibiae, 2 scapulae, several vertebrae and some cranium and maxilla fragments *Fish*: 1 cyprinid opercula, 1 cleithrum, 1 indeterminate, 1 salmonid vertebra *Unidentified bird*: 12 – a chicken sternum and pelvis fragments, a furcula, a wader coracoid, ?small duck or wader carpometatarsus, burnt ?wader scapula fragment *Unidentified*: 225 fragments, to 73 mm, mostly medium-sized mammal rib, shaft , cranium and vertebra fragments, few burnt fragments
AP8	8008	48	Fill of pit of Romano-British date	32	*Cattle*: 1 distal metapodial fragment *Caprovid*: 1 premolar *Pig*: 1 premolar, 1 incisor *Unidentified*: 28 fragments, to 38 mm, fair preservation, bit battered in appearance,1 burnt
AP8	8008	48		167	*Cattle*: 1 distal radius fragment *Pig*: 1 premolar, 1 maxillary incisor *Small mammal*: 1 upper incisor, 1 distal tibia fragment *Unidentified*: 162 fragments, includes a few bird vertebrae, medium-sized mammal shaft, rib and cranium Overall fragments to 76 mm, many less than 35 mm

Test pit	Context	Sample	Context details	Frags	Notes
AP8	8008	79		140	*Cattle*: 1 cuboid-navicular *Caprovid*: 1 scapula blade fragment, 1 sesamoid *Pig*: 1 calcaneum, knifemarks, chopped *Small mammal*: 1 incisor, 1 vertebra *Amphibian*: 1 fragment *Unidentified bird*: 1 vertebra *Unidentified*: 132 small fragments, small number of burnt remains, mostly white in colour Overall, preservation good, fragments to 66 mm, but many less than 30 mm
AP8	8010	49	Fill of 8009	11	*Unidentified*: 11 well preserved fragments, to 26 mm, 2 burnt
AP8	8011	50	Fill of possible well 8013	171	*Caprovid*: 3 incisors (2 deciduous), 1 maxillary M3, 1 mandible fragment, 2 tibia fragments, 2 phalanges, 1 carpal/tarsal *Small mammal*: 1 mouse mandible *Fish*: 1 salmonid vertebra *Unidentified bird*: 3 fragments including a Turdidae tarsometatarsus *Unidentified*: 156 fragments, to 58 mm
AP8	8011	50		9	*Unidentified*: 9 fragments, well preserved, 1 large mammal rib fragment (53 mm maximum dimension), remaining 8 fragments less than 22 mm
AP8	8014	51	Fill of pit 8015	11	*Amphibian*: 1 fragment *Unidentified*: 10 fragments, 3 burnt, to 53 mm in maximum dimension
AP9	9007	52	Occupation deposit	20	*Unidentified*: 20 small (to 28 mm), rather battered fragments, including medium-sized mammal cranium
AP9	9016	78	Occupation deposit	14	*Pig*: 1 carpal/tarsal *Unidentified*: 13 fragments, some burnt black, with a few greyish/white, quite brittle but mainly fair preservation, ?large mammal rib fragments

APPENDIX 14 – Wood Technology

By J Jones

Method

The 91 wood fragments were washed by hand, without the use of brushes, under cold running tap water. The washed pieces were double bagged in polythene and stored frozen until work began. During preparation of this report, the wood surface was blotted dry for visual examination. Five pieces were sampled for species identification, each sample being examined microscopically in transverse, radial longitudinal and tangential longitudinal sections at magnifications between X10 and X400. Identifications follow Schweingruber (1982). After examination, the wood fragments were resealed in polythene bags with water and returned to cold storage. Examination found that 42 of the fragments had probably been worked. All measurements are in mm.

Catalogue

AP2 [2005] <30> (1 fragment)
Tangentially split piece (92 l, 32 w, 20 thick), no bark, with one end broken and the other cut off at an angle. The piece is 'D' shaped in section. Part of the rounded long face has also been trimmed at an angle. This piece was sampled for species identification and found to be oak (Quercus robor).

AP2 [2006] <25> (16 fragments)
Three twig fragments, two with traces of bark, all ends broken, 46 l maximum. No evidence of conversion.

Four irregularly shaped, abraded and damaged fragments, including two with bark. No original ends. Longest piece is 96mm. No evidence of conversion.

Seven fairly thin and flat fragments (27-84 l, 15-36 w maximum, 3.5-6 thick), two with bark. The smallest fragment and one of the pieces with bark each have one chopped short end. All seven pieces are likely to be wood conversion debris, but the surfaces are too abraded for tool marks to have survived.

One piece (69 l, 22 w, 14 thick), both short ends broken. One face is compressed in the centre, probably from having formed part of a woven panel. This piece was sampled for species identification and found to be alder (Alnus glutinosa).

AP2 [2006] <25> (1 fragment)
One fragment (53 l, 29 w, 9 thick), short edges broken, long edges damaged. No evidence of conversion.

AP2 [2006] <25> (1 fragment)
One fragment of bark (142 l, 32 w maximum, 12 thick), with wood adhering. Short edges broken. The piece appears to have been trimmed from the timber, and the edges of the bark have also been trimmed longitudinally.

AP2 [2006] <25> (3 fragments)
Three small abraded pieces (42 l, 26 w, 7 thick maximum), with no bark surviving and no tool marks. Their size and shape suggest wood conversion debris, however.

AP2 [2005] and [2006] <44> (36 fragments)
13 pieces of twig with bark (34-58 l, 5-17 d), all ends broken. No evidence of conversion.

Eight pieces of irregularly shaped bark, one of which has a sliver of wood attached to the inside. These pieces may have been trimmed from the timber, but no tool marks survive.

Two small rectangular slivers (28-30 l, 3-6 thick), no bark. Their shape and size suggests wood conversion debris, but the pieces are abraded and no tool marks survive.

13 irregularly shaped pieces of wood with no bark (19-113 l). Only one fragment has possible evidence of conversion. This is small and sub-rectangular (35 l, 55 w, 20 thick), with evidence of compression on one long face. The other twelve fragments could be wood conversion debris, but are too damaged and abraded for any evidence beyond their size and shape to survive.

AP5 [5018] <28> (10 fragments)
Eight small fragments of abraded, soft and poorly preserved roundwood and twigs (maximum 52 l), some with bark surviving. No evidence of conversion.

One larger fragment of twig (105 l, 18diam), with some bark surviving. Both ends broken. Possible compression and distortion effects along its length from having been woven into a panel, but the piece is too abraded to be certain.

Piece (78 l x 46 w x 24 thick), no bark. One end is broken and abraded, the other has possibly been hewn, but the wood is too soft and damaged to be certain.

AP5 [5018] <28> (2 fragments)
Slightly curved piece of roundwood with bark (72 l, 27 diam), both ends broken, with compression/distortion along its length on opposing faces, probably from having been woven into a panel.

Degraded and fragmentary chunk of wood (c173 l, 148 w, 85 thick), in a very poor state of preservation, splitting and falling into fragments longitudinally, no bark surviving. The piece comes to a rough point at one end, but is too degraded to determine whether this is the result of conversion. The other end appears to have been truncated by excavation.

AP5 [5018] <28> (11 fragments)
Four fragments of twig with bark (largest 77 l, 6-14 diam), all ends broken. Some fragments have evidence of compression and distortion, from having been woven into a panel. A sample taken for species identification was found to be alder (Alnus glutinosa).

Seven more substantial pieces of roundwood of varying dimensions (62 – 163 l, 20 – 46 diam), with bark. Most ends are broken, but two ends, which were recorded as pointing upwards at excavation, are trimmed at an angle. No tool marks survive. All fragments show evidence of compression and distortion, perhaps from having been woven into a panel. A sample taken for species identification was found to be alder (Alnus glutinosa).

AP5 [5018] <28>
One hazelnut.

AP5 [5018] <28> (8 fragments)
Five pieces of twig with bark (128 l maximum, 11-13 diam), all ends broken. All have compression and distortion along their lengths – the largest piece on opposing faces – consistent with having been woven into a panel.

Three more substantial pieces of roundwood (179, 144 and 142 l, 22-34 diam), with bark surviving, which are less well preserved than the associated twigs. One piece has both ends broken; one has one end broken and one possibly trimmed – though this end is bent and distorted; and one has one end broken and the other cut cleanly at an angle. The cut end was recorded as pointing upwards at excavation.

AP5 [5018] <28> (1 fragment)
Degraded and fragmentary chunk of wood, in a very poor state of preservation (c82 l, 96 w, 51 thick), no bark surviving. Both ends broken, no evidence of conversion.. Fragile, with a fissured and split surface.

AP [5018] <28> (1 fragment)
Piece of worked roundwood (122 l, 32 diam) with no bark. One end has been broken, the other has been hewn to a point on one face. No tool marks survive. At the worked end, just below the hewn face, the wood is slightly compressed and distorted, probably as a result of having been woven into a panel. A sample taken for species identification was found to be alder (Alnus glutinosa).

AP5 [5018] <28>(1 fragment)
Piece of worked roundwood (143 l, 29 diam), traces of bark surviving. One end has been broken, the other has been hewn to a point on one face. No tool marks survive. Possible slight indentation/compression just below the cut face. Wood in poor state of preservation.

Discussion

Some of the fragments with evidence for conversion could be interpreted as having been components of a woven panel or hurdle, whose sails (upright poles) and rods were both made from alder. The tops of the sails, where discovered *in situ*, appear to have been trimmed to a point on one face. The alder wood was used complete with its bark, and some pieces (particularly sails) show characteristic distortion and compression at intervals along their length, where the rods have been woven around them. The distance between these areas of compression and distortion is not regular, but is generally around 40-50mm. Measured diameters of fragments of probable sail vary between 22 and 46mm. These would not have resulted in an especially tight weave when used with rods of between 5 and 18mm diameter. As none of the panel was recovered intact, however, its density can only be a matter of speculation. Woven wooden panels had many temporary and more permanent uses in the past, and were made from a variety of suitably sized and flexible woods, including alder, hazel, poplar and willow. The use here of alder is interesting, as

alder is a wood which is especially resistant to decay when partly immersed in water. The species would therefore be a sensible choice if the woven panel formed part of a structure which was wholly or partly immersed in a stream or pool.

Some of the smaller fragments of wood examined could be interpreted as wood conversion debris, which is made up of fragments of wood and bark removed during the cutting and trimming of larger pieces of wood. The wood in the assemblage is very soft and abraded, however, and few of the pieces examined have undamaged, original edges which might retain the signatures of tools used and so provide evidence for wood conversion or wood working practices.

Recommendations

If some of the worked fragments are to be retained as part of the site archive, then the pieces should continue to be stored wet and cold or frozen, Conservation to stabilise the selected fragments should be undertaken as soon as possible so they can be stored safely at ambient temperatures and humidity.

Photographs

AP2
Context (2005)

Plate 14.1

AP2
Context (2005)

Plate 14.2

AP2
Context (2006)

Pllate 14.3

AP2
Context (2006)

Plate 14.4

AP5
Context (5018)

Plate 14.5

AP5
Context (5018)

Plate 14.6

AP5
Context (5018)

Plate 14.7

AP5
Context (5018)

Plate 14.8

AP5
Context (5018)

Plate 14.9

AP5
Context (5018)

Plate 14.10

APPENDIX 15 – Geoarchaeology

By Michael J. Allen, PhD, MIFA, FLS, FSA

Access pits 2, 4, 8 and 9 were inspected, recorded and sampled where appropriate by AEA on 5th September 2007. Full field sedimentological descriptions were undertaken to record and characterise the sedimentary architecture of the Frome valley at Stretton Grandison, Herefordshire. All descriptions used terminology following Hodgson (1976).

Geoarchaeological Work Conducted

Access pit 4 was fully described, and a sequence from 0.94m– 3.12m depth sampled and undisturbed sediment in a sequence of overlapping (where possible) monolith tins. These were removed to AEA facilities where field descriptions were augmented by laboratory observations. The full sequence was sampled for pollen, diatoms and magnetic susceptibility. These records are given below.

Access pit 2 was fully described in the field recording a sequence to 2.67m. The sequence was similar but less pronounced than that recorded in access pit 4. No sampling was deemed necessary.

Access to access pit 5 was not possible as this was still underwater. The basal sequence here is reported to contain organic peaty deposits (Border Archaeology pers. comm. 24/7/07 and 5/9/07). These deposits were not observed elsewhere and it is imperative that this sequence is fully described following sedimentological notation, and the basal sequence at least sampled, to complement that recovered from AP4.

Access pits 8 and 9 with the Stretton Grandison Scheduled Ancient Monument area had only been excavated to about 1.5m (in features). The descriptions of this upper profile need to be augmented by descriptions of exposures of the lower sequence when excavated. Sampling will be considered at that stage.

Geoarchaeological and sample records

Non-technical Summary

Observation of sequences exposed in the Access Pits relived colluvial alluvium and overbank floodplain alluvium to about 1 to 1.5m over Romano-British levels in AP 4, 8 & 9 developed on overbank alluvium. Considerable depths (2m) of stratified prehistoric alluvium have accumulated over river bed sands and gravels. The basal deposits are waterlogged and are reported to contain waterlogged wood and stakes (Border Archaeology pers. comm.). These sequences have the potential of providing a datable major key palaeo-environmental sequences documenting the development of the Stretton Grandison landscape and possibly indicating changing local floodplain environments which my be tied to Romano-British occupation and abandonment. Hints at the earlier (prehistoric) activity are possible via preserved wood material accompanied by datable palaeo-environmental sequences.

Field and Laboratory Methods

Field descriptions were made after cleaning exposures and all field sedimentological and pedological descriptions follow notation outlined in Hodgson (1976). Munsell colours were recorded moist, and checked against sampled monoliths. Undisturbed sediment samples were tank in monoliths through the main sequence, and samples were overlapped, where possible, to ensure complete sampling. Monolith samples were related to a series of temporary datums surveyed by Border Archaeology allowing them to be accurately related to section drawings. The buried soil was sampled using kubiena tins to remove undisturbed sampled through the soil profile and augmented by spot bulk samples for soil chemistry from each sampled horizon. Monoliths unwrapped in the laboratory, and the sediment surface prepared and cleaned, and additional descriptions noted and added to field records. All monoliths were related to a single depth sequence and subsampled at 2cm, 4cm and 8cm intervals as appropriate for pollen and for diatom assessment/analysis.

Field and Laboratory Record

ACCESS PIT 4
This sequence was described after pumping and the full sequence described from three temporary datums which were levelled in by Border Archaeology (details in archive). In the laboratory 101 subsamples were removed comprising, 45 magnetic susceptibility samples, 27 pollen and 27 diatoms samples, and 2 radiocarbon samples.

unit	depth cm	samples			description
		pollen & diatom	Mag. Sucs	C14	
	0-16				Reddish brown (5YR 4/3) stonefree stiff very firm silty clay with large coarse blocky structure Ap
	16-38				Reddish brown (5YR 4/3) stonefree stiff very firm silty clay with large very coarse blocky structure, clear wavy boundary Ap
A1	38-114	96cm 104cm	94cm 96cm 100cm 104cm 108cm		Yellowish red (5YR 5/6) stonefree firm massive silty clay with large well developed firm columnar structure, very rare small stones, 0.2% fine fleshy roots to c 35cm, clear smooth boundary A1 – Overbank Alluvium 1 / B horizon
trans	114-124	112cm 116cm 120cm	112cm 116cm 120cm		Reddish brown (5YR 4/3) firm malleable silty clay coarsely mottled with fined dark grey (5YR 4/1 to 5/1) mottles, coarse blocky to prismatic structure, rare fine fleshy roots, 0.2% fine macropores, rare very fine charcoal flecks and manganese, clear smooth boundary transition

unit	depth cm	samples			description
		pollen & diatom	Mag. Sucs	C14	
OLS	124-142	124cm 128cm 132cm 136cm 140cm	124cm 128cm 132cm 136cm 140cm		Brown (7.5YR 4/2) firm silty clay with small to medium blocky (subcolumnar) structure with fine charcoal and rare very small stones Buried old land surface
stone lens	142-150	144cm 146cm	144cm 146cm		As above but with rare medium stones, and many small and very small stones (silty clay loam) looks like overbank wash and earthworm working horizon, clear smooth boundary Buried old land surface
A2	150-162	(148cm) 150cm (156cm) 158cm	(148cm) 150cm (152cm) 154cm (156cm) 158cm 162cm		Reddish brown (5Y 4/4 to 4/6) stonefree moist clay with clear well developed large columnar structure, some fine charcoal flecks, rare small and very small stones towards base and a fine small and mediums stones at boundary, clear smooth boundary A2 – Overbank Alluvium 2
Trans	162-196	164cm 172cm 180cm 188cm 196cm	160cm 164cm 168cm 172cm 176cm 180cm 184cm 188cm 192cm 196cm		Transition
A3	196-236	204cm 121cm 220cm 228cm 236cm	200cm 204cm 208cm 212cm 216cm 220cm 224cm 228cm 232cm 236cm		Dark reddish brown (5YR 3/3) soft malleble stonefree massive silty clay, no structure observed, rare very small charcoal pieces, abrupt smooth boundary A2 – Overbank Alluvium 3
Sand	236-260	248cm 252cm 260cm	240cm 248cm 252cm 256cm 260cm		Greysih brown (2.5YR 5/2) coarse gritty loose sand deposit with Sand and loose gravel Sand

unit	depth cm	samples			description
		pollen & diatom	Mag. Sucs	C14	
gravel	260-312	264cm 272cm 280cm 288cm 296cm 304cm 312cm	264cm 268cm 272cm 276cm 280cm 284cm 288cm 292cm 296cm 300cm 304cm 308cm 312cm	wood nut	Medium gravel with lenses of humic matter, and weak bedding, in a humic peaty alluvial sandy silty loam matrix, with rare large pieces of ?eroded/reworked very dark brown organic woody peat. At 290cm matrix less humic and at 310cm gravel coarser with little matrix Gravel – stream deposits

Table 15.1 – Access Pit 4

ACCESS PIT 2

unit	depth	description
Ap	0-24	Reddish brown (5YR 4/3) stonefree, very hard backed clay with medium blocky structure over coarse crumb structure, gradual boundary. Ah horizon
A1	24-70	Reddish brown (5YR 5/3) stonefree silty clay-clay with coarse columnar structure, gradual smooth boundary AP2 A1
A2	70-162	Reddish brown (5YR 4/4) stonefree silty clay-clay with coarse columnar structure with rare fine manganese pieces AP2 A2
A3	162-222	Reddish brown (5YR 4/4) stonefree silty clay-clay with massive structure with grey crazed gleying, medium charcoal pieces noted at180-187cm, rare snails at 192-202cm, AP2 A3a
slty clay	222-267+	Reddish brown (5YR 4/4), massive wet stonefree silty clay, rare occasional shells, no sign of sands or gravel AP2 A3b

Table 15.2 – Access Pit 2

ACCESS PIT 8 (within Stretton Grandison Scheduled Area)

unit	depth	description
	0-35	Dark brown to very dark brown (7.5YR 3/2 to 2.5/2) humic silty clay with few small and very small stones, clear medium to large blocky structure rare very small cbm fragments, gradual wavy boundary Ap horizon

unit	depth	description
	35-70	Reddish brown (5YR4/304) stonefree silty clay, weak large blocky/prismatic structure, rare small and medium charcoal pieces AP8 A1
	70-94	(description in peat feature edge) Reddish brown (5YR 4/3-4 - 2.5YR 5/4) stonefree silty clay, weak blocky to prismatic structure, rare small and medium charcoal pieces, gradual smooth boundary. No soil rippening at 70cm-94cm where Romano-British features are recognised/cut from. Romano-British occupation level AP8 A1b
	94-108	Reddish brown (5YR 4/3) stonefree silty clay darker in colour medium blocky to prismatic structure buried soil
	108-150+	Reddish brown (5YR 4/4) massive stonefree silty clay AP8 A2

Table 15.3 – Access Pit 8

ACCESS PIT 9 (within Stretton Grandison Scheduled Area)

unit	depth	description
	0-38	Dark brown (7.5YR 3/2) silty clay loam with small-medium blocky / large (10cm) crumb structure, rare stones, @30cm rottoe wood ploughed in (0-24cm Ap; 24-30cm colluvial; 30-38cm relict Ap)
	38-48	Brown (7.5YR 5/3) compact and cemented silty clay, some rare fine charcoal, clear smooth boundary
	48-58	Brown (5YR 5/4) stonefree cemented silt with large prismatic structure, clear smooth boundary Colluvial Alluvium AP9 A1
	58-80	Dark brown (5YR 3 /4) darker silty clay, clear blocky structure, lenses of charcoal and burning, rare very small and small stones, (floor levels etc, elsewhere some greenish hues), smooth gradual boundary Buried soil
	80+	Reddish brown (2.5YR 4/4) – strong reddish hues, with large columnar structure with old land surface developed on it @ 85cm Romano-British surface

Table 15.4 – Access Pit 9

Preliminary Geoarchaeological Summary

The main alluvial packets (*cf.* Macklin & Needham 1992) have been recognised, at the base of the first (A1) is an intermittent- buried Romano-British welded soil sequence. The alluvial sequence overlies sands and gravels where these have been exposed.

Further fieldwork required

Full sedimentological sequence should be undertaken of AP5, and suitable samples (i.e., monolith tins) removed from the reported basal organic deposits.

Lists of organic remains and wood, and human skeletal remains should be provided with detailed location information to enable assessment of the radiocarbon potential.

Soil micromorphology and soil chemistry

Two soil micromorphological samples, accompanied by 4 soil chemistry samples, were removed from the Romano-British welded soil sequence in AP4.

Sample 1 (S1) at 120-138cm; Sample 2 (S2) at 128-146cm. Soil chemistry samples taken from transition (S7), buried soil (S8), fine stone horizon (S9) and Overbank Alluvium 2 (S10).

Outline palaeo-environmental assessment programme (pending completion of 3, above)

A full series of selected pollen and diatom samples should be assessed to determine the preserved and preservation of the pollen, and characterise the sampled sequence. These should be augment by further samples from AP5 (when described and sampled)

Soil micromorphology, soil chemistry and magnetic susceptibility and the geoarchaeology can be assessed without any further technical analysis, however if soil micromorphological analysis is likely, then soil samples should be impregnated and micromorphological slides should be made.

Radiocarbon dating potential

Only two items suitable for radiocarbon dating were recovered from AP2. These can, however, be augmented by the two levels of Romano-British burials in this sequence, and by organic material (yet to be described sampled) from AP5. When this sampling is completed then a full appraisal of the radiometric potential can be given

References

Hodgson, J.M., 1976. *Soil Survey Field Handbook.* Harpenden: Soil Survey Tech. Mono. 5

Macklin M.G. & Needham, S. 1992. Studies in British alluvial archaeology, in S. Needham and M.G. Macklin (eds), *Alluvial Archaeology in Britain.* Oxford: Oxbow Books, 91-23

APPENDIX 16 – Plant macrofossil assessment and human bone analysis

Report 1701

Summary

The project

Border Archaeology are undertaking the excavation of a series of 13 Access Pits (AP) for the installation of a new water main across the Frome valley flood plain, in Herefordshire. These pits lie within an area of Roman settlement at Stretton Grandison. To date, seven pits have been excavated, of which six have produced evidence of Roman occupation, and two indicate earlier activity. This report presents the results of assessment of plant macrofossils and analysis of human bone remains at the site.

The work was commissioned by Border Archaeology, and conducted by Archaeological Services Durham University.

Results

The plant macrofossil assessment indicates the use of oats, barley and wheat at the site during the Roman occupation, with evidence in the form of chaff to suggest that crop processing was taking place. In addition to cereals, meat, fish and hazelnuts were probably also components of the diet. The earlier occupation deposit, context (2004), and the associated context (2005), contained a suite of waterlogged seeds, indicative of the natural environment at the time of deposition. In addition, context (2005) contained a single piece of worked oak wood.

The human bone remains, skeleton (4027), were that of a neonatal or perinatal infant, who died at or around the time of birth. The bones were well preserved although moderately fragmented. The skeleton was fully articulated, oriented north-south, and lying on the left hand side with legs flexed at the hip and one arm flexed, the other extended in front of the body. No signs of any disease or trauma were observed. Fragments of cremated bone were discovered throughout the clay block surrounding the skeleton, but in particular were concentrated in the upper and middle layers of the deposit, and near or with two fragmentary remains of pots.

Recommendations

Full plant macrofossil analysis is recommended: for the chaff-rich Roman contexts (1013), (3003), (5005), (5011), (4008), (4013), (4026), (4006), (4024), (4031) and (4030); the waterlogged contexts (2004) and (2005); and the burial context (4027). In addition, pollen analysis and radiocarbon dating is recommended for the waterlogged contexts (2004) and (2005). Amongst the contexts that have not been recommended for full analysis there are four (1009, 1011, 1016 and 5013) that contained pot sherds. It is recommended that the remainder of these bulk sample are processed to recover any remaining sherds.

No further analysis is recommended on this skeleton.

Project background

Location and background

Border Archaeology are undertaking the excavation of a series of 13 Access Pits (AP) for the installation of a new water main across the Frome valley flood plain in Herefordshire. The pits are located approximately 100m apart and lie within an area of Roman settlement at Stretton Grandison. To date, seven pits have been excavated (AP1-AP7) of which six have produced ditches, shallow pits and postholes, indicative of Roman occupation. In addition, AP4 which is located close to the river, contained a child burial of probable Roman date, together with a waterlogged rectangular wooden 'casket' (not yet excavated) and a stone-lined well. Two pits (AP2 and AP5) have provided evidence for earlier occupation, this comprises the remains of a series of waterlogged wooden 'stakes' preserved within organic deposits. This report presents the results of assessment of plant macrofossils and analysis of human bone remains from five of the access pits at the site.

Objective

The objective was to assess the general state of preservation of plant remains, and the potential for further analyses of the assemblages to provide evidence for interpreting diet and agricultural practices, and the natural environment at the site. The human skeleton was analysed to determine age at death and any other information available.

Dates

Samples were submitted to Archaeological Services on 15th June 2007 Analysis and report preparation was conducted between 25th June and 26th July 2007.

Personnel

Plant macrofossil assessment and report preparation was conducted by Dr Helen Ranner, and the human bone analysis and report preparation was by Dr Anwen Caffell. Louisa Gidney advised on the faunal remains.

Archive

The site code is **LTM07**. The flots, small finds and skeleton, are currently retained in the Environmental Laboratory at Archaeological Services Durham University for collection.

Plant macrofossil assessment

Method

Bulk samples were processed from 26 contexts from five of the Access Pits. These were from a series of Roman pit fills, and single ditch and post hole fills, occupation deposits from the Roman period and earlier, and two fills from a stone-lined Roman well. The intact and fully articulated skeleton of a baby, context (4027), was removed from AP4, together with the surrounding clay soil that was supporting the bones. The skeleton was excavated from the clay block and the remaining clay was divided into 3 spits (spit1 - upper, spit2 - middle and spit3 - lower) which were then assessed for plant macrofossil remains.

A maximum volume of 5 litres from each bulk sample was manually floated and sieved through a 500µm mesh. The residues were described and scanned using a magnet for

ferrous fragments. The flots were dried slowly, and scanned at × 40 magnification for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant taxonomic nomenclature follows Stace (1997).

Results

The residues from a majority of the samples contained background levels of metal dust, with small metal objects being found in contexts (1013), (4013) and (4027 spit 1). Pot sherds were present in half the contexts, but particularly in AP1 and context (4027). Occasional pieces of mortar and daub were also recorded. Charcoal was present in all the contexts except (2004) and (5014), with occasional records of very small amounts of clinker. Indeterminate fragments of calcined, burnt and unburnt bone were common to most contexts, with the exception of (1031), (1019), (3003), (5009), (4030), (5014) and (2005). A number of unburnt fragments of bone from a variety of small mammals, and sheep/goat were identified in context (4027), and seven human baby teeth were recovered from context (4027 Sk level). Individual fish bones and scales were recorded in context (4008), and the two upper layers of context (4027). All contexts except (1031) contained modern root material and a few also had small amounts of other vegetative material. Wood fragments and a small piece of worked oak wood were recorded in context (2004). Terrestrial snail shell was found in a few contexts but particularly in (2004) and (2005) from AP2. Insect remains were occasionally recorded.

Charred remains were recorded in most contexts, with the exception of (1016), (1019), (3004), (5013), (5009) and the waterlogged context (2005). These consisted of cereal grains and chaff, hazelnut shell fragments, and a variety of weed seeds. Oats, barley and wheat grains were recorded, with a few wheat grains showing the characteristic form of bread wheat. Chaff was recorded from glume wheat and barley, and some of this was identified as spelt wheat glume bases. The arable weed, scentless mayweed, was recorded in context (4031) and (2004), and wetland sedges in contexts (1009), (1011) and (4013). There were occasional seeds from a range of ruderal and wide niche *taxa* throughout. Hazelnut shell fragments were recorded in contexts (1011) and (4026).

The preservation of uncharred seeds was generally poor throughout, with very occasional occurrences of seeds from arable weeds, and ruderal and wide niche *taxa*. The exception to this pattern were contexts (2004) and (2005) from AP2. Both of these contexts had much higher abundances of uncharred seeds, and similar suites of arable, aquatic and wetland *taxa* were recorded in both. The residue and flot contents are presented in Table 16.1.

Table 16.1a: Contents of the residues and flot matrices, and charred remains from samples 1 - 18

Access Pit	AP1	AP1	AP1	AP1	AP1	AP1	AP1	AP1	AP3	AP3	AP5	AP5	AP5	AP5	AP5	AP4
Sample	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	18
Context	1009	1015	1011	1016	1013	1017	1031	1019	3003	3004	5005	5011	5013	5009	5009	4008
Full analysis recommended					□				□		□	□				□
Material available for radiocarbon dating			□	□	□			□	□		□			□		□
Volume processed (ml)	5000	5000	5000	5000	5000	5000	5000	2000	5000	5000	5000	5000	5000	2000	1000	5000
Material remaining	□		□	□	□	□	□		□	□	□	□	□			□
Volume of flot (ml)	10	7	20	25	10	5	12	20	25	10	7	10	25	35	<5	10
Volume of flot assessed (ml)	10	7	20	25	10	5	12	20	25	10	7	10	25	35	<5	10
Residue contents (relative abundance)																
Bone (calcined) >2cm	1	1	1	-	1	-	-	-	-	-	1	-	1	-	-	1
Bone (calcined) <2cm	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt) >2cm	-	1	-	-	-	-	-	-	-	-	1	1	-	-	-	1
Bone (unburnt) <2cm	-	-	-	1	-	-	-	-	-	-	1	1	-	-	-	1
Bone (unburnt) small mammal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt) cf. sheep/goat acetabulum	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt) sheep/goat humerus	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt) mouse-size long bone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt) mouse lower jaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt) mouse	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt) shrew jaw	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charcoal	2	2	2	-	2	-	2	2	2	-	-	-	-	3	-	-
Clinker	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Daub	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-
Metal dust	1	1	-	-	-	-	1	-	1	1	1	-	-	-	1	1
Metal object (total)	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Mollusca - terrestrial snails	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mortar	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Pot sherds (total no.)	2	19	13	5	11	-	-	-	-	-	3	-	3	-	-	4
Teeth (human baby) (total no.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Teeth (vole) (total no.)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wood	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wood (worked)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flot matrix (relative abundance)																
Bone (calcined) indeterminate	-	1	2	1	-	1	-	-	-	-	-	-	1	-	-	1
Bone (unburnt) indeterminate	2	-	-	1	1	1	-	-	-	1	1	1	-	-	-	1
Bone (burnt) indeterminate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charcoal/charcoal dust	3	3	4	3	4	3	4	3	3	2	3	3	3	5	3	3
Clinker	-	-	-	-	2	1	-	-	-	-	-	-	-	-	-	-
Fish bone	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Fish scales	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Insecta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mollusca - terrestrial snails	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Mollusca shell fragments - terrestrial snails	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-
Roots (modern)	1	1	1	1	1	1	-	1	1	1	1	1	2	1	1	2
Vegetative material (miscellaneous)	-	-	-	-	-	-	-	-	-	2	1	-	-	-	-	-
Wood fragments	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charred remains (relative abundance)																
(a) *Tripleurospermum inodorum* (Scentless Mayweed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Avena* spp (oat species)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Hordeum* sp (Hulled Barley)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(c) *Hordeum* sp (Barley undifferentiated)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(c) *Hordeum* sp rachis fragment (Barley)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *aestivum* (cf. Bread Wheat)	-	-	-	-	1	-	-	-	-	-	1	-	-	-	-	1
(c) *Triticum* spp (Wheat species)	-	-	-	-	-	-	1	-	2	-	1	-	-	-	-	1
(c) *Triticum spelta* glume base (Spelt)	-	-	-	-	-	-	-	-	2	-	2	1	-	-	-	-
(c) *Triticum spelta* spikelet fork (Spelt)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum spelta or T. dicoccum* glume base (Spelt or	-	-	-	-	-	-	-	-	1	-	3	3	-	-	-	1
(c) *Triticum spelta or T. dicoccum* spikelet fork (Spelt or	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(c) Cerealia indeterminate	-	-		-	-	-	-	-	3	-	17	2	-	-	-	1
(c) Cerealia / Poaceae indeterminate	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
(h) *Rumex acetosella* (Sheep's Sorrel)	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
(r) *Galium aparine* (Cleavers)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Lapsana communis* (Nipplewort)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) Polygonaceae undifferentiated (Knotweed family)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Polygonum aviculare* (Knotgrass)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* shell fragment (Hazelnut)	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* spp trigonous nutlet (Sedges)	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) Cyperaceae undifferentiated (Sedge family)	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Brassicaceae undifferentiated (Cabbage family)	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Chenopodium* spp (Goosefoot)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Danthonia decumbens* (Heath-grass)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Fabaceae undifferentiated (Pea family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated <2mm (Grass)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated >2mm (Grass)	-	-	1	-	-	1	-	-	1	-	2	-	-	-	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Rumex* spp (Dock)	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Rumex* acetosella (Sheep's Sorrel)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Vicia* spp (vetch)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Seed - indeterminate	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(a:arable weed; c: cultivated plant; h: heathland; r: ruderal; t:tree/shrub; w: wetland; x: wide niche)
Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Table 16.1b: Waterlogged remains from samples 1 - 18

Access Pit	AP1	AP1	AP1	AP1	AP1	AP1	AP1	AP1	AP3	AP3	AP5	AP5	AP5	AP5	AP5	AP4
Sample	1	2	3	4	5	6	7	8	9	10	12	13	14	15	16	18
Context	1009	1015	1011	1016	1013	1017	1031	1019	3003	3004	5005	5011	5013	5009	5009	4008
Full analysis recommended					□				□		□	□				□
Material available for radiocarbon dating	□		□	□	□			□	□		□			□		□
Volume processed (ml)	5000	5000	5000	5000	5000	5000	5000	2000	5000	5000	5000	5000	5000	2000	1000	5000
Material remaining	□		□	□	□	□	□		□	□	□	□	□			□
Volume of flot (ml)	10	7	20	25	10	5	12	20	25	10	7	10	25	35	<5	10
Volume of flot assessed (ml)	10	7	20	25	10	5	12	20	25	10	7	10	25	35	<5	10
Waterlogged remains (relative abundance)																
(a) *Chenopodium album* (Fat-hen)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Fallopia convolvulus* (Black-Bindweed)	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(a) *Fumaria* spp (Fumitory)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
(a) *Urtica urens* (Small Nettle)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Valerianella rimosa* (Broad-fruited Cornsalad)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(q) Alismataceae (Water-plantain family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(q) *Lemna* spp (Duckweed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(q) *Potamogeton* spp (Pondweed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(q) *Ranunculus* subgenus *Batrachium* (Crowfoot)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(q) *Zanichellia palustris* (Horned Pondweed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Hyoscyamus niger* (Henbane)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Lapsana communis* (Nipplewort)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Persicaria lapathifolium* (Pale Persicaria)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Polygonum aviculare* (Knotgrass)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) Polygonaceae undifferentiated (Knotweed family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Sonchus asper* (Prickly Sow-thistle)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Stellaria media* (Common Chickweed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Urtica dioica* (Common Nettle)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) cf. *Alnus glutinosa* cone (Alder)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* shell fragment (Hazelnut)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Picea* sp needle (Spruce)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Rubus fruticosus* agg. (Bramble)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Rubus idaeus* (Wild Raspberry)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Sambucus nigra* (Elder)	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
(w) *Carex* spp biconvex nutlets (Sedges)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* spp trigonous nutlet (Sedges)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Conium maculatum* (Hemlock)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) Cyperaceae undifferentiated (Sedge family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Isolepis setacea* (Bristle Club-rush)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Montia fontana* (Blinks)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Ranunculus flammula* (Lesser Spearwort)	--	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Ranunculus sardous* (Hairy Buttercup)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Solanum dulcamara* (Bittersweet)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Thalictrum flavum* (Common Meadow-rue)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Asteraceae undifferentiated (Daisy family)	-	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-
(x) Caryophyllaceae spp (Pink family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Chenopodium* spp (Goosefoot)	1	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
(x) *Cirsium / Carduus* spp (Thistles)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Fabaceae undifferentiated (Pea family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Lamiaceae undifferentiated (Mint family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae >2mm undifferentiated (Grass)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Potentilla anserina* (Silverweed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Potentilla* spp (Cinquefoils)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Rumex* spp (Dock)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Viola* spp (Violet)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(a:arable weed; c: cultivated plant; h: heathland; q: aquatic; r: ruderal; t:tree/shrub; w: wetland; x: wide niche)
Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Table 16.1c: Contents of the residues and flot matrices, and charred remains from samples 19 – 31, and the burial context

Access Pit	AP4	AP4	AP4	AP4	AP4	AP4	AP5	AP2	AP2	AP4					
Sample	19	20	21	22	23	24	26	30	31	Sk	Spit1	Spit2	Spit3	Pot1	Pot2
Context	401	402	400	402	403	403	501	200	200	4027					
Full analysis recommended	□	□	□	□	□	□		□	□		□	□	□	□	□
Material available for radiocarbon dating	□	□	□		□						□	□	□	□	□
Volume processed (ml)	500	500	500	500	500	500	500	500	500	-	2300	4000	3500	10000	1000
Material remaining	□	□	□	□	□	□	□	□	□						
Volume of flot (ml)	30	<5	5	5	7	5	25	500	100	325	25	10	60	5	5
Volume of flot assessed (ml)	30	<5	5	5	7	5	25	500	100	325	25	10	60	5	5
Residue contents (relative abundance)															
Bone (calcined) >2cm	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Bone (calcined) <2cm	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt) >2cm	-	1	1	1	1	-	-	-	1	-	-	-	-	-	-
Bone (unburnt) <2cm	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt) small mammal	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Bone (unburnt) cf. sheep/goat acetabulum	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
Bone (unburnt) sheep/goat humerus	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Bone (unburnt) mouse-size long bone	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Bone (unburnt) mouse lower jaw	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Bone (unburnt) mouse	-	-	-	-	-	-	-	-	-	-	1	1	-	-	-
Bone (unburnt) shrew jaw	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Charcoal	1	1	-	-	-	-	-	3	-	-	-	-	-	-	-
Cinder	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Daub	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Metal dust	1	1	-	-	1	1	-	1	-	-	-	-	-	-	-
Metal object (total)	2	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Mollusca – terrestrial snails	-	-	-	-	-	1	-	-	-	-	-	1	-	-	-
Mortar	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pot sherds (total no.)	-	-	3	3	-	-	-	-	-	-	2	3	10	13	2
Teeth (human baby) (total no.)	-	-	-	-	-	-	-	-	-	7	-	-	-	-	-
Teeth (vole) (total no.)	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Wood	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-
Wood (Oak) (worked)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Flot matrix (relative abundance)															
Bone (calcined) indeterminate	-	-	-	-	-	-	-	-	-	1	1	2	-	1	-
Bone (unburnt) indeterminate	1	-	1	-	-	-	-	-	-	-	1	1	1	1	1
Bone (burnt) indeterminate	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Charcoal/charcoal dust	3	4	3	2	3	3	-	3	-	2	4	4	4	3	3
Clinker	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-
Fish bone	-	-	-	-	-	-	-	-	-	1	1	-	-	-	-
Fish scales	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Insecta	-	-	-	-	-	1	-	1	1	1	1	-	-	-	-
Mollusca – terrestrial snails	-	-	-	-	-	2	-	3	4	-	1	-	1	-	-
Mollusca shell fragments – terrestrial snails	2	-	-	3	-	3	-	-	-	1		-	-	-	-
Roots (modern)	2	1	2	2	1	2	1	1	1	1	1	1	2	1	-
Vegetative material (miscellaneous)	-	-	-	-	-	2	4	5	-	-	-	-	2	-	-
Wood fragments	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
Charred remains (relative abundance)															
(a) *Tripleurospermum inodorum* (Scentless Mayweed)	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-
(c) *Avena* spp (oat species)	-	-	-	-	-	1	-	-	-	-	-	2	2	-	-
(c) *Hordeum* sp (Hulled Barley)	1	-	-	-	-	-	-	-	-	-	1	1	1	-	-
(c) *Hordeum* sp (Barley undifferentiated)	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-
(c) *Hordeum* sp rachis fragment (Barley)	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *aestivum* (cf. Bread Wheat)	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-
(c) *Triticum* spp (Wheat species)	1	2	1	-	2	-	-	-	1	-	2	1	3	2	1
(c) *Triticum spelta* glume base (Spelt)	-	2	-	-	2	2	-	-	3	-	1	2	3	2	2
(c) *Triticum spelta* spikelet fork (Spelt)	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-
(c) *Triticum spelta or T. dicoccum* glume base (Spelt	2	3	2	2	3	3	-	-	2	1	3	4	4	3	3
(c) *Triticum spelta or T. dicoccum* spikelet fork (Spelt	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(c) Cerealia indeterminate	1	2	-	-	2	1	-	-	2	1	3	-	3	3	2
(c) Cerealia / Poaceae indeterminate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(h) *Rumex acetosella* (Sheep's Sorrel)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galium aparine* (Cleavers)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Lapsana communis* (Nipplewort)	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
(r) Polygonaceae undifferentiated (Knotweed family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Polygonum aviculare* (Knotgrass)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* shell fragment (Hazelnut)	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* spp trigonous nutlet (Sedges)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) Cyperaceae undifferentiated (Sedge family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Brassicaceae undifferentiated (Cabbage family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Chenopodium* spp (Goosefoot)	-	-	-	-	1	-	1	-	1	-	-	-	-	-	-
(x) *Danthonia decumbens* (Heath-grass)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Fabaceae undifferentiated (Pea family)	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(x) Poaceae undifferentiated <2mm (Grass)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated >2mm (Grass)	-	1	-	-	2	-	-	-	-	-	2	2	2	2	1
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-
(x) *Rumex* spp (Dock)	-	-	-	-	1	-	-	-	-	-	1	-	1	1	-
(x) *Rumex* acetosella (Sheep's Sorrel)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Vicia* spp (vetch)	-	-	-	-	-	-	-	-	-	-	-	1	1	1	-
Seed – indeterminate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

(a:arable weed; c: cultivated plant; h: heathland; r: ruderal; t:tree/shrub; w: wetland; x: wide niche)
Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Table 16.1d: Waterlogged remains from samples 19 – 31, and the burial context

Access Pit	AP4	AP4	AP4	AP4	AP4	AP4	AP5	AP2	AP2	AP4					
Sample	19	20	21	22	23	24	26	30	31	Sk level	Spit1	Spit2	Spit3	Pot1 (Spit1)	Pot2 (Spit2)
Context	4013	4026	4006	4024	4031	4030	5014	2005	2004	4027					
Full analysis recommended	□	□	□	□	□	□		□	□		□	□	□	□	□
Material available for radiocarbon dating	□	□	□		□						□	□	□	□	□
Volume processed (ml)	5000	5000	5000	5000	5000	5000	5000	5000	5000	-	23000	40000	35000	10000	1000
Material remaining	□	□	□	□	□	□	□	□	□						
Volume of flot (ml)	30	<5	5	5	7	5	25	500	100	325	25	10	60	5	5
Volume of flot assessed (ml)	30	<5	5	5	7	5	25	500	100	325	25	10	60	5	5
Waterlogged remains (relative abundance)															
(a) *Chenopodium album* (Fat-hen)	-	-	-	-	-	-	-	3	2	-	-	-	-	-	-
(a) *Fallopia convolvulus* (Black-Bindweed)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Fumaria* spp (Fumitory)	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-
(a) *Urtica urens* (Small Nettle)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(a) *Valerianella rimosa* (Broad-fruited Cornsalad)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(q) Alismataceae (Water-plantain family)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(q) *Lemna* spp (Duckweed)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(q) *Potamogeton* spp (Pondweed)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(q) *Ranunculus* subgenus *Batrachium* (Crowfoot)	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
(q) *Zanichellia palustris* (Horned Pondweed)	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
(r) *Hyoscyamus niger* (Henbane)	-	-	-	-	-	-	-	1	1	-	-	1	1	-	-
(r) *Lapsana communis* (Nipplewort)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(r) *Persicaria lapathifolium* (Pale Persicaria)	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
(r) *Polygonum aviculare* (Knotgrass)	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
(r) Polygonaceae undifferentiated (Knotweed	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
(r) *Sonchus asper* (Prickly Sow-thistle)	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
(r) *Stellaria media* (Common Chickweed)	-	-	-	-	-	-	-	3	2	-	-	-	-	-	-
(r) *Urtica dioica* (Common Nettle)	-	-	-	-	-	-	-	4	3	-	-	-	-	-	-
(t) cf. *Alnus glutinosa* cone (Alder)	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
(t) *Corylus avellana* shell fragment (Hazelnut)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(t) *Picea* sp needle (Spruce)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Rubus fruticosus* agg. (Bramble)	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-
(t) *Rubus idaeus* (Wild Raspberry)	-	-	-	-	-	-	-	2	3	-	-	-	-	-	-
(t) *Sambucus nigra* (elder)	-	1	-	-	-	3	-	3	3	-	1	1	2	-	-
(w) *Carex* spp biconvex nutlets (Sedges)	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-
(w) *Carex* spp trigonous nutlet (Sedges)	-	-	-	-	-	-	-	3	3	-	-	-	-	-	-
(w) *Conium maculatum* (Hemlock)	-	-	-	-	-	-	-	1	2	-	-	-	-	-	-
(w) Cyperaceae undifferentiated (Sedge family)	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
(w) *Isolepis setacea* (Bristle Club-rush)	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
(w) *Montia fontana* (Blinks)	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
(w) *Ranunculus flammula* (Lesser Spearwort)	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
(w) *Ranunculus sardous* (Hairy Buttercup)	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-
(w) *Solanum dulcamara* (Bittersweet)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(w) *Thalictrum flavum* (Common Meadow-rue)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(x) Asteraceae undifferentiated (Daisy family)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(x) Caryophyllaceae spp (Pink family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Chenopodium* spp (Goosefoot)	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-
(x) *Cirsium / Carduus* spp (Thistles)	-	-	-	-	-	-	-	3	1	-	-	-	-	-	-
(x) Fabaceae undifferentiated (Pea family)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Lamiaceae undifferentiated (Mint family)	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
(x) Poaceae >2mm undifferentiated (Grass)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Potentilla anserina* (Silverweed)	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(x) *Potentilla* spp (Cinquefoils)	-	-	-	-	-	-	-	3	1	-	-	-	-	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-
(x) *Rumex* spp (Dock)	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-
(x) *Viola* spp (Violet)	-	-	-	-	-	-	-	2	1	-	-	-	-	-	-

(a:arable weed; c: cultivated plant; h: heathland; q: aquatic; r: ruderal; t:tree/shrub; w: wetland; x: wide niche)
Relative abundance is based on a scale from 1 (lowest) to 5 (highest).

Discussion

The relatively small amounts of charcoal throughout most of the contexts is indicative of domestic fire waste, and probably represents a background level associated with occupation. Contexts (1017) and (1013), the primary and secondary fills respectively, of a shallow pit [1012] contained a small amount of clinker which may indicate specific use for domestic fire waste. The two contexts without charcoal, (2004) and (5014), are from an alluvial deposit and a marsh/waterlogged deposit respectively; these were probably not used directly as occupation sites (occasional charcoal flecking was recorded in the context register for (2004)). Animal bone fragments (burnt, unburnt and calcined), are recorded in most of the fill contexts with the exception of those from the linear feature (1031), post hole (1019), and pit (5009). The three fish bone and fish scale records suggest that fish may have been a component of the diet. The small mammal bones found in the burial context (4027) indicate the presence of a variety of *taxa*, such as mouse and shrew. These individuals would probably have entered the area following disturbance of the soil for the burial of the baby, since the heavy clay would have been generally too compact for small mammal activity; there may have been some attraction to food offerings either above or below ground. The sheep/goat bones may have originated from burial offerings. The wood fragments recorded in context (2005) included a small piece of worked oak, showing cut marks. This find could be linked to the series of waterlogged wooden stakes already recorded from an earlier occupation. The presence of terrestrial mollusc shells, particularly in contexts (2004) and (2005) from AP2, is indicative of wet or waterlogged conditions, and supports the suggestion that these two contexts represent former marshland.

The suite of charred cereal grains and hazelnut shell recorded at this site is in common with that found on other Roman sites in the region eg. Collfryn (Caseldine 1990). In addition, several contexts contained abundant chaff remains, particularly the occupation deposits (4026) and (5005), the stone-lined well (4030), and the pit fill (5011). By the time of the Roman occupation in Britain, spelt wheat had become the major field crop (Caseldine1990, Hillman 1981), following on from the principle cultivation of emmer wheat, and preceding the principle cultivation of bread wheat (Hillman 1981). The glume wheat bases and spikelet forks of spelt and emmer wheat are diagnostic, and some spelt wheat has been specifically identified at this site. In addition, a few grains of wheat showed the characteristic shape associated with bread wheat, but identification of the rachis fragments of this free-threshing wheat are required in order to record this species. Therefore, further work on the chaff-rich samples from this site could enable both qualitative and quantitative analysis, leading to identification the three different wheat species, and providing data that would give an indication of the relative proportions of each being used during the Roman occupation of the site. In addition, this site has evidence of earlier occupation in AP2, context (2005), and chaff has also been found in the associated context (2004). Full analysis of these two samples may provide an opportunity to identify the principal cereal type that was being used before the Roman occupation at the site, and hence provide important information about changing agricultural practices over this transitional period. These records of abundant chaff, suggest that some crop processing or cleaning was taking place at the site, and full analysis has the potential to provide the data necessary to identify commercial or domestic activity. The record of charred hazelnut shell, suggests that these nuts were being used as an additional food source.

A range of charred weed seeds were preserved. Full analysis of these would provide further information about land use and the natural environment at the time of occupation.

The poor preservation of waterlogged seeds in AP1, AP3, AP4 and AP5 indicates that the site was generally well-drained during its Roman occupation, and therefore the uncharred plant material that has been identified may have been introduced post abandonment. In contrast, the two contexts from AP2, (2004) and (2005), have abundant uncharred seeds that have been preserved in marshy waterlogged deposits. The oak used for the worked wood in context (2005) may have grown on or near the site, but it could have been transported from elsewhere in the region for a specific use. The lower context (2005) is from an earlier occupation, and contains no charred cereal remains, whereas the upper context (2004) contains records of spelt wheat chaff and cereal grains. Full analysis of these two samples has the potential to provide further information about the natural environment during the earlier occupation and transition to Roman occupation. In addition, pollen analysis could provide further information about the local and regional flora. Any further plant macrofossil analysis, or additional pollen analysis on these two contexts, should be backed up with radiocarbon dates to confirm when the deposits were formed.

Human bone analysis

Introduction

The fully articulated skeleton of a baby, context (4027), was discovered in AP 4. The skeleton was uncovered during machine excavation, which exposed part of the skull, right arm, and several right ribs. The baby was lying in a north-south orientation, with the head to the north, close to a boundary ditch (4025) and a well (4004); no evidence of a grave cut could be seen. The skeleton is believed to be Roman in date.

Excavation

Rather than attempt full excavation on site, the remains were removed in a large block of clay (*c.* $45 \times 58 \times 22$ cm), and sent for excavation in the laboratory. The clay was damp, and a layer of tinfoil covered the clay block and skeleton to prevent it from drying out. Plate 16.1 shows the initial appearance of the remains on arrival, before further excavation took place.

Plate 16.1: Condition of the skeleton on arrival

Careful excavation around the skeleton revealed further right ribs, the right half of the pelvis, right leg and foot (close to the edge of the block), and part of the right hand (Plate 16.2). The right limbs were then removed prior to exposure of the left limbs (Plate 16.3). All soil was sieved through a 500µm mesh ensuring maximum recovery of small bones.

After the skeleton had been lifted, the remaining clay was excavated in spits. This revealed the partial remains of a pot rim in the south-east corner of the block, near the right foot of the skeleton and possibly truncated by the edge of the block (Pot 1, Plate 16.4 and Plate 16.5), and a small concentration of cremated bone fragments and a pot sherd (Pot 2, Plate 16.6 and Plate 16.7) in the south-west corner of the block. Fragments of cremated bone were recovered throughout the clay block.

Plate 16.2: Right side of body and right limbs exposed

Plate 16.3: Left limbs exposed (right limbs removed)

Plate 16.4: Location of Pot 1

Plate 16.5: Pot 1 close-up

Plate 16.6: Location of Pot 2 and cremated bone fragments

Plate 16.7: Pot 2 and cremated bone fragments close-up (rotated 90º to Plate 16.6)

Analysis of the skeleton

The skeleton was analysed in detail, recording the condition and completeness, estimating age-at-death, and examining the skeleton for any traces of disease or trauma. Since the skeleton was that of a child, it was not possible to estimate the sex.

Preservation

Skeletal preservation depends upon a number of factors, including the age and sex of the individual as well as the size, shape and robustness of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition. Preservation of human skeletal remains is assessed subjectively, depending upon the severity of bone surface erosion and post-mortem breaks, but disregarding completeness.

Surface preservation was assessed using the seven-category grading system defined by McKinley (2004a), ranging from 0 (excellent) to 5+ (extremely poor). Excellent preservation implies no bone surface erosion and a clear surface morphology, whereas extremely poor preservation indicates heavy and penetrating erosion of the bone surface resulting in complete loss of surface morphology and modification of the bone profile. Overall, the condition of Skeleton (4027) was good (Grade 2), with slight areas of mild surface erosion present but with most detail preserved, although unfortunately the bones had suffered moderate fragmentation (Table 16.2).

The skeleton was around 90-95% complete (Plate 16.8), with the excellent recovery of skeletal elements due to the block-lifting, excavation in the laboratory and sieving of all soil (Plate 16.9). The right half of the jaws (mandible and maxilla), right shoulder (scapula and most of the clavicle), lower half of the ulna (one of the fore-arm bones) and some of the right hand bones (metacarpals) were missing. The right hand had been positioned close to the right shoulder, and it was the right side of the upper body that had been exposed by machine on site. It seems likely that these bones were lost during this initial stage of excavation.

Skeleton No	Preservation	Fragmentation	Completeness	Age	Sex	Stature (cm)	Pathology
4027	Good (Grade 2)	Moderate	90-95%	neonate	-	-	-

Table 16.2: Summary of osteological and palaeopathological results

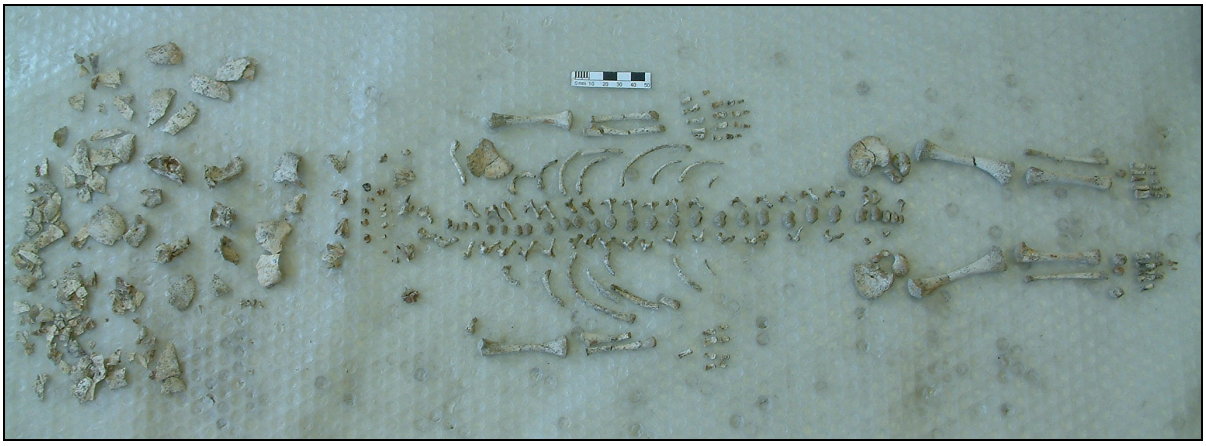


Plate 16.8: Skeleton (4027)

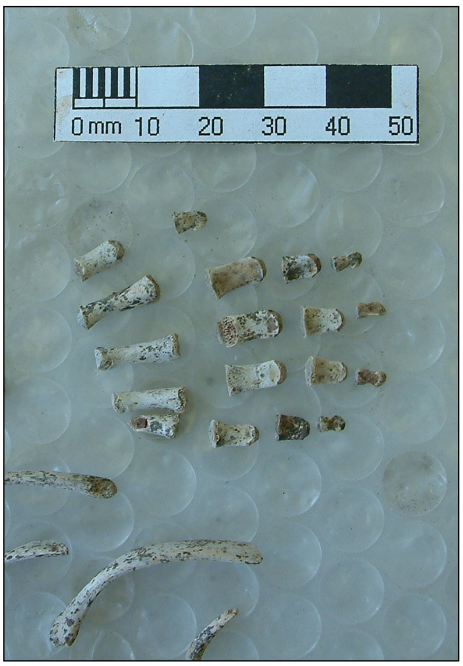


Plate 16.9: Skeleton (4027) - left hand

Minimum number of individuals

A count of the 'minimum number of individuals' (MNI) recovered from a cemetery is carried out as standard procedure in osteological reports on inhumations, in order to establish how many individuals are represented by the articulated and disarticulated human bones (without taking the archaeologically defined graves into account). The MNI is calculated by counting all long bone ends, as well as other larger skeletal elements recovered. The largest number of these is then taken as the MNI. The MNI is likely to be lower than the actual number of skeletons which would have been interred on the site, but represents the minimum number of individuals which can be scientifically proven to be present. There was no duplication of bone elements, so the MNI was one.

Assessment of Age

Age was determined using standard ageing techniques, as specified in Scheuer and Black (2000a; 2000b). Age estimation in children is based on an examination of the stage of dental and skeletal development achieved, measurements of certain bones, and an assessment of the stage of dental eruption. It is preferable to use as many methods as possible, but the number of methods that can be employed depends on the preservation and completeness of the skeleton. Fortunately, Skeleton (4027) was well preserved and extremely complete. The recovery of deciduous (milk) teeth in the early stages of formation suggested the individual had died around the time of birth, and the general stage of skeletal development was consistent with this. Measurements taken from the three intact long bones all suggested an age of 38-40 weeks in utero (i.e. full term), with measurements of the basilar (part of one of the bones in the skull) suggesting an age range of birth to a few weeks old. Overall, analysis suggests that this baby was a perinate or neonate who was stillborn, or who had died either at birth or within a few weeks of being born.

Pathological Analysis

No signs of pathological changes due to disease or trauma could be seen in the skeleton. Such changes are rarely observed in such a young baby, as it takes time for the skeleton to react to the stress of disease; if death occurs before this happens, no trace remains in the skeleton.

Mortuary Practice

Skeleton (4027) was oriented north-south, with the head to the north, and had been laid on its left side, in a flexed position (Table 16.3). Both legs were tightly flexed at the hip, at around 45º to the torso, and slightly flexed at the knees, with the result that the legs seemed to extend out in front of the body (16.2 and Plate 16.3). The left leg was more tightly flexed than the right. The left arm extended straight out in front of the body, being flexed 90º at the shoulder, and the left hand was close to the left foot (Plate 16.3). The right arm was flexed at the elbow, with the right hand positioned in front of the right shoulder and near the face (Plate 16.2). No grave cut was observed on site, and none could be observed during excavation in the laboratory. The burial was located near a boundary ditch (4025), and a well (4004).

Skeleton No	Feature	Trench	Position	Orientation	Date
4027	?	AP4	Left side, flexed	North to south	Roman

Table 16.3: Summary of archaeological information

Discussion

The curled position of Skeleton (4027) is that adopted by neonates, as if sleeping. This posture is the result of physiology: the neck (and other) muscles are not strong enough to allow the head and body to straighten until the infant is around three months old (Scott 1999). It should therefore be considered that Skeleton (4027) was not arranged in this position deliberately, but that this was the natural position for an infant of that age. The orientation of the body (north-south) is broadly similar to that of the nearby ditch, and it is possible that the grave (although no cut was discovered) was aligned on this feature.

Infanticide is frequently cited as a likely cause for the number of neonatal deaths seen in the Roman period in Britain, but a high mortality for this age group due to natural causes would be expected and should be considered a more likely cause (Lewis 2007; Scott 1999). Birth itself is highly traumatic for the infant, carrying a risk of death, and exposure to diseases, unsuitable foods (if the baby was not breast-fed), and extremes in temperature can all prove fatal to a newborn baby although considered relatively minor by healthy adults (Scott 1999). It cannot be assumed that all neonates seen in the archaeological record are the victims of infanticide.

Neonates and infants are often excluded from burial within the communal cemetery in all time periods and in most geographic locations, and this is true of the Iron Age and Roman periods in Britain. During the Iron Age they have been found buried under shrines and in the foundations of buildings, in cairns, wells, bogs, middens, pits and ditches (Lewis 2007; Watts 1989). In the Roman period they have often been buried within settlements, inside or immediately outside of buildings (Watts 1989), and Scott (1999) has noted that many infants and neonates in the late Roman period have been found interred within villas, or associated with agricultural processing areas. Concentrations of neonates and infants have also been found buried in the ditches of earlier structures, as at the Iron Age enclosure of Oram's Arbour, Winchester, where 52 neonates from the second century AD were found buried in the ditch, and at Kingsdown Camp, where 10 neonates were buried in a boundary ditch (Scott 1999). Skeleton (4027) was discovered in the vicinity of both a boundary ditch and a well, and although not deposited within either, it could possibly be associated with this practice of burying neonates at the boundaries of settlements or territories (Scott 1999), or with the deposition of neonates in wells or other types of water (Lewis 2007). As an example of the latter, around 450 neonates and 130 dogs were excavated from a well in the centre of Athens (Lewis 2007). Possibilities for this separation of infants from the rest of the community in death include: that neonates and infants were not perceived as fully human; that the funerary rituals given to older children and adults were deemed too expensive; alternatively there may have been a more symbolic reason, involving the liminality of neonates, and associations with boundaries or fertility (Lewis 2007; Scott 1999).

Summary

The remains of Skeleton (4027) were that of a neonatal or perinatal infant, who died at or around the time of birth. The bones were well preserved although moderately fragmented, and the completeness of the skeleton is largely due to the block-lifting of the remains and their excavation under controlled conditions with full sieving of all associated soil. The skeleton was fully articulated, oriented north-south, and lying on the left hand side with legs flexed at the hip and one arm flexed, the other extended in front of the body. No

signs of any disease or trauma were observed. The proximity of the burial to the nearby boundary ditch and well is interesting, as both are contexts in which neonatal remains have previously been discovered in the Roman period, when exclusion of neonates and infants from the main communal cemeteries is the norm.

The cremated bone

Fragments of cremated bone were discovered throughout the clay block surrounding Skeleton (4027), but in particular were concentrated in the upper and middle layers of the deposit, and near or with the two fragmentary remains of pots (particularly pot 1; Table 16.4). It is possible that all or most of the cremated bone derives from an earlier disturbed cremation burial. However, the overall quantity of cremated bone is small, weighing only 31.0g in total, and the fragments were also small, the largest measuring 34.29mm but most being much smaller. If these fragments do represent a disturbed cremation burial then little survives.

Location	Weight of cremated bone (g)	Size of largest fragment (mm)	Species
Deposit from around Sk (4027)	0	-	-
Upper deposit	10.1	34.29	Unknown
Middle deposit	9.9	33.09	Unknown
Lowest deposit	0.1	4.51	Unknown
Pot 1	8.4	29.16	Unknown
Pot 2	2.5	33.67	Unknown

Table 16.4: The cremated bone

Most fragments were buff or white in colour, although some were a blue-grey to black colour; the former suggesting full oxidation had occurred at a higher burning temperature, the latter that partial oxidation had occurred at a lower temperature or in the presence of insufficient oxygen (McKinley 2004b). Although some of the fragments were possibly cranial, and one was probably a rib, they were too small for the species to be identified, and it cannot be determined whether these represent human or animal remains.

Recommendations

Plant macrofossils

Full plant macrofossil analysis is recommended: for the chaff-rich Roman contexts (1013), (3003), (5005), (5011), (4008), (4013), (4026), (4006), (4024), (4031) and (4030); the waterlogged contexts (2004) and (2005); and the burial context (4027). In addition, pollen analysis and radiocarbon dating is recommended for the waterlogged contexts (2004) and (2005). Amongst the contexts that have not been recommended for full analysis there are four (1009, 1011, 1016 and 5013) that contained pot sherds. It is recommended that the remainder of these bulk samples are processed to recover any remaining sherds.

Human bones

No further analysis is recommended on this skeleton.

Sources

Caseldine, A, 1990 *Environmental Archaeology in Wales*, Archaeology Department, St.David's University College, Lampeter

Hillman, G C 1981 Reconstructing crop processing from the charred remains of crops in R Mercer (ed) *Farming practice in British Prehistory,* Edinburgh, 123-62

Lewis, M E, 2007 *The Bioarchaeology of Children: Perspectives from Biological and Forensic Anthropology*, Cambridge, Cambridge University Press

McKinley, J I, 2004a Compiling a Skeletal Inventory: Disarticulated and Co-Mingled Remains in M Brickley and J I McKinley (eds), *Guidelines to the Standards for Recording Human Remains*, *IFA Paper No. 7,* Southampton and Reading: British Association of Biological Anthropology and Osteoarchaeology and the Institute of Field Archaeologists, pp 14-17

McKinley, J I, 2004b Compiling a Skeletal Inventory: Cremated Human Bone in M Brickley and J I McKinley (eds), *Guidelines to the Standards for Recording Human Remains*, *IFA Paper No. 7,* Southampton and Reading: British Association of Biological Anthropology and Osteoarchaeology and the Institute of Field Archaeologists, pp 9-13

Scheuer, J L, and Black, S, 2000a *Developmental Juvenile Osteology*, San Diego, Academic Press

Scheuer, J L, and Black, S, 2000b Development and Ageing of the Juvenile Skeleton in M Cox and S Mays, (eds), *Human Osteology in Archaeology and Forensic Science*, London, Greenwich Medical Media Ltd, pp 9-21

Scott, E, 1999 *The Archaeology of Infancy and Infant Death*, British Archaeological Reports International Series **819**, Oxford, BAR

Stace, C, 1997 *New Flora of the British Isles*, 2nd Edition, Cambridge
Watts, D J, 1989 Infant Burials and Romano-British Christianity *The Archaeological Journal* **146**, pp 372-383

Report 1740

Summary

The project

Border Archaeology have undertaken the excavation of a series of access pits (AP) for the installation of a new water main across the Frome Valley flood plain, Herefordshire. These pits lie within an area of Roman settlement at Stretton Grandison. Most of the access pits produced evidence of Roman occupation, and two indicated earlier activity. This report presents the results of assessment of plant macrofossils, pollen and wood fragments and the analysis of a human skeleton.

Results

Charred plant remains were present in 9 of the samples and were dominated by wheat grains and spelt wheat chaff. A few oat grains and hazelnut shell fragments also occurred. Uncharred seeds were abundant in the waterlogged deposits of AP2 and 5, and macrofossils from arable, ruderal, woodland, aquatic and wetland *taxa* were present. The residues also contained faunal remains of sheep, pig, cow and rodent, and a bone pin was recovered from the coffin fill ⟨43⟩.

Pollen concentration was low in all of the samples and most of the grains were badly degraded. Most of the grains recorded were of tree *taxa*, including alder, pine, hazel, birch and lime.

Examination of the wood showed evidence for conversion which could be interpreted as having been components of a woven panel or hurdle, whose sails (upright poles) and rods were both made from alder. A piece of worked alder wood from context (5018) was sent for radiometric radiocarbon dating. The 2 sigma calibrated date was in the ranges Cal BC 3930 to 3870 (Cal BP 5880 to 5820) and Cal BC 3810 to 3640 (Cal BP 5760 to 5590).

The analysis of skeleton 4039 suggests that he was a tall, mature, adult male who had suffered from a number of dental and pathological conditions.

Recommendations

Full plant macrofossil analysis is recommended for the chaff-rich samples ⟨32⟩, ⟨37⟩, ⟨42⟩, ⟨43⟩ and the sample labelled ‘outside coffin’. Full analysis is also recommended for the waterlogged samples ⟨25⟩, ⟨27⟩, ⟨28⟩, ⟨44⟩ and ⟨51⟩.

No further work is recommended on the pollen samples due to the poor preservation and low concentration of grains.

Conservation of some of the wood fragments would be required, if they are to be retained as part of the site archive.

Skeleton 4039 has been fully analysed, and therefore further work is not required.

Project background

Location and background

Border Archaeology have undertaken the excavation of a series of access pits (AP) for the installation of a new water main across the Frome Valley flood plain, Herefordshire. These pits lie within an area of Roman settlement at Stretton Grandison. Most of the access pits produced evidence of Roman occupation, and two indicated earlier activity. This report presents the results of plant macrofossil assessment of bulk samples from AP 2, 4, 5, 6, 7, 11 and 12, and pollen assessment of a waterlogged layer in AP5. The report also contains a catalogue of wood fragments from the waterlogged layer, and the results of radiocarbon dating of one of the wood pieces. The results of human bone analysis of the wooden coffin burial in AP4 are also presented.

Objective

The objective was to assess the plant macrofossil and pollen evidence within the samples, in order to establish their potential to provide information about the diet, agricultural practices and palaeoenvironment of the site. The wood fragments were examined in order to establish the nature of the work marks present. The human skeleton was analysed to determine age at death, physical and pathological features, and burial practices.

Dates

The second delivery of samples was submitted to Archaeological Services on 8th August 2007. Assessment, analysis and report preparation were undertaken between 9th August – 6th December 2007.

Personnel

Plant macrofossil and pollen assessment and report preparation were conducted by Dr Charlotte O'Brien. Human bone analysis was by Dr Anwen Caffell. The wood technology report was conducted by Ms Jennifer Jones. Faunal identifications were by Ms Louisa Gidney.

Archive

The site code is **LTM07**. The flots, small finds and wooden fragments are retained in the Environmental Laboratory at Archaeological Services Durham University for collection. The human remains have been returned to Border Archaeology.

Plant macrofossil assessment

Method

Plant macrofossil assessment was undertaken on 19 bulk samples. These included the fills of linear features in AP6; ditch fills in AP7; the fill of a sub-circular pit/posthole in AP11; an occupation deposit and fill of a curvilinear ditch in AP12. In addition, the fill of a wooden coffin burial in AP4, and waterlogged deposits containing a number of worked wooden fragments in AP2 and AP5, were also assessed.

A maximum volume of 12 litres from each bulk sample was manually floated and sieved through a 500 µm mesh. The residues were described and scanned using a magnet for ferrous fragments. The flots were dried slowly and scanned at x 40 magnification for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant taxonomic nomenclature follows Stace (1997).

Results

Charred plant remains were present in 9 of the samples and were dominated by wheat grains and spelt wheat chaff. A few oat grains and hazelnut shell fragments also occurred, and charred weed seeds included those of sedge, grass and dock.

Uncharred seeds were abundant in the waterlogged deposits of AP2 and 5, particularly macrofossils from arable, ruderal, woodland, aquatic and wetland *taxa*.

The residues contained burnt and unburnt bone, charcoal, molluscs, pottery fragments and possible mortar fragments. The shaft of a bone pin was recovered from the coffin fill ⟨43⟩. Approximately 30% of a human baby skeleton was present in the residues of ⟨45⟩ and an additional human baby bone occurred in ⟨42⟩. The contents of the flots and residues are presented in Appendix 1. A list of the identifiable animal bone fragments in the residues is shown in Table 16.5.

Access Pit	2	6	6	1
Sample	25	32	37	39
Context	2006	6006	6016	1208
Volume processed (ml)	400	10000	10000	10000
Identifiable faunal remains (relative abundance)				
Bone (unburnt) cow	1	-	-	-
Bone (unburnt) cow-size	-	-	1	-
Bone (unburnt) sheep	1	-	-	-
Bone (unburnt) sheep-size	-	1	-	1
Bone (unburnt) pig	1	-	-	-
Bone (unburnt) mouse	-	1	-	-

Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

Table 16.5: Identifiable animal bone fragments from the bulk samples

Discussion

Charred plant remains were particularly numerous in the linear feature fills ⟨32⟩ and ⟨37⟩, and pottery fragments, charcoal and bone in the residues suggests that domestic waste accumulated in these features. The charred plant remains were dominated by wheat grains and spelt wheat chaff. Spelt had become the major arable crop in Britain by the time of the Roman occupation (Hillman 1981). The abundance of chaff in several of the samples suggests that the cereal crops were processed at the site. Analysis of the

charred assemblage is recommended in order to establish the full range of crop plants used at the site.

Charred plant remains were also abundant in ⟨42⟩, the coffin fill ⟨43⟩, and the sample labelled 'outside coffin'. These were dominated by spelt wheat chaff which may relate to the burial or may indicate the proximity of an area of crop processing or domestic waste disposal. A few charred hazelnut shells occurred outside the coffin and may derive from votive offerings or domestic waste.

A diverse range of uncharred seeds was present in the waterlogged deposits from AP2 and AP5, in which the worked wooden fragments occurred. These included samples ⟨25⟩, ⟨27⟩, ⟨28⟩, ⟨44⟩ and ⟨51⟩, and suggested damp woodland conditions dominated by alder, with hawthorn, sloe, elder and hazel also present. Full analysis of these samples would provide a detailed reconstruction of the palaeoenvironment of the site. Initial assessment suggests that the local landscape reflected in the samples from AP2 is different from that in AP5, which may indicate that the deposits are not contemporary, or that the site included a range of vegetation communities.

The faunal remains indicate that sheep, pigs and cows were present at the site, suggesting that meat and dairy produce formed a part of the diet.

Pollen assessment

Method

Pollen assessment was undertaken on a column sample from AP5. The three samples assessed were from (5014), and the upper and lower boundary of (5016). Pollen assessment was also undertaken on (5018), from a bulk sample. Pollen was extracted from one ml of each of the samples, using sodium hydroxide digestion followed by sieving and heavy liquid separation. The pollen was mounted in silicone fluid and scanned at high magnification. Identification of pollen and spores was undertaken by comparison with modern reference material, using Moore *et al* (1991) as a guide.

Results

Pollen concentration was low in all of the samples assessed and most of the grains were badly degraded, particularly in (5016).

Discussion

The poor preservation of pollen may have been caused by drying out and oxidation of the organic layer, possibly due to fluctuations in the water table. The identifiable pollen in (5014) was dominated by arboreal *taxa*, suggesting the landscape may have been wooded. The main species were pine, hazel, lime, willow and alder. The samples from (5016) and (5018) contained hazel and birch pollen, again suggesting areas of woodland, but the occurrence of grass pollen may indicate some areas of open ground. The low number of grains prevents a definitive interpretation of the palaeoenvironment.

Human bone analysis

Summary of skeleton 4039

Preservation: 70-80% complete, excellent preservation, severe fragmentation

The skeleton was 70-80% complete, missing the right side of the face, most of the cranial vault, the right half of the hip, most of the sacrum, the right fibula (one of the bones in the lower leg) and some foot bones; the ribs were also largely incomplete. The preservation was excellent, and the bones were solid and hard with no erosion of the bone surfaces. The colour was unusually dark, almost black, which probably resulted from the presence of the oak coffin and the waterlogged environment. Unfortunately, the bones have suffered a considerable amount of fragmentation, which has limited the amount of information available.

Age: mature adult (46+ years)

The skeleton was a mature adult (46 years or over), which is the oldest age category for adult skeletons. Unfortunately, it is not possible to age adults with any real accuracy because the methods are based entirely on degenerative changes to the skeleton, which can be heavily influenced by genetics and lifestyle (e.g. levels of activity, type of occupation, diet et*c.*). The 'mature adult' age group could include individuals of 60, 70 or 80 years old.

Sex: probably male

The skeleton was probably male. The pelvis is the most reliable indicator of sex, but in this case the right side was missing the left side was rather fragmented. The pieces that survived showed male traits. The skull (cranium and mandible) is a less reliable indicator, but again mainly showed male traits (with occasional indeterminate or possibly female traits). A point to bear in mind is that older women tend to develop some masculine traits in their crania, and this individual was in the older age group. Measurements of certain parts of the skeleton are also taken to determine sex, but only one joint surface (the head of the right femur, part of the hip joint) survived intact to be measured; this fell well into the male range.

Stature: 176.0cm (5'9") – well above average for Roman period

Due to the fragmentation of the bones, there were no intact long bones to measure in order to calculate stature. However, the right radius (one of the bones of the forearm) had one clean break and was otherwise intact. Measurements of this bone gave a stature estimate of 175.97cm (±4.32cm). This estimate should be taken with the following points in mind: 1) reconstruction of stature is not precise, there is a degree of error; 2) the arm bones are less accurate (there is a higher degree of error) than the leg bones; and, 3) broken bones ought not to be used, since the measurement of the bone itself will be less accurate due to the break. Skeleton 4039 was well above average height for the Roman period (169cm), and was close to the upper range of 178cm (Roberts and Cox 2003).

Dental Disease

All teeth showed moderate to heavy deposits of calculus (mineralised plaque); if the teeth are not cleaned frequently or effectively then accumulations of plaque will mineralise, and form concretions of calculus on the surfaces of the teeth. This suggests that the individual did not practice effective oral hygiene. Calculus is ubiquitous in archaeological skeletons.

All teeth were heavily worn, in some cases right down to the roots. This suggests a lifetime's consumption of a heavy, gritty diet that had worn away at the teeth until just the roots were left. Heavy tooth wear is frequently seen in ancient populations.

One tooth had developed a small cavity (tooth decay) at the junction between the crown and the root. This is a common location for cavities in early populations. Tooth decay occurs when bacteria in the mouth metabolise sugars and carbohydrates in the diet and produce acid, which causes the cavities to form. In this period most sugars would have come from fruits, vegetables and perhaps honey. These are not as likely to cause tooth decay as refined white sugar (unavailable at the time). The location of the cavity therefore suggests it was the accumulation of food debris (containing carbohydrates and limited sugars) around the necks of the teeth that eventually led to the formation of the cavity.

Evidence of periodontal disease could be seen in the mandible, probably linked to the heavy deposits of calculus. The presence of calculus and trapped food debris can irritate the gums, causing inflammation (gingivitis). If left untreated, this can spread to involve the underlying bone (periodontal disease). In this case, the tooth sockets gradually recede and the roots of the teeth become exposed, eventually resulting in the loss of teeth.

Five teeth had been lost during life, and the empty sockets had filled in with bone. Causes include heavy wear, periodontal disease, tooth decay and trauma. The former two (heavy wear and periodontal disease) seem the most likely causes in this case.

Dental enamel hypoplasia (DEH) was observed in the enamel of three teeth. During childhood any stress, such as poor nutrition or disease, can lead to interruptions in growth, and the teeth temporarily stop forming. When the stress is gone, the teeth resume growth, but a line is left behind in the enamel, termed DEH. The presence of multiple lines in the teeth of Skeleton 4039 suggest that this individual experienced episodes of childhood stress, perhaps poor nutrition, childhood illnesses, or a combination of both.

Pathological Conditions

Skeleton 4039 was affected fairly extensively by joint disease, which is unsurprising given the age of the individual. The spine was affected by degenerative joint disease (DJD), where the joint surfaces had become enlarged and porous, with the vertebrae in the neck showing evidence of osteoarthritis (OA). The latter occurs when the cartilage of the joint is worn away to such an extent that bone-to-bone contact occurs, leading to polishing of the joint surface (termed eburnation). This polishing was seen on the facets between the cervical (neck) vertebrae, and even between the bodies of the cervical vertebrae (rather more unusual). DJD was also seen in the right hip, and affected the clavicles (collar bones) at both ends. OA was also seen in the right hand (at the base of the thumb, and probably related to a possible fracture) and left wrist; slight OA was seen in both knees. The temporomandibular joints (TMJ, the joints between the mandible and the cranium) had also suffered from joint disease, with OA on the right side and DJD on the left. This is probably related to chewing a heavy diet, and the inference is supported by the heavy

wear seen on the teeth. An alternative possibility is the use of the mouth as a tool, placing stress on these joints.

The individual possibly suffered from a condition known as diffuse idiopathic skeletal hyperostosis (DISH). This condition causes the formation of extra outgrowths of bone in the spine and at the sites of muscle and ligament attachment elsewhere in the skeleton. Large osteophytes (bony outgrowths) were seen in the lower thoracic spine, the appearance and location (affecting just the right side not the left) being very characteristic of DISH. However, the vertebrae had not fused together, which usually occurs with DISH. Enthesophytes (outgrowths of bone at muscle and ligament attachment sited) were seen throughout the skeleton. This condition is usually seen in older males, and has been associated with obesity and adult-onset diabetes. It is a condition particularly frequently observed in medieval monastic cemeteries, and it has been suggested that this indicated a rich, plentiful diet.

This individual had suffered a degree of trauma. There were four fractured right ribs (mostly lower ribs) and three fractured unsided rib fragments, all well-healed but with some degree of misalignment. Fractured ribs can result from a blow to the chest, a fall, or even coughing. Multiple rib fractures are more likely caused by a blow, and affect the efficiency of respiration. There was also a possible fracture of the right first metacarpal (the bone at the base of the thumb), which had probably led to the development of osteoarthritis in the associated joint. The distal right tibia also showed signs of trauma – certainly signs of soft tissue injury were seen (suggesting a twisted ankle), and there may be an underlying fracture of this bone. The associated bones of the ankle (fibula, talus, calcaneus) may have been damaged, but unfortunately these bones are missing (lost postmortem).

Skeleton 4039 had an additional lumbar vertebra, with six rather than five vertebrae in the lower back. There were also two toes where the bones had fused together. This might be the result of joint disease, or perhaps trauma. There were faint traces of striated bone on the tibiae (shin bones) – this indicates a long healed inflammation or infection. The tibiae are commonly affected in this way in archaeological populations, and the changes could indicate infection, low-grade trauma to the lower legs, or even leg ulcers or varicose veins.

Recommendations

Full plant macrofossil analysis is recommended for samples ⟨32⟩, ⟨37⟩, ⟨42⟩, ⟨43⟩ and the sample labelled 'outside coffin', which are rich in charred plant remains. This would provide information about diet and crop husbandry and possibly about burial practices and use of food offerings at the site. Full analysis is also recommended for the waterlogged samples ⟨25⟩, ⟨27⟩, ⟨28⟩, ⟨44⟩ and ⟨51⟩ in order to reconstruct the palaeoenvironment of the site.

No further work is recommended on the pollen samples due to the poor preservation and low concentration of grains.

If some of the worked fragments are to be retained as part of the site archive, then the pieces should continue to be stored wet and cold or frozen. Conservation to stabilise the selected fragments should be undertaken as soon as possible so they can be stored safely at ambient temperatures and humidity.

Skeleton 4039 has been fully analysed, and therefore further work is not required.

Sources

Hillman, B, 1981 Reconstructing crop husbandry practices from charred remains of crops, in R Mercer (ed) *Farming practice in British Prehistory,* 123-162 Edinburgh: EUP

Moore, P D, Webb, JA, & Collinson, ME, 1991 Pollen Analysis, Oxford

Roberts, C, A, and Cox, M, 2003 *Health and Disease in Britain: From Prehistory to the Present Day,* Stroud.

Schweingruber, F H, 1982 *Microscopic Wood Anatomy*, Teufen

Stace, C, 1997 *New Flora of the British Isles*, 2nd Edition, Cambridge

Table 16.6 – (Appendix 1: Plant macrofossil data from LTM07)

Access Pit	2	5	5	6	7	7	7	6	6	1	1	1	1	4	4	2	4	4	5	4
Sample	25	27	28	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	51	Outside
Context	2006	5016	5018	6006	7007	7010	7012	6008	6016	1205	1208	1209	1107	4033	4038	2005/6	4044	4045	5016	coffin
Full analysis recommended	Y	Y	Y	Y	N	N	N	N	Y	N	N	N	N	Y	Y	Y	N	N	Y	Y
Material available for radiocarbon dating	Y	Y	Y	Y	Y	N	N	N	Y	N	N	N	N	Y	Y	Y	N	N	Y	Y
Volume processed (ml)	400	10000	12000	10000	10000	10000	10000	10000	10000	10000	10000	6000	10000	10000	10000	10000	4000	10000	7000	8000
Material remaining	N	Y	Y	N	Y	Y	N	Y	Y	N	Y	N	N?	Y	Y	N	N?	Y	Y	N
Volume of flot (ml)	200	2000	2000	20	50	50	100	10	20	30	20	5	60	30	150	300	2	30	2000	50
Volume of flot assessed (ml)	60	200	100	20	50	50	100	10	20	30	20	5	60	30	70	100	2	30	250	50
Residue contents (relative abundance)																				
Bone (burnt)	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-
Bone (unburnt)	-	-	-	2	-	-	1	2	1	-	1	-	-	1	2	-	2	-	-	2
Bone (unburnt) human baby	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	3	-	-	-
Bone pin (shaft of)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Charcoal	-	1	-	-	1	1	-	-	1	1	-	-	2	1	-	-	1	-	1	-
Molluscs	2	-	1	-	-	1	-	-	-	1	1	1	-	-	-	3	-	-	1	-
Mortar?	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pottery (number of fragments)	-	-	-	-	-	-	-	1	9	-	-	-	-	-	5	-	1	-	-	-
Flot matrix (relative abundance)																				
Bone (unburnt)	-	-	-	1	-	-	-	1	1	-	-	-	-	-	1	-	-	-	-	-
Bud scales	-	4	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-
Charcoal	1	-	-	2	1	1	1	1	2	1	1	1	2	1	2	-	1	1	-	2
Insect	2	-	1	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
Modern roots	-	-	-	-	2	3	3	-	-	1	1	1	-	-	-	-	-	1	-	-
Molluscs	3	1	-	-	-	1	-	-	-	1	-	2	-	-	-	2	-	-	2	-
Straw	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Vegetative material	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Wood fragments	4	4	5	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	4	3
Charred remains (relative abundance)																				
(c) *Avena* sp (Oats) - grain	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* sp (Wheat species) - grain	-	-	-	2	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-
(c) *Triticum* sp (Glume wheat species) – glume base	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-
(c) *Triticum* cf. *dicoccum* (cf. Emmer) – glume base	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
(c) *Triticum spelta* (Spelt) – glume base	-	-	-	3	-	-	-	-	2	1	-	-	-	1	3	-	2	1	-	3
(c) Cerealia indeterminate - grain	-	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2
(t) *Corylus avellana* (Hazelnut) – shell fragment	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(w) *Carex* spp (Sedges) – trigonous nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) Poaceae indeterminate (Grass) >2mm - caryopsis	-	-	-	1	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-
(x) *Rumex* sp (Dock) - nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Waterlogged remains (relative abundance)																				
(a) *Chenopodium album* (Fat-hen) - seed	-	-	-	-	-	-	-	-	1	1	-	-	-	-	-	-	-	-	-	1
(a) *Valerianella dentata* (Narrow-fruited cornsalad) - fruit	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(q) *Lemna* sp (Duckweed) - seed	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(q) *Nuphar lutea* (Yellow water-lily) - seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(q) *Ranunculus* subgenus *Batrachium* sp (Crowfoot) - achene	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(r) *Galium aparine* (Bedstraw) - seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(r) *Hyoscyamus niger* (Henbane) - seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	1
(r) *Polygonum aviculare* (Knotgrass) - nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
(r) *Urtica dioica* (Common Nettle) - achene	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	1	-	-
(t) *Alnus glutinosa* (Alder) - cone	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(t) *Alnus glutinosa* (Alder) - fruit	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(t) *Betula* sp (Birch) - fruit	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazelnut) - shell fragment	-	1	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Crataegus monogyna* (Hawthorn) - fruitstone	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Prunus spinosa* (Sloe) - fruitstone	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
(t) *Rubus fruticosus* agg. (Bramble) - achene	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
(t) *Sambucus nigra* (Elder) - fruitstone	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-	2	-	-	-	-
(w) *Alisma* cf. *plantago aquatica* (Water plantain) - fruit	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* spp (Sedges) – triogonous nutlet	-	3	2	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	3	1
(w) *Conium maculatum* (Hemlock) - fruit	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(w) *Eleocharis* sp (Spike-rush) - nutlet	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Juncus* spp (Rushes) - seed	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Lycopus europaeus* (Gypsywort) - nutlet	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
(w) *Mentha* cf. *aquatica* (Aquatic mint) - nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(w) *Menyanthes trifoliata* (Bogbean) - seed	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	-
(q) *Potamogeton* sp (Pondweed) - fruit	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Schoenoplectus lacustris* (Common club-rush) - nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-
(x) Poaceae indeterminate (Grass) <2mm - caryopsis	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae indeterminate (Grass) >2mm - caryopsis	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Prunella vulgaris* (Selfheal) - nutlet	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Ranunculus subgenus Ranunculus* (Buttercup) - achene	-	1	2	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(x) Rosaceae (Rose family) - thorn	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Stachys* sp (Woundwort) - nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(x) *Viola* sp (Violet) - seed	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[a: arable weed; c: cultivated plant; q: aquatic; r: ruderal; t: trees/shrubs; w: wetland; x: wide niche]. Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

Report 1770

Summary

The project

Border Archaeology has undertaken excavations within the Stretton Grandison Romano-British settlement site, Herefordshire. This included the excavation of a series of access pits (AP) for the installation of a new water main across the Frome Valley floodplain. Most of the pits have produced evidence of Roman occupation, and two indicate earlier activity. Bulk environmental samples and human skeletal remains have been submitted to Archaeological Services Durham University.

Results

Charred plant remains were present in all but one of the samples. These were dominated by wheat and barley grains, and spelt wheat chaff. Meat and fish were also components of the diet, which was supplemented by wild foods, such as hazelnuts.

Pollen and spores were poorly preserved in the upper fill of the stone-lined well.

Sk 4037 is the skeleton of a female, over 35 years old, who suffered from curvature of the spine. Sk 4042 is the partial skeleton of a child aged between 2-5 years. Sk 4050 is the skeleton of an adolescent aged between 15-16 years who had suffered multiple fatal injuries to the head and neck, caused by a sharp bladed instrument. In addition, the body had been decapitated.

Recommendations

Full plant macrofossil analysis is recommended for contexts (4003), (4062), (4058), (4066), (8006), (8008), (8010), (8011), (8014) and (9007).

No further work is recommended on the pollen samples due to the poor preservation and low concentration of grains.

The human skeletons have been fully analysed, and therefore no further work is required.

Project background

Location and background

Border Archaeology are undertaking the excavation of a series of access pits (AP) for the installation of a new water main across the Frome Valley flood plain, Herefordshire. These pits lie within an area of Roman settlement at Stretton Grandison. Most of the pits have produced evidence of Roman occupation, and two indicate earlier activity. This report presents the results of plant macrofossil assessment of a third delivery of bulk samples and analysis of three additional adult human skeletons. The report also provides details of the excavation and reconstruction of a large cremation vessel. In addition, pollen assessment was undertaken on four samples from the upper fill of a stone-lined well [4005].

Objective

The objective was to assess the plant macrofossil and pollen evidence within the samples, in order to establish their potential to provide information about the diet, agricultural practices and palaeoenvironment of the site. The human skeletal remains were analysed to determine age at death, physical and pathological features, and burial practices. The large pot was excavated in order to assess its contents.

Dates

The third delivery of samples was submitted to Archaeological Services on 17th September 2007. Assessment and report preparation were undertaken between 18th September – 6th December 2007.

Personnel

Plant macrofossil assessment, pollen assessment and report preparation were conducted by Dr Charlotte O'Brien. Human bone analysis was by Dr Anwen Caffell. The pot excavation and reconstruction was by Ms Jennifer Jones. Faunal identifications were by Ms Louisa Gidney.

Archive

The site code is LTM07. The flots, small finds and bones are retained in the Environmental Laboratory at Archaeological Services Durham University for collection. The cremation vessel has been returned to Border Archaeology.

Plant macrofossil assessment

Method

Plant macrofossil assessment was undertaken on 20 bulk samples. These included the fills of pits, burials, possible kilns, occupation layers and a well.

A maximum volume of 10 litres from each bulk sample was manually floated and sieved through a 500 µm mesh. The residues were described and scanned using a magnet for ferrous fragments. The flots were dried slowly and scanned at x 40 magnification for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant taxonomic nomenclature follows Stace (1997).

Results

Charred plant remains were present in all but one of the samples. These were dominated by wheat and barley grains, and spelt wheat chaff. Hazelnut shell fragments and a range of ruderal, wetland and wide niche weed seeds, were also among the charred plant remains.

In most of the samples, uncharred seeds were absent, or only present in very low numbers. By contrast, the well fill (4066) and the ditch fill (4065) contained a diverse range of seeds from arable, ruderal, woodland and wetland habitats.

The residues contained burnt and unburnt bone. This included human, animal and fish remains. Table 16.7 lists the identifiable faunal remains in the residues. Pot, glass, corroded metal objects, leather, hob-nails and a bone toggle were also recovered and charcoal was abundant in the flots. The contents of the flots and residues are presented in Appendix 1a&b.

Discussion

Charred cereal remains were present in most of the samples. The grains were predominantly wheat, but barley was also common. Chaff was abundant and initial assessment suggests this is dominated by spelt wheat glume bases. Although the variability in the morphology of wheat grains prevents them from being identified to species with certainty, most of the grains had the blunt, parallel-sided shape often seen in spelt wheat. However, some grains had the short, stout appearance of bread wheat. Chaff is the only reliable diagnostic material. Analysis of the full charred assemblage is recommended in order to establish the different crop plants used at the site.

Charred hazelnut shells were present in 6 of the samples, suggesting that wild foods were gathered locally to supplement the diet. In addition, a few fish bones, fish scales and a mussel shell fragment were recorded. Considering the inland location of the site, these may be freshwater *taxa*, which would suggest that the River Frome was exploited for its food resources. Alternatively they could be marine *taxa* reflecting trade with coastal areas. The shellfish could have been transported alive in salt water to keep them fresh. The animal bones indicate the importance of meat and perhaps dairy produce, and a dog skeleton in the well fill (4066) indicates the presence of companion / work animals at the site.

Pig and cattle / cattle-size bones were found with the human skeletal remains [Sk 4037] and [Sk 4042]. Sheep bones also occurred with [Sk 4037] and cattle bones with [Sk 4050]. These may relate to food offerings, either placed in the graves as joints of meat or as the remains of food eaten during the wake. A cattle long bone which occurred in grave fill (4049) showed marks of pathological damage and dog-gnawing. This bone may have been buried by a dog or redeposited by other means, and may not relate to the burial.

Table 16.7: Identifiable faunal remains from the bulk samples and inhumations

Access Pit	8	8	8	8	4	4	4	4	4	4	4	4	4	4
Sample	47	48	50	51	53	54	55	58	65	60	64	-	-	-
Context	8006	8008	8011	8014	4066	4036	4003	4047	4049	4058	4060	Sk 4037	Sk 4042	Sk 4050
Volume processed (ml)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	-	-	-
Identifiable faunal remains (relative abundance)														
Cow (unburnt)	-	1	-	-	3	-	1	-	1	1	-	-	2	2
Cow-size (unburnt)	1	-	-	-	-	-	-	1	-	-	-	1	-	-
Dog (unburnt)	-	-	-	-	3	1	-	-	-	-	-	-	-	-
Fish (unburnt)	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Frog / toad (unburnt)	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Lamb or piglet (unburnt)	-	-	1	-	-	-	-	-	-	-	-	-	-	-
Pig (unburnt)	-	-	-	-	-	-	-	-	-	-	-	1	1	-
Sheep (unburn)	-	-	-	-	-	-	-	-	-	-	3	1	-	-
Sheep (burnt)	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Small mammal (unburnt)	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Small rodent tooth	-	-	-	-	-	-	-	-	-	-	-	1	-	-

Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

The presence of chaff throughout the site suggests that the arable crops were processed on site, and the cereals were therefore probably also grown locally. The pit fill (8006) contained bone fragments, metal objects, pot sherds, charcoal, the bone toggle and an abundance of charred plant remains, suggesting that this feature was used for the disposal of domestic waste. Domestic waste also appears to have accumulated in many of the other contexts, such as the well fill (4066) and the ditch fill (4065).

Wheat grains were relatively abundant in the gully fill (8010) associated with a possible kiln, which may indicate that the feature was used as a corn-dryer. By contrast, the fill (4070) of the possible corn-drying kiln [4069] contained no charred cereal remains.

A diverse range of well-preserved uncharred seeds in (4066) and (4065) reflect waterlogged conditions in the well and ditch. Full analysis of these seeds will enable a reconstruction of the local environment of the site.

The alluvial deposit (4080) contained a large number of pieces of wood of varying size, and a high concentration of uncharred hazelnut shells. On initial assessment, the wood pieces do not appear to have been worked, but further examination is recommended.

Pollen assessment

Method

Pollen assessment was undertaken on a column sample from the upper fill of a stone-lined well [4005]. Pollen was extracted from one ml of each of four samples, using sodium hydroxide digestion followed by sieving and heavy liquid separation. A Lycopodium spore tablet was added to the samples in order to facilitate calculation of total pollen/spore concentrations. The pollen was mounted in silicone fluid and scanned at high magnification. Identification of pollen and spores was undertaken by comparison with modern reference material, using Moore et al (1991) as a guide. Plant taxonomic nomenclature follows Stace (1997).

Results

Microscopic charcoal was abundant thoughout but pollen and spores were rare. Fern spores were present. The poor preservation is likely to reflect exposure to aerobic conditions. This may have resulted from the upper sections of the well fill having dried out.

Pot excavation

Context (4007) vessel 1

A broken but complete ceramic vessel was received with its contents intact. It had been lifted from site by wrapping with polyethylene film. The vessel was received lying on its side, with some sherds visible.

With the vessel supported to prevent lateral movement, the polyethylene film was cut and overlying sherds and soil removed. The fill was gradually taken out (though not in spits), and sherds removed as encountered. A cremation was revealed lying mainly in the mid-section of the vessel, with 20-30mm of overlying fill. It is probable that the burial jar has been lying on its side for a considerable period of time, as the sherds below the cremation are particularly water worn (Plate 16.8). The cremated bone fragments were allowed to air dry and the soil was removed from the bones using handtools.

The vessel sherds were washed and air dried. The sherds were consolidated using 8% Paraloid B72 (an ethyl methacrylate copolymer) in acetone to make them sufficiently hard for joining. The sherds were joined using Paraloid B72 adhesive.

As reconstructed, the cremation vessel is a large jar in a pale red / buff poorly-fired fabric. It stands *c.*280mm high, with an everted rim 111mm diameter and a flat base also *c.*111mm. It is *c.*235mm diameter at its widest point. There is no decoration, and the smooth fabric has few visible inclusions. All joins were found to be abraded, probably the result of water percolation during burial.

There were no remains of grave goods found among the fill. The cremated bone weighs 638.5g, and shows variable degrees of burning, with some fragments completely calcined, and others only lightly burned.

After conservation, the vessel fabric is stable, but the reconstructed jar is fragile and should be handled with great care. It may be stored in conditions of ambient temperature and relative humidity, avoiding extremes of both.

Human bone analysis

Skeleton [4037]

This skeleton is 60-70% complete, with moderate to poor surface preservation and moderate to severe fragmentation. The skeleton is female, but difficult to age as many of the essential parts are missing, and those that are present have been affected by pathological conditions, but she was probably over 35 years old. The stature cannot be calculated as the bones are too fragmented, but observations suggest that she was quite small and gracile.

She had moderate to severe calculus (deposits of mineralised plaque) on all her teeth, suggesting inadequate oral hygiene. She also suffered from moderate periodontal disease – probably as a result of the calculus on her teeth, which would have irritated the gums and led to gingivitis (inflammation of the soft tissue of the gums). This can later progress to involve the hard tissue beneath the gums (periodontitis), and the bone that forms the tooth sockets and holds the teeth in place is gradually resorbed and the tooth roots become exposed. Eventually teeth can be lost as there is very little bone remaining to hold them in place. Her tooth roots were exposed, and there were signs of inflammation around the edges of the sockets, but she had not actually lost any teeth as a result of this process. One of her third molars (lower right) was impacted; it had tried to erupt at the wrong angle and was partially embedded in the ramus (vertical part) of the mandible. The upper right third molar was very small. Third molars are the teeth that most often suffer from impaction, variation in size, or congenital absence (i.e. they are not present). Three premolars were not present (in the lower jaw the second left; in the upper jaw the second(?) left and the first right). This could be because they had been lost during life and the tooth sockets healed over, but they could also have been congenitally absent (i.e. failed to form) or impacted (remain unerupted in the jaw).

This individual suffered from scoliosis, sideways curvature of the spine. The bodies of the vertebrae in the mid-thoracic region (T6-8) are compressed on the left side creating a wedge-shaped body, meaning that this part of her spine would have leaned over to the left. The pedicles (two small bridges of bone that join the arch of the vertebra to the body on either side) are very thin (approximately 1 mm thick) on the left side in these vertebrae, compared to the pedicles on the right (approximately 5.5 mm thick). Unfortunately most of her vertebrae are rather fragmented and the bodies are incomplete, but it is likely that there would have been a compensatory curve in the opposite direction elsewhere (traces of asymmetry can be seen in the surviving fragments of vertebrae). The curvature of the spine has also affected the ribs (again fragmented and incomplete), with many of the right ribs showing a very tight curve inwards, and with changes to the shape of the joint surfaces between the ribs and vertebrae. The sacrum (at the base of the spine) has fused to the pelvis on the right hand side (since broken post-mortem), and it looks like an attempt had been made at fusion on the opposite side. This is probably related to the scoliosis. This was probably idiopathic scoliosis, which is the most common type . Idiopathic means that the cause is unknown and appears during childhood. The most common age of onset in modern cases is between 10-12 years.

Aside from the scoliosis, the presence of striated new bone on both femora (thigh bones) suggests that she had suffered from an infection or inflammation. The type of bone present shows that it was long-healed by the time of death.

There were small plaques of new bone on the inside of the cranium, particularly on the frontal bone (forehead). There is a condition called hyperostosis frontalis interna (HFI) that tends to affect females over the age of 35, which leads to the formation of raised nodules of bone on the inside of the frontal bone (the cause of this condition is unknown). It is possible that these plaques of bone may be related to this condition, but the precise location and nature of the bone is not what would be expected in HFI. Another possibility is an inflammation of the meninges, the membranes that surround the brain, but this type of lesion is usually seen in young children rather than in adults. The character of the bone suggested it was healed, i.e. had been there a long time before death.

Skeleton [4042]

This skeleton is 5-10% complete, with good surface preservation but is severely fragmented. The age is 2-5 years old, which is too young to allow determination of the sex. The bones present include the left leg (femur, tibia and fibula) and lower right leg (tibia and fibula), plus one foot phalanx (toe bone).

There is evidence for healed infection or inflammation of the tibiae (shin bones); new bone has been laid down on the surface of the shaft and then re-modelled.

On the skeleton context sheet the orientation has been given as SE-NW, with the head to the SE. However, examination of photographs and bones suggest the head was actually to the NW. A bag labelled 'pelvis' contained two fragments of animal bone and the foot phalanx. The bags labelled 'right and left upper limbs' contained bones of the lower limb ('right upper limb' contained the left lower limb, and 'left upper limb' contained the right lower limb). The bag labelled 'right lower limb' contained the left femur.

Skeleton [4050]

This skeleton is 50-60% complete, with good surface preservation and moderate to severe fragmentation of the bones. The lower legs and feet have been lost post-mortem. The age is 15-16 years old, which is too young to allow determination of the sex. Stature is unknown.

There is slight calculus on most teeth suggesting poor oral hygiene. There is also slight crowding of the teeth in the lower jaw, rotation of several premolars, the presence of dental enamel hypoplasia with multiple lines visible in the crowns of most teeth. These indicate periods of interrupted growth due to stress during childhood. This could be a result of poor nutrition, or disease, or a combination of both.

This individual had fractured both the bones in the right forearm (radius and ulna) close to the wrist, and the lower part of the radius had been displaced backwards. This is the type of fracture that occurs when a person puts their hand out in front of them to break a fall. Both fractures had healed well (so had occurred some time before death), and there was no sign of infection.

There was a small oval depression surrounded by active new bone formation on the left fifth metacarpal (the bone on the edge of the palm of the hand, on the 'little finger' side). This could be the result of an ulcer or a localised infection, perhaps resulting from a cut on that part of the hand allowing bacteria from the environment to enter. The nature of the new bone formation suggested the infection was still active at the time of death.

This individual had suffered multiple sharp blade injuries to the head, neck and right shoulder, none of which show any sign of healing and which must have occurred around the time of death. At least four blows had been delivered to the right-hand side of the back of the head, all at a very similar angle and orientation, all straight-edged cuts with a smooth and polished surface, implying a sharp weapon. Two of these blows had glanced down the right-hand side of the head (probably removing the ear in the process) and probably continued into the back of the lower jaw; the other two blows had penetrated the cranium from behind, one reaching a point level with the ear (on the inside of the skull), and the other slicing right through the cranium to the back of the lower jaw. Obviously, the latter blows would have cut through the brain, and would have severed the right jugular vein and carotid artery (the main artery supplying blood to the brain); these are fatal injuries. At least four blows had been delivered from the left-hand side of the person to the left side of the head. One had just caught the back of the cranium, removing a sliver of bone from the back of the head. A second blow had skimmed the surface of the left mastoid process (the lump of bone behind the ear). Another shallow blow had landed close behind the left ear, only penetrating a couple of millimetres into the bone. However, a third blow, falling just behind the left ear (about a centimetre in front of the previous cut), had sliced through the angle of the left lower jaw, right through the temporal bone (bearing the left ear), through the front of the atlas (the vertebra at the top of the spine that supports the cranium), and terminated in the occipital bone a couple of millimetres in front of the spinal cord. A small fracture line can be seen continuing the line of force from this blow around the edge of the foramen magnum (where the spinal cord exits the cranium). Again, this would have been a fatal injury, cutting through the brain, the left carotid artery and jugular vein, and coming very close to the spinal cord. There are two other fragments of cranium that display cuts, but it has been impossible to work out which part of the cranium these belong to, and how they fit with the known pattern of blows. It is possible that they represent further blows as yet unaccounted for. The sequence of blows is unknown, but several possibilities exist. There may have been two assailants, one behind and the other to the left of the victim; or some of the blows may have been delivered after the victim had fallen (possibly hit from the left, fell forwards, and then hit from behind as they lay on the ground).

The body had been decapitated. Evidence for the decapitation cut was seen in one of the cervical (neck) vertebrae, which had a horizontal blade injury through the upper part of the arch on the right hand side (the left half of this vertebra had been lost post-mortem). Unfortunately, due to the severe fragmentation of the neck vertebrae, it is impossible to determine the precise vertebra involved, although it would have been either the fourth, fifth or sixth vertebra. Two other fragments of cervical vertebra also show signs of blade injuries, but again the severe fragmentation has hindered attempts to interpret these. The body may have been decapitated following the attack, or as part of the attack itself, but decapitation as a funerary ritual must also be considered.

A sequence of four blows had been delivered to the right shoulder, all on a similar angle and orientation, all delivered from behind and directed away from the head/neck (i.e. from the head or neck towards the shoulder). All four can be seen on the right clavicle (collarbone), with the smallest, shallowest cut closest to the head, a slightly deeper cut 1 cm closer to the shoulder, then a deeper cut still about 3 mm closer to the shoulder again, and a fourth cut 3 mm closer to the shoulder again which had severed the shoulder end of the collarbone completely (that fragment is lost post-mortem). This cut had continued into the back half of the head of the humerus, and had nicked the back of the scapula. The angle and direction of the blows is curious, as the head would have been in the way. Either the head was bent forwards or to the left, or the head had already been removed when the blows to the shoulder were delivered. Possible reasons for directing blows to

the right shoulder include an attempt to disable the weapon hand (presuming they were right-handed and still alive at the time), or an attempt to remove something from the right shoulder after death, such as a bag or item of clothing.

There are no signs of perimortem cuts elsewhere in the skeleton, for example on the hands or arms (although the left forearm has been lost post-mortem), to suggest the person tried to defend themselves from the assault (although the question of armour is raised here). This attack may have taken place in a battle situation or it may have been the murder of a 'civilian'.

Recommendations

Full plant macrofossil analysis is recommended for contexts (4003), (4062), (4058), (4066), (8006), (8008), (8010), (8011), (8014) and (9007), in order to provide information about economy, diet and agricultural practices. Further examination of the wood pieces in (4080) is recommended, in order to look for work marks.

No further work is recommended on the pollen samples due to the poor preservation and low concentration of grains.

The human skeletons have been fully analysed, and therefore no further work is required.

Sources

Moore, P D, Webb, JA, & Collinson, ME, 1991 Pollen Analysis, Oxford

Stace, C, 1997 New Flora of the British Isles, 2nd Edition, Cambridge

Table 16.8 (- Appendix 1a: Contents of the residues and flots from LTM07)

Context	8006	8008	8010	8011	8014	9007	4066	4036	4003	4049	4064	4047	4062	4058	4065	4052	4060	4080	4070
Sample	47	48	49	50	51	52	53	54	55	65	57	58	59	60	61	62	64	70	76
Full analysis recommended	□	□	□	□	□	□	□		□				□	□				□	
Material available for radiocarbon dating	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□	□
Volume processed (ml)	10000	10000	8000	10000	10000	10000	10000	10000	10000	10000	10000	10000	6000	10000	10000	4000	10000	20000	10000
Material remaining		□		□	□	□	□	□	□	□		□		□					□
Volume of flot (ml)	100	160	30	75	50	25	240	10	25	10	10	15	10	80	10	10	180	N/A	50
Volume of flot assessed (ml)	100	160	30	75	50	25	60	10	25	10	10	15	10	80	10	10	180	N/A	50
Residue contents (relative abundance)																			
Bone (burnt)	1	-	1	-	1	-	-	-	-	-	-	-	-	1	-	-	1	-	-
Bone (unburnt)	1	1	1	1	1	1	3	1	1	1	1	1	1	1	1	2	2	-	1
Bone (human)	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Coal/shale	-	-	-	1	-	-	-	-	-	1	-	-	-	1	1	-	3	-	-
Cu alloy (nail?)	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fish Bone	1	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-
Glass (total no.)	-	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Leather	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
Metal items (corroded) (total no.)	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mollusca shell (fragments)	-	-	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Nail (hob-nail) (total no.)	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-
Pot sherds (total no.)	6	10	2	4	15	3	-	1	-	2	-	2	-	2	2	-	-	-	1
Teeth (total no.)	-	-	-	-	-	-	1	-	1	-	-	-	-	-	-	-	1	-	-
Wood	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5	-
Flot matrix (relative abundance)																			
Bone (calcined) indeterminate fragments	1	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Bone (unburnt) indeterminate fragments	1	-	-	2	-	-	1	2	3	4	-	2	-	1	-	4	3	-	1
Bone (burnt) indeterminate fragments	-	-	-	1	1	-	-	-	-	-	-	-	-	1	-	-	2	-	-
Bone - small mammal /amphibian	-	2	2	2	1	1	1	-	-	-	1	1	1	-	1	-	-	-	-
Button/toggle (bone)	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Charcoal/charcoal dust	4	4	4	4	4	4	-	4	4	3	4	4	4	4	4	3	5	-	4
Clinker	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Diplopoda (millipedes)	-	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fish bone	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Fish scales	1	-	-	-	1	-	-	-	1	1	-	1	-	1	-	-	-	-	-
Insecta	-	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
Monocot stems	-	-	1	1	2	3	-	-	-	-	-	-	-	-	-	-	-	-	-
Mollusca shell - terrestrial snails	3	4	4	4	3	-	3	2	-	-	2	2	1	2	-	-	-	-	1
Mollusca - shell (fragments)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mollusca - shell (fragments) - mussel	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Roots (modern)	2	2	2	2	3	4	2	-	1	-	-	2	2	-	-	-	2	-	2
Semi-vitrified fuel waste	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Vegetative material (miscellaneous)	-	-	-	-	-	2	5	-	-	-	-	-	-	-	-	-	-	-	-

Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

Table 16.9 (- Appendix 1b: Charred and waterlogged plant remains from LTM07)

Context	8006	8008	8010	8011	8014	9007	4066	4036	4003	4049	4064	4047	4062	4058	4065	4052	4060	4080	4070
Sample	47	48	49	50	51	52	53	54	55	65	57	58	59	60	61	62	64	70	76
Charred remains (relative abundance)																			
(c) *Avena* spp (oat species) - grain	2	-	-	1	-	1	1	-	1	-	-	-	1	2	-	-	-	-	-
(c) *Hordeum* spp (Barley undifferentiated) - grain	3	1	-	1	1	2	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *aestivum* (cf. Bread Wheat) - grain	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* spp (Wheat species) - grain	2	3	4	1	-	2	2	1	1	1	1	-	1	2	2	-	1	-	-
(c) *Triticum spelta* (Spelt) – glume base	2	1	-	2	-	2	4	2	4	1	-	2	4	4	3	2	-	-	-
(c) *Triticum spelta* (Spelt) - spikelet fork	-	1	-	-	-	2	2	-	2	-	-	-	-	1	-	-	-	-	-
(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer) - glume base	-	-	2	-	1	2	2	-	1	-	1	-	1	1	1	1	-	-	-
(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer) - spikelet fork	-	-	-	-	-	2	-	-	1	-	-	-	-	1	-	-	-	-	-
(c) Cerealia indeterminate - grain	3	3	2	-	2	3	-	1	2	-	-	2	2	3	-	1	-	-	-
(r) *Plantago lanceolata* (Ribwort Plantain) - seed	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazelnut) - shell fragment	2	-	1	-	-	-	-	-	2	-	-	-	1	1	-	-	1	-	-
(t) Fruitstone fragments indet.	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* spp (Sedges) - trigonous nutlet	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Conium maculatum* (Hemlock) - fruit	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) Brassicaceae undifferentiated (Cabbage family) - seed	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Fabaceae undifferentiated (Pea family) - seed	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated <2mm (Grass) - caryopsis	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated >2mm (Grass) - caryopsis	-	-	-	2	1	1	1	-	1	-	-	-	-	3	-	1	-	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup) - achene	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Rumex* spp (Dock) - nutlet	1	-	1	1	-	-	-	-	1	-	-	-	-	1	-	-	-	-	-
(x) *Rumex acetosella* (Sheep's Sorrel) - nutlet	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Vicia* spp (vetch) - seed	2	-	-	1	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Seed - indeterminate	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-
Waterlogged remains (relative abundance)																			
(a) *Chenopodium album* (Fat-hen) - seed	1	1	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Fallopia convolvulus* (Black-Bindweed) - seed	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Fumaria* spp (Fumitory) - seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
(a) *Urtica urens* (Small Nettle) - achene	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Galeopsis* spp (Hemp-nettle) - seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-	-	-	-
(r) *Hyoscyamus niger* (Henbane) - fruit	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-
(r) *Lapsana communis* (Nipplewort) - achene	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Polygonum aviculare* (Knotgrass) - nutlet	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Urtica dioica* (Common Nettle) - achene	-	-	-	-	-	-	2	-	-	-	-	-	-	-	4	-	-	-	-
(t) *Corylus avellana* (Hazelnut) - shell fragment	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	4	-
(t) *Rubus fruticosus* agg. (Bramble) - fruitstone	-	-	-	-	-	-	2	-	-	-	-	-	-	-	2	-	-	-	-
(t) *Sambucus nigra* (Elder) - fruitstone	-	-	-	-	-	-	1	-	-	-	-	-	-	-	4	-	-	-	-
(w) *Carex* spp (Sedges) - trigonous nutlet	-	-	-	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-
(w) *Conium maculatum* (Hemlock) - fruit	-	-	-	-	-	-	1	-	-	-	-	-	-	-	3	-	-	-	-
(x) Asteraceae undifferentiated (Daisy family) - achene	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Brassicaceae undifferentiated (Cabbage family) - seed	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Cirsium / Carduus* spp (Thistles) - achene	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup) - achene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-

[a: arable weed; c: cultivated plant; q: aquatic; r: ruderal; t: trees/shrubs; w: wetland; x: wide niche]. Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

Plate 16.8: Vessel 1 showing condition on arrival; *in situ* cremated bone; and the vessel following reconstruction

Report 1786

Summary

The project

Border Archaeology has undertaken excavations within the Stretton Grandison Romano-British settlement site, Herefordshire. This included the excavation of a series of access pits (AP) for the installation of a new water main across the Frome Valley floodplain. Most of the pits have produced evidence of Roman occupation, and two indicate earlier activity. Bulk environmental samples, pottery vessels and human skeletal remains have been submitted to Archaeological Services Durham University.

Results

Charred plant remains were present in all but two of the samples. These were dominated by wheat grains and spelt wheat chaff. Barley and oats also occurred in some of the samples. The presence of oyster shells suggests that there has been trade with coastal areas, and sheep, pig and cattle bones point to the importance of meat and perhaps also dairy produce, in the diet.

Vessels 2 and 4 contained a substantial amount of cremated bone, with weights approaching those you would expect from a complete burial. Bone from most parts of the skeleton appears to be present, which supports this interpretation. A smaller amount of cremated bone was present in Vessels 1 and 3, suggesting some of the burial may have been lost.

The 2 sigma calibrated date of skeleton [4050] was Cal AD 550 to 660 (Cal BP 1400 to 1290). The 13C/12C ratio was -19.3 ‰ and the 15N/14N ratio was +10.6 ‰.

Recommendations

Full plant macrofossil analysis is recommended for contexts (4064), (4065), (4072), (4092), (4094), (4107), (8008) and (9016).

Further analysis of the cremated bone is forthcoming.

Project background

Location and background

Border Archaeology has undertaken the excavation of a series of access pits (AP) for the installation of a new water main across the Frome Valley flood plain, Herefordshire. These pits lie within an area of Roman settlement at Stretton Grandison. Most of the pits produced evidence of Roman occupation, and two indicate earlier activity. This report presents the results of assessment of a fourth delivery of bulk samples and excavation of cremation vessels 2, 3 and 4. The report also contains the results of analysis of the cremated human bone and AMS radiocarbon dating of human skeleton [4050]. A leather shoe from the stone-lined well [4005], was conserved by freeze-drying during this phase of work.

Objective

The objective was to assess the plant macrofossil evidence within the samples, in order to establish their potential to provide information about the diet, agricultural practices and palaeoenvironment of the site. The human remains were analysed and dated to provide information about the physical characteristics, pathological features and burial practices of the occupants of the site.

Dates

The fourth delivery of samples was submitted to Archaeological Services on 16th October 2007. Assessment and report preparation were undertaken between 18th October – 7th December 2007.

Personnel

Plant macrofossil assessment and report preparation were conducted by Dr Charlotte O'Brien. The excavation of the cremation vessels was by Ms Jennifer Jones and Ms Janet Beveridge. Cremated bone analysis was by Dr Anwen Caffell. Ms Jennifer Jones undertook the conservation of the leather shoe and AMS radiocarbon dating was by Beta Analytic In*c.*

Archive

The site code is LTM07. The flots, small finds, cremation vessels, bones and shoe are retained in the Environmental Laboratory at Archaeological Services Durham University for collection.

Plant macrofossil assessment

Method

Plant macrofossil assessment was undertaken on 16 bulk samples. The majority of these were from Access Pit 4 and included the fills of pits, burials, linear features, ditches and a possible palaeochannel.

In each case the entire bulk sample was manually floated and sieved through a 500 µm mesh. The residues were described and scanned using a magnet for ferrous fragments. The flots were dried slowly and scanned at x 40 magnification for waterlogged and charred botanical remains. Identification of these was undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant taxonomic nomenclature follows Stace (1997).

Results

The charred plant remains were dominated by wheat grains and spelt wheat chaff. Charred cereals were particularly abundant in (9016), in which oats was common. A few barley grains were recorded in 5 contexts. In most contexts, charred weed seeds were absence or low in number, but they were more numerous in (9016).

Uncharred seeds were absent, or only present in very low numbers in most of the contexts. By contrast, the linear fill (4065) and the possible palaeochannel fill (4094) contained a diverse range of seeds from arable, ruderal, woodland and wetland habitats.

The residues contained human, animal and fish bone, in addition to shellfish remains. Table 16.10 lists the identifiable faunal remains in the residues. Pot, glass and metal objects (including nails and hob-nails) also occurred in the residues, and charcoal was abundant in the flots. The contents of the flots and residues are presented in Appendix 1a&b.

Discussion

Charred cereal remains were present in most of the samples. The grains were predominantly wheat, but barley and oats were also present. Initial assessment of the chaff suggests this is dominated by spelt wheat, although bread wheat and emmer may also be present. Full analysis of the charred assemblage would establish the full range of crop plants used at the site.

The presence of oyster shells suggests that there has been trade with coastal areas. The oysters were probably kept alive in salt water and transported up the river or by land. The fish may also be marine *taxa* brought from the coast, or freshwater *taxa* caught locally. Analysis of the fish bones would provide species identifications to answer this question, and analysis of parasites attached to the oyster shells can provide information about where the oysters had been growing and whether they were farmed or foraged. The sheep, pig and cattle bones point to the use of meat, and perhaps also dairy produce, in the diet. The presence of two species of wild bird bones in (4064) may indicate that these were also caught for food.

The abundance of chaff in some of the samples indicates that the arable crops were processed on site, and the cereals were therefore probably also grown locally.

Table 16.10: Identifiable faunal remains from the bulk samples

Access Pit	4	4	4	4	4	4	4	4	4	4	4	8	9
Sample	75	73	72	68	77	69	71	81	83	84	86	71	78
Context	4064	4068	4072	4075	4075	4090	4092	4094	4096	4101	4110	8008	9016
Volume processed (ml)	50000	40000	60000	20000	20000	20000	30000	10000	20000	4000	10000	10000	20000
Identifiable faunal remains (relative abundance)													
Bird	2	-	-	-	-	-	-	-	-	-	1	-	-
Carnivore tooth	-	-	-	-	-	-	1	-	-	-	-	-	-
Chicken-size	-	-	-	-	-	-	-	-	-	-	-	1	1
Cow	-	-	1	-	1	1	3	-	-	-	-	1	-
Cow-size	-	-	-	-	-	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	1	-	-	-	-	-	-
Frog / toad	1	1	-	-	1	-	-	-	-	-	-	-	-
Mouse	-	-	1	-	-	-	-	-	-	-	-	-	-
Oyster	-	-	1	-	-	1	2	-	1	-	-	1	-
Pig	-	-	-	2	1	-	-	-	-	-	-	1	-
cf. Piglet	1	-	-	-	-	-	-	-	-	-	-	-	-
Sheep	2	-	-	-	1	-	1	1	-	-	-	1	-
Sheep / goat	-	-	-	1	-	-	-	-	-	-	-	-	-
Small mammal	-	-	-	-	1	-	-	-	1	-	-	-	-
Small rodent tooth	-	-	-	-	-	-	-	-	-	-	-	1	-
Vole jaw	-	-	-	-	-	-	-	-	-	1	-	-	-

Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

Charred cereal remains were particularly abundant in charcoal lens (9016) suggesting this context may have accumulated waste from a corn-drier or domestic hearth. The linear fill (4064) comprised general domestic waste including fish bone, animal bone, oyster shells, charcoal, charred grains, numerous pottery sherds and small metal objects such as hob-nails. Domestic waste also appears to have accumulated in some of the other contexts, such as the pit fills (4090) and (4092).

A diverse range of well-preserved uncharred seeds in (4065) and (4094) reflects waterlogged conditions in these features and supports the interpretation of (4094) as a palaeochannel fill. Full analysis of these seeds will enable a reconstruction of the local environment of the site.

Pot excavation

Vessel 2

Vessel 2 (Plate 16.9) was lifted from site wrapped around with polyethylene film. It was received by Archaeological Services Durham University packed with some loose surrounding soil, which was processed and the flot retained. The polyethylene film was left in place, and the soil and cremated bone fill removed. The bone was washed through a coarse sieve, with a further 500 µ sieve below it. The flot resulting from the fill was retained and the cremated bone was dried. The vessel was dismantled and the sherds washed without brushes and air dried retaining the relationship between the pieces as far as possible. Only the flat base and part of the walls of the vessel survive. The fabric is poorly fired and pale red throughout, with few visible inclusions. There is no decoration.

Vessel 3

Vessel 3 (Plate 16.10) was received in a rectangular block of soil, which had been lifted on a board. Some sherds were in a red fabric and cremated bone was visible. When excavation of the soil block began, it became clear that there was part of a second cremation vessel in a dark fabric beside the red pot, and that both vessels were bordered by a large stone (Plate 16.11).

The block was dismantled, keeping the sherds, fills and cremated bone from the two vessels separate. Examination of the 'section' across the soil block and the condition of the vessels suggests that the dark pot was probably deposited first, and that it was disturbed or truncated by the deposition of the red vessel and possibly also the large stone, which was lying against both pots.

The stone is irregularly shaped, 220 x 136 mm, with one finished face and one original curving edge. In the middle of one long edge is part of a pecked perforation. It is of variable thickness, but pecking on the unworked underside suggests that it has not been split from a larger object before deposition. A further small sub-rectangular stone, 95 x 88 mm, was found on the far side of the red pot.

The vessels are fragmentary, and only the bases and lower parts of the walls survive. The cremated bone fragments were very crushed and packed tightly into the bases, suggesting that larger pieces of bone have been lost. The red vessel is in an undecorated pale red/buff gritty fabri*c.* The dark vessel appears to be a black burnished vessel, paler grey on the inside, with traces of cross hatching decoration.

Vessel 4

Vessel 4 (Plate 16.12) is an almost complete vessel, received with cremated bone fill *in situ*. Part of the rim was detached, and a further rim fragment was found in the fill. The fill and cremated bone was removed and washed through a coarse sieve, with a further 500 µ sieve below it. The bone includes some large pieces and the degree of burning is very variable. The resulting flot was retained. The vessel was washed without brushes and dried. It is an undecorated jar with a flat base and everted rim. It stands *c.*245 mm high with a rim 111 mm in diameter. It is *c.*228 mm diameter at its widest point. The poorly fired fabric is pale red with a faint dark core and has few visible inclusions.

Cremated bone analysis

Vessel 1

The weight of cremated bone is approximately 640 g. Fragments of cranial vault, vertebrae, upper limb (humerus, radius, ulna, hand) and lower limb (femur) are present. The bone is probably from an adult. There are some osteophytes (outgrowths of bone) around one of the vertebral bodies.

Vessel 2

The weight of cremated bone is approximately 1380 g. Fragments of cranial vault, torso (vertebrae, ribs), upper limb (humerus, radius), pelvis, and lower limb (femur, fibula, feet) are present. It is an adult skeleton with a double atlas facet (a non-metric trait).

Vessel 3 Red

The weight of cremated bone is approximately 880 g. The bone is very friable and covered in soil. Very little is identifiable but some fragments of cranial vault and long bone are present. The individual was probably an adult, but may be an adolescent.

Vessel 3 Black

The weight of cremated bone is approximately 277 g. Most is small unidentifiable fragments. Some long bone fragments are present. The individual was possibly an adult/adolescent.

Vessel 4

The weight of cremated bone is approximately 1844 g. Fragments of cranial vault, tooth, torso (vertebrae, ribs), upper limb (humerus, radius, ulna), and lower limb (femur, tibia, fibula, foot) are present. It is probably an adult skeleton. The individual suffered two fractured ribs which had healed.

Discussion

Vessels 2 and 4 contained a substantial amount of cremated bone, with weights approaching those you would expect from a complete burial. Bone from most parts of the skeleton appears to be present, supporting this interpretation. The amount of cremated bone from Vessel 1 was not as much, suggesting some of the burial may have been lost, but still several identifiable fragments were observed. The material from Vessel 3 (red and black) was in the worst condition, and the black vessel contained the least amount of cremated bone (suggesting much of this burial may have been lost).

Radiocarbon dating

30 g of human bone from skeleton [Sk 4050] was sent to Beta Analytic, Florida, for AMS radiocarbon dating and stable isotope ratio analysis. The 2 sigma calibrated date range was Cal AD 550 to 660 (Cal BP 1400 to 1290). The 13C/12C ratio was -19.3 ‰ and the 15N/14N ratio was +10.6 ‰. These stable isotope ratios suggest a predominantly terrestrial-based diet, with marine fish / shellfish being absent or only forming a minor component of the diet.

Conservation of leather shoe

The sole and part of the upper from a right foot child's shoe (*c.* UK size 12/13) was received for conservation (Plate 16.13). The sole is 188 mm long, 65 mm wide across the forepart and 47 mm wide at the heel. Only the back part of the upper survives. This appears to be intact, though damaged, and was originally made from one thickness of leather, which has now become laminated. The upper is 39 mm high maximum, and is sharply angled at each side, meeting and joining with the sole behind the ankle. The front part of the shoe upper was separately constructed, and there is no indication of the form it took. The sole is constructed from at least five layers of leather, and has iron hobnails on the underside. Most of these, though corroded, survive *in situ*. The shoe shows no evidence of repair, though the toe edge of the sole and the top edge of the upper are damaged.

Conservation methodology

The shoe was received wet. It was washed, supported on a net frame, under running tap water, using soft brushes, to remove soil. It was immersed in 20% PEG (polyethylene glycol) 400 in water for 2 weeks, then frozen and freeze dried. Following freeze drying, the leather was surface treated with 2 applications of 5% ASAK ABP (a leather lubricant) in white spirit to improve its appearance and flexibility. Loose hobnails and leather fragments were re-adhered using Paraloid B72 adhesive. The stabilised shoe retains little flexibility and the surface layers of the leather remain brittle. It may be stored in conditions of ambient temperature and humidity, avoiding extremes of both, but should be handled as little as possible, using great care.

Recommendations

Full plant macrofossil analysis is recommended for contexts (4064), (4065), (4072), (4092), (4094), (4107), (8008) and (9016) in order to provide information about the economy, diet, farming practices and palaeoenvironment at the site.

Further analysis of the cremated bone is forthcoming.

Sources

Stace, C, 1997 New Flora of the British Isles, 2nd Edition, Cambridge

Table 16.11 (- Appendix 1a: Contents of the residues and flots from LTM07)

Fill type	linear	linear	ditch	no description	grave cut	ditch	linear	pit	pit	possible palaeochannel	no description	no description	no description	no description	no description	charcoal lens
Context	4064	4065	4068	4068	4072	4075	4075	4090	4092	4094	4096	4101	4107	4110	8008	9016
Sample	75	74	73	82	72	68	77	69	71	81	83	84	85	86	79	78
Full analysis recommended	✓	✓			✓				✓	✓			✓		✓	✓
Material available for radiocarbon dating	✓	✓							✓	✓			✓		✓	✓
Volume processed (ml)	50000	40000	40000	10000	60000	20000	20000	20000	30000	10000	20000	4000	10000	10000	10000	20000
Volume of flot (ml)	250	225	25	5	75	75	60	60	75	200	10	5	10	75	140	500
Volume of flot assessed (ml)	250	225	25	5	75	75	60	60	75	200	10	5	10	75	140	500
Residue contents (relative abundance)																
Bone (burnt)	-	-	1	-	1	-	-	2	-	-	-	-	-	-	2	-
Bone (unburnt)	3	2	3	2	3	3	3	2	3	1	3	3	2	3	3	2
Charcoal	2	2	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Ceramic built material	2	-	-	-	-	-	-	-	-	-	-	3	1	-	-	-
Fish Bone	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Glass (total no. of fragments)	1	-	-	-	3	-	-	1	-	-	-	-	-	-	-	-
Metal dust	1	-	-	-	1	-	-	-	-	-	-	1	-	-	2	-
Metal fragments	4	-	-	-	2	-	-	1	2	-	1	-	-	-	1	-
Mollusca shell - indeterminate fragments	-	2	-	-	2	-	2	-	-	-	1	3	-	-	-	-
Mollusca shell - terrestrial snails	-	-	-	-	-	-	-	-	-	1	-	-	-	-	2	-
Mollusca shell - oyster	2	-	-	-	1	-	-	1	2	-	1	-	-	-	1	-
Pot sherds (total no. of fragments)	34	3	7	-	16	3	5	10	10	3	20	5	-	?	19	-
Teeth (total no.)	-	-	-	-	1	5	1	-	-	-	-	-	-	-	-	-
Flot matrix (relative abundance)																
Bone (calcined) indeterminate fragments	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-
Bone (unburnt) indeterminate fragments	1	-	-	-	2	1	2	2	1	-	1	3	1	1	2	-
Bone (burnt) indeterminate fragments	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	1
Bone - small mammal	2	2	2	1	-	-	2	1	2	1	-	-	1	-	1	-
Charcoal/charcoal dust	4	3	4	3	4	3	3	4	4	2	3	4	4	4	5	6
Clinker	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-
Coal	-	2	-	1	-	1	-	-	-	-	-	-	-	-	-	-
Cu alloy (total no. of fragments)	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Fish bone	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fish scales	1	-	-	-	-	-	-	-	1	-	-	-	-	-	1	-
Insecta	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Mollusca shell – indeterminate fragments	3	-	-	-	-	-	-	-	2	1	-	-	-	3	-	-
Mollusca - terrestrial snails	3	-	2	1	2	3	4	2	2	1	2	-	2	2	3	-
Roots (modern)	-	-	-	2	-	-	2	-	-	-	2	2	2	2	2	2
Vegetative material (miscellaneous)	-	3	-	-	-	-	2	-	-	4	-	-	-	-	-	-
Woody stems	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-

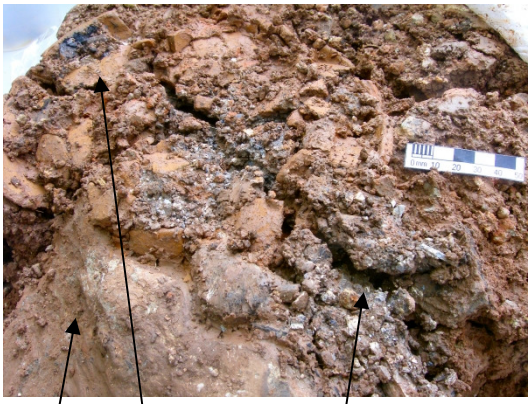
Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

Table 16.12 (- Appendix 1b: Charred and waterlogged plant remains from LTM07)

Fill type	linear	linear	ditch	no description	grave cut	ditch	linear	pit	pit	possible palaeochannel	no description	no description	no description	no description	no description	charcoal lens
Context	4064	4065	4068	4068	4072	4075	4075	4090	4092	4094	4096	4101	4107	4110	8008	9016
Sample	75	74	73	82	72	68	77	69	71	81	83	84	85	86	79	78
Full analysis recommended	✓	✓			✓				✓	✓			✓		✓	✓
Material available for radiocarbon dating	✓	✓							✓	✓			✓		✓	✓
Volume processed (ml)	50000	40000	40000	10000	60000	20000	20000	20000	30000	10000	20000	4000	10000	10000	10000	20000
Volume of flot (ml)	250	225	25	5	75	75	60	60	75	200	10	5	10	75	140	500
Volume of flot assessed (ml)	250	225	25	5	75	75	60	60	75	200	10	5	10	75	140	500
Charred remains (relative abundance)																
(c) *Avena* spp (Oat species) - grain	-	-	-	-	1	-	-	-	-	-	-	-	1	-	1	3
(c) *Hordeum* spp (Hulled Barley) - grain	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	-
(c) *Hordeum* spp (Barley undifferentiated) - grain	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	2
(c) cf. *Triticum aestivum* (cf. Bread Wheat) - rachis fragment	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *aestivum* (cf. Bread Wheat) - grain	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-
(c) *Triticum* spp (Wheat species) - grain	2	2	1	-	1	-	-	1	1	1	1	1	1	-	3	5
(c) *Triticum spelta* (Spelt wheat) - glume base	2	2	-	-	3	-	-	2	2	1	1	-	3	-	3	6
(c) *Triticum spelta* (Spelt wheat) - spikelet fork	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3
(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer wheat) - glume base	3	3	1	-	3	-	-	2	2	1	2	1	3	1	4	6
(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer wheat) - spikelet fork	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2	3
(c) Cerealia indeterminate - grain	3	2	-	-	3	1	-	1	2	1	1	2	3	-	4	5
(h) *Rumex acetosella* (Sheep's Sorrel) - nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2
(r) *Galium aparine* (Cleavers) - seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	-
(x) cf.Brassicaceae undifferentiated (cf. Cabbage family) - seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
(x) Poaceae undifferentiated <2mm (Grass family) - caryopsis	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) Poaceae undifferentiated >2mm (Grass family) - caryopsis	1	1	-	-	1	-	-	1	2	1	-	1	2	-	3	5
(x) *Rumex* spp (Dock) - nutlet	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	2
(x) *Vicia* spp (Vetch) - seed	-	-	-	-	-	-	-	1	-	-	1	-	-	-	1	1
Seed - indeterminate	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Waterlogged remains (relative abundance)																
(a) *Chenopodium album* (Fat-hen) - seed	-	2	-	-	-	-	-	-	-	1	-	-	-	-	-	1
(a) *Fallopia convolvulus* (Black-Bindweed) - nutlet	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Fumaria* spp (Fumitory) - seed	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
(r) *Urtica dioica* (Common Nettle) - achene	-	4	-	-	-	-	-	-	-	4	-	-	-	-	-	-
(t) *Sambucus nigra* (Elder) - fruitstone	-	4	-	-	-	-	-	-	-	2	-	-	-	-	-	-
(w) *Carex* spp (Sedges) - triogonous nutlet	-	-	-	-	-	-	-	-	-	2	-	-	-	-	-	-
(w) *Conium maculatum* (Hemlock) - fruit	-	4	-	-	-	-	-	-	-	4	-	-	-	-	-	-
(x) Apiaceae (Carrot family) - fruit	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-
(x) *Chenopodium* spp (Goosefoot) - seed	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-
(x) Lamiaceae undifferentiated (Mint family) - nutlet	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	-
(x) *Potentilla* spp (Cinquefoils) - achene	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-

[a:arable weed; c: cultivated plant; h: heathland; r: ruderal; t: trees/shrubs; w: wetland; x: wide niche]. Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

Plate 16.9: Vessel 2 emptied



Stone Red vessel Black vessel

Plates 16.10 and 16.11: Vessel 3 and stone in soil block, and stone after washing

Plate 16.12: Vessel 4

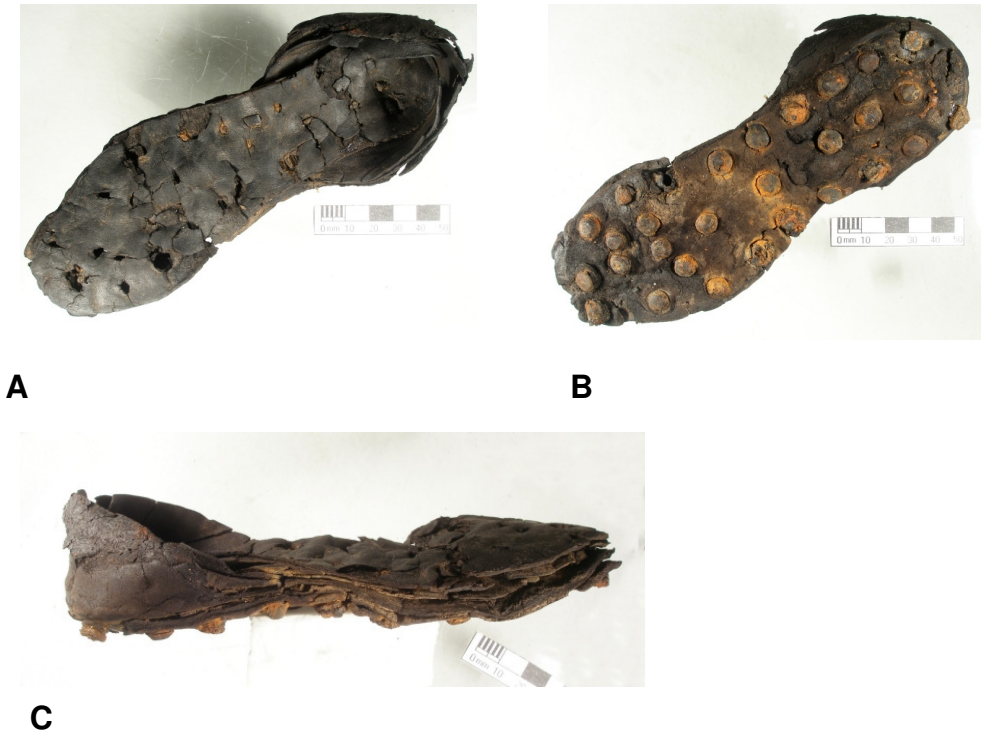


Plate 16.13A, B and C: Leather shoe following conservation (A: top view; B: underside view; C: side view)

Report 2081

Summary

The project

Border Archaeology has undertaken excavations within the Stretton Grandison Romano-British settlement site, Herefordshire. This included the excavation of a series of access pits (APs) for the installation of a new water main across the Frome Valley floodplain. The majority of these pits have produced evidence of Roman occupation; however, the evidence from two of the pits indicated earlier activity. Bulk environmental samples, pottery vessels, artefacts and human skeletal remains have previously been assessed by Archaeological Services Durham University.

Plant macrofossil analysis

The charred food plant remains in the Roman contexts indicate the former use of both cultivated and wild gathered resources. The cultivated crop remains derived principally from spelt wheat, with some hulled barley and oats; an assemblage typically recorded in Roman deposits in the region, and throughout Britain. These assemblages are characterised by the presence of abundant cereal chaff, consisting principally of spelt wheat glume bases; thus indicating that a level of crop processing was taking place at the site. The indications are that a cleaned glume wheat crop (probably pure spelt wheat), was being processed on a domestic scale. The remains of wild gathered food indicate the use of hazel nuts, sloe and wild plum.

The natural environment during the Roman occupation has been inferred from both the charred and the uncharred seed assemblages. The charred weed seeds are indicative of an occupation site, with open and disturbed ground and localised areas of wetland and heath. Hazel and wild cherries (i.e. sloe and plum) would have been constituents of local woodland or growing as opportunistic bushes at the site. The waterlogged seed assemblage from the well feature is derived from *taxa* that thrive in damp and disturbed ground, typical of the area around a community well.

The natural environment during the pre-Roman occupation is inferred from assemblages of waterlogged seeds. These suggest that the landscape was open and disturbed, typical of occupied areas, but with permanent and/or seasonal wetland, as would be expected in the Frome valley flood plain. Birch and hazel were constituents of local woodland, which would have been relatively open, perhaps occupying drier, raised areas, and forming a mosaic with the surrounding wetland.

Human bone analysis

Thirteen inhumation burials were recorded at the site, six of which were fully excavated and examined osteologically. Five urned cremation burials were also excavated and examined. One skeleton was radiocarbon dated to the first/second century AD. A further skeleton was radiocarbon dated to the early medieval period (sixth/seventh century). Burial practices were varied, and included a range of orientations and positions amongst the inhumation burials, and two adults who were buried in wooden coffins.

The condition of the bone, which was fragmented with incomplete skeletons, compromised the data set retrieved. The inhumation burials included three adults (one

not lifted), an adolescent, a young child, and eight probable neonates (six not lifted). The cremation burials each contained one adult.

Many pathological changes were present among the inhumation burials, including evidence of nutritional deficiencies, infectious disease, degenerative joint disease, traumatic injury and dental disease. Cases of idiopathic scoliosis (a sideways curvature of the spine) and of diffuse idiopathic skeletal hyperostosis (DISH), were identified. The early medieval skeleton had suffered a violent death, with multiple perimortem wounds and decapitation.

Radiocarbon dating

The 2 sigma calibrated date range for the human tooth from skeleton (4039) was Cal AD 10 to 210 (Cal BP 1940 to 1740).

Project background

Location and background

Border Archaeology has undertaken excavations within the Stretton Grandison Romano-British settlement site, Herefordshire. This included the excavation of a series of APs for the installation of a new water main across the Frome Valley floodplain. The majority of these pits have produced evidence of Roman occupation, however, the evidence from two of the pits (AP2 and AP5) indicated earlier activity. Plant macrofossil assessment has been carried out on a wide range of contexts previously sampled from these APs. The charred food plant remains that were identified indicate the former use of spelt wheat, oats, barley and hazelnuts. The waterlogged contexts contained suites of uncharred seeds, indicative of the natural environment at the time of their deposition. An assessment of the human osteology was also carried out on 13 inhumation burials (six of which were fully excavated and examined osteologically), and five urned cremation burials (Archaeological Services 2007a; 2007b; 2007c; 2007d).

This report presents the results of analyses of plant macrofossils and human osteology, and the results of AMS radiocarbon dating of a tooth from the human skeleton [4039]. Plant macrofossil analysis was undertaken on 26 bulk samples that had been recommended for further work. These were taken from: 22 contexts associated with the Roman occupation that were rich in charred plant remains; three waterlogged contexts (2004, 2005, 5018) that were associated with pre-Roman occupation, and which contained abundant uncharred plant remains; and a single waterlogged context (4066) from a Roman well fill. Analysis of the human osteology was carried out on 13 inhumation burials (six of which were fully excavated and examined osteologically) and five urned cremation burials.

Objective

The objective was to analyse the plant macrofossil evidence and the skeletal material in order to: provide further information about the diet and agricultural practices of the former occupants at the site, and to interpret the local natural environment at that time; to record

the condition and completeness of the skeletal material, estimating age-at-death, sex, and stature, as well as recording any traces of disease or trauma; and to obtain a radiocarbon date for the human skeleton [4039].

Dates

Analysis and report preparation were undertaken between 18th October 2007 and 18th November 2008.

Personnel

Plant macrofossil analysis and report preparation were conducted by Dr Helen Ranner. The human osteology was analysed by Dr Anwen Caffell. Ms Jennifer Jones and Ms Janet Beveridge undertook laboratory excavation of two vessels used for cremation burials. Dr Annia Cherryson advised on Anglo-Saxon execution cemeteries. AMS radiocarbon dating was undertaken by Beta Analytic In*c.*

Archive

The site code is LTM07. The flots and skeletal material are retained in the Environmental Laboratory at Archaeological Services Durham University for collection.

Plant macrofossil analysis

Methods

The entire bulk sample for each of the non-waterlogged contexts was manually floated and sieved through a 500 µm mesh. The residues were described and scanned using a magnet for ferrous fragments. The flots were dried slowly and examined at ×40 magnification for charred botanical remains. Identifications were undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant taxonomic nomenclature follows Stace (1997).

The bulk samples from the waterlogged contexts were wet sieved. A sub-sample of 200ml from each context was washed through a nest of sieves ranging from 1mm to 150µm. The resulting fractions were examined at ×40 magnification for uncharred botanical remains. Identifications were undertaken by comparison with modern reference material held in the Environmental Laboratory at Archaeological Services Durham University. Plant taxonomic nomenclature follows Stace (1997).

Results

Roman non-waterlogged contexts

The non-waterlogged contexts were dominated by fire waste; this was principally charcoal with occasional fragments of coal, coal shale, clinker and semi-vitrified fuel waste. Indeterminate fragments of mammal bone and small animal bones were present in all contexts. The condition of the bone fragments varied, with unburnt, burnt and calcined fragments recorded; some of the unburnt fragments appeared etched and

smoothed, which is consistent with having passed through a canine digestive gut. Fish bone and marine *mollusca* shell fragments were present in context (8006), with additional shell fragments in contexts (4003) and (4064). A few samples contained a background level of metal dust commonly associated with deposits from occupation sites. The small finds comprised: ceramic building material (CBM) in context (4064) and (4107); copper alloy items in contexts (8006); daub in context (4027, spit 3); a flint flake in context (8006); glass shards in contexts (4064), (4072), (8006) and (8010); corroded metal items in contexts (4027, spit 1) and (8008); and abundant pot sherds in all contexts except (4030), (4062), (9016) and outside the coffin. Wood fragments were present in context (4038). Vivianite deposits were recorded in contexts (4038), (4064) and outside the coffin; these clasts are indicative of former organic material, being the product of the interaction of phosphate, iron and water in the natural environment, and typically occurring in association with human remains, human and animal waste deposits, industrial waste deposits and areas rich in iron (McGowan & Prangnell 2006). Terrestrial *mollusca* shells, both entire and fragmented, were recorded in many contexts but were particularly abundant in context (8010). Modern material, including roots, seeds, miscellaneous vegetative material and insect remains were present, variously, in all contexts.

The preservation of plant macrofossils was principally through charring. The quality of cereal grains was generally poor, with over 50% of the grains appearing vesicular, clinkered and distorted. Close identification of cereal *taxa* from the grain was not possible, due to the limited survival of key morphological characteristics; however, the presence of identifiable chaff fragments from both spelt wheat and bread-type wheat has confirmed the presence of both these in the assemblage. In contexts (4003; 4031; 4058; 8008; 8010; 9016) some of the grains appeared to have suffered from insect damage, manifest as neat and regular cavities in the grain surface. In contexts (4003; 4027; 4038; 4058; 4062; 4072; 8008) some grains had begun to germinate prior to charring, and some of the fragile charred coleoptiles had become detached. In the majority of contexts there is modern intrusive material present indicating some bioturbation.

The charred food plant remains consisted of wheat, barley and oat grains with abundant cereal chaff, and a few pea/beans, hazel nutshell fragments and fruitstones from sloe and wild plum. Wheat grains and spelt wheat chaff were present in all contexts, and were particularly abundant in context (9016). Free-threshing bread-type wheat rachis fragments were identified in context (8006). Brome grass caryopses were recorded regularly, particularly in association with contexts containing abundant charred cereal remains. A single charred tuber from false oat grass was recovered from context (8006). Charred weed seeds were present in all contexts except (4027), at the level of the baby skeleton (4027). The weed seeds derived principally from *taxa* characteristic of a wide range of niches, predominantly grasses, but also *taxa* associated with ruderal and heath habitats. Arable weed seeds were present in contexts (4003), (4031) and (8006). The results are presented in Appendix Ia.

Roman well fill - waterlogged context (4066)

This waterlogged context consisted principally of miscellaneous vegetative material with charred and uncharred plant macrofossil remains, terrestrial *mollusca* shells and insect remains. The charred plant macrofossil remains consisted of a single hulled barley

grain, glume wheat chaff (some of which was identified as having derived from spelt wheat), and a single caryopsis from *cf*. brome grass.

The waterlogged seeds derived from a range of *taxa* characteristic of aquatic, ruderal, woodland, wetland and wide niche habitats. The results are presented in Appendix Ib.

Prehistoric waterlogged contexts

The prehistoric waterlogged contexts consisted principally of miscellaneous vegetative material with diverse ranges of uncharred seeds. A small animal bone was recorded in context (2004), and context (2005) contained terrestrial *mollusca* shells, insect remains, charcoal and coal. Charred plant macrofossil remains were present in context (2004), and these consisted of individual seeds derived from arable and wide niche *taxa*, with cereal chaff remains.

Waterlogged seeds, derived from a range of taxa from aquatic, ruderal, woodland, wetland and wide niche habitats, were present in all contexts. Seeds from aquatic and wetland *taxa* were more abundant and diverse in context (2005), where Characeae oospores were also present. The results are presented in Appendix Ib.

Discussion
Roman food plants

The charred food plant remains indicate the use of both cultivated and wild gathered resources. The cultivated crop remains derived principally from spelt wheat, with some hulled barley and oats. Wheat grains, and glume bases were present in all contexts, and some of the chaff has been identified as deriving from spelt wheat; it is likely therefore that the indeterminate glume bases also came from spelt wheat. Spelt wheat and barley were the main crops of the Roman period throughout Britain (Greig 1991), and typical assemblages have been recorded locally at other Roman sites in Droitwich, i.e., Bays Meadow Villa (Straker 2006) and Hanby Street (de Moulins 2006), and at Birdlip Quarry, Gloucestershire (Pelling 1999). Although there is no evidence for the presence of emmer wheat in this assemblage, its use cannot be ruled out; grains with the morphological characteristics of emmer wheat have been recorded at Bays Meadow Villa (Straker 2006). A few free-threshing bread wheat-type rachis fragments were identified in context (8006), attesting to the presence of this type, although very few wheat grains were identified with the morphological characteristics of this bulky grain. Similarly, at Birdlip Quarry (Pelling 1999), two bread wheat-type rachis nodes were recorded, but no grain [see also 3.17]. However, the generally poor condition of the cereal grains, characterised by a vesicular, clinkered and distorted appearance, indicates exposure to relatively high temperatures (Boardman & Jones 1990); this can lead to differential preservation of the two types of grain, with spelt wheat grains better able to withstand applied heat (ibid.). Bread wheat is not well represented at this site, but this grain type is particularly susceptible to high temperatures (ibid.), and therefore these counts may not reflect the true proportions of the wheat types present.

A few grains of barley were recorded, with hulled barley specifically identified in context (4003) and (8008), where some of this type were recorded as having begun to germinate prior to charring. Detached coleoptiles (indeterminate) were also recorded in other

contexts. This may indicate that some of the grain had been harvested in wet conditions, where germination had begun on the ear, or that they had been stored in unsuitable damp conditions. Charred germinated grain is also associated with brewing activities, but the proportion of germinated grain in context (8008) is too low for such an interpretation; the percentage of germinated grains as a result of malting is expected to be in excess of 75% (van der Veen 1989). Rachis internodes were absent and the poor condition of the grains, which appeared puffed and distended, prevented any identification of symmetrical or asymmetrical grain types, and therefore none of the grains could be assigned to the 6-row type, although the presence of 6-row barley has been identified at Bay Meadow Villa (Straker 2006) and Birdlip Quarry (Pelling 1999).

Oat grains were recorded in contexts (4027), (4038), (4072), (8008), (9007) and (9016). The absence of oat floret bases means that the grains were not identifiable to type, and it was not possible to establish whether these were cultivated oats, or wild oats growing amongst the wheat and barley crops. The relative quantity of oats may also be under-recorded since the presence of larger grass caryopses (2-5mm) may represent small oat grains. Relatively low counts of grains from oat species were also recorded at Birdlip Quarry (Pelling 1999), and both Bays Meadow Villa (Straker 2006) and Hanbury Street (de Moulins 2006).

Brome grass caryopses were recorded regularly, and particularly in association with the charred cereal remains. Brome grass has been consistently associated with Roman deposits, both nationally (Godwin 1975), and regionally (de Moulins 2006; Pelling 1999; Straker 2006), and is likely to have been growing as an arable weed.

A few peas and pea/beans were recorded in context (4038) and (8006). These are not usually associated with Roman assemblages, although it is known that peas and beans were grown in Roman Britain (Jones 1981), and a single horsebean was recorded at Bays Meadow Villa (Straker 2006), [see also 3.17 – 3.19].

The remains of wild gathered food indicate the use of hazel nuts; the nutshell fragments were particularly abundant in context (8006), which also contained fruit stones from sloe and wild plum [see also 3.17-3.19]. A wild plum fruitstone was also recorded in context (4058). Hazel nut shell fragments have also been recorded at Birdlip Quarry (Pelling 1999).

Roman cereal processing

The charred plant macrofossil assemblages in all contexts are characterised by the presence of cereal chaff, indicating that a level of crop processing was taking place at the site. There is no evidence, in the form of the larger chaff items such as culm nodes or straw, or the lighter elements, lemmas et*c.*, to suggest large scale processing, although it must be noted that if the cereal remains have generally been subjected to relatively high temperatures these chaff components may have burnt away. If the abundant glume wheat chaff is a true reflection of the character of the assemblage, then this would suggest the use of a cleaned glume wheat crop (probably pure spelt wheat), processed on a domestic scale. Glume wheats were often stored as spikelets for domestic consumption, as the hull affords some protection during storage. The hulls would be removed on a day to day basis as the grain was used, and in wet areas these cleanings were often thrown straight on to the domestic fire (Hillman 1981). This

interpretation is supported for all contexts, except (8006) [see also 3.17-3.19], by the presence of brome grass caryopses (similar in size to prime grain), and the absence of any of the larger arable weed seeds, thus suggesting a sieved and cleaned crop.

Roman features - context (8006)

The data from the pit fill, context (8006) appears to be different in character from the other Roman contexts, and could therefore be interpreted in an alternative way. The assemblage of arable weed seeds is more diverse, with larger seeds from black bind-weed and field gromwell present, suggesting a possible alternative source of origin and different level of processing. This context also contains a relatively large number of charred peas, barley grains and hazelnut shell fragments, and is the only recorded context with bread wheat chaff. This overall difference in character may indicate that the context is of a later date, since peas are rarely recorded from Roman sites (Godwin 1975) and are more commonly associated with medieval deposits [see also 3.10 – 3.15].

A single charred false oat-grass tuber was also recorded in this context. These plant macrofossils have regularly been recorded on prehistoric sites throughout Britain, and they are believed to have derived from the use of this particular species of grass as kindling in funeral pyres for cremations (Robinson 1988). Godwin (1975) suggests that the tubers were collected or grown as a food source at that time; this was also the interpretation given by Huntley (1993) for the relatively large numbers of charred tubers that occurred in combination with hazelnuts and cereal grains in a series of Neolithic pits at Marton-le-Moor, North Yorkshire. In the knowledge that occupation at this site pre-dates the Roman period, it is likely that this is re-worked material. A flint flake was also recovered from this context.

Context (8006) also contains abundant pot sherds, some copper alloy items, mammal and fish bone fragments and marine *mollusca* shell, which are indicative of domestic waste disposal.

Roman features - other contexts

These contexts represent a selection of feature fills (from pits, wells and gullys), with occupation layers and burial soils associated with inhumations and cremation urns. With the exception of the charcoal lens, context (9016), there are no compelling indications for any specific uses for these features; they would have acted as accumulators for domestic debris commonly associated with occupation. Context (9016) is dominated by cereal chaff, i.e., glume bases, and may specifically have been a deposit of domestic fire-waste, containing the chaff remains from domestic scale processing of glume wheat (probably spelt wheat) [see 3.16].

The natural environment during the Roman occupation

The natural environment can be interpreted from both the charred and the uncharred seed assemblages in the Roman contexts. The charred weed seeds are indicative of an occupation site, deriving from *taxa* typical of open and disturbed ground, with the

presence of nutlets from sedge and sheep's sorrel indicating localised areas of wet ground and heath respectively. The arable weed seeds present are likely to have been contaminants of processed grain and therefore more characteristic of the landscape where the grain was grown. Hazel nuts and wild plums would have been gathered from local woodland, or from opportunistic bushes growing at the site, and *cf*. white bryony would have grown in association with these tree/shrub *taxa*.

The waterlogged assemblage from the well fill, context (4066), indicates the former presence of a single aquatic taxon, water-plantain, with hemlock and rushes. These *taxa* are indicative of damp places (Preston et al. 2002), as would be expected in the vicinity of the well, perhaps growing on exposed mud developed from disturbance or localised drainage activities. The ruderal *taxa*, particularly common nettle and knotgrass, may have favoured rather drier ground, but would also have thrived in the disturbed area adjacent to the well.

This assemblage from context (4066) contains many of the same *taxa* recorded in a comparable well fill from Bays Meadow Villa (Greig 2006); in particular, nettle and hemlock, which are so characteristic of damp and disturbed ground. This plant community has been compared with the modern plant community in this location, which is very similar, thus indicating that the local flora has remained relatively stable since the Roman occupation (ibid.).

The natural environment during the pre-Roman occupation

The three pre-Roman waterlogged deposits contain assemblages of seeds derived from a range of aquatic, ruderal, woodland, wetland and wide niche *taxa*. Whilst sharing a number of common features each context is distinct in character.

Contexts (2004) and (2005) are both from AP2. The presence of crowfoot, horned pondweed and water plantain suggest eutrophic conditions with shallow water areas and exposed mud, typical of marshy or swampy ground (Preston et al. 2002). The presence of oospores from green algae in context (2005) may be a relic from early colonisation of the wetland area since these *taxa* tend to thrive in oligotrophic environments. However, oospores are produced when unfavourable conditions prevail, and this adaptation enables rapid recolonisation when the environment becomes habitable again, which means that they are often successful in ephemeral habitats (after Moore 1986); this would be typical of the Frome Valley floodplain. The presence of bogbean, which grows in shallow water at the edge of lakes or slow flowing water and is intolerant of shade (Preston et al. 2002) supports the interpretation of an open and regularly flooded landscape. A number of wetland *taxa* are represented, e.g., hairy buttercup and sedges, and particularly rushes in context (2005); these would have been occupying the damp ground associated with standing or slow moving water. The ruderal *taxa*, and particularly the presence of common nettle in context (2004), suggest an open landscape with some human disturbance. The presence of macrofossils derived from elder (bushes or small trees) and bramble support this interpretation. Therefore, the overall indications suggest that the landscape was open and disturbed, typical of occupied areas, but with permanent and/or seasonal wetland.

These two contexts are, however, distinct. In addition to the waterlogged material, context (2004) also contained a few charred plant macrofossils, amongst which a spelt

wheat glume base was identified. Spelt wheat first appeared on Bronze Age sites and became widespread in southern England during the Iron Age (Grieg 1991), and it has been sparsely but regularly recorded at prehistoric sites along the route of Roman Ermin Street in Gloucestershire and Wiltshire (Pelling 1999). Nevertheless this chaff item is not so characteristic of pre-Roman deposits, and in the knowledge that the Roman deposits were rich in spelt wheat chaff, it is possible that this may be later intrusive material resulting from bioturbation. This would suggest less waterlogging in this context, which does appear to have been generally drier; indicated particularly by the additional presence in context (2005) of relatively abundant remains of land snail shells.

Context (5018) is from AP5. An alder wood stake from this context has previously been AMS radiocarbon dated (Archaeological Services 2007b) and provided a late Mesolithic to early Neolithic date. This context is rather different in character to those from AP2. Water-plaintain and bog bean are indicative of an open shallow water environment [as discussed in 3.25]. The presence of pondweed suggests that the water was calcium rich but nutrient poor (Preston et al. 2002), and the additional presence of the great fen sedge, which inhabits oligotrophic to mesotrophic environments (ibid.), would support the interpretation of a low nutrient habitat. In addition, gypsy wort can be a coloniser of newly created wetlands (ibid.), which would also tend to be low in nutrients. Alder is often chosen for use in construction associated with wet environments because it preserves well in waterlogged conditions (Gale & Cutler 2000).

Plant macrofossils from woodland *taxa* are recorded for birch and hazel, which confirms the local presence of birch and hazel woodland, as identified in the pollen assessment (Archaeological Services 2007c). This would have been relatively open woodland, perhaps occupying drier, raised areas, and forming a mosaic with the surrounding wetland.

Human bone

Introduction

Twelve inhumation burials were identified archaeologically, of which five were lifted on site, and these were subsequently examined by the author (Table 16.13). This table also includes skeleton (4027), which was originally believed to be an isolated burial and discussed in a previous report (Archaeological Services 2007). Following the discovery of the other burials, the data on this individual was incorporated into the present report. Photographs of the non-lifted skeletons were examined and documented. Fragments of bone present in soil samples from contexts (4052) and (4101) were probably derived from skeletons (4053) and (4102) respectively, neither of which were lifted. A collection of bones found in a soil sample from context (4044) almost certainly derived from one individual: they probably represent a thirteenth inhumation burial not identified during excavation, but it is also possible that they derived from one of the archaeologically identified inhumations. These bones have been considered as a sixth lifted individual for the purposes of this report.

In addition to the inhumation burials, four cremation burials were identified on site. Subsequent excavation in the laboratory revealed that one of these, (Vessel 3), comprised two vessels, one red (Vessel 3R) and one black (Vessel 3B), each of which contained cremated bone. This brought the total number of cremation burials analysed to five.

Table 16.13: Summary of the archaeological information for the inhumation burials

Skeleton No.	Position	Hand Position	Orientation	Date	Radiocarbon Date
4027	Flexed, left side	Right hand in front of face, left arm extended in front of body	North/ South	Roman	-
4037	Extended, left side	Arms crossed over chest, hands near shoulders	South/ North	Roman	-
4039	Partially disarticulated		North/ South	Roman	AD 10 - 210
4042	Extended, supine?	Unknown	North-west/ South-east	Roman	-
4044*	Disarticulated			Roman	-
4050	Extended, prone	Arms either side of torso, hands next to hips	West/ East	Early Medieval	AD 550-660
4053†	Extended, supine?	Either side of body?	West/ East?	Roman	-
4056‡	Flexed, right side?	Unknown	North/ South	Roman	-
4073‡	Extended, supine?	Unknown	North/ South	Roman	-
4078‡	Flexed, right side	In front of body/ face?	East/ West	Roman	-
4099‡	Unknown	Unknown	Unknown	Roman	-
4102†	Flexed, left side?	Unknown	West/ East?	Roman	-
4105‡	Unknown	Unknown	Unknown	Roman	-

* Discovered in soil sample for context (4044)
† Not lifted, but bone fragments present in soil samples from the graves
‡ Not lifted

All the inhumation and cremation burials were originally believed to be Roman. Radiocarbon dates have since been obtained for two of the skeletons; skeleton (4039) dated to the early Romano-British period (AD 10-210), but skeleton (4050) dated to the early medieval period (AD 550-660). There were no finds or grave goods associated with the inhumation or cremation burials.

Osteological analysis

Osteological analysis concerns the determination of the age-at-death, sex, and stature of each individual, as well as recording the presence of minor skeletal variations and calculating various indices to describe the shape of certain bones, such as the cranium. A summary of the results is presented in Table 16.14; the full report on the human remains appears in Appendix II; a catalogue of the articulated skeletons is provided in Appendix III; a catalogue of the disarticulated human bone can be found in Appendix IV; and a catalogue of the cremated human bone in Appendix V.

Preservation

Surface preservation was assessed using the seven-category grading system defined by McKinley (2004a), ranging from 0 (excellent) to 5+ (extremely poor). Fragmentation was assessed on a five-grade scale, from 'minimal' to 'extreme' fragmentation. The completeness of the skeleton was assessed and expressed as a percentage.

The bone condition of the six lifted skeletons was generally good (Grade 2), with a solid cortex and light, patchy surface erosion, preserving a reasonable amount of surface detail. The bone condition of skeleton (4039) was somewhat unusual, almost black in colour, and extraordinarily hard, with little in the way of surface erosion or flaking, and (Grade 1) surface preservation. This individual had been buried in an oak coffin, possibly leading to the unusual preservation of the skeleton. The results are summarised in Table 16.14.

It was not possible to assess the preservation or condition of the non-lifted skeletons from the photographs. The bones appear fragmented, and the general impression of preservation is similar to the majority of the lifted bones.

Table 16.14: Summary of osteological and palaeopathological results

Skeleton No	Preservation			Age (years)	Sex	Stature (cm)	Pathology
	SP	F	C (%)				
4027	Good (Grade 2)	Moderate	90-95	neonate	-	-	-
4037	Moderate (Grade 3)	Severe	60-70	35+(?)	Female	-	Scoliosis; DJD & OA of spine; fusion of right sacroiliac joint & possibly left; periostitis both femora; new bone formation on endocranium Calculus (heavy/ moderate); unusual & uneven dental wear; impacted RM_3; congenital absence/ impaction three premolars; small RM^3; periodontal disease
4039	Very Good (Grade 1)	Severe	70-80	45+	Male?	176.0	OA – neck, right TMJ, wrists, knees; DJD – spine, left TMJ, medial clavicles, lateral right clavicle, right hip; additional lumbar vertebra; fractures – multiple ribs, right thumb, right ankle, right big toe; fusion of two pairs of foot phalanges; periostitis both tibiae; Harris lines (tibiae); DISH? Calculus (heavy); caries; heavy dental wear; periodontal disease; enamel hypoplasia
4042	Good (Grade 2)	Severe	5-10	2-5	-	-	Non-specific infection (periostitis) both tibiae
4044*	Moderate (Grade 3)	Moderate	10-20	neonate	-	-	-
4050	Good (Grade 2)	Severe	50-60	15-16½	-	-	Fractured right forearm (healed); multiple perimortem sharp blade injuries to head, neck and right shoulder; decapitation; possible ulcer on right hand (MC5) Enamel hypoplasia; calculus (slight); crowding & rotation of teeth
4053†	-	-	-	neonate?	-	-	-
4056‡	-	-	-	neonate?	-	-	-
4073‡	-	-	-	adult?	-	-	-
4078‡	-	-	-	neonate?	-	-	-
4099‡	-	-	-	non-adult?	-	-	-
4102†	-	-	-	neonate ?	-	-	-
4105‡	-	-	-	non-adult?	-	-	-

Key: SP = surface preservation, grades according to McKinley (2004); F = fragmentation; C = completeness
** Discovered in soil sample for context (4044)*
† Not lifted, but bone fragments present in soil samples from the graves
‡ Not lifted

Minimum Number of Individuals

The minimum number of individuals (MNI) which could be identified was seven, based on bone from the lifted individuals and also from contexts (4052) and (4101), which may have derived from skeletons (4053) and (4102) respectively.

Assessment of Age

Age was determined using standard ageing techniques, as specified in Scheuer & Black (2000a, 2000b) and Cox (2000).

Three of the five lifted Roman skeletons were non-adults, and two were adults. The non-adults included two neonates (skeletons 4027 and 4044), and a young juvenile aged 2-5 years (skeleton 4042). One of the adults (skeleton 4039) was a mature adult, over 46+ years of age. The other adult (4037) was more difficult to age, since many of the relevant parts of the skeleton were missing, but was probably over the age of *c.*35 years at the time of death. The early medieval skeleton (4050) was an adolescent aged around 15-16½ years.

Using the scaled *in situ* photographs of the seven non-lifted skeletons, measurements were taken of identifiable and apparently complete long bones, to give a broad indication of their length, and provide an approximate age estimate. Four of the individuals have been classified as probable neonates and skeleton (4073) was probably an adult. The results are summarised in Table 16.14.

Most of the twelve Roman burials were those of neonates (or possibly infants), with one slightly older child of 2-5 years, bringing the number of non-adults to 9 (75.0% of the total).

Sex Determination

Sex determination was carried out using standard osteological techniques, as described by Mays & Cox (2000). Assessment of sex can only be carried out on adult remains, once sexual characteristics have developed during adolescence, and the success of sex estimation is heavily influenced by the preservation of the skeletal material.

Skeleton (4037) was almost certainly female. The determination of sex in skeleton (4039) was more difficult, due to fragmentation and incompleteness, but the surviving pieces showed probable male traits.

The adolescent skeleton (4050) had not completed development, and was therefore too young to estimate sex with any degree of certainty.

Metric Analysis

Post-mortem fragmentation affected both adult skeletons, and no long bones were intact and undamaged. However, the right radius of skeleton (4039), which had one clean break, was used to calculate a stature of 176.0cm (± 4.32cm), or 5'9". This is well above

the average male stature for British Roman skeletons of 169cm (5'6½") reported by Roberts & Cox (2003), although still within the upper range of 178cm (5'10").

The crania of both adults were incomplete and severely fragmented, so none of the cranial indices could be calculated.

Non-Metric Traits

A total of thirty non-metric traits were recorded for the two adults and the adolescent (after Buikstra & Ubelaker 1994; Finnegan 1978; Berry & Berry 1967). Prevalence rates are presented in Appendix VI. Six of the 13 inhumation burials were lifted and examined osteologically, and limited information on the non-lifted skeletons was gleaned from the excavation records and *in situ* photographs. The skeletons had suffered a degree of fragmentation and tended to be incomplete, although the condition of the bone cortex itself was reasonably good. Three quarters of the individuals discovered were non-adults, most of whom had died at or around the time of birth, but a young child and a teenager were also present. The adults included a mature man, a woman who was probably over *c.*35 years when she died, and an unsexed probable adult.

Pathological Analysis

All the skeletons were examined for evidence of pathological conditions (disease or trauma) which can become manifest in the skeletal material, particularly if the disease is chronic (longstanding). Examination of pathological lesions and their distribution throughout the skeleton is essential for diagnosis, so the better preserved and the more complete the skeletons, the greater the information that can be retrieved. With larger sample sizes, calculating the prevalence of pathological conditions assists in comparing data between sites. However, there was insufficient data from this site to warrant such calculations.

Congenital Conditions

Skeleton (4039), the mature adult male, had six lumbar vertebrae in his lower back rather than the usual five. This is "not unusual" (Barnes 1994) and is more common than a reduction in the number of vertebral segments.

Skeleton (4037), the adult female, had suffered from scoliosis (a sideways curvature of the spine), with associated changes in the shape of her ribcage, which may result from congenital vertebral anomalies, neurological problems, and disease or trauma (Barnes 1994; Salter 1999; Skyrme et al. 2005; Resnick 2002). It may also be associated with complex congenital syndromes (Resnick 2002). However, 80-85% of cases are idiopathic, where the cause is unknown (Salter 1999; Aufderheide & Rodríguez-Martín 1998). Few cases of scoliosis have been recognized in archaeological skeletons, probably because of difficulties in diagnosis with incomplete and poorly preserved remains (Aufderheide & Rodríguez-Martín 1998), and the author is unaware of any cases dating to the Roman or early medieval periods in Britain.

Trauma

Ante mortem trauma, where the person has survived and the injury has healed, was seen in two of the skeletons. Skeleton (4050), the adolescent, had fractured both bones in the right forearm, probably at the same time. Both fractures were well healed and showed no signs of infection. This type of double fracture, close to the wrist, occurs in children after a fall on an outstretched arm (Dandy & Edwards 2003).

Skeleton (4039) had fractured multiple ribs, though all were well healed, and showed no signs of infection, and had also fractured his right thumb. He had sustained a traumatic injury to his right ankle of the type which occurs by falling with the foot trapped and twisted outwards (Protas & Kornblatt 1981). In addition, he had probably fractured his right big toe.

Blade Injuries

Skeleton (4050), the adolescent, had suffered multiple perimortem sharp-force injuries to the head, neck, and right shoulder, probably from a blade, at least three of which would have been fatal. The cranium was incomplete and badly fragmented, making reconstruction of the precise number and sequence of blows impossible. The body had also been decapitated.

Infectious Disease

Evidence for infection or inflammation affecting the skeleton was seen in three individuals. Periostitis (inflammation of the membrane surrounding the bone) as defined by Ortner (2003), was seen in the legs of three skeletons: (4037), (4039) and (4042), possibly caused by infection, low-grade trauma to the shins, leg ulcers, or even varicose veins (Roberts & Manchester 1995).

Joint Disease

The term 'joint disease' encompasses a large number of conditions with different causes, which all affect the articular joints of the skeleton. Degenerative Joint Disease (DJD) and Osteoarthritis (OA) become common with advancing age, but can also be influenced by other factors such as physical activity, occupation, and workload (Larsen 1997). Thirteen percent of individuals in the Roman period in Britain were recorded as suffering from spinal OA by Roberts & Cox (2003), and evidence for DJD and OA, was seen in both the adult skeletons here (4037) and (4039). OA in skeleton (4037) was almost certainly a result of her scoliosis, where in addition to degenerative changes to the spine, she had also experienced fusion of her right (and possibly left) sacroiliac joints.

OA was observed in the neck vertebrae of skeleton (4039) and in the joint of the right thumb and in the left wrist. He had also suffered OA in both knees, and DJD of his right hip joint. There was further occurrence of DJD in both the clavicles and the lower jaw, which was also affected by DJD.

Diffuse Idiopathic Skeletal Hyperostosis (DISH)

Diffuse Idiopathic Skeletal Hyperostosis (DISH) is characterised by outgrowths of bone at the site of muscle and ligament attachments, and particularly affects the thoracic region

of the spine. Skeleton (4039) showed some of the characteristic signs of DISH, with osteophytes on the right side of the vertebral bodies of the lower thoracic and upper lumbar spine.

Summary

The total number of skeletons examined was small, yet they displayed a remarkable number of pathological changes. The middle aged or mature adult woman had suffered from scoliosis. The joints in her spine and hip had almost certainly begun to degenerate as a result of the abnormal stresses placed on her body. Accidental injuries were seen in the adolescent and the mature adult male. Evidence for interpersonal violence was observed in the adult male, who had probably fractured his thumb through punching. The early medieval adolescent had suffered multiple sharp blade wounds to the head, neck, and right shoulder, some of which had penetrated deep into the skull, and proved fatal. Healed inflammation of the bones had affected almost all the individuals, most commonly involving the legs. Both adults had suffered DJD and OA. Skeleton (4039) was also probably suffering from a condition known as DISH.

Dental Health

Analysis of the teeth from archaeological populations provides vital clues about health, diet and oral hygiene, as well as information about environmental and congenital conditions. Partial jaws and some teeth were present in both the adult skeletons and the adolescent, and these were examined macroscopically for evidence of pathological changes. Calculus (mineralised dental plaque) deposits were seen on all teeth in both adults, where two-thirds displayed moderate to heavy deposits (after Brothwell 1981). One small carious lesion (tooth decay) was seen in a molar from skeleton (4039), the mature male adult.

The adults had a total of 48 tooth positions between them (27 from skeleton (4037) and 21 from skeleton (4039)). Thirty-nine teeth were present and erupted, with 26 from skeleton (4037) (including 3 loose teeth where the tooth positions were missing) and 13 from skeleton (4039). All 32 tooth positions were present in the adolescent individual, with one tooth having been lost post-mortem, and four teeth not yet erupted.

Ante-Mortem Tooth Loss (AMTL) (the loss of teeth during life), can occur as a result of a variety of factors, including dental caries, pulp-exposure from heavy tooth wear, or periodontal disease (Hillson 1996; Brothwell 1963). Skeleton (4039) had lost five teeth during life, giving an AMTL prevalence of 10.4%.

Dental Enamel Hypoplasia (DEH) is the presence of lines, grooves or pits on the surface of the tooth crown (Hillson 1996), representing periods when crown formation is halted, and is caused by severe stress, such as episodes of malnutrition or disease, during the first seven years of childhood. Skeleton (4039) had multiple DEH lines in both lower canines and one lower premolar, giving a prevalence rate of 7.7% (3/39 teeth affected). Multiple and moderately pronounced DEH lines were also observed in 24 of the teeth from the early medieval adolescent (4050).

Summary

Both adults and the adolescent provided dentition for analysis, and only a small proportion of teeth had been lost post-mortem. Moderate to heavy deposits of mineralised plaque on the teeth of both adults suggests oral hygiene was poor. The moderate to heavy tooth wear observed suggests the presence of coarse, unrefined foods in the diet, and this may well have contributed to the loss of teeth during life (observed in the mature male). The presence of defective enamel formation in the male adult and the adolescent, implies that these individuals experienced poor childhood health and/or nutrition. There was little evidence of dental disease in the adolescent.

The cremation burials

Introduction

Four cremation burials were initially identified on site. However, one (Vessel 3) turned out to represent two burials when excavated in the conservation laboratory. These were contained in separate vessels, one vessel being later disturbed or truncated by the deposition of the other (J. Jones Pers. comm.). There was also a small amount of unstratified bone. A summary of the data for each cremation burial, plus unstratified contexts, is given in Table 16.15.

Method

The bone from each context was passed through a nest of sieves (after McKinley 2004b). Each fraction was weighed and the largest fragment of bone measured. The identifiable bone fragments were divided into four categories: skull (bone from the cranium and mandible), axial (rib cage and spine), upper limb and lower limb. Bone from each of these categories was weighed and described, and any evidence indicating the age or sex of the individual was recorded. The presence of pathological lesions was also recorded. The results are presented in Tables 16.16 and 16.17.

Results and discussion

The amount of cremated bone recovered from each vessel ranged from 250.3g (Vessel 3B) to 1626.0g (Vessel 4), with a mean weight of 901.3g.

The majority of the bone was reasonably well preserved, although warping and cracking of fragments due to the cremation process was observed. The bone from Vessel 3B was the least well preserved.

All five vessels contained fragments over 10mm in size, with over half the weight of bone from Vessels 1, 2 and 4 recovered from this sieved fraction. 62.6% of the bone from Vessel 4, the most intact urn, fell into this category. The mean maximum fragment size from all five vessels was 66.7mm.

Table 16.15: Summary of cremation burials

	Detail*	Period	Bone Colour	Preservation	Species	Weight (g)
Vessel 1	Contained in undecorated urn; complete but broken, probably lying on side	Roman	Most buff/white, some pale to medium blue-grey; occasional dark grey or black areas	Good	Human; Animal ?	610.9
Vessel 2	Contained in poorly fired and undecorated urn; just the base and part of the walls survive	Roman	Most buff/white, some pale to medium grey	Good	Human; Animal	1539.3
Vessel 3R	Contained in well fired undecorated urn; located adjacent to Vessel 3B; just the base and lower part of the walls survive	Roman	Most grey (from dark to light), white in places; some dark grey and black areas	Moderate	Human	480.0
Vessel 3B	Contained in well fired burnished urn decorated with cross hatching; located adjacent to Vessel 3R; just the base and lower part of the walls survive	Roman	Some buff/white, *c.* 50% blue-grey (dark to light); some black	Poor	Human; Animal	250.3
Vessel 3	From either Vessel 3R or 3B	Roman	Most mid to pale grey/white; some dark grey	Moderate	Human	108.9
Vessel 4	Contained in poorly fired undecorated urn; virtually complete and recovered largely intact	Roman	Most buff/white, small portion mid to dark blue-grey; some black	Good	Human; Animal	1626.0
Vessel 5		Roman	Most pale grey/ white, some mid and dark grey	Good	?	22.7

** Information provided by J. Jones of Archaeological Services*

Table 16.16: Summary of cremated bone fragment size

	10mm		5mm		2mm		Weight	Max. Frag. Size
	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(mm)
Vessel 1	348.8	57.1	239.9	39.3	22.2	3.6	610.9	71.6
Vessel 2	789.2	51.3	497.9	32.3	252.2	16.4	1539.3	69.9
Vessel 3R	39.2	8.2	237.5	49.5	203.3	42.4	480.0	30.9
Vessel 3B	40.9	16.3	133.0	53.1	76.4	30.5	250.3	53.9
Vessel 3	7.6	7.0	49.3	45.3	52.0	47.8	108.9	38.8
Vessel 4	1017.1	62.6	431.1	26.5	177.8	10.9	1626.0	107.4
Vessel 5	0.0	0.0	0.3	1.3	22.4	98.7	22.7	11.8

Skeletal elements were identified in all five burials, with the proportion of bone that could be identified ranging from 6.2% in Vessel 3R, to 48.4% in Vessel 4. All vessels contained bones from all parts of the body, except for Vessel 3B, where only fragments from the skull and lower limb could be identified. Within each vessel, the majority of identifiable fragments were either from the skull or from the lower limb.

Table 16.17: Summary of identifiable elements

	Skull		Axial		Upper Limb		Lower Limb		Total ID		UID Long Bone	
	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(%)
Vessel 1	82.2	34.4	44.9	18.8	56.0	23.4	56.0	23.4	239.1	39.1	154.0	25.2
Vessel 2	70.0	15.6	63.6	14.2	44.5	9.9	270.9	60.3	449.0	29.2	289.9	18.8
Vessel 3R	18.9	63.4	1.4	4.7	0.6	2.0	8.9	29.9	29.8	6.2	69.0	14.4
Vessel 3B	15.6	65.8	0.0	0.0	0.0	0.0	8.1	34.2	23.7	9.5	58.6	23.4
Vessel 3	2.9	49.2	1.9	32.2	1.1	18.6	0.0	0.0	5.9	5.4	3.9	3.6
Vessel 4	166.1	21.1	53.4	6.8	108.4	13.8	458.9	58.3	786.8	48.4	177.1	10.9

Small quantities of animal bone were present in all contexts, except Vessel 3R, and possibly Vessel 1. The weight of animal bone and the proportion of total weight are given in Table 16.18.

Table 16.18: Weight and proportion of animal bone

	Animal Bone	
	(g)	(%)
Vessel 1	0.3	0.05
Vessel 2	0.1	0.01
Vessel 3R	0.0	-
Vessel 3B	1.4	0.56
Vessel 4	5.1	0.31

Osteological Assessment

No double burials were identified, as none of the vessels contained duplicated skeletal elements, and none contained bones from individuals of different ages. From the osteological evidence, it appears that each vessel contained the remains of a single individual.

Estimation of age in cremated remains has often to be based on less reliable criteria than those applied to inhumation burials, because the required parts of the skeleton are not present. The material from Vessels 1, 2 and 3R, and the bone associated with Vessel 3R and 3B, all contained fully developed bones, shown by the fusion of late-stage epiphyses, indicating adults (Table 16.19). Degenerative changes affecting the joints in the remains from Vessel 1 and in the material associated with Vessels 3R and 3B might suggest these were mature individuals. The remains from Vessel 3B contained fragments of adult size, but the state of epiphyseal fusion could not be observed. The cremated bone from Vessel 4 included fully developed bones and a partial pubic symphysis, whose surface was irregular and showed signs of degeneration consistent with a mature adult.

Table 16.19: Summary of osteological results for the cremation burials

	Age	Sex	Weight (g)
Vessel 1	Adult	?	610.9
Vessel 2	Adult	Male??	1539.3
Vessel 3R	Adult	?	480.0
Vessel 3B	Adult/ adolescent?	?	250.3
Vessel 3	Adult	?	108.9
Vessel 4	Mature adult?	Male??	1626.0

A fragment of occipital bone displaying male traits was present in Vessel 2. Part of the pubic symphysis was present in Vessel 4, but insufficient survived to provide a positive indication of sex. These two burials were tentatively identified as male (Table 16.19).

Pathological Conditions

Limited evidence for pathological conditions was observed. Four unsided rib fragments from Vessel 4 displayed well-healed fractures. Joint surfaces from Vessels 1 and 3R/3B showed signs of degenerative changes, probably associated with age. Ante mortem tooth loss may have been present in the individuals from Vessels 1 and 4.

Summary

All five cremation burials contained the remains of an adult (or probable adult), with Vessel 4 probably containing a mature adult. Two of the cremations were tentatively identified as males. Pathological conditions observed included traumatic injury to the ribs and degenerative changes affecting the joints. Burial within urns had protected the remains to an extent, but only Vessel 4 is likely to have contained the original quantity of bone deposited. Not all bone was fully oxidised, suggesting insufficiently high temperatures and/ or inadequate oxygen supplies during the cremation process.

Mortuary Practice

Four of the inhumations had been buried on a north-south alignment (heads to the north), including the male adult (skeleton 4039), the unexcavated probable adult (skeleton 4073), and two neonates (Table 16.20). Adults (4039) and (4073) were buried in coffins. The young child (skeleton 4042) was aligned northwest-southeast, and the adult female (skeleton 4037) was oriented south-north. Two of the neonates were probably aligned west-east, and another east-west. The adolescent (skeleton 4050) was also aligned west-east.

Table 16.20: Summary of funerary information for inhumation burials

Skeleton No.	Age	Sex	Position	Hand position	Orientation	Notes
4027	Neonate	-	Flexed, left side	Right hand in front of face, left arm extended in front of body	North/ South	-
4037	35+(?) years	Female	Extended, left side	Arms crossed over chest, hands near shoulders	South/ North	-
4039	45+ years	Male ?	Partially disarticulated		North/ South	Buried in wooden coffin; possibly partially decomposed before burial

Skeleton No.	Age	Sex	Position	Hand position	Orientation	Notes
4042	2-5 years	-	Extended, supine?	Unknown	North-west/ South-east	-
4044	Neonate	-	Disarticulated			-
4050	15-16½ years	-	Extended, prone	Arms either side of torso, hands next to hips	West/ East	Decapitated, multiple sharp blade injuries to head and neck
4053	Neonate ?	-	Extended, supine?	Either side of body?	West/ East?	-
4056	Neonate ?	-	Flexed, right side?	Unknown	North/ South	-
4073	Adult?	-	Extended, supine?	Unknown	North/ South	Buried in wooden coffin
4078	Neonate ?	-	Flexed, right side?	In front of body/ face?	East/ West	-
4099	Neonate ??	-	Unknown	Unknown	Unknown	-
4102	Neonate ?	-	Flexed, left side?	Unknown	West/ East?	-
4105	Neonate ??	-	Unknown	Unknown	Unknown	-

It was possible to determine burial position for nine of the thirteen inhumations. The position of skeleton (4039), the mature male buried in the wooden coffin, was undetermined, since many of the bones were not found *in situ*. Interestingly, the dimensions of the coffin for skeleton (4039) were considered by the excavators to be too small for a fully articulated adult male. As no evidence for cut marks suggestive of dismemberment was observed, it is possible that the body was partially decomposed before it was placed in the coffin.

The adult female (skeleton 4037) lay on her left side with straight legs and arms crossed over her chest (Table 16.20). The 2-5 year old child (skeleton 4042) was probably buried extended and supine (lying on the back). The unexcavated adult was probably also extended and supine. The excavated neonate (skeleton 4027) was flexed and placed on the left side. Most of the remaining neonates were probably flexed on their left or right sides.

The early medieval adolescent (skeleton 4050) was buried prone (face down), with arms lying on either side of the torso. This individual had also been decapitated, and the head was located over the right shoulder.

Summary

Burial practices included both inhumation and urned cremation. There was no obvious organisation to the cemetery, although the lack of intercutting suggests earlier graves were probably visible when later graves were dug. Two of the adults were buried in wooden coffins. The most popular grave orientation was north-south, although west-east and east-west burials also occurred among the neonates. Burial position included extended and supine, as well as flexed on the side, the latter being most commonly seen in the neonate burials. The early medieval skeleton was buried on a west-east alignment, prone and decapitated. The number of skeletons excavated was too few to discern any meaningful patterns in funerary provision.

Discussion

O'Brien (1999) has noted a general absence of burials from the Iron Age, Romano-British, and post-Roman periods in western England, including an area east of the Welsh border and west of the Severn; incorporating parts of Gloucestershire, and Hereford and Worcester. She has suggested that this may indicate a continuation into these later periods of earlier burial rites for the majority of the population, and that this burial ritual is largely invisible to archaeologists, as few cemeteries have been discovered. Alternatively, the lack of evidence could relate to poor preservation due to acidic soils, or a lack of archaeological investigation in the area. The small cemetery at Stretton Grandison is located within this region, and makes a valuable contribution to our knowledge of the population through the study of their skeletal remains.

Two radiocarbon dates returned dates for AD 10-210, and AD 550-660. The latter date could either indicate a cemetery whose use extended into the early medieval period, or an intrusive early medieval burial into a Roman cemetery.

A large proportion of the graves discovered (62%) were probably those of neonates. Neonates and infants under two years of age are generally absent from Roman cemeteries prior to the fourth century AD, being buried within settlements, inside or immediately outside of buildings (Watts 1989; Scott 1999; Philpott 1991). Suggested reasons for their exclusion from the communal cemetery include the economic cost of a formal burial, a cultural failure to accept the infant as a fully human, or infant deaths having a special meaning and significance (Scott 1999; Watts 1989).

Infanticide is viewed by many past and present societies as an acceptable form of birth control (Mays 2000), and is frequently cited as a likely cause for the number of neonatal deaths seen in the Roman period in Britain. Mays (2000) has argued that infanticide was practised during this period, citing documentary evidence, the frequent adult sex imbalance in favour of males, and the unusual peak at 38-40 weeks (i.e. full term) for the age at death often observed in Romano-British infants. Others, however, (e.g. Lewis 2007; Scott 1999) have argued that a high mortality for this age group due to natural causes would be expected and should be considered a more likely cause. Skeleton (4027) was considered to be around 38-40 weeks old at the time of death, but too little of skeleton (4044) survived to determine age with such precision. None of the other probable neonates were fully excavated.

Oral hygiene was poor, and moderate to heavy deposits of mineralised plaque had built up on the teeth of both adults. Coarse, unrefined foods present in the diet contributed to moderate to heavy tooth wear, exposing the softer dentine beneath the enamel. This process likely contributed to the loss of teeth during life. Skeleton (4039), and the adolescent (4050), both experienced episodes of poor childhood health or nutrition, which left behind lines of defective enamel formation in the teeth.

The two adults, both of whom were probably middle-aged or mature, had suffered degenerative joint disease and osteoarthritis. This affected the spine in skeleton (4037) and was almost certainly related to her scoliosis. As well as DJD of the lower limbs, skeleton (4039) also had osteoarthritis in both wrists, which on the right side was probably related to his fractured thumb, and in his jaw, which may have been related to heavy use of his teeth. This individual was possibly suffering from a condition known as DISH, most commonly seen in older men, where excessive bone is formed at certain points in the skeleton. Although the cause is unknown, it has been associated with rich diets and late-onset diabetes. Joint degeneration was also observed in two of the cremation burials.

The possibly middle aged or mature adult woman (4037) had suffered from scoliosis, or a sideways curvature of her spine to the right in the chest region, with associated changes in the shape of her rib cage. It is likely she began to develop this condition in adolescence, and the curvature may have been progressing slowly all her life. The degree of curvature may have been sufficient to be visible to others. She may have suffered shortness of breath and pain in her back as a result of the spinal curvature, and the asymmetrical weight distribution and abnormal stresses placed on her spine probably led to the degeneration observed in her spinal joints and the fusion of joints in her pelvis. However, she would have been capable of many of the physical activities carried out by others in her population, including pregnancy and childbirth.

Evidence for interpersonal violence was seen in the early medieval 15-16½ year old adolescent (4050), who had suffered a bloody and violent death. Multiple sharp blade wounds were seen on the left side of his head and neck, on the back of his head, and on the back of his right shoulder. Some of these wounds had penetrated deep into the skull, and severed vital arteries as well as damaging the brain. These injuries were fatal, and showed no signs of healing. There was no evidence for any defence injuries in the surviving bones of the arms and hands. This assault may have taken place as part of an armed conflict such as a battle or skirmish, or may have been murder.

Most of the graves were concentrated in a central area north-east of the well, and north of ditch (4063), and this area included the adult inhumation burials, as well as that of the child and the early medieval adolescent. Most of the neonates and three of the cremation burials were located around the peripheries of the main group. Unlike the large ordered cemeteries at Cannington (Rahtz et al. 2000) and Cirencester (McWhirr et al. 1982), there was little evidence for organisation of the graves into rows at Stretton Grandison. However, most graves respected the presence of earlier burials, which may imply the location of the graves was marked in some way, or simply that the mounds of soil covering earlier burials were still visible when later graves were dug. If this was the case, then the grave containing cremation Vessel 3B was deliberately opened for the interment of Vessel 3R; unfortunately, the former burial was truncated by the deposition of the latter.

The early medieval adolescent who had died a violent death was buried face down, having been decapitated. Both rituals are observed in the Roman and early medieval periods in Britain (Harman et al. 1981), although the purpose and meaning of these funerary activities is complex and varied, and no doubt changed with time (Reynolds 1997). The location of this burial within a Roman cemetery is also open to various interpretations, depending on whether the cemetery continued in unbroken use from the earlier period, or whether the later burial was intrusive. The potential meanings of the burial location and funerary rites are also closely connected with the identity of those who buried the individual. The location of the cemetery, close to the borders of Wales and at the western extent of early Anglo-Saxon cemeteries (Lucy 2000) raises the question of the ethnicity of the individual, and of those who buried him.

In Anglo-Saxon execution cemeteries, where prone burial and decapitation frequently occur (Reynolds 1997), prone burial was used as a mark of disrespect for the corpses of convicted offenders. These cemeteries emerge during the seventh and eighth centuries, probably in connection with the establishment of states and institutions able to organise and effect official punishments (Reynolds 1997; Buckberry & Hadley 2007). Many were excavated early in the nineteenth century, and few of the skeletons have been studied with modern osteological techniques. However, the skeletons from Walkington Wold, radiocarbon dated to the mid to late Anglo-Saxon period, were re-examined by Buckberry (Buckberry 2008, Buckberry & Hadley 2007) and provide a more reliable comparison. From just one burial, it is not possible to consider whether features present in execution cemeteries apply to skeleton (4050), for example random grave orientations or intercutting burials. There was no evidence for tying of the hands, or amputation of limbs, although both lower legs and part of the left forearm had been lost post-mortem. The date for skeleton (4050), AD 550-660, is slightly early for an execution cemetery, and also it is questionable whether this area of the country would have been under Anglo-Saxon influence or control at this time. Three of the features (prone burial, decapitation, and evidence for trauma) were present, however.

If skeleton (4050) was buried by family and friends, then it is reasonable to expect that efforts would have been made to secure an appropriate burial (Komar 2008). It is possible that cemetery at Stretton Grandison may have been reserved for special burials. This could be supported by the high proportion of neonate burials, often accorded a different burial ritual from older children and adults (Scott 1999), and the burial of a woman with scoliosis, who might have been considered differently from the rest of the community for the purposes of burial (after Philpott 1991). Continuity of function from the earlier period could have led to the burial of skeleton (4050) within the cemetery, possibly deemed an appropriate location given the violent nature of his death. Decapitation and a prone position may have been selected as requisite burial rituals under these circumstances. The association of decapitation with healing and assistance for the injured soul in the journey to the afterlife (Philpott 1991) may be relevant in this case, although this is a Roman interpretation. Alternatively, the connotation of preventing the dead from haunting the living could be applied (Philpott 1991; Harman et al. 1981), and documentary evidence for such beliefs occurs at the end of the Anglo-Saxon period (Bartlett 2002).

A final consideration concerns the date of skeleton (4037), the woman with scoliosis. If she also dates to the early medieval period, this could represent the attempted establishment of an early medieval deviant burial ground. Such a burial ground would be necessary following the establishment of Christianity and the emergence of burial grounds from which certain classes of people were excluded (Reynolds 1997).

Establishment of a deviant burial ground in the location of a pre-existing cemetery could be a possibility. Further radiocarbon dating of other skeletons, particularly skeleton (4037) could help elucidate the function of this cemetery.

Radiocarbon date

The human tooth from skeleton (4039) provided adequate carbon for accurate measurement and analysis proceeded normally. The 2 sigma calibrated date range was Cal AD 10 to 210 (Cal BP 1940 to 1740). The sample information and results of AMS radiocarbon dating are summarised in Table 16.21, details of the results and calibrations are presented in Appendix VIII.

Table 16.21: Summary of sample information and results of AMS radiocarbon dating

Lab. code	Sample ID	Material	Sample dry weight (mg)	Conventional ^{14}C age BP	$\delta^{13}C$ ‰	15N/14N ‰	95.4% (2σ) cal age range AD
Beta - 245906	LTM07 SK4039	human tooth	?	1910 ± 40	-23.7	9.4	10 - 210

Sources

Archaeological Services 2007a *Stretton Grandison, Frome Valley, Herefordshire: plant macrofossil assessment and human bone analysis,* unpublished report **1701** for Border Archaeology, Archaeological Services Durham University

Archaeological Services 2007b *Ledbury Trunk Main, Stretton Grandison, Frome Valley, Herefordshire: palaeoenvironmental assessment and human bone analysis – second delivery of samples,* unpublished report **1740** for Border Archaeology, Archaeological Services Durham University

Archaeological Services 2007c *Ledbury Trunk Main, Stretton Grandison, Frome Valley, Herefordshire: palaeoenvironmental assessment and human bone analysis – third delivery of samples,* unpublished report **1770** for Border Archaeology, Archaeological Services Durham University

Archaeological Services 2007d *Ledbury Trunk Main, Stretton Grandison, Frome Valley, Herefordshire: palaeoenvironmental assessment and human bone analysis – forth delivery of samples,* unpublished report **1786** for Border Archaeology, Archaeological Services Durham University

Aufderheide, A C, & Rodríguez-Martín, C, 1998 *The Cambridge Encyclopedia of Human Palaeopathology*, Cambridge

Barnes, E, 1994 *Developmental Defects of the Axial Skeleton in Palaeopathology*, Niwot

Bartlett, R, 2002 *Geoffrey of Burton - Life and Miracles of St. Modwenna*, Oxford

Berry, A C, & Berry, R J, 1967 Epigenetic Variation in the Human Cranium, *J Anat* **101**, 361-379

Boardman, S, & Jones, G, 1990 Experiments on the Effects of Charring on Cereal Plant Components, *J Archaeol Sci*, **17**, 1-11

Brothwell, D R, 1963 The Macroscopic Dental Pathology of some Earlier Human Populations, in D R Brothwell (ed) *Dental Anthropology*, 271-288, Oxford

Brothwell, D R, 1981 *Digging Up Bones*, New York

Buckberry, J L, 2008 Off With Their Heads: The Anglo-Saxon Execution Cemetery at Walkington Wold, East Yorkshire, in E Murphy (ed) *Deviant Burial in the Archaeological Record*, 148-168, Oxford

Buckberry, J L, & Hadley, D M, 2007 An Anglo-Saxon Execution Cemetery at Walkington Wold, Yorkshire, *Oxf J Archaeol* **26**, 309-329

Buikstra, J E, & Ubelaker, D H, (eds) 1994 *Standards for Data Collection from Human Skeletal Remains*, Arkansas Archaeological Survey Research Series **44**, Arkansas

Cox, M, 2000 Ageing Adults from the Skeleton, in M Cox & S A Mays (eds) *Human Osteology in Archaeology and Forensic Science*, 61-82, London

Dandy, D J, & Edwards, D J, 2003 *Essential Orthopaedics and Trauma*, Edinburgh

de Moulins, D, 2000 Hanbury Street, Droitwich: excavations 1980-82; charred plant remains, in D Hurst, *Roman Droitwich: Dodderhill fort, Bays Meadow Villa and roadside settlement*, CBA Res Rep **60**, 69-74

Finnegan, M, 1978 Non-Metric Variation of the Infracranial Skeleton, *J Anat* **125**, 23-37

Gale, R, & Cutler, D, 2000 *Plants in archaeology, identification of vegetative plant materials used in Europe and the southern Mediterranean to c.1500*, West Yorkshire

Godwin, H, 1975 *History of the British Flora. A factual basis for Phytogeography*, 2nd Edition, Cambridge

Greig, J R A, 1991 The British Isles, in W Van Zeist, K Wasylikowa & K-E Behre (eds), *Progress in Old World Palaeoethnobotany*, Rotterdam

Greig, J R A, 2006 Bays Meadow Villa, Droitwich: excavations 1967-77; environmental evidence from well V 18 - plant remains, in D Hurst, *Roman Droitwich: Dodderhill fort, Bays Meadow Villa and roadside settlement*, CBA Res Rep **60**, 224-238

Harman, M, Molleson, T I, & Price, J L, 1981 Burials, Bodies, and Beheadings in Romano-British and Anglo-Saxon Cemeteries, *Bull Br Mus Nat Hist (Geol)* **35**, 145-188

Hillson, S W, 1996 *Dental Anthropology*, Cambridge

Huntley, J P, 1993 *A1 Walshford-Dishforth (WD93). An assessment of the palaeoenvironmental samples. Part IIa: a selection from fields 88, 89, 90*, Durham Environmental Archaeology Report **4/93**.

Hillman, G C 1981 Reconstructing crop processing from the charred remains of crops in R Mercer (ed) *Farming practice in British Prehistory,* Edinburgh, 123-62

Jones, M, 1981 The Development of crop husbandry, in M K Jones & G W Dimbleby (eds), *The environment of Man: the Iron Age to the Anglo-Saxon period*, BAR Brit Ser **87**, 95-127, British Archaeological Reports, Oxford

Komar, D, 2008 Patterns of Mortuary Practice Associated with Genocide: Implications for Archaeological Research, *Curr Anthropol* **49**, 123-133

Larsen, C S, 1997 *Bioarchaeology: Interpreting Behaviour from the Human Skeleton*, Cambridge

Lewis, M E, 2007 *The Bioarchaeology of Children: Perspectives from Biological and Forensic Anthropology*, Cambridge

Lucy, S, 2000 *The Anglo-Saxon Way of Death*, Stroud

Mays, S A, & Cox, M, 2000 Sex Determination in Skeletal Remains, in M Cox & S A Mays (eds) *Human Osteology in Archaeology and Forensic Science*, 117-130, London

McGowan, G, & Prangnell, J, 2006 The significance of Vivianite in Archaeological Settings, *Geoarchaeology*, **21(1)**, 93-111

McKinley, J I, 2004a Compiling a Skeletal Inventory: Disarticulated and Co-Mingled Remains, in M Brickley & J I McKinley (eds) *Guidelines to the Standards for Recording Human Remains*, IFA Paper No. 7 14-17, Southampton and Reading

McKinley, J I, 2004b Compiling a Skeletal Inventory: Cremated Human Bone, in M Brickley & J I McKinley (eds) *Guidelines to the Standards for Recording Human Remains*, 9-13, Southampton and Reading

McWhirr, A, Viner, L, & Wells, C, 1982 *Cirencester Excavations II: Romano-British Cemeteries at Cirencester*, Cirencester

Moore, J A 1986 *Charophytes of Great Britain and Ireland*. BSBI Handbook **5**, London 140

O'Brien, E, 1999 *Post-Roman Britain to Anglo-Saxon England: Burial Practices Reviewed*, British Archaeological Reports British Series **289**, Oxford

Pelling, R, 1999 Charred and waterlogged plant remains, in A Mudd, E J Williams & A Lupton (eds), *Excavations alongside Roman Ermin Street, Gloucestershire and Wiltshire*, 469-495

Philpott, R, 1991 *Burial Practices in Roman Britain: A Survey of Grave Treatment and Furnishing, A.D. 43-410*, British Archaeological Reports British Series **219**, Oxford

Preston, C D, Pearman, D A. & Dines, T D, 2002 *New Atlas of the British and Irish Flora.* Oxford

Protas, J M, & Kornblatt, B A, 1981 Fractures of the Lateral Margin of the Distal Tibia: The Tillaux Fracture, *Radiology* **138**, 55-57

Rahtz, P, Hirst, S, & Wright, S M, 2000 *Cannington Cemetery: Excavations 1962-3 of Prehistoric, Roman, Post-Roman, and Later Features at Cannington Park Quarry, Near Bridgewater, Somerset*, Britannia Monograph Series **17**, London

Resnick, D, 2002 *Diagnosis of Bone and Joint Disorders*, Philadelphia

Reynolds, A, 1997 The Definition and Ideology of Anglo-Saxon Execution Sites and Cemeteries, in G de Boe & F Verhaeghe (eds) *Death and Burial in Medieval Europe*, 33-41, Zellick

Roberts, C A, & Cox, M, 2003 *Health and Disease in Britain: From Prehistory to the Present Day*, Stroud

Roberts, C A, & Manchester, K, 1995 *The Archaeology of Disease*, Stroud

Robinson, M, 1988 The significance of the tubers of *Arrhenatherum elatius* (L.) Beauv. from Site 4, cremation 15/11, in G Lambrick, (ed), *The Rollright Stones: Megaliths, monuments and settlement in the prehistoric landscape*, English Heritage Archaeological Report **6**

Salter, R B, 1999 *Textbook of Disorders and Injuries of the Musculoskeletal System*,

Scheuer, J L, & Black, S, 2000a Development and Ageing of the Juvenile Skeleton, in M Cox & S Mays (eds) *Human Osteology in Archaeology and Forensic Science*, 9-21, London

Scheuer, J L, & Black, S, 2000b *Developmental Juvenile Osteology*, San Diego

Scott, E, 1999 *The Archaeology of Infancy and Infant Death*, British Archaeological Reports International Series **819**, Oxford

Skyrme, A D, Selmon, G P F, & Apthorp, L, 2005 *Common Spinal Disorders Explained*, London & Chicago

Stace, C, 1997 *New Flora of the British Isles*, 2nd Edition, Cambridge

Straker, V, 2000 Bays Meadow Villa, Droitwich: excavations 1967-77; macroscopic plant remains, in D Hurst, *Roman Droitwich: Dodderhill fort, Bays Meadow Villa and roadside settlement*, CBA Res Rep **60**, 221-223

Watts, D J, 1989 Infant Burials and Romano-British Christianity, *Archaeol J* **146**, 372-383

Table 16.22 (- Appendix Ia: Plant macrofossil data from the non-waterlogged Roman contexts)

Fill		occupation deposit	burial context of baby							well	charcoal rich deposit	grave	cremation burial?	pit	linear
Context		4003	4027							4024	4031	4038	4058	4062	4064
Sample		55	66	baby sk level	spit1	spit 2	spit 3	pot 1 (spit1)	pot 2 (spit2)	?	23	43	60	59	75
Volume processed (l)		60	-	-	23	40	35	10	10	9	8	155	20	6	90
Volume of flot (ml)		200	7	325	25	10	60	5	5	7	10	1070	140	10	350
Volume of flot analysed (ml)		200	7	325	25	10	60	5	5	7	10	1070	140	10	350
Residue contents (relative abundance)															
Bone (burnt)	mammal - indet. frag.	-	-	-	-	-	-	-	-	-	-	1	1	-	-
Bone (calcined)	mammal - indet. frag.	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Bone (unburnt)	mammal - indet. frag.	2	-	-	-	-	-	-	-	1	1	2	2	1	3
Bone (unburnt)	small animal	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Bone (unburnt)	cf. sheep/goat acetabulum	-	-	-	-	-	-	1	-	-	-	-	-	-	-
Bone (unburnt)	sheep/goat humerus	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Bone (unburnt)	mouse indet.	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Bone (unburnt)	mouse sized long bone	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Bone (unburnt)	mouse lower jaw	-	-	-	-	-	1	-	-	-	-	-	-	-	-
Bone (unburnt)	shrew jaw	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Bone	pin shaft	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Charcoal		-	-	-	-	-	-	-	-	-	-	1	1	-	2
CBM		-	-	-	-	-	-	-	-	-	-	-	-	-	1
Coal shale		1	-	-	-	-	-	-	-	-	-	-	-	-	-
Copper alloy item (total no.)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Daub		-	-	-	-	-	1	-	-	-	-	-	-	-	-
Fish Bone	indet. frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Flint flake (total no.)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Glass (total no.)		-	-	-	-	-	-	-	-	-	-	-	-	-	1
Metal items (corroded) (total no.)		-	-	-	1	-	-	-	-	-	-	-	-	-	-
Metal dust		-	-	-	-	-	-	-	-	1	1	1	-	-	-
Mollusca shell (marine)		-	-	-	-	-	-	-	-	-	-	-	-	-	1
Mollusca shell (terrestrial)		1	-	-	-	1	-	-	-	1	-	-	1	-	-
Mollusca shell (oyster)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pot sherds (total no.)		18	-	-	2	3	10	13	2	-	1	25	10	-	38
Teeth (total no.)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Teeth (total no.)	vole	-	-	-	-	1	-	-	-	-	-	-	-	-	-
Flot matrix (relative abundance)															
Bone (burnt)	mammal - indet. frag.	-	-	1	-	-	1	-	-	-	-	-	1	-	1
Bone (calcined)	mammal - indet. frag.	2	-	1	1	2	-	1	-	-	-	1	-	-	1
Bone (ethched and smoothed)	mammal - indet. frag.	3	-	-	-	-	-	-	-	-	-	1	1	-	2
Bone (semi-mineralised)	mammal - indet. frag.	-	-	-	-	-	-	-	-	-	-	2	-	-	-
Bone (semi-mineralised)	fish	-	-	-	-	-	-	-	-	-	-	1	-	-	-
Bone (unburnt)	mammal - indet. frag.	4	-	-	1	1	1	-	1	1	1	-	1	1	2
Bone	small animal	-	-	-	-	-	1	1	-	-	1	1	2	-	3
CBM		1	-	-	-	-	-	-	-	-	-	-	-	-	-
Charcoal		3	3	2	4	4	3	2	2	3	3	3	3	4	4
Clinker		-	-	-	-	-	1	-	-	-	-	-	-	-	-
Coal		1	-	-	-	-	-	-	-	-	-	1	-	-	1
Fish bone (unburnt)	indet. frag.	2	-	1	1	-	-	1	-	-	-	2	1	-	1
Fish scales		1	-	-	1	-	1	-	-	-	-	-	1	-	1
Flint flake (total no.)		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Insecta		1	-	1	1	-	-	-	-	1	-	-	-	-	-
Mollusca shell (marine)	indet. frag.	1	-	-	-	-	-	-	-	-	-	-	-	-	-
Mollusca shell (marine cf. oyster)	indet. frag.	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Mollusca shell (terrestrial)	entire and frags	1	1	1	1	-	1	-	-	2	-	-	2	1	3
Monocot stems		-	-	-	-	-	-	-	-	2	-	-	-	-	-
Pot sherds (total no.)		2	-	-	-	-	-	-	-	-	-	-	-	-	8
Roots (modern)		-	-	1	1	1	2	1	-	2	-	2	1	2	1
Seeds (uncharred)		-	-	-	1	1	1	-	-	2	1	3	-	-	2
Semi-vitrified fuel waste		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Vegetative material		-	-	-	-	-	2	-	-	2	-	5	-	-	1
Vivianite deposits		-	-	-	-	-	-	-	-	2	-	3	-	-	3
Wood	frags	-	-	-	-	-	-	-	-	-	-	3	-	-	-
Charred remains (total counts)															
(a) *Anthemis cotula* (Stinking Chamomile)	achene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Chenopodium album* (Fat-hen)	seed	1	-	-	-	-	-	-	-	-	1	-	-	-	-
(a) *Chrysanthemum segetum* (Corn Marigold)	achene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Fallopia convolvulus* (Black Bindweed)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Lithospermum arvense* (Field Gromwell)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(a) *Tripleurospermum inodorum* (Scentless Mayweed)	achene	-	-	-	-	-	-	-	-		1	-	-	-	-
(c) *Avena* spp (oat species)	grain	-	-	-	1	-	-	3	1	-	-	2	-	-	-
(c) *Hordeum* spp (Barley species)	grain	-	-	-	-	1	2	-	-	-	-	2	-	-	-
(c) *Hordeum* spp (Barley species)	rachis frag.	-	-	-	-	-	-	-	-	2	-	2	1	-	-
(c) *Hordeum* spp (Hulled Barley)	grain	2	-	-	-	-	-	-	-	-	-	0	-	-	-
(c) *Hordeum* spp (Hulled Barley)	grain - sprouting	1	-	-	-	-	-	-	-	-	-	0	-	-	-
(c) *Pisum sativum* (Pea)	fruit	-	-	-	-	-	-	-	-	-	-	1	-	-	-
(c) *Pisum sativum* (Pea) / *Vicia* cf. *faba* (Bean)	fruit	-	-	-	-	-	-	-	-	-	-	1	-	-	-
(c) *Triticum* cf. *aestivum* (cf. Bread Wheat)	grain	-	-	-	-	-	-	-	-	-	-	0	8	-	-
(c) *Triticum* cf. *aestivum* (cf. Bread Wheat)	rachis fragment	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *spelta* (cf. Spelt Wheat)	grain	-	-	-	-	-	-	-	-	-	-	0	17	-	-
(c) *Triticum spelta* (Spelt Wheat)	glume base	239	6	-	1	8	28	17	3	8	25	89	1488	68	78
(c) *Triticum spelta* (Spelt Wheat)	spikelet fork	-	-	-	-	2	-	-	-	-	-	13	-	-	-
*(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer	glume base (rel abund)	*6*	*3*	*1*	*3*	*4*	*4*	*4*	*3*	*3*	*3*	4	6	3	4
(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer Wheat)	spikelet fork frag.	-	5	-	-	-	41	26	3	-	-	54	-	-	-
(c) *Triticum* spp (Wheat species)	grain	27	2	-	3	1	10	3	1	1	5	23	21	4	14
(c) Cerealia indeterminate	grain	6	-	1	11	3	64	11	3	1	9	118	146	24	24
*(c) Cerealia indeterminate	awn frag. twisted (rel	*3*	-	-	-	-	-	-	-	-	-	-	-	-	2
(c) Cerealia indeterminate	rachis fragment	-	-	-	-	-	4	-	-	-	-	8	-	-	-
(c) Cerealia indeterminate	culm nodes	-	-	-	-	-	-	-	-	-	-	-	-	-	-
*(c) Cerealia indeterminate	detached radicles (rel	-	*1*	-	-	-	*2*	*3*	-	-	-	2	3	2	-
*(c) Cerealia indeterminate %	grain	*17*	-	*100*	*73*	*60*	*84*	*65*	*60*	*50*	*64*	*81*	*76*	*86*	*63*
(g) *Arrhenatherum elatius* ssp *bulbosum* (False Oat-	tuber	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(h) *Rumex acetosella* (Sheep's Sorrel)	nutlet	2	1	-	-	-	-	-	-	-	-	-	1	-	-
(r) *Galium aparine* (Cleavers)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Hyocyamus niger* (Henbane)	seed	-	-	-	-	-	-	-	-	-	-	1	-	-	-
(r) *Lapsana communis* (Nipplewort)	achene	-	-	-	-	-	-	1	-	-	1	-	-	-	-
(r) *Plantago lanceolata* (Ribwort Plantain)	seed	-	-	-	-	-	-	-	-	-	-	2	-	-	-
(r) Polygonaceae undifferentiated (Knotweed family)	nutlet	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(r) *Stellaria media* (Common Chickweed)	seed	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) cf. *Bryonica dioica* (White Bryony)	seed	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag.	3	-	-	-	-	-	-	-	-	-	2	7	1	1
(t) *Prunus domestica* (wild plum)	fruitstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Prunus* cf.*spinosa* (Sloe)	fruitstone	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(t) *Prunus* sp (Wild Plum)	fruitstone	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(w) Asteraceae indeterminate (Daisy family)	achene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) *Carex* spp (Sedges)	biconvex nutlet	-	-	-	-	-	-	-	-	-	-	1	1	-	-
(w) *Carex* spp (Sedges)	trigonous nutlet	-	-	-	-	-	-	-	-	-	-	5	1	-	-
(w) *Conium maculatum* (Hemlock)	fruit	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(w) Cyperaceae undifferentiated (Sedge family)	nutlet	-	-	-	-	-	-	-	-	-	-	5	-	-	-
(w) *Ranunculus sardous* (Hairy Buttercup)	achene	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(x) Apiaceae (Carrot family)	achene	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(x) Brassicaceae undifferentiated (Cabbage family)	seed	-	-	-	-	-	-	-	-	-	-	1	-	-	-
(x) cf. *Bromus* spp (Brome grass)	caryopsis	16	-	-	-	6	18	4	-	3	28	4	230	20	15
(x) *Chenopodium* spp (Goosefoot)	seed	1	-	-	-	-	-	-	-	-	1	2	-	-	-
(x) Euphorbiaceae (Spurge family)	seed	-	-	-	-	-	-	-	-	-	-	-	1	-	-
(x) Fabaceae undifferentiated (Pea family)	seed	1	-	-	-	-	1	-	-	-	-	3	3	-	-
(x) Poaceae undifferentiated <2mm (Grass family)	caryopsis	9	-	-	-	-	18	-	-	-	-	13	-	-	-
(x) Poaceae undifferentiated 2-5mm (Grass family)	caryopsis	13	1	-	10	5	5	10	2	-	3	9	21	1	1
(x) *Prunella vulgaris* (Selfheal)	achene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	achene	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Rumex* spp (Dock)	nutlet	6	-	-	1	-	3	1	-	-	4	23	4	-	1
(x) *Rumex* spp (Dock)	tepal	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(x) *Vicia* spp (vetch)	seed	1	-	-	-	-	1	2	-	-	-	7	5	-	-
(x) *Viola* spp (Violet)	seed	-	-	-	-	2	-	-	-	-	-	-	-	-	-
Seed - indeterminate		-	-	-	-	-	-	-	-	-	-	4	-	-	-

[a:arable weed; c: cultivated plant; g: grass; h: heathland; r: ruderal; t: woodland; w: wetland; x: wide niche]
Relative abundance is based on a scale from 1 (lowest) to 5 (highest)
**Numbers in italics are not total counts*

Table 16.22 (- Appendix Ia (continued): Plant macrofossil data from the non-waterlogged Roman contexts)

Fill		grave cut	linear	pit	pit/well	gully	occupation layer	charcoal lens	outside coffin
Context		4072	4107	8006	8008	8010	9007	9016	-
Sample		72	85	47	79	49	52	78	-
Volume processed (l)		60	10	70	10	8	10	20	8
Volume of flot (ml)		75	10	500	140	30	25	500	50
Volume of flot analysed (ml)		75	10	500	140	30	25	500	50
Residue contents (relative abundance)									
Bone (burnt)	mammal - indet. frag.	1	-	1	2	1	-	-	-
Bone (calcined)	mammal - indet. frag.	-	-	-	-	-	-	-	-
Bone (unburnt)	mammal - indet. frag.	3	2	2	3	1	1	2	2
Bone (unburnt)	small animal	-	-	-	-	-	-	-	-
Bone (unburnt)	cf. sheep/goat acetabulum	-	-	-	-	-	-	-	-
Bone (unburnt)	sheep/goat humerus	-	-	-	-	-	-	-	-
Bone (unburnt)	mouse indet.	-	-	-	-	-	-	-	-
Bone (unburnt)	mouse sized long bone	-	-	-	-	-	-	-	-
Bone (unburnt)	mouse lower jaw	-	-	-	-	-	-	-	-
Bone (unburnt)	shrew jaw	-	-	-	-	-	-	-	-
Bone	pin shaft	-	-	-	-	-	-	-	-
Charcoal		-	1	-	3	-	-	-	-
CBM		-	1	-	-	-	-	-	-
Coal shale		-		4	-	-	-	-	-
Copper alloy item (total no.)		-	-	2	-	-	-	-	-
Daub		-	-	-	-	-	-	-	-
Fish Bone	indet. frag.	-	-	1	-	-	-	-	-
Flint flake (total no.)		-	-	1	-	-	-	-	-
Glass (total no.)		3	-	1	-	1	-	-	-
Metal items (corroded) (total no.)		-	-	-	2	-	-	-	-
Metal dust		1	-	-	2	-	-	-	-
Mollusca shell (marine)		-	-	-	-	-	-	-	-
Mollusca shell (terrestrial)		2	-	1	2	1	-	-	-
Mollusca shell (oyster)		1	-	-	1	-	-	-	-
Pot sherds (total no.)		16	1	55	19	2	3	-	-
Teeth (total no.)		1	-	-	-	-	-	-	-
Teeth (total no.)	vole	-	-	-	-	-	-	-	-
Flot matrix (relative abundance)									
Bone (burnt)	mammal - indet. frag.	-	-	-	-	-	-	1	-
Bone (calcined)	mammal - indet. frag.	1	-	1	1	-	-	-	-
Bone (ethched and smoothed)	mammal - indet. frag.	2	-	-	-	1	-	-	1
Bone (semi-mineralised)	mammal - indet. frag.	-	-	-	-	-	-	-	-
Bone (semi-mineralised)	fish	-	-	-	-	-	-	-	-
Bone (unburnt)	mammal - indet. frag.	2	1	-	1	-	-	1	-
Bone	small animal	1	1	4	1	2	1	-	1
CBM		-	-	-	-	-	-	-	-
Charcoal		4	4	4	4	4	4	4	3
Clinker		1	-	-	-	-	-	-	-
Coal		1	-	-	-	-	-	-	1
Fish bone (unburnt)	indet. frag.	-	-	1	-	-	-	-	1
Fish scales		1	-	1	1	-	-	-	-
Flint flake (total no.)		-	-	1	-	-	-	-	-
Insecta		-	-	-	-	-	-	1	-
Mollusca shell (marine)	indet. frag.	-	-	2	-	-	-	-	-
Mollusca shell (marine cf. oyster)	indet. frag.	-	-	-	-	-	-	-	-
Mollusca shell (terrestrial)	entire and frags	2	2	3	2	4	-	-	-
Monocot stems		-	-	-	-	1	3	-	-
Pot sherds (total no.)		1	-	-	-	-	-	-	-
Roots (modern)		1	2	2	2	2	4	2	-
Seeds (uncharred)		-	-	-	-	2	-	1	1
Semi-vitrified fuel waste		-	-	-	-	1	-	-	-
Vegetative material		-	-	-	-	-	2	-	4
Vivianite deposits		-	-	-	-	-	-	-	3
Wood	frags	-	-	-	-	-	-	-	-
Charred remains (total counts)									
(a) *Anthemis cotula* (Stinking Chamomile)	achene	-	-	1	-	-	-	-	-
(a) *Chenopodium album* (Fat-hen)	seed	-	-	11	-	-	-	-	-
(a) *Chrysanthemum segetum* (Corn Marigold)	achene	-	-	1	-	-	-	-	-
(a) *Fallopia convolvulus* (Black Bindweed)	nutlet	-	-	5	-	-	-	-	-
(a) *Lithospermum arvense* (Field Gromwell)	seed	-	-	1	-	-	-	-	-
(a) *Tripleurospermum inodorum* (Scentless Mayweed)	achene	-	-	-	-	-	-	-	-
(c) *Avena* spp (oat species)	grain	1	-	-	29	-	1	32	-
(c) *Hordeum* spp (Barley species)	grain	-	-	19	14	-	2	1	-
(c) *Hordeum* spp (Barley species)	rachis frag.	-	-	-	-	-	-	-	-
(c) *Hordeum* spp (Hulled Barley)	grain	-	-	9	1	-	-	-	-
(c) *Hordeum* spp (Hulled Barley)	grain - sprouting	-	-	-	8	-	-	-	-
(c) *Pisum sativum* (Pea)	fruit	-	-	6	-	-	-	-	-
(c) *Pisum sativum* (Pea) / *Vicia* cf. *faba* (Bean)	fruit	-	-	-	-	-	-	-	-
(c) *Triticum* cf. *aestivum* (cf. Bread Wheat)	grain	-	1	-	-	1	-	4	-
(c) *Triticum* cf. *aestivum* (cf. Bread Wheat)	rachis fragment	-	-	5	-	-	-	-	-
(c) *Triticum* cf. *spelta* (cf. Spelt Wheat)	grain	-	-	-	-	3	-	-	-
(c) *Triticum spelta* (Spelt Wheat)	glume base	6	21	47	275	7	35	3552	3
(c) *Triticum spelta* (Spelt Wheat)	spikelet fork	-	-	-	36	-	7	448	2
*(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer	glume base (rel abund)	*3*	*3*	*4*	*4*	*3*	*4*	*6*	*2*
(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer Wheat)	spikelet fork frag.	-	-	61	36	3	68	4044	2
(c) *Triticum* spp (Wheat species)	grain	14	7	48	25	7	8	264	-
(c) Cerealia indeterminate	grain	32	21	104	179	27	64	1252	1
*(c) Cerealia indeterminate	awn frag. twisted (rel	*1*	-	-	-	-	-	-	-
(c) Cerealia indeterminate	rachis fragment	-	-	-	28	-	2	64	-
(c) Cerealia indeterminate	culm nodes	-	-	3	-	-	-	1	-
*(c) Cerealia indeterminate	detached radicles (rel	*1*	-	-	-	-	-	-	-
*(c) Cerealia indeterminate %	grain	*68*	*72*	*58*	*70*	*71*	*85*	*81*	*100*
(g) *Arrhenatherum elatius* ssp *bulbosum* (False Oat-	tuber	-	-	1	-	-	-	-	-
(h) *Rumex acetosella* (Sheep's Sorrel)	nutlet	-	-	4	-	-	-	2	-
(r) *Galium aparine* (Cleavers)	seed	-	-	20	-	-	-	-	1
(r) *Hyocyamus niger* (Henbane)	seed	-	-	-	-	-	-	-	-
(r) *Lapsana communis* (Nipplewort)	achene	-	-	-	-	-	-	-	-
(r) *Plantago lanceolata* (Ribwort Plantain)	seed	-	-	2	-	-	-	-	-
(r) Polygonaceae undifferentiated (Knotweed family)	nutlet	-	-	1	-	-	-	-	-
(r) *Stellaria media* (Common Chickweed)	seed	-	-	1	-	-	-	-	-
(t) cf. *Bryonica dioica* (White Bryony)	seed	-	-	-	-	-	-	-	-
(t) *Corylus avellana* (Hazel)	nutshell frag.	2	-	97	-	1	1	-	-
(t) *Prunus domestica* (wild plum)	fruitstone	-	-	1	-	-	-	-	-
(t) *Prunus* cf.*spinosa* (Sloe)	fruitstone	-	-	1	-	-	-	-	-
(t) *Prunus* sp (Wild Plum)	fruitstone	-	-	-	-	-	-	-	-
(w) Asteraceae indeterminate (Daisy family)	achene	-	-	2	-	-	-	-	-
(w) *Carex* spp (Sedges)	biconvex nutlet	-	-	-	-	-	-	1	-
(w) *Carex* spp (Sedges)	trigonous nutlet	1	-	12	2	-	1	32	-
(w) *Conium maculatum* (Hemlock)	fruit	-	-	1	-	-	-	-	-
(w) Cyperaceae undifferentiated (Sedge family)	nutlet	-	-	3	3	-	-	-	1
(w) *Ranunculus sardous* (Hairy Buttercup)	achene	-	-	-	-	-	-	-	-
(x) Apiaceae (Carrot family)	achene	-	-	1	-	-	-	-	-
(x) Brassicaceae undifferentiated (Cabbage family)	seed	-	-	-	-	1	-	-	-
(x) cf. *Bromus* spp (Brome grass)	caryopsis	24	1	30	6	-	2	704	2
(x) *Chenopodium* spp (Goosefoot)	seed	-	-	-	-	-	-	-	-
(x) Euphorbiaceae (Spurge family)	seed	-	-	-	-	-	-	-	-
(x) Fabaceae undifferentiated (Pea family)	seed		1	3	4	-	-	-	-
(x) Poaceae undifferentiated <2mm (Grass family)	caryopsis		3					1248	1
(x) Poaceae undifferentiated 2-5mm (Grass family)	caryopsis	2	6	127	70	1	30	5376	
(x) *Prunella vulgaris* (Selfheal)	achene			3					
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	achene			3					
(x) *Rumex* spp (Dock)	nutlet	2		45	5	4		128	
(x) *Rumex* spp (Dock)	tepal					1			
(x) *Vicia* spp (vetch)	seed			119	5			2	
(x) *Viola* spp (Violet)	seed				2				
Seed – indeterminate				10		1			

[a:arable weed; c: cultivated plant; g: grass; h: heathland; r: ruderal; t: woodland; w: wetland; x: wide niche]
Relative abundance is based on a scale from 1 (lowest) to 5 (highest)
**Numbers in italics are not total counts*

Table 16.23 (- Appendix Ib: Plant macrofossil data from the Roman and prehistoric waterlogged contexts)

Period		Prehistoric			Roman
Access Pit		2	2	5	4
Context		2004	2005	5018	4066
Sample		31	30	28	53
Volume processed (l)		200	200	200	200
Volume of waterlogged material analysed (ml)		200	200	200	200
Matrix (relative abundance)					
Bone	small animal	1	-	-	-
Charcoal		-	5	-	-
Coal		-	2	-	-
Insecta		-	2	-	2
Mollusca shell (terrestrial)	entire and frags	-	3	-	2
Vegetative material	mis***C.***	2	3	3	3
Wood	frags	-	3	-	-
Charred remains (total counts)					
(a) *Tripleurospermum inodorum* (Scentless Mayweed)	achene	1	-	-	-
(c) *Hordeum* spp (Hulled Barley)	grain	-	-	-	1
(c) *Triticum spelta* (Spelt Wheat)	glume base	1	-	-	7
(c) *Triticum spelta* (Spelt Wheat)	spikelet fork	-	-	-	100
(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer wheat)	glume base	-	-	-	3
(c) *Triticum spelta or T. dicoccum* (Spelt or Emmer Wheat)	spikelet fork frag.	1	-	-	3
(c) Cerealia indeterminate	rachis fragment	1	-	-	-
(c) Cerealia indeterminate	detached radicles	1	-	-	-
(x) cf. *Bromus* spp (Brome grass)	caryopsis	1	-	-	1
(x) Poaceae undifferentiated <2mm (Grass family)	caryopsis	1	-	-	-
Waterlogged remains (total counts)					
(q) Alismataceae (Water-plantain family)	seed	1	6	1	1
(q) Characeae (Green Algae)	oospores	-	12	-	-
(q) *Menyanthes trifoliata* (Bogbean)	seed	-	1	5	-
(q) *Potamogeton coloratus* (Pondweed)	fruit	-	-	6	-
(q) *Ranunculus* subgenus *Batrachium* (Crowfoot)	fruit	1	1	-	-
(q) *Zanichellia palustris* (Horned Pondweed)	fruit	1	1	-	-
(r) *Hyoscyamus niger* (Henbane)	seed	1	-	-	-
(r) *Persicaria maculosa* (Redshank)	nutlet	-	2	7	-
(r) *Polygonum aviculare* (Knotgrass)	nutlet	1	-	-	17
(r) *Sonchus asper* (Prickly Sow-thistle)	achene	1	2	-	-
(r) *Stellaria graminea* (Lesser Stitchwort)	seed	1	3	-	-
(r) *Stellaria media* (Common Chickweed)	seed	1	9	-	2
(r) *Urtica dioica* (Common Nettle)	seed	13	-	-	48
(t) *Betula* spp (Birch)	fruit	-	-	33	-
(t) *Betula* spp (Birch)	bract	-	-	1	-
(t) *Corylus avellana* shell fragment (Hazelnut)	nut	-	-	1	-
(t) *Rubus fruticosus* agg. (Bramble)	fruitstone	2	4	-	-
(t) *Rubus idaeus* (Wild Raspberry)	fruitstone	1	-	-	-
(t) *Sambucus nigra* (Elder)	fruit	1	3	-	1
(t) Fruitstone fragments indet.	fruitstone	1	-	-	-
(w) *Carex* spp biconvex nutlets (Sedges)	nutlet	1	-	-	-
(w) *Carex* spp (Sedges)	trigonous nutlet	1	4	2	-
(w) *Cladium mariscus* (Great Fen-sedge)	fruit	-	-	11	-
(w) *Conium maculatum* (Hemlock)	seed	1	-	-	8
(w) Cyperaceae undifferentiated (Sedge family)	nutlet	1	-	-	-
(w) *Eleocharis* spp (Spike-rush)	nutlet	-	3	-	-
(w) *Isolepis setacea* (Bristle Club-rush)	nutlet	1	-	-	-
(w) *Juncus articulatus* type (Jointed Rush)	seed	-	44	-	1
(w) *Juncus effusus* type (Soft-rush)	seed	-	100	-	-
(w) *Juncus spp* (Rush)	seed	-	120	-	2
(w) *Lycopus europaeus* (Gypsywort)	seed	-	-	5	-
(w) *Montia fontana* (Blinks)	seed	1	-	-	-
(w) *Ranunculus sardous* (Hairy Buttercup)	achene	1	2	-	-
(w) *Schoenoplectus lacustris* (Common Club-rush)	nutlet	1	-	7	-
(x) Apiaceae (Carrot family)	achene	-	1	1	-
(x) Asteraceae undifferentiated (Daisy family)	achene	-	1	-	-
(x) *Chenopodium* spp (Goosefoot)	seed	1	4	-	-
(x) *Cirsium / Carduus* spp (Thistles)	achene	1	3	1	1
(x) Fabaceae undifferentiated (Pea family)	seed	-	-	1	-
(x) Lamiaceae undifferentiated (Mint family)	seed	1	-	-	-
(x) *Mecanopsis cambrica* (Welsh Poppy)	seed	4	6	-	-
(x) *Potentilla* spp (Cinquefoils)	achene	1	1	-	-
(x) *Ranunculus* subgenus *Ranunculus* (Buttercup)	achene	1	1	-	1
(x) Rosaceae undifferentiated (Rose family)	achene	-	2	-	-
(x) *Rumex* spp (Dock)	nutlet	1	4	-	6
(x) *Rumex* tepal spp (Dock)	nutlet	-	1	-	2
(x) *Stachys* spp (Woundwort)	seed	-	-	-	2
(x) *Viola* spp (Violet)	seed	1	1	-	-
Indeterminate	fruitstone frag.	-	-	1	-
Wood	frags	-	-	1	-

[a:arable weed; c: cultivated plant; q: aquatic; r: ruderal; t; woodland; w: wetland; x: wide niche]
Relative abundance is based on a scale from 1 (lowest) to 5 (highest)

Human Remains

By Anwen Caffell, Honorary Research Associate, Durham University

Summary

Human remains were discovered during excavations carried out in 2007 at Stretton Grandison, Herefordshire. Of thirteen inhumation burials, six were fully excavated and examined osteologically; five urned cremation burials were also excavated and examined. One of the burials was dated to the first/ second century AD. One skeleton was radiocarbon dated to the early medieval period (sixth/ seventh century). Burial practices were varied, including a range of orientations and positions amongst the inhumation burials, and two adults were buried in wooden coffins. The early medieval skeleton was buried on a west-east alignment, prone and decapitated. The five cremation burials were all buried in relatively plain pottery urns. Not all bone was fully oxidised, suggesting sufficiently high temperatures and/ or adequate oxygen supplies were not maintained during the cremation process.

Fragmentation and incomplete skeletons affected the data retrieved. The inhumation burials included three adults (one male and one female, the third not lifted), an adolescent, a young child, and eight probable neonates (six not lifted). Both the lifted adults were probably mature or middle aged. The man was probably around 176.0cm tall (5'9"), which would have been tall for the Roman period, but no stature estimate could be obtained for the woman. The cremation burials each contained one adult, in two cases possibly males, and one of these was probably a mature adult.

Many pathological changes were present among the inhumation burials, including evidence of nutritional deficiencies, infectious disease, degenerative joint disease, and dental disease. The adult female had suffered from idiopathic scoliosis, or a sideways curvature of her spine, with secondary degeneration of her spinal and hip joints. The adult male had probably suffered from Diffuse Idiopathic Skeletal Hyperostosis. Healed accidental injuries were seen in the adolescent and the mature adult male, including broken bones sustained through falls, or dropped objects on the foot. Evidence for interpersonal violence was observed in the adult male, who had probably fractured his thumb through punching, with later degeneration of the involved joint. The early medieval adolescent had suffered a violent death, with multiple perimortem sharp blade wounds to their head, neck, and right shoulder, some of which had penetrated deep into the skull. This individual was also decapitated and buried prone. Traumatic injury, and degeneration of joints were also observed amongst the cremation burials.

Introduction

Human remains were discovered during excavations carried out in 2007 at Stretton Grandison, Herefordshire, as part of the Dŵr Cymru Welsh Water/ Laing O'Rourke Ledbury Trunk Main pipeline programme. Twelve inhumation burials were identified archaeologically, but only five were lifted and examined by the author (Table 16.24). The latter included skeleton (4027), which was originally believed to be an isolated burial and discussed in a previous report (Archaeological Services 2007). However, following discovery of the other burials it was decided to incorporate the data on this individual into the present report. Photographs were available for the non-lifted skeletons, and these were examined to obtain whatever information was possible on those individuals. Fragments of bone present in soil samples from contexts (4052) and (4101) were probably derived from skeletons (4053) and (4102) respectively, neither of which were lifted. A collection of bones found in a soil sample from context (4044) almost certainly derived from one individual: they probably represent a thirteenth inhumation burial not identified during excavation, but it is also possible they derived from one of the archaeologically identified inhumations. They have been considered as a sixth lifted individual for the purposes of this report.

In addition to the inhumation burials, four cremation burials were identified on site. On excavation in the laboratory (by J. Jones and J. Beveridge, Archaeological Services), it transpired that one of these (Vessel 3) actually comprised two vessels, one red (Vessel 3R) and one black (Vessel 3B), each of which contained cremated bone. This brings the total number of cremation burials analysed to five, discussed below.

All the inhumation and cremation burials were originally believed to be Roman in date. Radiocarbon dates have been obtained for two of the skeletons: skeleton (4039) dated to the early Romano-British period (AD 10-210), but skeleton (4050) dated to the early medieval period (AD 550-660). Whether this late burial indicates a cemetery that continued in use throughout the Romano-British and into the early medieval period, cannot be resolved at present. Further radiocarbon dating may help shed light on the issue. No finds or grave goods were associated with the inhumation or cremation burials.

Table 16.24 Summary of archaeological information for inhumation burials

Skeleton No.	Position	Hand Position	Orientation	Date	Radiocarbon Date
4027	Flexed, left side	Right hand in front of face, left arm extended in front of body	North/ South	Roman	-
4037	Extended, left side	Arms crossed over chest, hands near shoulders	South/ North	Roman	-
4039	Partially disarticulated		North/ South	Roman	AD 10 - 210
4042	Extended, supine?	Unknown	North-west/ South-east	Roman	-
4044*	Disarticulated			Roman	-

Skeleton No.	Position	Hand Position	Orientation	Date	Radiocarbon Date
4050	Extended, prone	Arms either side of torso, hands next to hips	West/ East	Early Medieval	AD 550-660
4053†	Extended, supine?	Either side of body?	West/ East?	Roman	-
4056‡	Flexed, right side?	Unknown	North/ South	Roman	-
4073‡	Extended, supine?	Unknown	North/ South	Roman	-
4078‡	Flexed, right side	In front of body/ face?	East/ West	Roman	-
4099‡	Unknown	Unknown	Unknown	Roman	-
4102†	Flexed, left side?	Unknown	West/ East?	Roman	-
4105‡	Unknown	Unknown	Unknown	Roman	-

** Discovered in soil sample for context (4044)*
† Not lifted, but bone fragments present in soil samples from the graves
‡ Not lifted

Aims and objectives

The skeletal material was analysed in detail, recording the condition and completeness, estimating age-at-death, sex, and stature, as well as recording any skeletal traces of disease or trauma.

Osteological analysis

Osteological analysis concerns the determination of the age-at-death, sex, and stature of each individual, as well as recording the presence of minor skeletal variations and calculating various indices to describe the shape of certain bones, such as the cranium. A summary of the results is presented in Table 16.25, while a full catalogue of the articulated skeletons is provided in Appendix III; a catalogue of the disarticulated human bone can be found in Appendix IV.

Table 16.25 Summary of osteological and palaeopathological results

Skeleton No	Preservation			Age	Sex	Stature (cm)	Pathology
	SP	F	C				
4027	Good (Grade 2)	Moderate	90-95%	neonate	-	-	-
4037	Moderate (Grade 3)	Severe	60-70%	35+(?) years	Female	-	Scoliosis; DJD & OA of spine; fusion of right sacroiliac joint & possibly left; periostitis both femora; new bone formation on endocranium Calculus (heavy/ moderate); unusual & uneven dental wear; impacted RM_3; congenital absence/ impaction three premolars; small RM^3; periodontal disease
4039	Very Good (Grade 1)	Severe	70-80%	45+ years	Male?	176.0	OA – neck, right TMJ, wrists, knees; DJD – spine, left TMJ, medial clavicles, lateral right clavicle, right hip; additional lumbar vertebra; fractures – multiple ribs, right thumb, right ankle, right big toe; fusion of two pairs of foot phalanges; periostitis both tibiae; Harris lines (tibiae); DISH? Calculus (heavy); caries; heavy dental wear; periodontal disease; enamel hypoplasia
4042	Good (Grade 2)	Severe	5-10%	2-5 years	-	-	Non-specific infection (periostitis) both tibiae
4044*	Moderate (Grade 3)	Moderate	10-20%	neonate	-	-	-

Skeleton No	Preservation			Age	Sex	Stature (cm)	Pathology
	SP	F	C				
4050	Good (Grade 2)	Severe	50-60%	15-16½ years	-	-	Fractured right forearm (healed); multiple perimortem sharp blade injuries to head, neck and right shoulder; decapitation; possible ulcer on right hand (MC5) Enamel hypoplasia; calculus (slight); crowding & rotation of teeth
4053†	-	-	-	neonate?	-	-	-
4056‡	-	-	-	neonate?	-	-	-
4073‡				adult?	-	-	-
4078‡				neonate?	-	-	-
4099‡				non-adult?	-	-	-
4102†	-	-	-	neonate?	-	-	-
4105‡				non-adult?	-	-	-

Key: SP = surface preservation, grades according to McKinley (2004); F = fragmentation; C = completeness
** Discovered in soil sample for context (4044)*
† Not lifted, but bone fragments present in soil samples from the graves
‡ Not lifted

Preservation

Skeletal preservation depends upon a number of factors, including the age and sex of the individual as well as the size, shape and robusticity of the bone. Burial environment, post-depositional disturbance and treatment following excavation can also have a considerable impact on bone condition (Garland & Janaway 1989, Henderson 1987). Preservation of human skeletal remains is assessed subjectively, and the severity of bone surface erosion and degree of fragmentation are examined separately. Surface preservation was assessed using the seven-category grading system defined by McKinley (2004a), ranging from 0 (excellent) to 5+ (extremely poor). Excellent preservation implied no bone surface erosion and a clear surface morphology, whereas extremely poor preservation indicated heavy and penetrating erosion of the bone surface resulting in complete loss of surface morphology and modification of the bone profile. Fragmentation was assessed on a five-grade scale, from minimal through to extreme fragmentation. Finally the completeness of the skeleton was assessed, and expressed as a percentage.

The bone condition of the six lifted skeletons was generally good (Grade 2) (Table 16.25), with a solid cortex and light, patchy surface erosion that had preserved a reasonable amount of surface detail. Two individuals (skeletons 4037 and 4044) showed moderate preservation (Grade 3), where the degree of erosion had removed much of the surface detail even though the bone itself was reasonably solid. However, the bone condition of skeleton (4039) was somewhat unusual. The bone was a very dark brown, almost black in colour, compared to the light beige typical of the other skeletons from this site. The texture of the bone itself was extraordinarily hard, and felt more akin to pottery than bone – certainly the sound made by two pieces tapped together was ceramic in nature. Possibly as a result of this, there was little in the way of surface erosion or flaking, meaning that surface preservation was very good (Grade 1). Unlike the other lifted burials, this individual had been buried in an oak coffin, and it is possible that the presence of the coffin had in some way led to the unusual preservation of the skeleton.

Unfortunately, all the lifted skeletons had experienced a fair degree of fragmentation of the bones (Table 16.25), meaning that few bones were intact and undamaged and in many instances they were broken into multiple small pieces. The degree of skeletal completeness varied between individuals. Skeleton (4027) was virtually complete, almost certainly because it had been block lifted and excavated in the laboratory, with all soil sieved through a fine mesh. The remaining skeletons were less fortunate, with the older individuals (adults and adolescent) tending to be more complete (between 50-80%), and the younger individuals (neonate and child) being less than 20% complete (Table 16.25). Skeletons (4037) and (4050) were missing their lower legs and feet, whereas most parts of skeleton (4039) were represented at least in part. Skeleton (4044) was represented by the upper parts of the right arm and thigh, part of the left shoulder, and several ribs and vertebrae, whereas just the legs of skeleton (4042) survived. This degree of fragmentation and lack of completeness will have limited the information it was possible to obtain for each individual.

It was not really possible to assess the preservation or condition of the non-lifted skeletons from the photographs. Certainly the bones look to have been fragmented, and the general impression was that preservation was similar to that of the majority of those lifted.

Minimum number of individuals

A count of the minimum number of individuals (MNI) recovered from a cemetery is carried out in order to establish how many individuals are represented by the articulated and disarticulated human bones. The number of long bone ends and distinctive parts of other bone elements that are present determines the minimum number of individuals that could have contributed material to the assemblage. This is likely to be lower than the actual number of skeletons that were interred on the site, but represents the minimum number of individuals that can be proved to have been present.

At Stretton Grandison, the MNI was seven, based on bone from the lifted individuals and also from contexts (4052) and (4101), which may have derived from skeletons (4053) and (4102) respectively. This indicated the presence of two adults (left temporal bones), one adolescent, a young juvenile, and three neonates (proximal right humeri). Obviously, it was not possible to include evidence from the photographs of the non-lifted

skeletons in the MNI calculation, so the true number of individuals buried at the site was certainly higher.

Assessment of age

Age was determined using standard ageing techniques, as specified in Scheuer and Black (2000a, 2000b) and Cox (2000). Age estimation in children is based on an examination of the stage of dental and skeletal development achieved, measurements of certain bones, and an assessment of the stage of dental eruption. Age categories used include: foetus (up to 38-40 weeks *in utero*), neonate (around the time of birth), infant (1-12 months), juvenile (1-12 years), and adolescent (13-17 years). In adults, age-at-death is estimated from degenerative changes occurring in the pelvis and at the ends of the ribs, and from dental wear. Whilst non-adults can be aged fairly accurately, adults can only be placed into relatively broad age groups, including young adult (18-25 years), young middle-adult (26-35 years), old middle-adult (36-45 years) and mature adult (46+ years). Any adult that cannot be placed into one of these age groups is simply categorised as an adult (aged 18 years and over). However, it is important to note that several studies (for example Molleson & Cox 1993, Molleson 1995, Miles *et al* in prep.) have highlighted the difficulty of accurately determining the age-at-death of adults from their skeletal remains, with age-at-death frequently underestimated for older individuals. The categories defined here should perhaps be taken as a general guide to the relative physiological age of the adult, rather than being an accurate portrayal of the real chronological age; no doubt many of those aged '46+' would in actuality have been in their sixties, seventies or eighties when they died. For both non-adults and adults it is preferable to use as many methods as possible, but the number of methods that can be employed depends on the preservation and completeness of the skeleton.

Three of the six lifted skeletons were non-adults, and three were adults. The non-adults included two neonates (skeletons 4027 and 4044), and a young juvenile aged 2-5 years (skeleton 4042). The two neonates may have been stillborn, or died at birth or within a couple of weeks of being born. The Romano-British adult (skeleton 4039) was a mature adult, over 46+ years of age. The early medieval skeleton (4050) was an adolescent aged around 15-16½ years at the time of death. The third adult was harder to age, as many of the relevant parts of the skeleton were missing, but was probably over the age of *c.* 35 years at the time of death; they may have been an old-middle or mature adult.

The scaled *in situ* photographs of the seven non-lifted skeletons were examined and, where possible, measurements were taken of identifiable and apparently complete long bones. This gave a broad indication of the length of those bones, and although the margin of error is undoubtedly high, at least this provided a means to arrive at an approximate age estimate. Using this method, four of the individuals probably died around the time of birth, and have been classified as probable neonates. In two cases sufficient detail was not available from the photographs to allow measurements, but those two individuals were almost certainly non-adults, probably also neonates or infants. Finally, skeleton (4073) was probably an adult: the grave cut was certainly of adult size, and the appearance of the cranium in the *in situ* photograph (the only part of the skeleton uncovered) was consistent with an adult age.

Combining the data from the lifted and non-lifted skeletons, it can be seen that most of the burials were those of neonates (or possibly infants), with one slightly older child of 2-

5 years and one adolescent, bringing the number of non-adults to 10 (76.9% of the total). The three adults comprised the remaining 23.1%.

Sex determination

Sex determination was carried out using standard osteological techniques, as described by Mays and Cox (2000). It relies on examining variation in the shape of the pelvis and skull (cranium and mandible), supported by measurements taken of certain bones. The pelvis is the most reliable indicator of biological sex, since its shape is directly linked to the physiological requirements of childbirth (Schwartz 1995). Assessment of sex can only be carried out on adult remains, once sexual characteristics have developed during adolescence, and the success of sex estimation is heavily influenced by the preservation of the skeletal material.

Skeleton (4037) was almost certainly female. Her pelvis displayed markedly female traits, and the majority of cranial and mandibular traits were female. Although she had moderately pronounced supra-orbital (brow) ridges (a male trait), it has been noted that females can develop pronounced supra-orbital ridges with age (Walker 1995), and this would be broadly consistent with her age estimate of 35+ years. The skeleton was fairly small and gracile, and measurements taken were either within the female range, or close to it.

Determination of sex in skeleton (4039) was more difficult. The pelvis was fragmented and incomplete, but what survived displayed probable male traits. The cranium and mandible displayed a mixture of male and female traits, with some appearing indeterminate. However, measurement of the radial head fell firmly in the male range, despite the fact it had suffered some postmortem damage; other measurements could not be taken due to postmortem damage. On balance, it appeared that skeleton (4039) was possibly male.

The adolescent skeleton (4050) had not completed development, and was therefore too young to estimate sex with any degree of certainty.

Metric analysis

Stature is influenced by both hereditary and environmental factors, and variations in mean stature occur in different chronological periods (Bogin 1988). Stature is calculated from measurements taken from intact and undamaged, fully fused long bones using a regression formula developed using individuals of known stature (Trotter 1970). Bones from the lower limb are more closely correlated with height, and so are preferred to bones from the upper limb (*ibid*).

Unfortunately, the degree of postmortem fragmentation affecting both adult skeletons meant that no long bones were intact and undamaged. However, the right radius (forearm bone) of skeleton (4039) had one clean break with a tight join between the two parts, being otherwise undamaged. The stature calculated from this bone was 176.0cm (± 4.32cm), or 5'9". This is well above the average male stature for British Roman skeletons of 169cm (5'6½") reported by Roberts and Cox (2003), although still within the upper range of 178cm (5'10"). However, it must be borne in mind that upper limb bones

are a less reliable indicator of stature, and the bone used for stature calculation was damaged: both factors that will have increased the margin of error.

The crania of both adults were incomplete and severely fragmented, so none of the cranial indices could be calculated.

The meric and cnemic indices are calculated to describe the degree of flattening of the femoral and tibial shafts respectively (Bass 1987). The femora (thigh bones) of the male individual, skeleton (4039), were *eurymeric* (rounded), but those of the female, skeleton (4037), were *platymeric* (flattened). The tibiae (shin bones) of skeleton (4039) were *mesocnemic*, or of average shape. The lower legs of skeleton (4037) had been lost post-mortem, and so her tibiae could not be assessed.

Non-Metric traits

Non-metric traits are small variations, such as additional sutures, facets, bony processes and foramina, which occur in a minority of skeletons. There may be a genetic basis for most traits, which could suggest hereditary affiliation between the skeletons (Saunders 1989), but some traits may be caused by mechanical stress (Kennedy 1989), or environmental factors (Trinkhaus 1978).

A total of thirty cranial (skull) and thirty post-cranial (bones of the rest of the body) non-metric traits were recorded for the two adults and the adolescent (Buikstra & Ubelaker 1994, Finnegan 1978, Berry & Berry 1967); see Appendix VI for prevalence rates. Skeleton (4037) had an ossicle in the right lambdoid suture, or a small additional bone towards the back of the head. She also had an accessory supraorbital foramen (a small hole above the orbit) on the left side, and this trait was also present in skeletons (4039) and (4050) on both sides. Both the adults had mandibular tori (nodules of bone close to the base of the teeth on the lower jaw): on the right side in skeleton (4037), and on the left in skeleton (4039). The adult male and the adolescent both had a parietal foramen on the left side (a small hole near the crown of the head), and the latter also had an open posterior condylar canal (a small hole on the base of the cranium).
Both adults had exostoses in the trochanteric fossae, or spicules of bone at a muscle attachment site near the hip. Skeleton (4037) also had a third trochanter on her right femur, a pronounced nodule of bone where the *gluteus maximus* (large bottom muscle) attaches to the upper thigh bone. Plaque (a roughened area of bone on the neck of the femur) was observed on the right femur in skeleton (4039) and on the left in skeleton (4037). Skeleton (4037) also had acetabular creases (small defects in the surface of the hip sockets), and a bipartite transverse foramen, a double rather than a single hole in one of her neck vertebrae. Skeleton (4039) had circumflex sulci (grooves on the shoulderblades) and a double anterior calcaneal facet on the left side (variation in the shape of the joint facets of the heel bone). The adolescent individual (skeleton 4050) had lateral atlas bridging (variation in the shape of the uppermost neck vertebra), hypotrochanteric fossae (depressions in the upper thigh bones), and variations in the shape of the kneecaps in the form of vastus fossae on both sides and a vastus notch on the left.

Summary

Only six of the thirteen inhumation burials discovered at Stretton Grandison were lifted and examined osteologically, but some limited information on the non-lifted skeletons could be gleaned from the excavation records and *in situ* photographs. The skeletons had suffered a fair degree of fragmentation and tended to be incomplete, although the condition of the bone cortex itself was reasonably good. Three quarters of the individuals discovered were non-adults, most of which had died at or around the time of birth, but a young child and a teenager were also present. The adults included a mature man, a woman probably aged over *c.* 35 years when she died, and an unsexed probable adult. The man was probably around 176.0cm tall (5'9"), which would have been tall for the Roman period, but no stature estimate could be obtained for the woman. A few cranial and post-cranial non-metric traits were observed in the two lifted adults and the adolescent, but the incomplete nature of the skeletons and fragmentation of the bones hindered observation.

Pathological analysis

All skeletons were examined for any evidence of pathological conditions (disease or trauma) that can manifest themselves in the skeleton, particularly if the disease is chronic (i.e. longstanding). Examining the appearance of pathological lesions and their distribution throughout the skeleton is essential for diagnosis, so the better preserved and the more complete the skeletons, the greater the mount of information that can be retrieved. With larger sample sizes, calculating the prevalence of pathological conditions assists in comparing data between sites. However, there was little point in calculating prevalence rates for the Stretton Gransidon skeletons given the small size of the sample, which would make any prevalence rates calculated rather meaningless.

Congenital conditions

Heredity and environment can predispose an individual to developmental anomalies, and these are commonly observed in archaeological populations. The expression of many anomalies can range from mild (probably including many of the non-metric traits) through to severe and life-threatening (Barnes 1994). However, the developmental anomalies most commonly seen in skeletal populations, particularly amongst adults, are usually the mild variety, as any infants born with a severe anomaly would be likely to die at birth or shortly after. In most cases, individuals with these mild congenital conditions would be unaware of their presence and be largely unaffected by them.

Skeleton (4039), the mature adult male, had six lumbar vertebrae in his lower back rather than the usual five. The usual complement of seven cervical and twelve thoracic vertebrae were present, and although the sacrum was incomplete, it did not appear that a 'border shift' had occurred at the junction between the lumbar and sacral vertebrae. When the latter occurs, the first sacral vertebra can develop as, and take on the form of, a lumbar vertebra, thus giving the impression of an additional vertebra (Barnes 1994). However, in this case, it would seem that the sixth lumbar vertebra was a genuine extra vertebral segment. These are most common in the lower back, when they either take on the form of a lumbar vertebra or a thoracic vertebra (Barnes 1994). They are "not

unusual" (Barnes 1994, 78), and are more common than reduction in the number of a vertebral segments.

Skeleton (4037), the adult female, had suffered from scoliosis, or a sideways curvature of the spine, with associated changes in the shape of her ribcage. Unfortunately her vertebrae and ribs were fragmented, and although parts of all 24 vertebrae were present, some of the bodies were incomplete or missing, particularly in the lower spine. There was a marked curve to the right between the fifth and eighth thoracic vertebrae (Plate 16.14). The bodies of these vertebrae were wedge-shaped, being compressed on the left side, and rotated to the right; the left pedicles (which join the body to the arch) were extremely thin and short, and the left apophyseal facets (joints between the vertebrae at the back of the spine) were markedly reduced in size (changes described by Wever *et al* 1999, Aufderheide & Rodríguez-Martín 1998, and Thulbourne & Gillespie 1976). These changes were most marked in T6, which was probably the apex of the curve: the left side of the body was 12.4mm tall compared to 21.2mm on the right, and the left pedicle was 0.5mm thick and 7.3mm tall compared to the right pedicle, which was 5.8mm thick and 14.0mm tall. Slight curves in the opposite direction (convex side to the left) were present between T1-4 and T9-L2/3. The lower lumbar vertebrae showed asymmetry suggesting a slight curve to the right. The neck vertebrae were unaffected. She either had a major right thoracic curve, with all other curves being compensatory (the most common type, Skyrme *et al* 2005), or a double curve, with a right thoracic curve and a left thoracolumabr curve, and compensatory curves in the upper thoracic and lower lumbar vertebrae. The ribcage was also affected, with both sides showing sharp superior margins and pronounced costal grooves. The right ribs possessed short, thick necks, a tight angle, and large, flat osteophytes on the anterior and inferior margins of the surviving rib heads. The left ribs were more fragmented, but showed less curvature than those on the right (Wever *et al* 1999).

'Scoliosis' is a term used to describe the lateral curvature of the spine, rather than being a specific disease (Salter 1999). It can result from congenital vertebral anomalies, neurological problems, and disease or trauma (Barnes 1994, Salter 1999, Skyrme *et al* 2005, Resnick 2002), and it can be associated with complex congenital syndromes (Resnick 2002). However, 80-85% of cases are idiopathic, where the cause is unknown (Salter 1999, Aufderheide & Rodríguez-Martín 1998). Most modern cases of idiopathic scoliosis first appear during adolescence in otherwise healthy children, and girls are far more commonly affected than boys: Skyrme *et al* (2005) report a ratio of between 4:1 and 10:1. In the case of skeleton (4037), it is most likely that she developed adolescent idiopathic scoliosis (AIS), although a neurological cause remains a possibility. Although no cause has been established for AIS, it appears there is a genetic element (Skyrme *et al* 2005, Greiner 2002).

Curves formed during childhood or adolescence can continue to progress slowly in adulthood, particularly if the degree of curvature is over 30-40º (Soucacos *et al* 1998, Salter 1999, Greiner 2002, Bjerkreim & Hassan 1982). In modern cases, the degree of curvature of the spine is measured on radiographic images, using a technique known as the Cobb method (Resnick 2002), and the spine is always more curved than would expected from the individual's physical appearance (Salter 1999). It would be interesting to know the degree of curvature affecting the spine of skeleton (4037), and if the method is applied to a photograph of her spine in articulation, it suggests an angle of 40-50º. However, it must be stressed that this only provides a very rough indication: this method was not designed for measuring scoliosis in skeletal remains, and the results obtained are necessarily dubious. It is possible that the degree of her scoliosis was sufficient to

gradually worsen over time, and it may well have been progressing slowly since she reached maturity. It is not known to what extent her scoliosis was visible to others. It has already been noted that the physical appearance is less pronounced than that suggested by the amount of curvature in the spine, and loose clothing can conceal scoliosis, particularly if the curvature is mild (Salter 1999). However, it seems likely that others were aware of her condition, as the postulated degree of curvature would require medical treatment in a modern patient (Greiner 2002).

In modern cases, moderate and severe curvatures of the spine are usually treated, either with braces or surgery (Salter 1999). Braces largely act to prevent further progression of the curve, whilst surgery aims to correct and/or stabilise the curvature (Salter 1999). It is not known whether any attempt would have been made to treat scoliosis in the Early Medieval or Roman period, but it is possible that an attempt at some type of bracing might have been made, although it is unlikely it would have been effective. Obviously surgery would have been beyond the medical skills of the time.

Various studies have been conducted on the effects of scoliosis in modern cases, although the issue of treatment will affect the applicability of the findings to the past. Scoliosis can have a psychological impact on the individual, who may feel self-conscious of their appearance, and limit their choice of clothing and level of social interaction as a result (Danielsson *et al* 2001, Weinstein *et al* 1981). This is not necessarily linked to the severity of the curve: some individuals with mild scoliosis are very self-conscious, whilst others with more severe scoliosis are not concerned (Weinstein *et al* 1981). Of course, how skeleton (4037) felt about her scoliosis will never be known. Physically, most individuals with scoliosis will have a close to normal function (Danielsson *et al* 2001), and those with curves less than 60º will experience few symptoms (Greiner 2002). Shortness of breath is experienced by some people with scoliosis, particularly those with curves in the thoracic spine (41% according to Weinstein *et al* 1981), although vital capacity is not significantly impaired until the curve reaches 100-120º (Weinstein *et al* 1981). Greiner (2002) also notes that restrictive pulmonary disease is not likely in individuals with curvatures less than 100º. These findings suggest that although skeleton (4037) may have experienced some shortness of breath, she is unlikely to have suffered any serious respiratory problems as a result of her scoliosis. Individuals with scoliosis frequently report back pain, which in some cases may limit their activities (Danielsson *et al* 2001, Weinstein *et al* 1981), so it seems probable that skeleton (4037) would have experienced pain in her back. Weinstein *et al* (1981) report that 38% of individuals with scoliosis had developed osteoarthritis in their spines, and degenerative changes were seen in many of the spinal joints in skeleton (4037). The curvature of the spine in scoliosis can cause an unbalanced weight distribution, leading to asymmetrical stresses placed on the muscles used to stabilise the hips and trunk during locomotion. As a result, long-term stresses are placed on the hips, which can lead to joint disease (Hopf *et al* 1998). Fusion of the right sacroiliac joint (and possible fusion of the left) in skeleton (4037) was likely associated with the stresses placed on those joints (located at the back of the pelvis) by her scoliosis. Balance can also be affected in people with scoliosis, particularly on uneven or soft ground and when carrying heavy loads, making them more prone to injury from falls (Chow *et al* 2007). However, no evidence for falls (e.g. fractured bones) was observed in skeleton (4037), although any falls that only damaged soft tissue would not be visible. Her scoliosis is also unlikely to have caused any problems in pregnancy or childbirth, beyond increased back pain; the only problems reported in a modern study were related to difficulties administering spinal anaesthetics in women who had undergone corrective surgery for their scoliosis (Betz *et al* 1987), neither of which would be issues in the Roman period.

Few cases of scoliosis have been recognized in archaeological skeletons, probably because of difficulties in diagnosis in incomplete and poorly preserved remains (Aufderheide & Rodríguez-Martín 1998). Skeletons with scoliosis have been reported in medieval and post-medieval British sites (Roberts & Cox 2003, Soden 2002), but the author is unaware of any cases dating to the Roman or early medieval periods in Britain.

Trauma

Injuries to the body that affect the skeleton, whether accidental or deliberately inflicted, can often be observed in archaeological remains, usually in the form of fractures (broken bones). However, dislocated joints, soft tissue injuries resulting in calcified nodules of bone, damage to the nerve or blood supply, and weapon injuries can also be observed (Roberts & Manchester 1995). The pattern of trauma often reflects the lifestyle, living environment and type of occupation of the population involved, and weapon injuries can shed light on interpersonal violence (*ibid*).

Fractures

Antemortem trauma, where the person had survived and the injury had healed, was seen in two of the skeletons from Stretton Grandison: the adolescent (skeleton 4050), and the mature adult male (skeleton 4039). Skeleton (4050) had fractured both the bones in their right forearm, in the distal third of the shafts (near the wrist), probably at the same time. The radius was broken *c.* 4cm from the wrist, and the distal end was angled backwards and slightly rotated. The ulna was fractured at a point level with the radius fracture, and the slight posterior displacement was less noticeable than in the radius. Both fractures were well healed, and showed no signs of infection. This type of double fracture close to the wrist occurs in children after a fall on the outstretched arm (Dandy & Edwards 2003).
Skeleton (4039) had fractured multiple ribs, including four left ribs (probably lower ribs) and three unsided rib fragments. One of the fractures in a left rib was displaced downwards and inwards. All were well healed, showing no signs of infection. Multiple rib fractures are usually caused by a blow to the chest, or by a crushing injury, and they can interfere with respiration until healed (Dandy & Edwards 2003). He had also fractured his right thumb: the proximal end of the right first metacarpal was enlarged, the dorsal third of the space normally occupied by the joint surface was roughened, and the joint surface itself was positioned towards the palmar side and angled so it faced in a palmar direction. As a result, the metacarpal appeared bowed, particularly on the palmar side, and the joint surface looked as though it had been moved in a palmar direction (Plate 16.15). This was almost certainly a healed Bennett's fracture (Dandy & Edwards 2003). These fractures are most commonly seen in young to middle aged men, and are often sustained during fights (punching) or sporting activities (Cannon *et al* 1986, Dandy & Edwards 2003). Malunion of the fracture will occur without treatment, but the joint usually remains functional despite some reduction in the range of movement (Dandy & Edwards 2003, Cannon *et al* 1986).

Skeleton (4039) had also sustained a traumatic injury to his right ankle. The anterior lateral (front right) quarter of the distal joint of the tibia was enlarged, and the joint surface in this clearly demarcated area was roughened. The tibia also had a prominent flange of smooth bone along the anterior border of the fibular notch, which indicates trauma to the ligaments binding the tibia and fibula together just above the ankle; these ligaments are important in stabilising the ankle joint. The injury to the tibia was probably

a Tillaux fracture, occurring when stress is placed on the anterior ligaments (at the front of the ankle) following lateral rotation and abduction of the foot, usually through falling with the foot trapped and twisted outwards (Protas & Kornblatt 1981). The expression of the injury varies with age. It is most common in adolescence when the partially fused (and therefore vulnerable) epiphysis is fractured (Britton 1988, Zatti *et al* 2000). In adults the anterior ligament will usually rupture, but occasionally it does not and instead a small segment of the tibia (the anterior tibial tubercle and surrounding bone) becomes detached (Protas & Kornblatt 1981). Unfortunately, it is not clear at what age skeleton (4039) sustained his injury. In modern cases, most such fractures are fixed with screws in order to restore the joint surface and prevent impairment of ankle movement (Britton 1988). Additional complications include weakness of the ankle due to ligament damage, and an increased risk of degenerative joint disease (*ibid*). Unfortunately the fibula, talus and calcaneus were lost postmortem, so it was impossible to observe whether they had also been injured, or had suffered changes secondary to the fracture in the tibia.

In addition, skeleton (4039) had probably fractured his right big toe: the first proximal phalanx was thickened and had a ridge of bone on the plantar surface, adjacent to the distal joint surface. The toes are often broken when objects fall onto the feet (Dandy & Edwards 2003).

Blade injuries

Skeleton (4050), the adolescent, had suffered multiple perimortem sharp-force injuries to the head, neck, and right shoulder, at least three of which would have been fatal. All cut marks were linear, with smooth, highly polished surfaces and corresponding roughened opposing edges (where these could be identified) showing no signs of healing, all features characteristic of perimortem blade injuries, i.e. injuries occurring at or around the time of death (Sauer 1998, Novak 2000). Unfortunately, the cranium was incomplete and badly fragmented, making reconstruction of the precise number and sequence of blows impossible; in fact the state of preservation may be largely due to the severity of the traumatic injuries, which will have caused extensive fragmentation and possibly detached fragments (Novak 2000). An overview of the pattern of injuries is given here, with a more detailed anatomical description given in the catalogue of articulated skeletons (Appendix III).

At least four blows had been delivered to the right-hand side of the back of the head, all on a similar angle and orientation, about 20-30º from vertical. Two of these blows had glanced down the right-hand side of the head and possibly terminated in the posterior ramus of the mandible (the back of the lower jaw), probably having removed the ear in the process. The other two blows had penetrated the cranium from behind, probably at the lateral part of the occipital (Plate 16.16): one reached a point level with the ear (terminating in the petrous temporal, on the inside of the skull); and the other sliced right through the petrous temporal bone (which supports the ear) and probably terminated in the posterior ramus of the mandible. The latter blow, apart from cutting through the brain, would have severed the right jugular vein and carotid artery (the main artery supplying blood to the brain). Three cuts were visible in the posterior right ramus of the mandible, probably resulting from the blows described above. One was a shallow cut close to the condyle (part of the joint between the lower jaw and the base of the cranium), with the second slightly deeper cut located 5mm below this first cut. The third cut was located *c.* 5mm below the second; it was deeper still (*c.* 25mm deep), and the force of the blow had caused the bone to fracture beyond the termination of the cut. This fracture extended into the body of the mandible, and stopped *c.* 10mm from the inferior

margin. All three cuts were on a similar angle and orientation, in line with those observed in the cranial bones discussed above.

At least four blows had been delivered from the left-hand side to the left side of the head. One had just caught the back of the cranium, removing a sliver of bone from the surface of the occipital. A second blow had skimmed the surface of the left mastoid process (the lump of bone behind the ear). Another shallow blow had landed close behind the left ear, only penetrating a couple of millimetres into the bone. However, a fourth blow, located about a centimetre in front of the previous cut, had sliced through the gonial angle of the left lower jaw, the left temporal bone, through the front of the atlas (the uppermost vertebra supporting the cranium, (Plate 16.17), and terminated in the basilar part of the occipital bone a couple of millimetres in front of the spinal cord. A small fracture line continued the line of force around the edge of the foramen magnum, where the spinal cord exits the cranium. Again, this would have been a fatal injury, cutting through the brain, the left carotid artery, and coming close to the spinal cord.

Two other cranial fragments display blade injuries, but it was impossible to determine from which part of the cranium these were derived, and how they fit with the known pattern of blows. It is possible they represent further blows, as yet unaccounted for.

The body had been decapitated, with a horizontal cut through the right-hand side of the upper part of the arch of one of the cervical (neck) vertebrae; the left half of this vertebra was lost postmortem (Plate 16.18). This was either the fourth, fifth or sixth cervical vertebra; it was impossible to determine the precise level of the cut due to the severe fragmentation of the neck vertebrae. Two other fragments of cervical vertebra also show signs of blade injuries, but the severe fragmentation has hindered attempts to interpret these.

A sequence of four cuts had been delivered to the right shoulder from behind, all on a similar shallow angle and orientation, directed away from the head/neck. All four were observed on the right clavicle (collarbone) (Plate 16.19). The smallest, shallowest cut was closest to the sternal end, a deeper cut was located 10mm lateral to this (closer to the shoulder), a yet deeper cut another 3mm closer to the shoulder, with a fourth cut 3mm closer to the shoulder again. The latter had severed the acromial end of the clavicle (with the fragment lost postmortem), and continued into the posterior half of the humeral head, having nicked the back of the scapula. The angle and direction of the blows suggests that either the head was bent forwards and to the left, or the head had already been removed when they were delivered.
There can be little question that the injuries sustained by skeleton (4050) were the result of interpersonal violence. The type of weapon involved was a sharp blade, demonstrated by the smoothness of the cut edges and the degree of polishing observed, which would have been capable of inflicting heavy and penetrating blows to a person. This could have included (but is not limited to) a sword, seax, or axe; unfortunately it is seldom possible to determine the exact type of weapon involved (Boylston 2000). These injuries could have occurred during a violent confrontation, such as a battle or skirmish, in which case it is possible the victim was armed and/or wearing some type of armour. If so, armour would have had a bearing on the type of injuries sustained (Boylston 2000). Alternatively, this could be an assault in a non-military situation, where the victim may have been ill-prepared to defend themselves or lacked the benefits of protective clothing. If it was the latter, then the assault could be construed as murder.

It has been largely impossible to reconstruct the sequence of blows with any certainty due to the considerable fragmentation of the cranium with loss of some of the fragments. The blows to the left hand side of the head and neck suggest a face-to-face confrontation with a right-handed attacker (Novak 2000, Boylston 2000), but the blows to the back of the head and shoulder were obviously delivered from behind. It is possible there were two assailants, although they may have risked injuring each other. The consistent location and angle of the blows to the back of the head would suggest that the victim was immobile, and that the position of the attacker did not change relative to the victim, when the blows were delivered. This might be unlikely if the victim was attacked simultaneously from the front and behind. Perhaps the most likely explanation would be an initial frontal attack focussing on the left side of the head, with one of the blows being heavy enough to penetrate halfway through the cranium. This blow would have been fatal, and the force might have caused the victim to fall to their right, possibly rotating so they fell lying face down. The additional blows from this angle either preceded this fatal blow, or may have been directed at the victim as they were falling. Once lying face down and immobile (presumably already dead) on the ground, the sequence of blows to the back of the head could have been delivered, two of which were heavy enough to penetrate the cranium quite some distance, with other blows glancing the right side of the head and probably removing the ear. This postulated sequence of events would only require one assailant, although more could have been present. The extreme number and repetition of heavy blows to the head indicates the assailant(s) were determined to ensure the death of their victim. The decapitation may have formed part of this attack, or it may have formed part of the funerary rite (discussed later).

It is not clear how the cuts to the right shoulder were sustained. They could reflect an attempt to disable the weapon hand, although they were delivered from behind and the similarity of the angle and location of the cuts (Plate 16.19) suggests the victim was immobile when they were delivered. It seems likely they were already incapacitated and lying face down – in which case disabling the weapon hand would serve little purpose. Possibly the head was angled forward and to the left after the victim fell and these blows formed part of the attack from behind; if so they may be continuations of blows that glanced the side of the head. Alternatively they may have occurred during or after the decapitation, although the former seems less plausible given the number, location and direction of the blows. It is possible that the cuts resulted from an attempt to remove something from the right shoulder, such as a bag (from a murdered civilian) or baldric (from an armed warrior).

A high proportion of cranial trauma is observed in males in all population groups and time periods, for example at the Romano-British cemetery at Cirencester (Wells 1982), among prehistoric hunter-gatherers in Southern California (Hollimon 1991), and even in non-human primates (Jurmain & Kilgore 1998), and this pattern has largely been linked to greater male aggression and tendency for interpersonal violence (Jurmain & Kilgore 1998). This would make it more likely that skeleton (4050) was male, but since they had not reached skeletal maturity it was impossible to determine their sex on osteological grounds. The lack of female traits in the pelvis and skull could simply be due to the immaturity of the skeleton rather than to true biological sex, and females do on occasion suffer from interpersonal violence: for example, one female at Cirencester had a healed blade injury to the cranium (Wells 1982). If the skeleton (4050) was male, then it is plausible that at *c.* 15-16½ years of age they were considered old enough within their society to engage in combat. For example, the Anglo-Saxon age of maturity was considered to be around 10-12 years by Crawford (2000), and modern British army recruits can be as young as 16 years (www.army.mod.uk).

The head is frequently a target during interpersonal violence (Roberts & Manchester 1995): the frequency of perimortem cranial trauma was certainly far higher than trauma to the rest of the body amongst individuals excavated from a mass grave at Towton, North Yorkshire, believed to be the grave of men who fought and died in the Battle of Towton in AD 1461 (Novak 2000). Only a third of these individuals showed injuries to the post-cranial skeleton, which mostly occurred as minor cuts and nicks in the bones of the hands and arms, particularly the right ulna; such injuries would be sustained in defending against blows (*ibid*). No such injuries were observed in the hands and arms of skeleton (4050), although the left forearm was largely incomplete, and several of the hand bones from both sides were missing. This could suggest that they did not attempt (or were unable) to parry the initial blow(s), unless they did so with their left arm. Alternatively, they could have been protected by armour or padded clothing, or any injuries sustained may not have penetrated to the skeleton (Novak 2000). Several of the Towton men had probably taken part in previous battles, and displayed evidence of well-healed blade and blunt-force trauma (*ibid*). The lack of similar injuries in skeleton (4050) could suggest they had little or no experience of combat, unless soft tissue wounds only were sustained, protective armour prevented injury, or they escaped injury entirely.

Infectious disease

Infectious disease can leave traces in the skeleton when the infection is chronic, i.e. the person lives with the illness for a period of time before they either recover or die, which implies their immune response was relatively strong. If the disease is acute, then death or recovery happens too quickly for bone changes to occur (Roberts & Manchester 1995). Therefore, individuals without any trace of infection could either have been perfectly healthy with a strong immune system able to fight off diseases quickly, or had such a weak immune response that they succumbed rapidly to infection (Wood *et al* 1992). In the majority of cases it is not possible to identify the specific infection that caused the changes, so much of the evidence for infection in archaeological populations is discussed as 'non-specific infection' (Ortner 2003).

Evidence for infection or inflammation affecting the skeleton was seen in four of the Stretton Grandison individuals. Periostitis, or inflammation of the membrane surrounding the bone (Ortner 2003), was seen in the legs of three skeletons. Skeleton (4037) had striated lamellar bone present on the midshafts of her femora (thigh bones); skeleton (4039) had faint striated lamellar bone on the medial shafts of both his tibiae (shin bones); and skeleton (4042), the 2-5 year old child, had lamellar bone on the medial midshafts of both tibiae. The presence of lamellar bone in all these individuals implies the lesions were healed and no longer active (Ortner 2003). The tibia is the bone most commonly affected by periostitis in archaeological populations, and aside from infection other possible causes include low-grade trauma to the shins, leg ulcers, or even varicose veins (Roberts & Manchester 1995).

Thin, clearly defined, smooth plaques of healed lamellar bone were observed on the internal surface of the frontal bone (forehead) in skeleton (4037). They were most pronounced on the left side, along the lateral margins, and in region of the orbits. Small plaques of bone were also present on the adjacent parts of the parietal bones, and along the posterior sagittal suture. New bone formation on the internal surfaces of the cranium is more commonly seen in infants and young children, rather than in adults, and in children is believed to develop following inflammation or haemorrhage of the meningeal blood vessels. A broad range of possible causes have been suggested, including:

chronic meningitis, trauma, anaemia, neoplastic disease (cancer), metabolic diseases (scurvy and rickets), venous drainage disorders and tuberculosis (Lewis 2007, 2004). It is not known whether the causes in adults would be the same. Given the fact that the lesions were healed in skeleton (4037) it is always possible she had sustained them some time before death; the age at which they occurred could not be determined. Hyperostosis frontalis interna (HFI) is a condition seen almost exclusively in women over 30 years of age that causes thickening of the frontal bone and development of undulating nodules of bone on its internal surface (Aufderheide & Rodríguez-Martín 1998). However, this condition has a most distinctive appearance, and the changes seen in skeleton (4037) were unlikely to be due to this condition.

Skeleton (4050) had a distinct elongated oval area of roughened bone on the left fifth metacarpal (the bone on the 'little finger' side of the palm of the hand) (Plate 16.20). This roughened bone appeared to be in transition from woven to lamellar bone, suggesting the lesion was active and in the process of healing at the time of death. The edges of the lesion were raised, creating a ridge, and a small area of thin lamellar bone was located on the shaft surrounding the lesion. Similar localised bone reactions have been observed beneath an overlying ulcer, most commonly in the lower leg and affecting the tibia (Ortner 2003). It is possible the lesion in the hand of skeleton (4050) was the result of an ulcer on the outer edge of their palm. Alternatively, it may indicate a localised infection following a cut.

Joint disease

The term 'joint disease' encompasses a large number of conditions with different causes, which all affect the articular joints of the skeleton. Degenerative joint disease and osteoarthritis become common with advancing age, but can also be influenced by other factors such as physical activity, occupation, and workload (Larsen 1997). It can also develop in response to other pathological conditions, such as traumatic injury (Roberts & Manchester 1995). Some joint changes may have inflammatory causes, for example the erosive arthropathies, such as septic or rheumatoid arthritis. Different joint diseases affect the articular joints in different ways, and it is the type of lesion, together with the distribution of skeletal manifestations, which determines the diagnosis. However, given the large number of joint diseases (over 250) and the limited possible responses of the skeleton to disease, diagnosis can often prove difficult or impossible (Roberts & Manchester 1995).

Joint degeneration

Evidence for degenerative joint disease (DJD) and osteoarthritis (OA) were seen in both the adult skeletons from Stretton Grandison. Skeleton (4037) had porosity in the bodies of two of her mid-thoracic vertebrae (T6 and T7) with osteophytes (outgrowths of bone) at the margins on the left side. This corresponded with the apex of the scoliotic curve to the right in the thoracic part of her spine. Osteophytes were also observed at the margins of the bodies of T4, T5 and T8, and along the left side of the body of the first sacral vertebra. Porosity and osteophytes at the joint margins were also observed in the vertebral apophyseal facets (synovial joints between the arches of the vertebrae) of the second through to the tenth thoracic vertebrae. This affected the right facets between T2-5, and the left facets between T6-9. Eburnation, or polishing resulting from bone-to-bone contact following the loss of the protective cartilage, was seen in the upper left apophyseal facet of the ninth thoracic vertebra. These joint changes were almost

certainly a result of her scoliosis, and osteoarthritis has been observed in 38% of modern patients with scoliosis (Weinstein *et al* 1981). The change in the distribution pattern of degenerative changes from above the apex to below the apex (identified as T6) probably reflects the changed stress pattern at these different points in her spine. Osteophytes and porosity were also observed in the majority of her rib facets, and again this no doubt resulted from the unusual shape of her ribs and altered stresses placed upon them.

In addition to the degenerative changes in her spine, skeleton (4037) had also experienced fusion of her right (and possibly left) sacroiliac joints, although both were damaged postmortem. These are the joints between the sacrum at the back of the pelvis, which supports the spinal column, and the ilia, which form the two blades of the pelvis. On the right side, the osteophytes bridging the joint at the margins were smooth and well remodelled, and the upper part of the joint space had been preserved. However, the lower half of the joint space had been obliterated, with the joint surface obscured by osteophytes (since broken postmortem). The left side was less well preserved, but also displayed osteophytes along the anterior margin of the joint, which might have broken post mortem. The asymmetrical stresses placed on the pelvis as a result of scoliosis have been outlined above (Hopf *et al* 1998), and it is highly likely that the fusion of these joints in skeleton (4037) was directly related to the curvature of her spine.

Osteoarthritis, with porosity and eburnation (polishing) of joint surfaces, and osteophytes at joint margins, was observed in the neck vertebrae of skeleton (4039), affecting the apophyseal facets of C2-C6. Somewhat unusually, eburnation was also observed on the posterior body surfaces of C2-5, and C7, in combination with osteophytes and porosity. OA was also observed in the right apophyseal joint between T10 and T11, and in the right rib facets on T1 and T11. Spinal osteoarthritis was observed in 13.0% of individuals in the Roman period in Britain (Roberts & Cox 2003). Degenerative changes were also seen in several of his extra-spinal joints. OA was present in the joint at the base of his right thumb between the first metacarpal and the trapezium. In this case, the osteoarthritis probably developed following the fracture of the first metacarpal, which would have altered the normal relationship between these two bones. The fact that eburnation developed on the joint surfaces shows that the joint was still being used. OA in his left wrist occurred in the scaphoid (Plate 16.21), affecting the facet between the scaphoid and trapezoid (unfortunately the trapezoid is lost postmortem), and this may have been related to age. He had also suffered OA in both knees, with eburnation observed in both distal femora, and DJD of his right hip joint (left side unaffected). Degeneration of the hip and knee joints is relatively common in archaeological populations (Ortner 2003), and is probably related to the weight-bearing function of these joints as well as to the relatively advanced age of the individual (Aufderheide & Rodríguez-Martín 1998, Roberts & Manchester 1995). DJD was also observed in both medial clavicles, and in the lateral right clavicle (left side lost postmortem); again these are common sites for degenerative changes (Roberts & Manchester 1995).

The temporomandibular joints, between the lower jaw and the cranium, of skeleton (4039) were affected by DJD on the left side and OA on the right side. It is possible that the degeneration of these joints was associated with the heavy wear observed in the teeth, which could suggest that mastication of tough foods placed stress on this joint (Roberts & Manchester 1995, Ortner 2003). A small percentage of individuals in the Roman period in Britain (0.8%) were recorded as suffering from degeneration of the temporomandibular joint by Roberts and Cox (2003).

Diffuse Idiopathic Skeletal Hyperostosis (DISH)

Diffuse Idiopathic Skeletal Hyperostosis (DISH) is a disease of unknown cause, but one which has been associated with obesity and type II (late onset) diabetes (Rogers & Waldron 2001). It is characterised by outgrowths of bone at the site of muscle and ligament attachments, and particularly affects the thoracic region of the spine where ossification of the anterior longitudinal ligament at the front of the vertebral bodies can result in the fusion of several vertebrae with thick, flowing 'candle-wax' osteophytes (Ortner 2003, Aufderheide & Rodríguez-Martín 1998). In the thoracic region the ossification is restricted to the right side of the bodies due to the presence of the aorta on the left side, and the joint spaces between the vertebrae are preserved. Enthesophytes (bony projections at the site of muscle attachment) are found throughout the extra-spinal skeleton, and the sacroiliac joint (between the blades of the pelvis and the sacrum at the base of the spine) may be bridged by osteophytes, although the joint surface itself will be unaffected (Aufderheide & Rodríguez-Martín 1998). Two-thirds of cases occur in males, and the disease is often first detected after the age of forty (Aufderheide & Rodríguez-Martín 1998).

Skeleton (4039) showed some of the characteristic signs of DISH. He had large, flowing osteophytes on the right side of the vertebral bodies of the lower thoracic and upper lumbar spine (T6-L1), with minimal osteophyte formation on the left side (Plate 16.22). However, none of the vertebrae had fused. He also had numerous large enthesophytes throughout his skeleton, including: the rib tubercles; tips of the spinous processes of the thoracic vertebrae; lateral epicondyles of the humeri (near the elbows); left ischial tuberosity and iliac crests (parts of the pelvis); linea asperae (back of the femora); left patella (kneecap); and the calcaneus and talus (heel and ankle bones). There were also small enthesophytes on the olecranon processes of the ulnae (elbows). A diagnosis of possible DISH should be considered, particularly since skeleton (4039) was in the age and sex group most typical for DISH.

In modern populations the prevalence rate for DISH has been reported at 3.8% for males (Rogers & Waldron 2001), and Roberts and Cox (2003) recorded a prevalence of 1.3% of cases during the Roman period in Britain. All cases they reported for this period occurred in males. A higher prevalence of DISH has been found to occur in medieval monastic populations compared to the general population (Rogers & Waldron 2001). Since burials in religious institutions tend to include members of the religious order and wealthy benefactors, this high prevalence of DISH in monastic populations has been attributed to a rich diet, which would have predisposed to obesity and late onset diabetes (Rogers & Waldron 2001). Although it is tempting to conclude that skeleton (4039) may have had access to a rich diet, and perhaps was relatively wealthy, Rogers and Waldron (2001) caution against such a simplistic interpretation, particularly when considering individual skeletons.

Miscellaneous

Skeleton (4039) had aggressive lytic lesions in the vertebral bodies of four thoracic (T3, T6, T7, and T10) and three lumbar (L1, L3, L5) vertebrae. Most lesions were fairly central, with the exception of the lesion in the superior body of L5, which was located on the left side (Plate 16.24). Lesions were seen in the superior bodies of T6, T7, and L5, and in the inferior bodies of T3, L1, L3, and L5. Lytic lesions in the vertebral bodies can occur with a number of conditions, including (among others) tuberculosis, brucellosis, and fungal infections (Aufderheide & Rodríguez-Martín 1998). However, the occurrence

of isolated lesions in widely separated vertebrae (as seen here) is rare in tuberculosis (Aufderheide & Rodríguez-Martín 1998). Brucellosis is a disease common in farming areas, particularly when there is close contact between animals and humans. Humans contract the disease following consumption of products (e.g. milk and meat) from infected animals, such as goats, sheep, pigs, cattle and horses (Aufderheide & Rodríguez-Martín 1998). Fungal infections may occur following inhalation of fungal spores present in soil, with subsequent spread of the infection to bone via the blood stream. Some of these fungal infections are most commonly seen in males, usually as a result of occupational exposure, for example working closely with the soil as farmers (Aufderheide & Rodríguez-Martín 1998). Unfortunately, it has not been possible to diagnose the cause of these lesions in skeleton (4039).

The bones from two toes in skeleton (4039) had fused: in one case a proximal, intermediate and distal foot phalanx had fused together with the distal phalanx at a *c.* 45º angle; and in the second case an intermediate and distal foot phalanx had fused. Given the disarticulated nature of the foot bones when they were excavated it was not possible to tell whether both affected toes were in the same foot or not. In both cases, x-radiography showed that the joint spaces had been lost. These bones could have fused as a result of trauma to the foot. If they were from the same foot as the fractured first proximal foot phalanx, it is possible that the same traumatic incident caused damage to all three toes. However, joints can fuse as a result of joint disease, and this individual certainly showed evidence of joint degeneration, so this must also be considered as a possible cause for the fusion of the bones.

Summary

The number of skeletons examined from Stretton Grandison was small, yet they displayed a remarkable number of pathological changes that has shed light on their lives. The middle aged or mature adult woman had suffered from scoliosis, or a sideways curvature of her spine, for most of her life. The joints in her spine and hip had almost certainly begun to degenerate as a result of the abnormal stresses placed on her body, and she may have suffered shortness of breath and back pain. Accidental injuries were seen in the adolescent and the mature adult male, including broken bones sustained through falls, or dropped objects. Evidence for interpersonal violence was observed in the adult male, who had probably fractured his thumb through punching. The early medieval adolescent had suffered multiple sharp blade wounds to their head, neck, and right shoulder, some of which had penetrated deep into the skull, and proved fatal. Healed inflammation of the bones had affected almost all the individuals, most commonly involving the legs, but also the internal surface of the cranium in the adult female. The adolescent may have had an ulcer on the side of his left hand, which had led to localised inflammation of the bone beneath. Both adults had suffered degenerative joint disease and osteoarthritis in the spine (related to scoliosis in the case of the woman). The jaw, wrists, and weight-bearing joints of the lower limb were also affected in the man. He was also probably suffering from a condition known as DISH, most commonly seen in older men, and often associated with rich diets and late-onset diabetes. Unfortunately, the cause of unusual holes present in some of his vertebrae remains unknown.

Dental health

Analysis of the teeth from archaeological populations provides vital clues about health, diet and oral hygiene, as well as information about environmental and congenital conditions. Partial jaws and some teeth were present in both the adult skeletons and the adolescent, and these were examined macroscopically for evidence of pathological changes. None of the deciduous teeth present in skeleton (4027) had erupted, and no teeth or jaws survived for skeletons (4042) and (4044), or were present with the remains from contexts (4052) and (4101).

The adults had a total of 48 tooth positions between them (27 from skeleton (4037) and 21 from skeleton (4039)). Thirty-nine teeth were present and erupted, with 26 from skeleton (4037) (including 3 loose teeth where the tooth positions were missing) and 13 from skeleton (4039). An unidentified tooth root was also present for the latter skeleton. Three teeth had been lost postmortem (6.3%), all from skeleton (4039). All 32 tooth positions were present in the adolescent individual, with one tooth having been lost postmortem and four teeth not yet erupted (although visible in the jaw), leaving a total of 27 erupted permanent teeth present.

Calculus

Calculus (mineralised dental plaque) is commonly observed in archaeological populations. If oral hygiene is poor and plaque is not removed from the teeth effectively or on a regular basis, then these plaque deposits mineralise and form concretions of calculus on the tooth crowns or roots (if these are exposed); (Plate 16.23)Mineralisation of plaque can also be common when the diet is high in protein (Roberts & Manchester 1995, Hillson 1996).

Calculus deposits were seen on all teeth in both adults, and two-thirds of the teeth displayed moderate to heavy deposits (according to Brothwell 1981): 12 teeth from skeleton (4039) and 14 teeth from skeleton (4037). Roberts and Cox (2003) reported that calculus was present on 43.4% of teeth in the Roman period in Britain, a lower prevalence than that recorded here. However, calculus tends to accumulate with age, and both individuals from Stretton Grandison were probably from the middle or older sections of the population and may therefore be expected to have more calculus deposits on their teeth.

Flecks and slight deposits of calculus were also observed on 25 teeth from the adolescent. Again, calculus was commonly observed in the early medieval British population (Roberts & Cox 2003).

Dental caries

Dental caries (tooth decay) forms when bacteria in the plaque metabolise sugars in the diet and produce acid. The acid causes the loss of minerals from the teeth and eventually leads to the formation of a cavity (Zero 1999). Simple sugars can be found naturally in fruits, vegetables, dried fruits and honey, as well as processed, refined sugar; since the latter three contain the most sucrose they are most cariogeni*c.* Complex sugars are usually less cariogenic and are found in carbohydrates, such as cereals. However, processing carbohydrates, including grinding grains into fine powders or

cooking them, will usually increase their cariogenicity (Zero 1999, Moynihan 2003).

One small carious lesion was seen in a lower second molar from skeleton (4039), the mature male adult, giving a caries prevalence of 2.6%. The cavity was located on the distal surface of the tooth (the surface that faces the third molar) at the cemento-enamel junction (neck of the tooth). This location is the most frequent site for tooth decay in Romano-British populations (Moore & Corbett 1973), and they suggest that this is due to a combination of heavy attrition and the packing of food debris around the necks of the teeth. The former would remove the pits and fissures (areas vulnerable to cavity formation), and may remove any carious lesions before they could develop; the latter would allow time for the less-cariogenic carbohydrates to ferment and lead to the formation of cavities. The teeth of this individual were certainly heavily worn, and the presence of calculus deposits (discussed above) suggests inadequate oral hygiene which would allow a build-up of food debris to occur.

As with all dental diseases, dental caries usually becomes more frequent with age, since the teeth cannot remodel to heal the lesions (Hillson 2001), so the occurrence of a carious lesion in the mature adult is not unexpected. According to Roberts and Cox (2003), 17.7% of individuals and 7.5% of teeth had suffered from dental caries in the Roman period. During this period, likely main sources of simple sugars in the diet included honey, *sapa*, fruits, and imported dates and figs (Moore & Corbett 1973), with complex carbohydrates represented by spelt wheat, barley, and other grains (Roberts & Cox 2003). Root crops, such as turnips, carrots and parsnips (*ibid*), would also have included carbohydrates and a limited amount of simple sugars.

Antemortem tooth loss

Ante-mortem tooth loss (AMTL), or the loss of teeth during life, can occur as a result of a variety of factors, including dental caries, pulp-exposure from heavy tooth wear, or periodontal disease (Hillson 1996, Brothwell 1963). The latter occurs when inflammation of the gums (gingivitis), which can be aggravated by the presence of calculus deposits on the teeth, spreads to the underlying bone. The tooth sockets are resorbed, leaving the tooth roots exposed and the tooth loose. Once the tooth has been lost, the empty socket is filled in with bone.

Skeleton (4039) had lost five teeth during life, giving an AMTL prevalence of 10.4%. Given the presence of heavy attrition, calculus and periodontal disease in this individual, these factors are the most likely causes of the tooth loss observed. As a comparison, AMTL was recorded in 14.1% of tooth sockets in Roman Britain by Roberts and Cox (2003). Skeleton (4037) also displayed moderate to heavy attrition and moderate periodontal disease. However, in both cases the exposure of the tooth roots may be due to a phenomenon known as continued eruption, where the teeth continue to erupt in order to compensate for heavy attrition, rather than to periodontal disease (Kerr 1990).

Dental enamel hypoplasia

Dental enamel hypoplasia (DEH) is the presence of lines, grooves or pits on the surface of the tooth crown, and occurs as a result of defective formation of tooth enamel during growth (Hillson 1996). Essentially, they represent a period when the crown formation is halted, and they are caused by periods of severe stress, such as episodes of malnutrition or disease, during the first seven years of childhood. Involvement of the deciduous (milk) teeth can indicate pre-natal stress (Lewis 2007).

Skeleton (4039), the mature adult male, had multiple DEH lines in both lower canines and one lower premolar, giving a prevalence rate of 7.7% (3/39 teeth affected). However, most of his teeth were unobservable due to heavy attrition and /or heavy calculus deposits, which obscured the tooth surfaces. Multiple and moderately pronounced DEH lines were also observed in 23 of the teeth from the early medieval adolescent. Roberts and Cox (2003) report that 9.1% of teeth in Roman period Britain displayed enamel defects, and that 6.7% of individuals were affected; for the early medieval period they give figures of 7.4% of teeth and 8.9% of individuals. For both individuals, the presence of multiple lines may indicate that they suffered repeated episodes of childhood stress.

Dental anomalies

The lower right third molar of skeleton (4037) was impacted, with the crown angled distally towards the mandibular ramus (Plate 16.23). The upper right third molar was small, appearing almost like a peg tooth with a rounded crown and the roots coalesced into one short and stubby root. The lower left third molar was fully erupted, though slightly small, and the upper left third molar could not be observed since both tooth and socket were lost postmortem. The third molars are the teeth most prone to impaction (Hillson 1996).

Skeleton (4037) was also missing three of her premolars, including the lower left second, upper right first, and one of the upper left (it was difficult to be certain whether it was the first or second premolar that was missing). In all cases no tooth socket was visible, and the alveolar bone was smooth and rounded. The remaining upper left premolar was part way between the canine and first molar, thus occupying most of the space normally occupied by two teeth (Plate 16.25). It is possible that these teeth were all lost antemortem, but the appearance of the bone, and particularly the position of the left upper premolar, suggest that they could either be congenitally absent or impacted (i.e. remaining unerupted within the jaw). Hillson (1996) observes that the second premolars are the third most frequently missing tooth, and first premolars the fifth most frequently missing. He also notes that the frequency of congenitally absent teeth in a population is usually low, with the exception of the third molar.

In addition, skeleton (4037) had unusual wear patterns on her right molars, which may be indicative of unusual occlusion between the upper and lower jaws. The upper first molar was heavily worn in the centre of the crown (mesial-distal), leaving the buccal and lingual edges relatively unworn. The overall effect in cross section was a deep ‘V’. The lower first molar was heavily worn on the lingual half of the occlusal surface, but the lingual rim of enamel was relatively unworn, creating a deep ‘U’ shape on the lingual (tongue) side of the tooth crown. This contrasts with the normal pattern of heavy wear on the buccal side of the lower, and lingual side of the upper molars, leading to a sloping occlusal surface (Hillson 1996). It suggests the presence of buccal posterior crossbite, where the lower molar is positioned more towards the cheek in relation to the upper molar (*ibid*). This strange wear pattern was only seen on the right side, not the left.

Skeleton (4050) had slight crowding of both mandibular canines of the lower left second premolar, and the upper first premolars were also slightly rotated. These anomalies were present despite the fact that the jaws were easily large enough to accommodate the teeth present.

Summary

Both adults and the adolescent provided dentitions for analysis, and only a small proportion of teeth had been lost post-mortem. Moderate to heavy deposits of mineralised plaque on the teeth of both adults suggests oral hygiene was poor, although heavy calculus deposits can also occur with diets high in protein. However, the fact that food debris was probably not cleared from around the gumline is further implied by the presence of a small cavity in this location in the mature male. Retention of food debris would allow time for cavities to develop as a result of the slow breakdown of complex carbohydrates in the mouth, rather than indicating a diet particularly high in simple sugars. The moderate to heavy tooth wear observed suggests the presence of coarse, unrefined foods in the diet, and this may well have contributed to the loss of teeth during life (observed in the mature male), although other factors (such as tooth decay) can also be a cause. The presence of defective enamel formation in the male adult and the adolescent implies that these individuals experienced poor childhood health and / or nutrition. The female exhibited a series of dental anomalies, including impaction of a lower third molar, probable congenital absence (or possible impaction) of three premolars, and unusual occlusion on the right side of her mouth leading to atypical wear patterns. There was little evidence of dental disease in the adolescent, beyond light deposits of calculus and minimal crowding and rotation of teeth, which could reflect their young age.

The cremation burials

Four cremation burials were identified on site, with what was initially thought to be one burial (Vessel 3) turning out to represent two burials when excavated in the laboratory. These were contained in two separate vessels, one black and one red. It appeared that the dark vessel had been deposited first, and it was later disturbed or truncated by the deposition of the red vessel (J. Jones, Archaeological Services). A large stone lay against the sides of both pots. It was not possible to tell from which vessel (red or black) that some of the bone derived from Vessel 3 had come, so it has been included as a separate entry in the tables below. There was also a small amount of unstratified bone, which presumably came from one of the five vessels. A summary of the data for each cremation burial, plus unstratified contexts is given in Table 16.26.

Table 16.26 Summary of cremation burials

Context	Detail*	Period	Bone Colour	Preservation	Species	Weight (g)
4007: Vessel 1	Contained in undecorated urn; complete but broken, probably lying on side	Roman	Most buff/white, some pale to medium blue-grey; occasional dark grey or black areas	Good	Human; Animal?	610.9
4007: Vessel 2	Contained in poorly fired and undecorated urn; just the base and part of the walls survive	Roman	Most buff/white, some pale to medium grey	Good	Human; Animal	1539.3
4007: Vessel 3R	Contained in well fired undecorated urn; located adjacent to Vessel 3B; just the base and lower part of the walls survive	Roman	Most grey (from dark to light), white in places; some dark grey and black areas	Moderate	Human	480.0
4007: Vessel 3B	Contained in well fired burnished urn decorated with cross hatching; located adjacent to Vessel 3R; just the base and lower part of the walls survive	Roman	Some buff/white, *c.* 50% blue-grey (dark to light); some black	Poor	Human; Animal	250.3
4007: Vessel 3	From either Vessel 3R or 3B	Roman	Most mid to pale grey/white; some dark grey	Moderate	Human	108.9
4110: Vessel 4	Contained in poorly fired undecorated urn; virtually complete and recovered largely intact	Roman	Most buff/white, small portion mid to dark blue-grey; some black	Good	Human; Animal	1626.0
4064: Vessel 5		Roman	Most pale grey/ white, some mid and dark grey	Good	?	22.7

** Information provided by J. Jones of Archaeological Services*

The bone from each context was passed through a nest of sieves, with mesh sizes of 10mm, 5mm, and 2mm (McKinley 2004b). Each fraction was weighed and the largest fragment of bone was measured. All bone was sorted into identifiable and non-identifiable fragments, and the identifiable bone was divided into four categories: skull (bone from the cranium and mandible), axial (rib cage and spine), upper limb and lower limb. The bone from each of these categories was weighed and described, and any evidence indicating the age or sex of the individual was recorded. The presence of pathological lesions was also recorded.

The amount of cremated bone recovered from each vessel ranged from 250.3g (Vessel 3B) to 1626.0g (Vessel 4; Table 16.26), with a mean weight of 901.3g. Two of the vessels (2 and 4) contained quantities of bone comparable with that recovered from modern crematoria, observed to be 1625.9g on average and ranging from 1001.5 to 2422.5g (McKinley 1993). Vessel 4 was recovered virtually intact, so it would be reasonable to expect that the amount of bone present corresponded with the amount originally placed in the vessel. In this case it was likely that most of the cremated remains were collected for deposition. Vessel 2 was damaged, and just the base and part of the walls of the vessel survived. Despite this, the quantity of bone recovered approached the amount recovered from Vessel 4. Either the damage to the vessel did not result in considerable loss of bone from the contents, or the vessel originally contained a far greater amount of bone. Vessel 1 was complete, although it had been damaged, and it was found lying on its side. The amount of bone recovered (just over 600g) fell below the lower end of the weight of material seen in modern cremations. It is possible that it contained a comparable quantity of bone to Vessels 2 and 4, but that the damage to the vessel resulted in the loss of some of the contents. Unsurprisingly, Vessel 3B, which had been truncated by the deposition of Vessel 3R, contained the least amount of cremated bone. Vessel 3R also contained a relatively small quantity of bone, and this vessel too had been damaged. In both cases, just the base of the vessel with the lower part of the walls survived, and it is unlikely that the quantity of bone recovered represents the amount originally deposited. This is illustrated by the presence of 100g of bone within soil associated with these two vessels. This bone could be derived from either or both vessels, but it was not possible to determine which. It should be noted that the original amount of bone deposited in the burial might not have included the complete cremated remains of the individual. There is archaeological evidence to suggest that a token selection of remains from the pyre were collected, and the amount of bone present in a cremation burial may be as low as 57g (McKinley 2000). Thus, there is no way to tell how much bone was originally placed within the damaged urns.

The bone from most of the vessels was reasonably well preserved, although warping and cracking of fragments due to the cremation process was observed (McKinley 1994a). The bone from Vessel 3B was the least well preserved, being quite soft and powdery to the touch.

All five vessels contained fragments over 10mm in size, with over half the weight of bone from Vessels 1, 2 and 4 recovered from this sieved fraction (Table 16.27). Indeed, 62.6% of the bone from Vessel 4, the most intact urn, fell into this category. In comparison, only 16.3% of the bone fragments from Vessel 3B, and 8.2% from Vessel 3R, were over 10mm in size; these two urns being the most damaged of the five. The maximum fragment size was over 50mm in the material from all the vessels, except for Vessel 3R, where the maximum fragment measured 30.9mm (Table 16.27). Unsurprisingly, the largest fragments came from the most intact vessel (Vessel 4), where the maximum fragment measured 107.4mm. The mean maximum fragment size from all

five vessels was 66.7mm. Bone can fragment during the cremation process, for example as a result of movement when the pyre collapsed, during any tending of the pyre, or as the bone was collected from the pyre (McKinley 1994a). However, work by McKinley (1994a) has demonstrated that fragment size in cremation burial is largely the result of post-depositional processes. Disturbed cremation burials tend to have smaller fragment sizes, and those protected within urns tend to have larger fragment sizes. The protection afforded by urns is obviously greater if those urns remain complete and no soil is able to infiltrate them (*ibid*). It seems likely that fragment size at Stretton Grandison was largely related to the deposition of the remains within protective vessels, with the most intact vessel containing the largest fragments (both as a proportion of weight, and in terms of the maximum fragment size), and the two most damaged vessels containing smaller fragments. However, evidence for fragmentation during burning was observed in the material from Vessel 4 (discussed below).

Table 16.27 Summary of cremated bone fragment size

Context	10mm		5mm		2mm		Weight	Max. Frag. Size
	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(mm)
4007: Vessel 1	348.8	57.1	239.9	39.3	22.2	3.6	610.9	71.6
4007: Vessel 2	789.2	51.3	497.9	32.3	252.2	16.4	1539.3	69.9
4007: Vessel 3R	39.2	8.2	237.5	49.5	203.3	42.4	480.0	30.9
4007: Vessel 3B	40.9	16.3	133.0	53.1	76.4	30.5	250.3	53.9
4007: Vessel 3	7.6	7.0	49.3	45.3	52.0	47.8	108.9	38.8
4110: Vessel 4	1017.1	62.6	431.1	26.5	177.8	10.9	1626.0	107.4
4064: Vessel 5	0.0	0.0	0.3	1.3	22.4	98.7	22.7	11.8

Complete oxidation of the bone generally occurs with exposure to temperatures of over *c.* 600ºC with a plentiful supply of oxygen (McKinley 2004b). Restricted oxygen or lower temperatures (*c.* 300-600ºC) tend to result in bone of a darker colour (*ibid*). Most of the bone from Vessels 1, 2 and 4 was buff or white in colour, demonstrating full oxidation of the bone, although some areas of darker grey were seen, particularly in Vessel 4. In all three burials these darker fragments included bone from the skull, vertebrae, ribs, and some long bone fragments. Some long bone fragments had a band of dark grey or black within the central cortex. This implies that full oxidation was not achieved in all bones, with some areas of the body and the interior parts of some bones being exposed to less heat and/or oxygen. The bone from Vessels 3B and 3R was less well oxidised, with a greater proportion of fragments being darker grey and black. Many fragments from Vessel 3B were black on the internal cortex, suggesting incomplete oxidation.

In Vessel 4, bones from the feet and the distal ends of the tibiae (shin bones near the ankles) were particularly dark. This could suggest temperatures were not maintained for a sufficient duration near the foot-end of the pyre, not surprising since the feet and lower legs contain little in the way of fat to help combustion. Close examination of the bone fragments from Vessel 4 enabled many adjacent fragments to be reunited, and this revealed some interesting patterns in colouration. Part of the distal humerus (near the elbow) had fragmented. The most distal fragment was entirely black to dark-grey in colour, yet the proximal fragment from which it had broken was completely white (including throughout the cross section). A similar pattern was seen in the distal right tibia, where the distal fragment was grey/ pale grey, and the proximal fragment was white. For such a dramatic variation in colour between two adjoining fragments to occur, they would have to have broken and separated whilst on the pyre, with one fragment exposed to high temperatures and plentiful oxygen, and the other experiencing lower temperatures and/ or less oxygen. This provides evidence for a degree of fragmentation during burning, although it is not known whether this was due to natural movements of the bone resulting from disintegration or stoking of the pyre, or deliberate movement of the bone on the pyre by attendants (McKinley 1994a).

Due to the presence of relatively large fragments it was possible to identify skeletal elements in all five burials. The proportion of bone that could be identified ranged from 6.2% in Vessel 3R, which contained the least amount of bone in the 10mm+ fraction and the smallest maximum fragment, to 48.4% in Vessel 4, the intact vessel containing the largest fragments (Table 16.28). All vessels contained bones from all parts of the body, except for Vessel 3B, where only fragments from the skull and lower limb could be identified. Identifiable fragments from the skull, axial skeleton and upper limb were found in the bone associated with Vessels 3B and 3R. The proportion of bone from each part of the body varied from vessel to vessel, and none corresponded with the expected proportions of: skull, 18.2%; axial, 20.6%; upper limb, 23.1%; and lower limb, 38.1% (McKinley 1994b). Within each vessel, the majority of identifiable fragments were either from the skull, or from the lower limb. Variation in the types of bone elements encountered in archaeological cremation burials usually indicates a ‘random’ selection process, rather than deliberate inclusion or exclusion of certain parts (McKinley 2000). However, since the cranial vault is distinctive and easily recognisable even when severely fragmented, it often forms a large proportion of identified bone fragments in cremated remains (McKinley 1994b). Unspecified long bone fragments also formed a significant proportion of the total weight of material from each vessel (Table 16.28).

Table 16.28 Summary of identifiable elements

Context	Skull		Axial		Upper Limb		Lower Limb		Total ID		UID Long Bone	
	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(%)	(g)	(%)
Vessel 1	82.2	34.4	44.9	18.8	56.0	23.4	56.0	23.4	239.1	39.1	154.0	25.2
Vessel 2	70.0	15.6	63.6	14.2	44.5	9.9	270.9	60.3	449.0	29.2	289.9	18.8
Vessel 3R	18.9	63.4	1.4	4.7	0.6	2.0	8.9	29.9	29.8	6.2	69.0	14.4
Vessel 3B	15.6	65.8	0.0	0.0	0.0	0.0	8.1	34.2	23.7	9.5	58.6	23.4
Vessel 3	2.9	49.2	1.9	32.2	1.1	18.6	0.0	0.0	5.9	5.4	3.9	3.6
Vessel 4	166.1	21.1	53.4	6.8	108.4	13.8	458.9	58.3	786.8	48.4	177.1	10.9

Fragments of skull identified in the material from Vessel 1 included parts of: the occipital bone, at the back of the head; frontal bone, including the area around the left orbit; left zygoma (cheekbone); right temporal bone, which supports the ear; mandible (lower jaw); as well as numerous vault fragments, including parts of the parietals. Fragments of axial skeleton included: numerous rib fragments; part of the atlas, the uppermost vertebrae supporting the skull; and numerous fragments of cervical (neck), thoracic (chest), and lumbar (lower back) vertebrae. The upper limb was represented by fragments of the left scapula (shoulderblade), as well as unsided fragments of humerus (upper arm), radius and ulna (forearm), and hand phalanges (finger bones). Bones from the lower limb included unsided parts of the pelvis, femur shaft (thigh), and probable tibia shaft (shins), as well as the right patella (kneecap), left talus (ankle bone), and metatarsal fragments (foot bones).

The skull fragments from Vessel 2 included parts of the occipital bone, right temporal bone, mandible, parietals, and vault fragments. The axial skeleton included rib fragments (including part of the first rib, unsided), parts of the atlas, and several fragments of thoracic and lumbar vertebrae. Fragments of upper limb came from the scapula, left humerus, ulna, left radius (and unsided radius fragments), metacarpals (from the hand), and hand phalanges. The lower limb was well represented by fragments of the pelvis, both femora, both tibiae, right fibula, both patellae, both tali (ankle bones), and metatarsals.

The bone from Vessel 3R included fragments of cranial vault, two fragments of cervical vertebra, a hand phalanx, and unsided parts of the femur shaft. The bone from Vessel 3B included fragments of cranial vault, and part of the tibia shaft. Identifiable fragments were present in the material associated with Vessels 3R and 3B. This included fragments of cranial vault, rib fragments, part of a thoracic vertebra, and fragments of hand phalanges.

A considerable number of fragments from Vessel 4 could be identified. Bones from the skull included parts of: the maxilla and mandible (upper and lower jaws); tooth fragments, including a lower molar; occipital bone; both parietals; both temporal bones; and numerous generic vault fragments. Bones from the axial skeleton included: rib fragments; part of the atlas and axis (the uppermost neck vertebrae); numerous cervical, thoracic and lumbar vertebra fragments; and even a small fragment of possible ossified thyroid cartilage. The upper limb was represented by fragments of both scapulae, both humeri, right ulna, unsided radius fragments, right hamate (wrist bone), and hand

phalanges. Fragments from the lower limb included parts of the pelvis, both femora, both tibiae, right fibula, a fragment of patella, and several foot bones. The latter included the left talus, navicular, cuboid and medial cuneiform; the right calcaneus (heel bone); unsided tarsal fragments (calcaneus, intermediate cuneiform); metatarsal fragments; and foot phalanges (toe bones).

Tiny quantities of animal bone were present in all contexts, except Vessel 3R, and possibly Vessel 1 where the identification of animal bone was less certain. The weight of animal bone and the proportion of total weight are given in Table 16.29.

Table 16.29 Weight and proportion of animal bone

Context	Animal Bone	
	(g)	(%)
4007: Vessel 1	0.3	0.05
4007: Vessel 2	0.1	0.01
4007: Vessel 3R	0.0	-
4007: Vessel 3B	1.4	0.56
4110: Vessel 4	5.1	0.31

Osteological assessment

No double burials were identified, as none of the vessels contained duplicated skeletal elements, and none contained bones from individuals of different ages. From the osteological evidence it appears that each vessel contained the remains of a single individual. However, identifying the presence of multiple individuals can be difficult with cremated remains. Firstly, the bone included in the cremation burial was selected from the pyre, and as such the skeleton is likely to be incompletely represented (McKinley 2000). Secondly, there are greater difficulties involved in identifying skeletal elements and applying the techniques for age estimation to cremated remains.

Estimation of age in cremated remains often has to be based on less reliable criteria than those applied to inhumation burials, simply because the required parts of the skeleton tend not to be present. The material from Vessels 1, 2 and 3R, and the bone associated with Vessel 3R and 3B, all contained fully developed bones, shown by the fusion of late-stage epiphyses (parts of the bone that fuse together during late adolescence). This indicated these remains were those of adults, but unfortunately it was not possible to assign a more precise age to these individuals (Table 16.30). Degenerative changes affecting the joints in the remains from Vessel 1 and in the material associated with Vessels 3R and 3B might suggest these were mature individuals, but joint disease can occur in younger age groups. The remains from Vessel 3B contained fragments of adult size, but the state of development (epiphyseal fusion) could not be observed. In this case, the remains were probably those of an adult, but they could have been those of an older adolescent. The cremated bone from Vessel 4 not only included fully developed bones and tooth roots, but a partial pubic symphysis. This part of the pelvis is one of the most useful in assessing the age of an individual.

The surface of the pubic symphysis was irregular and showed signs of degeneration (porosity and outgrowths of bone along the margins), features consistent with an older age group, and it seems most likely that this individual was a mature adult.

Table 16.30 Summary of osteological results for the cremation burials

Context	Age	Sex	Weight (g)
4007: Vessel 1	Adult	?	610.9
4007: Vessel 2	Adult	Male??	1539.3
4007: Vessel 3R	Adult	?	480.0
4007: Vessel 3B	Adult/ adolescent?	?	250.3
4007: Vessel 3	Adult	?	108.9
4110: Vessel 4	Mature adult?	Male??	1626.0

Similar problems to those encountered with age estimation are encountered when attempting to assess the sex of cremated remains. The relevant parts of the skeleton are often not present, and even where one or two such areas survive, the reliability of any estimate is questionable because the most accurate assessments involve examination of as many traits as possible. A fragment of occipital bone (from the back of the head) was present in Vessel 2, and this displayed a prominent external occipital protuberance (a male trait). The bones also appeared relatively large and robust. Part of the pubic symphysis was present in Vessel 4 (the most reliable area of the skeleton when determining sex), but unfortunately not enough to provide a positive indication of sex. However, the part that was present displayed male traits, including the lack of a ventral arc, and possibly the lack of a sub-pubic concavity. The external occipital protuberance was also present for this individual, but in this case was of indeterminate size. In both cases, these burials could be identified as possibly those of males (Table 16.30), but it is important to bear in mind the extremely tentative nature of these estimates.

Pathological conditions

Limited evidence for pathological conditions were observed in the cremated remains from Vessels 1 and 4, as well as in the remains associated with Vessels 3R and 3B. Four unsided rib fragments from Vessel 4 displayed well-healed fractures. Rib fractures can occur as a result of a blow to the chest, a fall, or through coughing (Roberts & Manchester 1995, Dandy & Edwards 2003). Joint surfaces from Vessels 1 and 3R/3B showed signs of degenerative changes, which would probably (but not necessarily) have been associated with age. In Vessel 1, an apophyseal facet from a cervical (neck) vertebra had osteophytes and porosity; a vertebral body fragment had osteophytes (outgrowths of bone) at the margin; and two distal hand phalanges (from the tips of the fingers) had osteophytes around the margins of the joint surfaces. The hand bones were also affected in the cremated bone associated with Vessels 3R and 3B, with one distal hand phalanx showing porosity, osteophytes and change to the normal contour of the joint suggestive of osteoarthritis. The remains of four intermediate or proximal hand phalanges also displayed osteophytes and porosity. Antemortem tooth loss might have been present in the individuals from Vessels 1 and 4, both involving either the second or

third molar. However, the third molar can be late to erupt, congenitally absent or impacted (Hillson 1996), so the diagnosis of AMTL is uncertain. It was more likely in Vessel 1, as the tooth socket in question appeared partially remodelled.

Summary

All five cremation burials contained the remains of an adult (or probable adult), with Vessel 4 probably containing a mature adult. Two of the vessels (2 and 4) might have contained males, but identification of sex in both cases was extremely tentative. Pathological conditions observed included traumatic injury to the ribs of the individual buried in Vessel 4, and degenerative changes affecting the joints of the individuals buried in Vessel 1 (spine and hands) and Vessel 3R/ 3B (hands). Burial within urns had protected the remains to an extent, although damage sustained by most the urns had contributed to the loss of, and damage to, some of the contents. Only Vessel 4 was likely to have contained the original amount of bone deposited. Not all bone was fully oxidised, suggesting sufficiently high temperatures and/ or adequate oxygen supplies were not maintained during the cremation process. This was particularly notable in the remains from Vessel 3B. Evidence for fragmentation during the cremation process was observed in the remains from Vessel 4.

Mortuary practice

It was originally believed that all burials at Stretton Grandison dated to the Roman period, and a Roman date (AD 10-210) was confirmed for the adult male buried in the wooden coffin through radiocarbon dating. However, the adolescent burial was radiocarbon dated to AD 550-660. Either this cemetery was in use for an extended period of time from the early Roman (or possibly late Iron Age) through to the early medieval period, or it was a Roman cemetery with later intrusive early medieval burials. Interpreting the chronology of inhumation and cremation burials can be complicated. In many areas of Britain the native Iron Age inhumation burial ritual was replaced by cremation in the early Roman period (Philpott 1991). Cremation as the favoured burial rite was in turn gradually superseded by inhumation between the mid second century and the late third century AD (Philpott 1991). However, some parts, particularly isolated rural areas located away from urban and military centres, may have been resistant to change (*ibid*). Thus, early examples of inhumation burials, perhaps including the Stretton Grandison burial radiocarbon dated to the first or second century AD, might represent continuation of native burial practices. Likewise, cremation as a burial rite persisted into the third and fourth centuries AD in some areas of Britain, including parts of the midlands (Philpott 1991). Philpott (*ibid*) has also suggested that child inhumation may have been practiced even when adults were usually cremated. Although the cremation burials at Stretton Grandison may date to an early period of use of the cemetery, it seems likely that both burial rites coexisted, at least for a time.

Burial distribution

Twelve of the inhumation burials and three of the cremation burials were located north of ditches (4063) and (4074), which ran in an east-west direction. This group of burials contained a central cluster of eight inhumation and two cremation burials to the north of ditch (4063), and north-east of the well (4005). This group included the three adult burials, the adolescent (dated to the early-medieval period), the 2-5 year old child, three neonates, and cremation burials (1) and (2). These vessels both contained the remains of adults, one of which was tentatively sexed as male. Skeleton (4027), a neonate, was located to the west of this central group, to the north-west of the well and south of the terminus of ditch (4025). Skeletons (4078), (4105), (4102), all probably neonates, and cremation burial (4), containing another possible male adult, were strung out in a line to the east of the central group, to the north of ditch (4074). Since the edge of the trench lies close to the north of these latter burials, it is possible that the cemetery continued to the north. Another neonate, skeleton (4099), and cremation burials (3R) and (3B), probably containing two adults, were located south of ditch (4063), to the south of the central group. Vessel 3B had apparently been truncated by the deposition of Vessel 3R. All lay close to the southern edge of the trench, and it is possible that burials extended further south.

The graves appeared to have a rather random distribution, with no clear evidence for organisation. They certainly did not appear to be organised into rows, as observed to some extent at Cannington (Somerset; Rahtz *et al* 2000), and Cirencester (Gloucestershire; McWhirr *et al* 1982). However, both these cemeteries were relatively large, and perhaps saw periods of intensive use. In contrast, the small cemetery at Stretton Grandison may have more in common with the collection of burials discovered around the Roman villa at Frocester (Gloucestershire; Price 2000a, 2000b). The latter burials probably spanned a considerable period of time, and although they were distributed around the site, small groups of burials apparently clustered together. However, despite the lack of apparent organisation at Stretton Grandison, there was virtually no intercutting of the graves, apart from the truncation of Vessel (3B) by the burial of Vessel (3R). This could suggest that the graves were marked in some way, or that the grave mounds were still visible when later burials occurred. This was the conclusion reached at Cannington, where many graves were not disturbed by later burials. At that site, the presence of grave-markers was inferred from postholes found close to three of the graves (which had possibly contained wooden posts), and two graves were marked with stones (Rahtz *et al* 2000). Conversely, at Cirencester there was a great deal of intercutting amongst the graves, which probably suggested limited grave marking (McWhirr *et al* 1982). If the gravediggers were aware of the locations of earlier graves at Stretton Grandison, this suggests that Vessel 3R was deliberately buried in the same location as Vessel 3B. The early medieval burial apparently avoided disturbing any existing graves, so it is possible that these were still visible when this adolescent was buried.

The number of skeletons discovered at Stretton Grandison was relatively small, and it is not known whether burials extended beyond the confines of the excavated area. This makes it rather futile to search for patterns in age or sex distribution. However, the adult graves, and that of the young child, were grouped fairly close together in the central group, as were two of the cremation burials. The early medieval adolescent was also placed in the same area. Most of the neonate burials appeared more marginal, and were scattered to the east, south and west of the central group. However, three of the

neonates were located with the central group, and three of the cremation burials (all containing adults or probable adults) were located at the margins with the neonate burials.

Orientation

Burial orientation was determined for ten of the thirteen inhumation burials. Skeleton (4044) was disarticulated, and it was not possible to establish the orientation of skeletons (4099) and (4105). The orientation of poorly preserved skeleton (4042) was recorded as southeast-northwest on site. However, on examination in the laboratory the bones of the lower legs were in bags labelled upper leg, and vice versa; and the bones labelled pelvis contained a bone from the foot and animal bones. Examination of the *in situ* photographs confirmed the impression that this individual had actually been buried with the head to the northwest.

Four of the inhumations had been buried on a north-south alignment (heads to the north), including the male adult (skeleton 4039), the unexcavated probable adult (skeleton 4073), and two neonates (Table 16.31). Both adults were buried in coffins. The young child (skeleton 4042) was aligned northwest-southeast, and the adult female (skeleton 4037) was oriented south-north. Two of the neonates were probably aligned west-east, and another east-west. The adolescent (skeleton 4050) was also aligned west-east.

The orientation of burials does vary between different cemeteries in Roman Britain. At Cirencester the majority of burials were aligned north-south, although east-west graves were present (McWhirr *et al* 1982). A range of orientations were observed at Frocester, but south-north alignment was slightly more common (Price 2000b). None of the individuals at Cannington were oriented along a north-south axis; instead they were broadly aligned west-east (Rahtz *et al* 2000). It is possible that a west-east orientation may have been more widely adopted in the later Roman period (*ibid*). North-south or south-north inhumations were common during the Iron Age, and O'Brien (1999) has suggested that the traditional burial orientation probably persisted to a greater extent in smaller Roman cemeteries, particularly in rural areas. Most burials in the post-Roman period continue the practice of west-east inhumation that had become standard by the late Roman period, although north-south and south-north burials do occur (O'Brien 1999). Graves may be aligned on nearby features, such as ditches, and this might have occurred at Stretton Grandison. The east-west burials might have been aligned on the two east-west ditches (4063 and 4074), while the north-south burials might have been aligned on ditches (4009) and (4025), assuming these ditches were visible at the time the graves were dug.

Table 16.31 Summary of funerary information for inhumation burials

Skeleton No.	Age	Sex	Position	Hand position	Orientation	Notes
4027	Neonate	-	Flexed, left side	Right hand in front of face, left arm extended in front of body	North/ South	
4037	35+ (?) years	Female	Extended, left side	Arms crossed over chest, hands near shoulders	South/ North	
4039	45+ years	Male?	Partially disarticulated		North/ South	Buried in wooden coffin; possibly partially decomposed before burial
4042	2-5 years	-	Extended, supine?	Unknown	North-west/ South-east	
4044	Neonate	-	Disarticulated			
4050	15-16½ years	-	Extended, prone	Arms either side of torso, hands next to hips	West/ East	Decapitated, multiple sharp blade injuries to head and neck
4053	Neonate?	-	Extended, supine?	Either side of body?	West/ East?	
4056	Neonate?	-	Flexed, right side?	Unknown	North/ South	
4073	Adult?	-	Extended, supine?	Unknown	North/ South	Buried in wooden coffin
4078	Neonate?	-	Flexed, right side?	In front of body/ face?	East/ West	
4099	Neonate??	-	Unknown	Unknown	Unknown	
4102	Neonate?	-	Flexed, left side?	Unknown	West/ East?	
4105	Neonate??	-	Unknown	Unknown	Unknown	

Position

It was possible to determine the position of burial for nine of the thirteen inhumations. As with orientation, the position of skeletons (4044), (4099) and (4105) could not be ascertained. The position of skeleton (4039), the mature male buried in the wooden coffin, was also undetermined, since many of the bones were not found *in situ* when excavated. It is possible that this partial disarticulation indicates that this individual was buried in a partially decomposed state. A similar conclusion was drawn for two partially disarticulated burials at Frocester (Price 2000b), and for several individuals from the later Anglo-Saxon cemetery of Raunds Furnells (Northamptonshire; Boddington 1987, 1996). At both sites the disturbance of the bones primarily involved the upper body, and all were buried in wooden coffins. Boddington (1996, 1987) suggested that these individuals may have been transported some distance in their coffins following their death, perhaps if the person died at a distance from the cemetery. An interesting consideration regarding the Stretton Grandison male is the dimensions of his coffin. This was regarded by the excavators as too small for a fully articulated adult male, and it is possible that some degree of dismemberment was required in order to fit his body into it. However, no evidence for cut marks suggestive of dismemberment was observed on the skeleton, and it is possible that the body was partially decomposed before it was put into the coffin.

A variety of burial positions were observed at Stretton Grandison, but unfortunately the number of skeletons discovered was too small to examine trends in burial position in any detail. The adult female (skeleton 4037) was laid on her left side with straight legs and arms crossed over her chest (Table 16.31). The 2-5 year old child (skeleton 4042) was probably buried extended and supine (lying on their back); since the upper body was not preserved the arm position is unknown. The unexcavated adult was probably also extended and supine, and again the arm position is unknown. The excavated neonate (skeleton 4027) was flexed and placed on their left side, with one arm flexed and the other extended in front of the body. Most of the remaining neonates were probably flexed on their left or right sides, except for skeleton (4053), which might have been extended and supine.

The presence of crouched burials in early Romano-British sites is often taken to indicate a continuation of native Iron Age burial practices, particularly in rural cemeteries (Philpott 1991). By the third and fourth centuries AD, the majority of inhumation burials tend to be supine, with extended legs and arms in a variety of orderly positions (*ibid*). Certainly 98.3% of the burials at Cannington were arranged in this fashion, and those burials that differed were located at the periphery of the main burial area (Rahtz *et al* 2000). Supine burial was also favoured at Cirencester, with 73.3% of burials in this position (McWhirr *et al* 1982). A small number of individuals were buried on their sides, some with straight legs, none of which were in coffins (*ibid*). Extended, supine burial was the predominant rite at Frocester, although two individuals were buried flexed and on their sides (an adult male and a child); other more unusual burial positions were also present, although the date of the skeletons was uncertain (Price 2000b).

Prone burial and decapitation

The early medieval adolescent (skeleton 4050) was buried prone (face down), with arms lying on either side of the torso. This individual had also been decapitated, and the head was located over their right shoulder, as if pushed back. Both decapitation and prone burial occur in the Roman and early medieval periods in Britain, sometimes one or the

other ritual is observed, and sometimes both are combined (Harman *et al* 1981). At the Romano-British cemetery at Cirencester, 33 individuals of all ages and sexes were buried prone, and while some appeared carefully laid out, others gave the impression of hasty burial (McWhirr *et al* 1982). Six of the Cirencester individuals, five males and one female, had been decapitated, but all had the heads repositioned in the correct anatomical position (McWhirr *et al* 1982, Wells 1982). One mature adult female from Frocester, possibly post-Roman in date, had been buried prone; and two individuals had been decapitated, one possibly dating to the late Roman period and the other of uncertain date (Price 2000b). Decapitated and prone burials also occur in the early medieval period, most notably in the later execution cemeteries such as Walkington Wold (Buckberry & Hadley 2007), or Stockbridge Down (Hill 1937). However, in the earlier Anglo-Saxon period prone burials and decapitated individuals are found within the general cemeteries (Reynolds 1997), for example, three prone females buried at Beckford cemetery B (Hereford and Worcester; Evison & Hill 1996).

Prone burials in the Roman period often lay beyond the borders or at the margins of the cemeteries, and it was a burial position that became increasingly common in the fourth century AD (Philpott 1991). During the Roman period, decapitations tend to be more commonly found in small, rural cemeteries associated with farms or minor settlements, and occur much less frequently in larger urban cemeteries (Philpott 1991). The head may be missing from Romano-British decapitated bodies, or it may be placed in the grave with the body. Where the latter occurs, it is usually either arranged in correct anatomical position, or placed elsewhere in the grave, almost always with the lower body and usually between the legs or feet (Philpott 1991). Prone burials and decapitated burials are often found clustered together within a cemetery, and sometimes occur in the same individual (Harman *et al* 1981). It is possible that in some cases there was a ritual link between the burial rites, and prone burial may reinforce the act of decapitation (Philpott 1991). Reynolds (1997) has argued that meaning and purpose of decapitation and prone burial within an early medieval English context was different to that of the earlier Roman period.

Philpott (1991) has considered some of the reasons for prone burials, and summarises them as follows: prone burial was desirable for ritual reasons; it occurred when the body was buried in haste, or there was a lack of concern for the position of the dead; it was carried out because there was a deliberate intent to dishonour the dead; or the attitude at death prevented the body being laid out in the normal position. There may be a connection between prone burials and the dishonour or disgrace of the dead person. In such cases, prone burial may have been meted out as a punishment in death: if the soul of the dead person was believed to rise from the grave to journey to the next world, then burial face down may prevent that soul from rising, and so prevent their entry to the afterlife (Philpott 1991). Alternatively, fear of the spirit of the dead person rising from the grave to haunt the living may be the reason for prone burial in other cases. This might be a concern were it thought that the spirit of the dead person would have difficulty in journeying to the next world. Again, burial face down might confuse the spirit and encourage the body to bury itself deeper into the ground (Philpott 1991, Harman *et al* 1981). It is possible that prone burial was considered suitable for those considered social outcasts, or those suffering an unusual death, where the normal burial rites might be inappropriate (Philpott 1991). Philpott (1991) even suggested that prone burial may have been used in cases of violent death in order to spare the mourners the sight of the disfigured face.

Similar reasons to those cited above for prone burials have been put forward to explain decapitation. It could have been used in cases of unnatural or premature death, or where an individual had died in unusual circumstances, and where there was a risk of the dead returning to haunt the living (Philpott 1991). The use of decapitation in such a manner was recorded by Geoffrey Burton, abbot of the Benedictine monastery of Burton upon Trent, in the early twelfth century, and the story recounted was probably based on oral traditions (Bartlett 2002). He recounts the tale of two runaway peasants who, having caused a violent conflict, were struck dead and buried in the village churchyard:

> That very same day on which they were interred they appeared at evening… carrying on their shoulders the wooden coffins in which they had been buried. The whole following night they walked through the paths and fields of the village, now in the shape of men carrying wooden coffins on their shoulders, now in the likeness of bears or dogs or other animals… Men were living in terror of the phantom dead men who carried their wooden coffins on their shoulders every evening and night… and they received permission from the bishop to go to their graves and dig them up… They cut off the men's heads and placed them in the graves between their legs, tore out the hearts from their corpses, and covered the bodies with earth again. (Bartlett 2002, 195-197)

Although the period in which this was written was much later than the period under consideration, it is possible that earlier beliefs and reasons were reflected in this document. Philpott (1991) also examines the positive connotation of decapitation, which he argues might have been used as a healing ritual for the soul of the dead person, thus allowing them entry to the afterlife. In this respect he connects decapitation with wells, and it is interesting that skeleton (4050) was buried in the vicinity of the well at Stretton Grandison.

Of course, the concept of decapitation as a form of punishment is familiar to many, and in some cases evidence for decapitation may be evidence for execution. Reynolds (1997) has argued that decapitation and prone burials in the early medieval period have a different meaning to those of the Roman period. He associates these rituals with the establishment of official punishment of offenders, connected with the formation of states and the development of institutions in the later sixth and seventh centuries. Anglo-Saxon execution cemeteries, such as Stockbridge Down (Hampshire; Hill 1937), Meon Hill (Hampshire; Liddell 1933), and Walkington Wold (Yorkshire; Buckberry & Hadley 2007, Buckberry 2008), containing prone and/or decapitated individuals, some with their hands tied behind their backs have been excavated. As well as containing executed criminals, these burial grounds may have been used to inter others denied burial the normal cemetery, such as suicide victims, or unbaptised individuals (Cherryson 2008, Reynolds 1997, Buckberry 2008). The earliest examples of execution cemeteries are seventh or eighth century in date (Reynolds 1997, Buckberry 2008, Buckberry & Hadley 2007), although the prime period of use appears to be the later Anglo-Saxon period (Cherryson 2008). Features common to execution cemeteries include shallow and undersized graves; intercutting graves; random grave orientation and unusual burial position, including prone burial; decapitated corpses, or other evidence of trauma (e.g. amputation); instances of tied hands or feet; and few grave goods, except low status dress fittings (Reynolds 1997, Buckberry 2008, Buckberry & Hadley 2007). The majority of burials are those of adult males (Buckberry 2008), and the cemeteries themselves may be associated with earthworks, located on or near major boundaries, and are often visible from important settlements and routes (Reynolds 1997, Buckberry 2008).

These various interpretations will be considered further in the final discussion.

Coffins and containers

Two of the skeletons were buried within coffins, including the mature adult male (skeleton 4039), and skeleton (4073), which was probably an adult (the skeleton was not lifted). Wooden coffins were probably more common in the Iron Age than previously suspected, often being constructed without nails (O'Brien 1999). They were widely used in the Roman period, and were seen in just over half the burials surveyed by O'Brien (1999). Five of the burials at Frocester were contained in wooden coffins, including three males and two females (Price 2000b). Burials within wooden, stone and lead coffins were present at Cirencester (McWhirr *et al* 1982), and although no evidence for wooden coffins was found at Cannington, this was most likely related to the poor conditions for organic preservation (Rahtz *et al* 2000).

All five cremation burials discovered at Stretton Grandison were contained within pottery urns. Pottery jars were the most common form of container for cremated remains in Roman Britain (Philpott 1991). The type of vessel used varies with the region, but they were usually simple and domestic in character (*ibid*). Only one of the vessels (3B) used at Stretton Grandison showed any trace of decoration.

Vessels 3R and 3B were bordered by a large partially worked stone, which lay against the sides of both pots. A smaller stone was found on the far side of Vessel 3R. Stones are frequently found in inhumation graves of the Roman period (O'Brien 1999). For example, at Cirencester stone packing was seen in 27 graves, in most cases using rough or partially worked stones, but in two cases using stone roofing tiles (McWhirr *et al* 1982); and 30 burials at Cannington were contained in stone-lined graves (Rahtz *et al* 2000). During the Iron Age, some cremation burials were covered by wooden boards or planks, and one pit was lined with woven material (O'Brien 1999). Coverings for cremation urns could also be provided during the Roman period, for example a diamond-shaped roofing tile was used as a cover for one of the two cremation urns excavated at Cirencester (McWhirr *et al* 1982). It is more likely that the stones with Vessels 3R and 3B were serving a similar function to the stone packing found in inhumation graves, perhaps protecting the urns or marking the limits of the grave, rather than they were some type of covering for the urns that had become dislodged.

Summary

The burial practices observed at Stretton Grandison were varied, including both inhumation and cremation burials. The latter were all buried in relatively plain pottery urns, as is typical for the Roman period, and one pair of urns may have had a protective stone lining the grave. There was no obvious organisation of the cemetery, although the lack of intercutting and probable deliberate burial of one of the cremation urns next to another suggests earlier graves were probably visible when later graves were dug. Two of the adults were buried in wooden coffins. The most popular grave orientation was north-south, with one burial oriented south-north; this may suggest continuation of native Iron Age burial traditions, although west-east and east-west burials also occurred among the neonates. Burial position included extended and supine, as well as flexed on the sides, the latter being most commonly seen in the neonate burials. The early medieval

skeleton was buried on a west-east alignment, prone and decapitated. Both are burial rituals observed in Roman and early medieval cemeteries. The number of skeletons excavated was too few to discern any meaningful patterns in funerary provision.

Discussion

O'Brien (1999) has noted a general absence of burials from the Iron Age, Romano-British, and post-Roman periods in western England, including an area east of the Welsh border and west of the Severn; this area incorporates parts of Gloucestershire, and Hereford and Worcester. She has suggested that this may indicate a continuation of whatever early burial rite was practiced for the majority of the population prior to the Iron Age into these later periods, and that this burial ritual was largely invisible to archaeologists since few cemeteries are discovered. Alternatively, the lack of evidence could relate to poor preservation due to acidic soils, or a lack of archaeological investigation in the area (*ibid*). The small cemetery at Stretton Grandison is located within this region for which there is limited evidence for burial. As such it makes a valuable contribution to our understanding of burial rituals in this area, as well as providing an opportunity to learn more of the population through studying their skeletal remains.

Radiocarbon dates for the burials returned dates for AD 10-210, and AD 550-660. The latter date could either indicate a cemetery whose use extended into the early medieval period, or it may indicate intrusive early medieval burials into a Roman cemetery. Unfortunately, the skeletons had suffered a fair degree of fragmentation and tended to be incomplete, although the condition of the bone cortex itself was reasonably good. Despite the small number of skeletons excavated, a surprising amount concerning the lives of the people and the use of the cemetery has been reconstructed.

A large proportion of the graves discovered (62%) were probably those of neonates, although not all were fully excavated or examined osteologically. Neonates and infants under two years of age are generally absent from Roman cemeteries prior to the fourth century AD, instead being found buried within settlements, inside or immediately outside of buildings (Watts 1989, Scott 1999, Philpott 1991). Although neonates and infants under two years of age were buried in the cemeteries at Cirencester (McWhirr *et al* 1982) and Cannington (Brothwell & Powers 2000), they only made up a small proportion of the total burials. Suggested reasons for their exclusion from the communal cemetery include the economic cost of a formal burial, a cultural failure to accept the infant as a fully human, or infant deaths having a special meaning and significance (Scott 1999, Watts 1989). It is possible they were associated with fertility and rebirth, and they are often found buried in villas or in association with agricultural contexts in later Roman Britain (Scott 1999, Watts 1989). The proportion of infants and neonates discovered around the rural villa at Frocester (62%) was identical to that discovered at Stretton Grandison (Reece 2000), and the two sites may have more in common with each other than with the larger organised cemeteries. Although the neonate burials at Stretton Grandison are believed to be Early Medieval, it is not known whether they date to this period or later Roman period; whether they were buried within a relatively short time of each other or over a longer period; or whether they, post-date, or are contemporary with the adult burials.

Infanticide is viewed by many past and present societies as an acceptable form of birth control (Mays 2000), and is frequently cited as a likely cause for the number of neonatal

deaths seen in the Roman period in Britain. Mays (2000) has argued that infanticide was practiced during this period, citing documentary evidence, the frequent adult sex imbalance in favour of males, and the unusual peak at 38-40 weeks (i.e. full term) in the age at death often observed in Romano-British infants. He suggests that this indicates the killing of the infant shortly after birth, within the period typical for infanticide, rather than natural deaths which might be expected to occur over a longer period. However, others (for example Lewis 2007, and Scott 1999) have argued that a high mortality for this age group due to natural causes would be expected and should be considered a more likely cause. Birth itself is highly traumatic for the infant, carrying a risk of death; and exposure to diseases, unsuitable foods (if the baby was not breast-fed), and extremes in temperature can all prove fatal to a newborn baby although considered relatively minor by healthy adults (Scott 1999). Mays (2000) has recommended detailed examination of the age at death of neonates and infants in a cemetery population to establish whether they peak at the suspect 38-40 weeks, which might indicate the practice of infanticide. He also suggested DNA testing of neonate burials to establish sex, since a significantly higher ratio of one sex to the other could also suggest selective killing of boys or (more usually) girls. Unfortunately, the size of the sample from Stretton Grandison was too small to allow such analysis of age at death profile. Skeleton (4027) was considered to be around 38-40 weeks old at the time of death, but too little of Skeleton (4044) survived to determine age with such precision; the size of the fragmented bones could not be measured, but was comparable with those of a neonate. None of the other probable neonates were fully excavated, and inferences as to their age at death were made purely on the basis of scaled photographs. DNA testing is expensive, and was beyond the reach of the project.

The remaining inhumation burials included one young child between two and five years of age, a middle aged or mature woman, a mature man, an unsexed adult (not lifted), and a 15-16½ year old adolescent. The latter was radiocarbon dated to the mid-sixth to mid-seventh centuries. The five cremation burials each contained the remains of one adult, in two cases possibly males. With such a small sample size it is difficult to draw any meaningful conclusions regarding the population demography. Plentiful evidence for pathological conditions was observed, although again the limited number of skeletons precludes a detailed study of prevalence rates.

Oral hygiene was poor, and moderate to heavy deposits of mineralised plaque had built up on the teeth of both adults. The failure to clear food debris efficiently from the mouth probably led to the development of a small cavity at the gumline in the mature male. Coarse, unrefined foods present in the diet contributed to moderate to heavy tooth wear, exposing the softer dentine beneath the enamel. This process likely contributed to the loss of teeth during life, which was observed in the mature male, although other factors (such as tooth decay) can also be a cause. The man and the adolescent both experienced episodes of poor childhood health or nutrition, which left behind lines of defective enamel formation in the teeth. The woman had an impacted lower third molar, probable congenital absence (or possible impaction) of three premolars, and unusual occlusion on the right side of her mouth leading to atypical wear patterns. The adolescent had suffered little in the way of dental disease, although they had light deposits of mineralised plaque and minimal crowding and rotation of their teeth.

Inflammation of the bones occurred in almost all the individuals examined, most commonly affecting the legs (seen in the woman, man and 2-5 year old child). All these lesions were healed and no longer active. A healed inflammation of the tissues surrounding the brain was observed in the female, although the possible causes for this

are many and varied. The adolescent may have had an ulcer on the side of his left hand, which had led to localised inflammation of the bone beneath. This lesion was in the process of healing at the time of death.

Unsurprisingly, the two adults, both of whom were probably middle-aged or mature, had suffered degenerative joint disease and osteoarthritis. This affected their spines (in the woman this was almost certainly related to her scoliosis), and the weight-bearing joints of the lower limb in the man. He also had osteoarthritis in both wrists, which on the right side was probably related to his fractured thumb, and in his jaw, which may have been related to heavy use of his teeth. The male individual was possibly suffering from a condition known as DISH, most commonly seen in older men, where excessive bone is formed at certain points in the skeleton. Although the cause is unknown, this condition has been associated with rich diets and late-onset diabetes. Unfortunately, the cause of unusual holes present in some of his vertebrae remains unknown. Joint degeneration was also observed in two of the cremation burials.

The possibly middle aged or mature adult woman had suffered from scoliosis, or a sideways curvature of her spine to the right in her chest region, with associated changes in the shape of her rib cage. It is likely she began to develop this condition in adolescence, and the curvature may have been progressing slowly all her life. The degree of curvature may have been sufficient that it was visible to others, although clothing will have concealed it to an extent, and the psychological impact of her condition will never be known. She may have suffered shortness of breath and pain in her back as a result of the spinal curvature, and the asymmetrical weight distribution and abnormal stresses placed on her spine probably led to the degeneration of her spinal joints and fusion of joints in her pelvis. However, she would have been capable of many of the physical activities carried out by others in her population, including pregnancy and childbirth. The causes of most cases of scoliosis in modern patients are unknown.

Accidental injuries were seen in the adolescent and the mature adult male. The former had broken their right wrist, probably through falling onto their outstretched hand, whilst the latter had broken their right ankle and damaged the surrounding ligaments, probably through falling with their foot trapped. The latter had also fractured several ribs, possibly also the result of a fall or a crushing injury to the chest, as well as the big toe in his right foot, probably through dropping a heavy object onto it. Fused bones in two of his toes may have been caused by the same incident, although they could be related to joint disease instead. A fractured bone at the base of this man's thumb could have been sustained through punching, and may indicate involvement in interpersonal violence. Fractured ribs were also observed in one of the cremation burials. All these injuries had healed, indicating they occurred some time before death.

Further evidence for interpersonal violence was seen in the early medieval 15-16½ year old adolescent, who had suffered a bloody and violent death. Multiple sharp blade wounds were seen on the left side of his head and neck, on the back of his head, and on the back of his right shoulder. Some of these wounds had penetrated deep into the skull, and severed vital arteries as well as damaging the brain. These injuries were fatal, and showed no signs of healing. There was no evidence for any defence injuries in the surviving bones of the arms and hands. This assault may have taken place as part of an armed conflict such as a battle or skirmish, or may have been the murder of a defenceless victim; an alternative explanation of an execution victim is considered below.

Most of the graves were concentrated in a central area north-east of the well, and north of ditch (4063), and this are included the adult inhumation burials, as well as that of the child and early medieval adolescent. Most of the neonates and three of the cremation burials were located around the peripheries of the main group. Unlike the large ordered cemeteries at Cannington (Rahtz *et al* 2000) and Cirencester (McWhirr *et al* 1982), there was little evidence for organisation of the graves into rows at Stretton Grandison. However, most graves respected the presence of earlier burials, which may imply the location of the graves was marked in some way, or simply that the mounds of soil covering earlier burials were still visible when later graves were dug. If this was the case, then the grave containing cremation Vessel 3B was deliberately opened for the interment of Vessel 3R; unfortunately, the former burial was truncated by the deposition of the latter.

The position and orientation of the body was quite varied, although the preference for north-south (south-north in one case) alignment could indicate continuation of native Iron Age traditions, consistent with the pattern observed in other small rural cemeteries in the Roman period (O'Brien 1999). Both supine extended burial and flexed burial lying on either side were present, although the latter was most common among the neonates. In the latter case, this burial position may be more a reflection of physiology, since the neck and other muscles are not strong enough to allow the head and body to straighten until the infant is around three months old (Scott 1999). Burial in a supine and extended position became typical of burials during the third century AD, although isolated cemeteries may have been more resistant to change (Philpott 1991). Two adults were buried in wooden coffins, a common feature of Roman burials, although they also occur with Iron Age burials (O'Brien 1999). The varied nature of the burial rites is another feature shared with the cemetery at Frocester (Price 2000b).

The early medieval adolescent individual who had died a violent death was buried face down having been decapitated. Both rituals are observed in the Roman and early medieval periods in Britain (Harman *et al* 1981), although the purpose and meaning of these funerary activities is complex and varied, and no doubt changed with time (Reynolds 1997). The location of the later burials within a Roman cemetery is also open to various interpretations, which partly depends on whether the cemetery continued in unbroken use from the earlier period, or whether the later burials were intrusive. The potential meanings of the burial location and funerary rites are also closely connected with who buried this individual, for example relatives/ friends, strangers, or those holding an official position (Komar 2008). Finally, the situation is complicated by the location of the cemetery, close to the borders of Wales and at the western extent of the early Anglo-Saxon cemeteries (Lucy 2000). This raises issues related to the possible ethnicity of the individual, and those who buried them. These issues can only be considered briefly here, and the following suggestions are open to reinterpretation following further study.

The question of whether skeleton (4050) could have been the victim of an execution is raised by the existence of Anglo-Saxon execution cemeteries, where prone burial and decapitation frequently occur (Reynolds 1997). In this context, prone burial was used as a mark of disrespect for the corpses of convicted offenders. These cemeteries emerge during the seventh and eighth centuries, probably in connection with the establishment of states and institutions able to organise and effect official punishments (Reynolds 1997, Buckberry & Hadley 2007). Many were excavated early in the nineteenth century, and few of the skeletons have been studied with modern osteological techniques. However, the skeletons from Walkington Wold, radiocarbon dated to the mid to late Anglo-Saxon period, were re-examined by Buckberry (Buckberry 2008, Buckberry & Hadley 2007) and

provide a more reliable comparison. With just one burial, it is impossible to consider whether some of the features present in execution cemeteries apply to skeleton (4050), for example random grave orientations or intercutting burials. There was no evidence for tying of the hands, or amputation of limbs, although both lower legs and part of the left forearm had been lost postmortem. The date for skeleton (4050), AD 550-660, is slightly early for an execution cemetery, and also it is questionable whether this area of the country would have been under Anglo-Saxon influence or control at this time. Three of the features (prone burial, decapitation, and evidence for trauma) were present. However, although two individuals at Walkington Wold had suffered perimortem blade injuries to the back of the head, these blows were broadly horizontal, and could be interpreted as incompetence on the part of the executioner (poorly aimed blows intended to sever the neck landed in the back of the head) or a struggling victim (Buckberry 2008, Buckberry & Hadley 2007). This contrasts with the angle of the blade injuries observed in skeleton (4050), which were closer to vertical, and also the fact that blows had been aimed at the head from more than one direction. Furthermore, the sheer number of blows to the head of this individual would be more consistent with a frenzied attack rather than a controlled official execution. As such, it is considered more likely that skeleton (4050) was either involved in a skirmish, or was murdered in a brutal assault.

If skeleton (4050) was buried by family and friends, then it is reasonable to expect that efforts would have been made to secure an appropriate burial within the means affordable and compliant with social beliefs (Komar 2008). It is possible that cemetery at Stretton Grandison may have been reserved for burial in special cases. This could be supported by the high proportion of neonate burials (often accorded a different burial ritual to older children and adults, Scott 1999), and the burial of the woman with scoliosis, who being physically different might have been considered differently for the purposes of burial from the rest of the community (Philpott 1991). Continuity of function from the earlier period could have led to the burial of skeleton (4050) within the cemetery, possibly deemed an appropriate location given the violent nature of their death. Decapitation and a prone position may have been selected as requisite burial rituals under these circumstances. The association of decapitation with healing and assistance for the injured soul in their journey to the afterlife (Philpott 1991) may be relevant in this case, although this interprets these rituals within a Roman context. Alternatively, the connotations of both rituals with preventing the dead from haunting the living could be applied (Philpott 1991, Harman *et al* 1981), and documentary evidence for such beliefs occurs at the end of the Anglo-Saxon period (Bartlett 2002).

Given this individual may have been murdered, a clandestine burial by the perpetrators with little care given to disposal of the corpse is likely. Although the head of skeleton (4050) was present in the grave, it was neither in anatomical position nor near the lower body; instead it was located over the right shoulder. This head position is compatible with incomplete decapitation, where the head remained attached by a flap of skin and tissue towards the right side of the neck. This could allow the head to be pushed back onto the right shoulder, and this might occur as the body was thrown face down into the grave. If this is the case, then the position of the body and head reflect a hasty and careless burial, rather than deliberate arrangement of the corpse. In this instance, the burial position and treatment of the body could indicate disrespect for the dead person, or a wish to further dishonour or punish them (Philpott 1991, Komar 2008). Furthermore, if the decapitation was incomplete, this might argue against a careful ritual decapitation. Prone burial and decapitation carried out by the attackers as protection against being haunted by their victim (Philpott 1991, Harman *et al* 1981) could again be valid interpretation of the burial rite. If skeleton (4050) is an isolated late burial within the

earlier cemetery, this may indicate a clandestine burial. However, those burying the corpse were presumably aware of the presence of the cemetery, chose it as a suitable location, and chose to dig a grave rather than dispose of the corpse within one of the nearby ditches.

A final consideration concerns the date of skeleton (4037), the woman with scoliosis. If she also dated to the early medieval period, this could represent the attempted establishment of an early medieval deviant burial ground. Such a burial ground would be necessary following the establishment of Christianity and the emergence of burial grounds from which certain classes of people were excluded (Reynolds 1997). Establishment of a deviant burial ground in the location of a pre-existing cemetery could be a possibility. Further radiocarbon dating of other skeletons, particularly skeleton (4037) may help elucidate the function of this cemetery.

Acknowledgements

I would like to thank Dr Annia Cherryson for her advice on Anglo-Saxon execution cemeteries.

References

Archaeological Services, 2007 *Stretton Grandison, Frome Valley, Herefordshire; plant macrofossil assessment and human bone analysis*, unpublished report **1701**, for Border Archaeology, Archaeological Services Durham University

Aufderheide, A C, & Rodríguez-Martín, C, 1998 *The Cambridge Encyclopedia of Human Palaeopathology*, Cambridge

Barnes, E, 1994 *Developmental Defects of the Axial Skeleton in Palaeopathology*, Niwot

Bartlett, R, 2002 *Geoffrey of Burton - Life and Miracles of St. Modwenna*, Oxford

Bass, W M, 1987 *Human Osteology: A Laboratory and Field Manual*, Columbia

Berry, A C, & Berry, R J, 1967 Epigenetic Variation in the Human Cranium, *J Anat* **101**, 361-379

Betz, R R, Bunnell, W P, Lambrecht-Mulier, E, & MacEwan, D, 1987 Scoliosis and Pregnancy, *J Bone Joint Surg* **69**, 90-96
Bjerkreim, I, & Hassan, I, 1982 Progression in Untreated Idiopathic Scoliosis After End of Growth, *Acta Orthop* **53**, 897-900

Boddington, A, 1987 Chaos, Disturbance and Decay in an Anglo-Saxon Cemetery, in A

Boddington, A N Garland & R C Janaway (eds) *Death, Decay and Reconstruction: Approaches to Archaeology and Forensic Science*, 27-42, Manchester

Boddington, A, 1996 *Raunds Furnells: The Anglo-Saxon Church and Churchyard*, London

Bogin, B, 1988 *Patterns of Human Growth*, Cambridge Studies in Biological Anthropology **3**, Cambridge

Boylston, A, 2000 Evidence for Weapon-Related Trauma in British Archaeological Samples, in M Cox & S Mays (eds) *Human Osteology in Archaeology and Forensic Science*, 357-380, London

Britton, P D, 1988 Adolescent-Type Tillaux Fracture of the Ankle: Two Case Reports, *Archives of Emergency Medicine* **5**, 180-183

Brothwell, D R, 1963 The Macroscopic Dental Pathology of some Earlier Human Populations, in D R Brothwell (ed) *Dental Anthropology*, 271-288, Oxford

Brothwell, D R, 1981 *Digging Up Bones*, New York

Brothwell, D R, & Powers, R, 2000 The Human Biology, in P Rahtz, S Hirst & S M Wright (eds) *Cannington Cemetery: Excavations 1962-3 of Prehistoric, Roman, Post-Roman, and Later Features at Cannington Park Quarry, Near Bridgewater, Somerset*, Britannia Monograph Series **17**, 131-256, London

Buckberry, J L, 2008 Off With Their Heads: The Anglo-Saxon Execution Cemetery at Walkington Wold, East Yorkshire, in E Murphy (ed) *Deviant Burial in the Archaeological Record*, 148-168, Oxford

Buckberry, J L, & Hadley, D M, 2007 An Anglo-Saxon Execution Cemetery at Walkington Wold, Yorkshire, *Oxf J Archaeol* **26**, 309-329

Buikstra, J E, & Ubelaker, D H, (eds) 1994 *Standards for Data Collection from Human Skeletal Remains*, Arkansas Archaeological Survey Research Series **44**, Arkansas

Cannon, S R, Dowd, G S E, Williams, D H, & Scott, J M, 1986 A Long-Term Study Following Bennett's Fracture, *J Hand Surg [Br]* **11**, 426-431

Cherryson, A K, 2008 Normal, Deviant and Atypical: Burial Variation in Late Saxon Wessex, *c.* AD 700-1100, in E Murphy (ed) *Deviant Burial in the Archaeological Record*, 115-130, Oxford

Chow, D H K, Leung, D, S. S., & Holmes, A D, 2007 The Effects of Load Carriage and Bracing on the Balance of Schoolgirls with Adolescent Idiopathic Scoliosis, *Eur Spine J* **16**, 1351-1358

Cox, M, 2000 Ageing Adults from the Skeleton, in M Cox & S A Mays (eds) *Human Osteology in Archaeology and Forensic Science*, 61-82, London

Crawford, S, 2000 Children, Grave Goods and Social Status in Early-Anglo-Saxon England, in J S Derevenski (ed) *Children and Material Culture*, 169-179, London and New York

Dandy, D J, & Edwards, D J, 2003 *Essential Orthopaedics and Trauma*, Edinburgh

Danielsson, A J, Wiklund, I, Pehrsson, K, & Nachemson, A L, 2001 Heath-Related Quality of Life in Patients with Adolescent Idiopathic Scoliosis: A Matched Follow-Up at Least 20 Years After Treatment with Brace or Surgery, *Eur Spine J* **10**, 278-288

Evison, V I, & Hill, P, 1996 *Two Anglo-Saxon Cemeteries at Beckford, Hereford and Worcester*, CBA Research Report **103**, York

Finnegan, M, 1978 Non-Metric Variation of the Infracranial Skeleton, *J Anat* **125**, 23-37

Garland, A N, & Janaway, R C, 1989 The Taphonomy of Inhumation Burials, in C A Roberts, F Lee & J Bintliff (eds) *Burial Archaeology: Current Research, Methods and Developments*, British Archaeological Reports, British Series, **211**, 15-37,

Greiner, K A, 2002 Adolescent Idiopathic Scoliosis: Radiologic Decision Making, *Am Fam Physician* **65**, 1817-1822

Harman, M, Molleson, T I, & Price, J L, 1981 Burials, Bodies, and Beheadings in Romano-British and Anglo-Saxon Cemeteries, *Bull Br Mus Nat Hist (Geol)* **35**, 145-188

Henderson, J, 1987 Factors Determining the State of Preservation of Human Remains, in A Boddington, A N Garland & R C Janaway (eds) *Death, Decay and Reconstruction: Approaches to Archaeology and Forensic Science*, 43-54, Manchester

Hill, G, 1937 Excavations at Stockbridge Down, 1935-36, *Proc Hampshire Field Club Archaeol Soc* **13**, 247-259

Hillson, S W, 1996 *Dental Anthropology*, Cambridge

Hillson, S W, 2001 Recording Dental Caries in Archaeological Human Remains, *Int J Osteoarchaeol* **11**, 249-289

Hollimon, S E, 1991 Health Consequences of Divisions of Labor Among the Chumash

Indians of Southern California, in D Walde & N D Willows (eds) *The Archaeology of Gender*, 462-469, Calgary
Hopf, C, Scheidecker, M, Steffan, K, Bodem, F, & Eysel, P, 1998 Gait Analysis in

Idiopathic Scoliosis Before and After Surgery: A Comparison of the Pre- and Postoperative Muscle Activation Pattern, *Eur Spine J* **7**, 6-11

Jurmain, R, & Kilgore, L, 1998 Sex-Related Patterns of Trauma in Humans and African Apes, in A L Grauer & P Stuart-Macadam (eds) *Sex and Gender in Palaeopathological Perspective*, 11-26, Cambridge

Kennedy, K A R, 1989 Skeletal Markers of Occupational Stress, in M Y Iscan & K A R

Kennedy (eds) *Reconstruction of Life from the Skeleton*, 129-160, New York

Kerr, N W, 1990 The Prevalence and Pattern of Distribution of Root Caries in a Scottish Medieval Population, *J Dent Res* **69**, 857-860

Komar, D, 2008 Patterns of Mortuary Practice Associated with Genocide: Implications for Archaeological Research, *Curr Anthropol* **49**, 123-133

Larsen, C S, 1997 *Bioarchaeology: Interpreting Behaviour from the Human Skeleton*, Cambridge

Lewis, M E, 2004 Endocranial Lesions in Non-Adult Skeletons: Understanding their Aetiology, *Int J Osteoarchaeol* **14**, 82-97

Lewis, M E, 2007 *The Bioarchaeology of Children: Perspectives from Biological and Forensic Anthropology*, Cambridge

Liddell, D M, 1933 Excavations at Meon Hill, *Proc Hampshire Field Club Archaeol Soc* **12**, 126-162

Lucy, S, 2000 *The Anglo-Saxon Way of Death*, Stroud

Mays, S, 2000 The Archaeology and History of Infanticide, and its Occurrence in Earlier British Populations, in J S Derevenski (ed) *Children and Material Culture*, 180-190, London and New York

Mays, S A, & Cox, M, 2000 Sex Determination in Skeletal Remains, in M Cox & S A

Mays (eds) *Human Osteology in Archaeology and Forensic Science*, 117-130, London

McKinley, J I, 1993 Bone Fragment Size and Weights of Bone from Modern British Cremations and the Implications for the Interpretation of Archaeological Cremations, *Int J Osteoarchaeol* **3**, 283-287

McKinley, J I, 1994a Bone Fragment Size in British Cremation Burials and its Implications for Pyre Technology and Ritual, *J Archaeol Sci* **21**, 339-342

McKinley, J I, 1994b *The Anglo-Saxon Cemetery at Spong Hill, North Elmham. Part VIII: The Cremations*, East Anglian Archaeology Report No **69**, Dereham

McKinley, J I, 2000 Phoenix Rising: Aspects of Cremation in Roman Britain, in J Pearce, M Millett & M Struck (eds) *Burial, Society and Context in the Roman World*, 38-44, Oxford

McKinley, J I, 2004a Compiling a Skeletal Inventory: Disarticulated and Co-Mingled Remains, in M Brickley & J I McKinley (eds) *Guidelines to the Standards for Recording Human Remains*, IFA Paper No. 7 14-17, Southampton and Reading

McKinley, J I, 2004b Compiling a Skeletal Inventory: Cremated Human Bone, in M Brickley & J I McKinley (eds) *Guidelines to the Standards for Recording Human Remains*, 9-13, Southampton and Reading

McWhirr, A, Viner, L, & Wells, C, 1982 *Cirencester Excavations II: Romano-British Cemeteries at Cirencester*, Cirencester

Miles, A, Powers, N, Wroe-Brown, R, & Walker, D, in prep. *St Marylebone Church and Burial Ground: Excavations at St Marylebone Church of England School, 2005*, London

Molleson, T, 1995 Rates of Ageing in the Eighteenth Century, in S R Saunders & A Herring (eds) *Grave Reflections: Portraying the Past through Cemetery Studies*, 199-222, Toronto

Molleson, T I, & Cox, M J, 1993 *The Spitalfields Project Volume 2: The Anthropology of the Middling Sort*, CBA Research Report **86**, York

Moore, W J, & Corbett, M E, 1973 The Distribution of Dental Caries in Ancient British Populations II. Iron Age, Romano-British and Mediaeval Periods, *Caries Res* **7**, 139-153

Moynihan, P, 2003 Diet and Dental Caries, in J J Murray, J H Nunn & J G Steele (eds) *The Prevention of Oral Disease*, 9-34, Oxford

Novak, S A, 2000 Battle-Related Trauma, in V Fiorato, A Boylston & C Knüsel (eds) *Blood Red Roses: The Archaeology of a Mass Grave from the Battle of Towton AD 1461*, 90-102, Oxford

O'Brien, E, 1999 *Post-Roman Britain to Anglo-Saxon England: Burial Practices Reviewed*, British Archaeological Reports British Series **289**, Oxford

Ortner, D J, 2003 *Identification of Palaeopathological Disorders in Human Skeletal Remains*, Amsterdam and San Diego

Philpott, R, 1991 *Burial Practices in Roman Britain: A Survey of Grave Treatment and Furnishing, A.D. 43-410*, British Archaeological Reports British Series **219**, Oxford

Price, E, 2000a *Frocester: A Romano-British Settlement, its Antecedents and Successors. Volume 1: The Sites*, Stonehouse

Price, E, 2000b *Frocester: A Romano-British Settlement, its Antecedents and Successors. Volume 2: The Finds*, Stonehouse

Protas, J M, & Kornblatt, B A, 1981 Fractures of the Lateral Margin of the Distal Tibia: The Tillaux Fracture, *Radiology* **138**, 55-57

Rahtz, P, Hirst, S, & Wright, S M, 2000 *Cannington Cemetery: Excavations 1962-3 of Prehistoric, Roman, Post-Roman, and Later Features at Cannington Park Quarry, Near Bridgewater, Somerset*, Britannia Monograph Series **17**, London

Reece, R, 2000 The Frocester Cemetery and Rural Burial in Roman Britain, in E Price (ed) *Frocester: A Romano-British Settlement, its Antecedents and Successors Volume 2: The Finds*, 205, Stonehouse

Resnick, D, 2002 *Diagnosis of Bone and Joint Disorders*, Philadelphia

Reynolds, A, 1997 The Definition and Ideology of Anglo-Saxon Execution Sites and Cemeteries, in G de Boe & F Verhaeghe (eds) *Death and Burial in Medieval Europe*, 33-41, Zellick

Roberts, C A, & Cox, M, 2003 *Health and Disease in Britain: From Prehistory to the Present Day*, Stroud

Roberts, C A, & Manchester, K, 1995 *The Archaeology of Disease*, Stroud

Rogers, J, & Waldron, T, 2001 DISH and the Monastic Way of Life, *Int J Osteoarchaeol* **11**, 357-365

Salter, R B, 1999 *Textbook of Disorders and Injuries of the Musculoskeletal System*,

Sauer, N J, 1998 The Timing of Injuries and Manner of Death: Distinguishing Among Antemortem, Perimortem and Postmortem Trauma, in K Reichs (ed) *Forensic Osteology: Advances in the Identification of Human Remains*, 321-332, Springfield

Saunders, S R, 1989 Non-Metric Skeletal Variation, in M Y Iscan & K A R Kennedy (eds) *Reconstruction of Life from the Skeleton*, 95-108, New York

Scheuer, J L, & Black, S, 2000a Development and Ageing of the Juvenile Skeleton, in M Cox & S Mays (eds) *Human Osteology in Archaeology and Forensic Science*, 9-21, London

Scheuer, J L, & Black, S, 2000b *Developmental Juvenile Osteology*, San Diego

Schwartz, J H, 1995 *Skeleton Keys: An Introduction to Human Skeletal Morphology, Development, and Analysis*, Oxford

Scott, E, 1999 *The Archaeology of Infancy and Infant Death*, British Archaeological Reports International Series **819**, Oxford

Skyrme, A D, Selmon, G P F, & Apthorp, L, 2005 *Common Spinal Disorders Explained*, London & Chicago

Soden, I, 2002 *Life and Death on a Norwich Backstreet, AD 900-1600: Excavations in St Faith's Lane, Norwich 1998*, Norwich

Soucacos, P N, Zacharis, K, Gelalis, J, Soultanis, K, Kalos, N, Beris, A, Xenakis, T, & Johnson, E O, 1998 Assessment of Curve Progression in Idiopathic Scoliosis, *Eur Spine J* **7**, 270-277

Thulbourne, T, & Gillespie, R, 1976 The Rib Hump in Idiopathic Scoliosis: Measurement, Analysis and Response to Treatment, *J Bone Joint Surg* **58-B**, 64-71

Trinkhaus, E, 1978 Bilateral Asymmetry of Human Skeletal Non-Metric Traits, *Am J Phys Anthropol* **49**, 315-318

Trotter, M, 1970 Estimation of Stature from Intact Long Limb Bones, in T D Stewart (ed) *Personal Identification in Mass Disasters*, 71-83, Washington DC

Walker, P L, 1995 Problems of Preservation and Sexism in Sexing: Some Lessons from Historical Collections for Palaeodemographers, in S R Saunders & A Herring (eds) *Grave Reflections: Portraying the Past through Cemetery Studies*, 31-47, Toronto

Watts, D J, 1989 Infant Burials and Romano-British Christianity, *Archaeol J* **146**, 372-383

Weinstein, S L, Zavala, D C, & Ponseti, I V, 1981 Idiopathic Scoliosis: Long-Term Follow-Up and Prognosis in Untreated Patients, *J Bone Joint Surg* **63**, 702-712

Wells, C, 1982 The Human Burials: South of Fosse Way, in A McWhirr, L Viner & C

Wells (eds) *Romano-British Cemeteries at Cirencester*, 135-196, Cirencester

Wever, D J, Veldhuizen, A G, Klein, J P, Webb, P J, Nijenbanning, G, Cool, J C, & Horn, R R v, 1999 A Biomechanical Analysis of the Vertebral and Rib Deformities in Structural Scoliosis, *Eur Spine J* **8**, 252-260

Wood, J W, Milner, G R, Harpending, H C, & Weiss, K M, 1992 The Osteological Paradox: Problems of Inferring Prehistoric Health from Skeletal Samples, *Curr Anthropol* **33**, 343-370

Zatti, G, D'Angelo, F, & Giughello, A, 2000 Delayed Diagnosis and Treatment of Tillaux Fracture - A Case Report, *Acta Orthop Scand* **71**, 322-332

Zero, D T, 1999 Dental Caries Process, *Dent Clin North Am* **43**, 635-664

Table 16.32 (- Appendix III: Catalogue of articulated skeletons)

Skeleton 4027

Surface Preservation:	Good (Grade 2)
Fragmentation:	Moderate
Completeness:	90-95%
Bones Present:	Cranium (except right maxilla), left mandible, spine (22 bodies, atlas & axis arches, 4 L & 4 R cervical arches, 12 L & 13 R thoracic/ lumbar arches), 8 L & 7 R ribs, part right clavicle, left shoulder (part clavicle and scapula), right arm (except distal ulna) and hand (except metacarpals), left arm and hand, pelvis (both ilia, ischia & pubic bones, 5 sacral bodies & 3 left arches), right leg and foot, left leg and foot

Age:	38-40 weeks *in utero*
Sex:	-
Stature:	-
Non-metric traits:	-

Pathology:	-

Dental Pathology:	11 deciduous tooth crowns present, all unerupted

						U			U	U	U		U					
Teeth Present	R				-	d	-	-	a	a	b	-	d	-				L
					-	-	c	b	-	a	b	c	d	-				
							U	U		U	U	U	U					

Skeleton 4037

Surface Preservation:	Moderate (Grade 3)
Fragmentation:	Severe
Completeness:	60-70%
Bones Present:	Cranium, mandible, spine (7 cervical, 12 thoracic, 5 lumbar arches), 7 L & 11 R ribs, right shoulder (part clavicle & scapula), left shoulder (clavicle and part scapula), right arm and hand (except pisiform and trapezium), left arm and hand (except capitate, pisiform, trapezoid, trapezium and triquetral), pelvis (both ilia and ischia, S1-3), right leg (proximal femur, proximal fibula), left leg (femur, proximal tibia shaft, proximal fibula shaft)

Age:	35+(?) years
Sex:	Female
Stature:	-
Non-metric traits:	Ossicle in lambdoid (R), mandibular torus (R), accessory supraorbital foramen (L) Transverse foramen bipartite (1/5 R, 0/6 L), acetabular crease (R & L), plaque (L), exostosis in trochanteric fossa (R & L), third trochanter (R)

Pathology:

Congenital/ Developmental: Scoliosis: cervical vertebrae largely complete, 12 thoracic and 5 lumbar arches present (fragmented), bodies lost post-mortem for T2, T11, and L1-4 (although some unidentified lumbar body fragments present), bodies incomplete for T3, T10, T12 and L5. The most noticeable curvature occurs between T5-8, with bodies compressed on the left side (especially T6), thin and vertically compressed left pedicles, small left apophyseal facets compared to right side, and sharp spinous processes. Reversal of facet sizes and pedicle sizes suggests an area of opposite curvature between T2-4, and T9-L1). Cervical vertebrae appear normal in shape. Detailed description of thoracic and lumbar vertebrae:
T1 – both pedicles robust, spinous process deviates to left & slightly sharp along superior border
T2 –spinous process sharp, right pedicle thinner than left
T3 – right pedicle thin (1.7mm) and compressed vertically (6.5mm), left pedicle 5.0mm wide & 11.2mm tall; tiny left inferior apophyseal facet (6.3 x 4.8mm), right enlarged (19.2 x 13.3mm) and affected by DJD; knife-edged spinous process
T4 – right side of body compressed (18.4mm tall compared to 20.5mm on left side) & concave; left pedicle thin (2.8mm compared to 4.5mm on the right); body rotated to the right (inferior surface located more to the right than superior surface); right superior apophyseal facet enlarged (DJD), left inferior apophyseal facet virtually non-existent and no clear facet visible to measure, right inferior facet enlarged (16.5 x 13.2mm), spinous process has sharp superior border, flattened medio-laterally, left transverse process more superiorly placed than right
T5 – body rotated to the right (inferior surface more to the right than superior) and compressed on left side (16.4mm tall compared to 20.8mm on right side); osteophytes around inferior body margins, especially the anterior and left; left pedicle thin (0.6mm) compared to right (5.2mm); superior border of spinous process knife-edged
T6 – left side of body compressed (12.4mm compared to 21.17mm on the right side); with osteophytes along left body margins, especially towards the anterior; some vertical osteophytes on right side of body); left pedicle thin (0.5mm) and compressed vertically (7.3mm) compared to the right (5.8mm wide, 14.0mm tall); right rib facet on body enlarged; left inferior apophyseal facet slightly enlarged compared to right; left superior apophyseal facet small (6.3mm diameter) compared to right (*c.* 9mm diameter); superior border of spinous process incredibly thin and knife-edged
T7 – left side of body compressed (14.9mm compared 22.4mm on the right) and concave; osteophytes along margins of body, especially left side with small buttress of osteophytes on left wall of body; left pedicle thin (1.0mm) compared to right (5.2mm); right facets small compared to left and superior facet extends considerably onto transverse process
T8 – left side of body compressed slightly (19.82mm compared to 21.40 on the right) and concave; osteophytes along superior left body margin; left pedicle thin (2.8mm) compared to right (5.31mm); superior right rib facet extends onto pedicle; small superior right apophyseal facet (7.2 x 5.6mm), left apophyseal facet enlarged (13.1mm diameter) and extending onto transverse process (affected by DJD); similar with inferior facets; right pedicle longer; spinous process deviates to the right
T9 – rotation of body to the left (inferior surface positioned more to the left than the upper); body slightly concave on left; enlargement of inferior left rib facet on body; right pedicle slightly thinner than left; superior left facet doubled in size

Pathology:

T10 – left side of body slightly concave, left rib facet doubled in size by large thin osteophyte at inferior margin; body rotated to left; spinous process angled to the right; ossification of ligamentum flavum on left inferior lamina
T11 – right superior facet smaller than left, right arch slightly compressed vertically; ossification of ligamentum flavum on superior left lamina; left rib fact on body greatly enlarged by thin flat osteophytes
T12 – body slightly compressed on right side (23.36mm compared to 26.36mm on left) though more concave on left side; right half of arch slightly compressed vertically; ossification of ligamentum flavum on left inferior lamina; all apophyseal facets small
L1 – ossification of ligamentum flavum on superior left lamina; inferior left apophyseal facet enlarged and bulky; spinous process angled to left
L 2 & 3 – ossification of ligamentum flavum of inferior left lamina
L4 – arch slightly compressed on left side; left apophyseal facets slightly smaller than right; spinous process angled to the right
L5 – arch slightly compressed on left side; left apophyseal facets slightly smaller than right; left side of body concave; osteophytes at inferior left body margin
Large osteophytes present along left rim of the body of S1 (none along anterior or right sides). The sacrum had fused to the ilium on the right side along the anterior/ inferior margin and demiface of auricular surface (since broken post-mortem), joint space obliterated in this area. The outer surface of the fused area protruded beyond the surface of the adjacent bone, but was smooth and rounded, well-remodelled. The posterior/ superior part of the joint surface is unaffected. The left half of the sacrum in missing post-mortem, but the left iliac auricular surface is present. The inferior part of the auricular surface is very narrow, tapering to an area *c.* 7-8mm wide, and also raised. There is pronounced osteophyte formation along the anterior margin of the inferior part of the auricular surface, and one part shows possible evidence for a post-mortem break suggesting possible fusion on this side.
The ribs were extremely fragmented and incomplete – difficult to piece together and side. The right ribs tend to have thin, short necks, a tight angle, and pronounced inward curve; the superior and inferior margins are very sharp, and the costal grooves on the inferior shaft are pronounced. Where the heads survive they tend to have large, flat osteophytes on the anterior and inferior margins. Also they often lack a facet for the transverse process. The left ribs are less complete, and no heads were identified. Again they have sharp superior and inferior borders with pronounced costal grooves. Possibly less curved than right side.

Infection: striations visible on the anterior and lateral femoral midshafts, probably long-healed lamellar bone (periostitis).
Thin, clearly defined, small plaques of lamellar bone were observed on the endocranial surface of the frontal bone, particularly on the lateral squama, and in the region of the orbits. This bone was thicker and more common on the left side. Similar plaques of bone were visible on the left parietal, close to the sphenoidal angle and along the posterior sagittal suture, and on the right parietal (posterior sagittal suture). All plaques of bone were covered by fine striations visible under magnification, as if brushed by a soft brush.

Joint disease: degeneration of the superior body surfaces of T6 and T7, and the inferior surface of T6 (osteophyte formation and porosity).
Degeneration of right apophyseal facets of T2-T5, and also T10

(osteophyte formation and porosity), and inferior apophyseal facets of T6-T9; superior left facet of T9 affected by osteoarthritis (eburnation present). Degeneration of rib facets on T1, T4-T9, osteophyte formation affecting rib facets on T10-T12.

Dental Pathology: 27 teeth present, 27 tooth positions
Lower right third molar impacted; lower left second premolar, upper right second premolar, and upper left first or second premolar possibly congenitally absent or unerupted. Crown and root of RM^3 small.
27/27 teeth with calculus (slight to heavy)
Moderate periodontal disease lower jaw and upper left (right unobservable)
RM_1 heavily worn on lingual half of occlusal surface, though lingual rim unworn, creating a deep U shaped concavity on lingual side. The occlusal surface of RM^1 is heavily worn in the centre of the crown, though enamel on buccal and lingual sides less worn, creating a V shaped concavity. Slight tendency for left side to follow the same pattern. Lower incisors heavily worn on buccal surfaces.

Wear		1	3	7	-	NP/U?	6	6	7	7	7	6	3	NP/U?	7	3	-	
Calculus		S	H	H	-	NP/U?	S	S	S	S	S	M	H	NP/U?	H	H	-	
DEH					-	NP/U?								NP/U?			-	
Caries					-	NP/U?								NP/U?			-	
Teeth Present	R	8	7	6	-	NP/U?	3	2	1	1	2	3	4	NP/U?	6	7	-	L
		I	7	6	5	4	3	2	1	1	2	3	4	NP/U?	6	7	8	
Caries		I												NP/U?				
DEH		I												NP/U?				
Calculus		I	S	H	H	H	M	M	S	S	S	M	H	NP/U?	M	S	S	
Wear		I	4	5	2	4	5	6	7	7	7	6	3	NP/U?	7	6	2	

Skeleton 4039

Surface Preservation: Very good (Grade 1)
Fragmentation: Severe
Completeness: 70-80%
Bones Present: Cranium (except R zygoma, R maxilla & L sphenoid), mandible, spine (7 cervical, 12 thoracic, 6 lumbar), 12 L & 12 R ribs, right shoulder (part clavicle & scapula), left shoulder (part clavicle & scapula), right arm and hand, left arm (except proximal humerus) and hand (except lunate, pisiform, trapezoid and triquetral), pelvis (part R ilium, part L ilium & ischium, body S1), right leg (except fibula) and foot (except calcaneus & talus), left leg and foot (except cuboid, navicular, lateral cuneiform & several phalanges)

Age: 45+ years
Sex: Male?
Stature: 175.97cm (calculated from broken R radius)
Non-metric traits: Parietal foramen (L), mandibular torus (L), accessory supraorbital foramen (R & L)

	Circumflex sulcus (R & L), plaque (R), exostosis in trochanteric fossa (R), double anterior calcaneal facet (L)
Pathology:	Congenital/ Developmental: Six lumbar vertebrae present. Seven cervical & 12 thoracic vertebrae present. Sacrum incomplete, but morphology S1 appears normal. Probably extra vertebral segment rather than result of border shift.
Pathology:	Trauma: healed fractures of four left ribs, probably from the lower ribcage, and three unsided rib fragments. One of the fractured left ribs has marked displacement of the broken shaft in an inferior and internal direction. Probable healed Bennett's fracture of R MC1: the proximal end was enlarged, the dorsal third of the space normally occupied by the proximal joint surface was roughened, and the joint surface was moved towards the palmar side, and angled in a more palmar direction. As a result the metacarpal appeared bowed, particularly on the palmar side. Probable healed Tillaux fracture of right ankle: the anterior lateral quarter of the distal joint surface of the tibia was enlarged, and this clearly demarcated area of the joint was roughened. There was a large flange of bone along the anterior border of the fibular notch, 58mm long and protruding *c.*10mm in a lateral direction. This bone was smooth and rounded, and there was an oval hole left between the flange of bone and the original tibia surface towards the distal end. Probable healed fracture of right proximal first foot phalanx: there is a distinct ridge of bone running medio-laterally on the plantar surface, close to the distal end of the bone. The dorsal surface is uneven and irregular. The bone is slightly shorter than the left side. Infection: striated lamellar bone visible on the medial shafts of both tibiae (periostitis). Joint disease: degeneration of the body surfaces of C2-C7 (osteophytes and extensive porosity), with eburnation of the posterior superior body surfaces of C3-C5 and C7, and of the inferior body surfaces of C2-C3. Osteoarthritis affecting the right apophyseal facets of C2-C6, and the left apophyseal facets of C3-C4; also the right superior apophyseal facet of T11, and the rib facets of T1 and T11. Osteoarthritis affected the joint between the right MC1 and the trapezium: a small area of eburnation was present on the dorsal third of the MC joint surface, and on the saddle joint of the trapezium. Probably secondary to fracture. Eburnation present on the left scaphoid, affecting the joint with the trapezoid (the trapezoid itself was not present). The right TMJ had been affected by OA, visible on both the mandibular condyle and the mandibular fossa of the temporal bone; the left side was affected by DJD, only visible on the mandibular fossa of the temporal (no change seen in mandibular condyle). Small areas of eburnation were present on the distal joint surfaces of both femora, and DJD affected the right acetabulum, both medial clavicles, and the lateral right clavicle. Diffuse Idiopathic Skeletal Hyperostosis: large flowing osteophytes on the right side of the bodies of T6-L1, being especially pronounced between T9-L1, projecting horizontally from the anterior right bodies. None of the vertebrae had fused. Minimal osteophytes visible on the left side. The joint surfaces and apophyseal facets are not involved. Numerous large enthesophytes were present throughout the skeleton: L ischial tuberosity,

unsided fragments of iliac crest, rib tubercles, L patella, L dorsal calcaneus, both linea asperae, tips of the spinous processes of the thoracic vertebrae, lateral epicondyles of the humerus; smaller enthesophytes present on the olecranon process of the ulna. Also ossified costal cartilage present, and a small fragment of thyroid cartilage.

Miscellaneous: aggressive lytic lesions in the vertebral bodies of four thoracic and three lumbar vertebrae. Lesions were seen in the superior surfaces of T6, T7 and L5, and in the inferior surfaces of T3, L1, L3 and L5. Most lesions were fairly central in the body, with the exception of the lesion in the superior body of L5, which was located on the left side. Little or no signs of blastic activity in relation to these lesions.
Ankylosis of proximal-intermediate-distal foot phalanges from one toe (with the distal phalanx angled at 45º), and intermediate and distal phalanges from another toe. Joints are bridged by a minimal amount of well-remodelled bone, and no trace of a joint surface was visible on x-radiographs.

Dental Pathology: 14 teeth present, 21 tooth positions
5 teeth lost AM, 3 lost PM
14/14 teeth with calculus (mainly moderate to heavy)
3/14 teeth with multiple DEH lines, many teeth unobservable due to heavy wear (loss of crown) and/ or heavy calculus
1/14 teeth with dental caries (small lesion at CEJ of distal RM_2)
Moderate periodontal disease in lower right jaw and considerable in lower left jaw (upper jaw unobservable)

Wear		-	-	-	-	-	-	-	-	6?	X	/	8	7	-	-	-	
Calculus		-	-	-	-	-	-	-	-	H	X	/	S	M	-	-	-	
DEH		-	-	-	-	-	-	-	-		X	/			-	-	-	
Caries		-	-	-	-	-	-	-	-		X	/			-	-	-	
Teeth Present	R	-	-	-	-	-	-	-	-	1	X	/	4	5	-	-	-	L
		X	X	X	5	4	3	/	X	1	2	3	4	5	6	7	/	
Caries		X	X	X				/	X							Sd	/	
DEH		X	X	X	L		L	/	X			L					/	
Calculus		X	X	X	M	M	M	/	X	H	H	M	M	M	H	H	/	
Wear		X	X	X	6	6	5	/	X	8	7	5	6	6	7	7	/	

Skeleton 4042

Surface Preservation: Good (Grade 2)
Fragmentation: Severe
Completeness: 5-10%
Bones Present: Right leg (central & distal tibia shaft, distal fibula shaft), left leg (femur shaft, proximal & central tibia shaft, fibula shaft), one proximal foot phalanx (unsided)

Age: 2-5 years
Sex: -
Stature: -
Non-metric traits: -

Pathology:	Infection: striated lamellar bone (some porosity arranged in striations) extends over most of the medial surface of both tibiae (periostitis).
Dental Pathology:	0 teeth present, 0 tooth positions

Skeleton 4044

Surface Preservation:	Moderate (Grade 3)
Fragmentation:	Moderate
Completeness:	10-20%
Bones Present:	Spine (atlas arch, 1 thoracic body, 2 body fragment (T or L), 4 lumbar bodies; 10 R thoracic/ lumbar arches, 10 L thoracic/ lumbar arches, 9 fragments of arches), 2 L ribs, & *c.* 30 unsided rib fragments; left shoulder (part scapula), right arm (proximal humerus), pelvis (4 sacral bodies, part R ilium), right leg (proximal femur)
Age:	*c.* Birth (neonate)
Sex:	-
Stature:	-
Non-metric traits:	-
Pathology:	-
Dental Pathology:	0 teeth present, 0 tooth positions

Skeleton 4050

Surface Preservation:	Good (Grade 2)
Fragmentation:	Severe
Completeness:	50-60%
Bones Present:	Cranium (heavily fragmented, parts frontal, parietals, occipital, temporals, right sphenoid and maxilla present), mandible, spine (C1-3, C7, fragments cervical vertebrae, 12 thoracic, 5 lumbar), 7 L ribs, & 8 R ribs, left shoulder (part clavicle & scapula), right shoulder (part clavicle & scapula), right arm and hand (except pisiform & trapezoid; metacarpals incomplete, some phalanges missing), left arm (humerus, proximal ulna & distal ulnar epiphysis) and hand (except hamate, pisiform, trapezoid; metacarpals incomplete and phalanges missing), pelvis (sacrum, ilia (incomplete), ischia, pubes), right leg (except distal tibia & fibula), left leg (except distal tibia & fibula)
Age:	15-16½ years

Sex:	-
Stature:	-
Non-metric traits:	Parietal foramen (L), open posterior condylar canal (L), accessory supraorbital foramen (R & L) Lateral atlas bridging (L), hypotrochanteric fossa (R & L), vastus notch (L), vastus fossa (R & L)

Pathology:

Trauma: antemortem fractures of right radius and ulna. Radius fractured in distal third of the shaft, *c.* 40mm from the distal end; distal part angled posteriorally. Ulna fractured in distal third of shaft, at a point level with the radius fracture; less obvious angulation of distal fragment. Both surrounded by smooth and well remodelled callus.

Multiple perimortem blade injuries to the cranium, mandible, neck and right shoulder. All linear, and displaying smooth and highly polished cut surfaces (with opposing surfaces rougher, although in most cases the opposing surfaces could not be identified). In some cases, fine parallel striations were visible on the cut surfaces particularly under magnification and with a light shone at an oblique angle across the cut mark. Because of the extremely fragmentary nature of the cranium it was impossible to reconstruct the precise number of cuts, or to relate cut marks seen on different parts of the cranium with each other with any degree of accuracy.
Right temporal – four cuts visible. 1) cut through lateral zygomatic process, anterior to the external auditory meatus, on an approximately vertical angle directed from posterior to anterior; has removed the lateral surface of the process; 2) cut through external surface of mastoid process, on similar (though slightly different) angle and orientation to cut 1, removing outer layer of posterior half of mastoid; 3) cut on internal temporal, at the base of the petrous where it meets the squama, immediately medial to the sigmoid sulcus; on similar angle as cut 1; direction of blow from posterior to anterior since the cut terminates in the petrous part of the temporal, *c.* 10mm posterior to the external auditory meatus; 4) cut on similar angle to cut 3, but *c.* 10mm closer to the midline; has completely and cleanly cut through the petrous portion. All four are on a very similar angle and orientation to each other; one was definitely directed from behind, and presumably the others must have been too.
Right mandible – three cuts visible in posterior right ramus. 1) small (*c.* 4mm long) and very shallow cut just below the condyle on the posterior neck, angle similar to the cuts visible on the right temporal bone; 2) *c.* 5mm below cut 1 there is a longer (*c.* 10mm) and slightly deeper cut, parallel with cut 1 on mandible; 3) *c.* 5mm inferior to cut 2, again on a similar angle, there is a deep cut (*c.* 25mm) into the posterior ramus; the medial surface of the cut is smooth and polished, the lateral surface is more jagged and roughened; continuing from the termination of the cut, the bone has fractured with roughened and bevelled edges the same colour as the rest of the bone cortex; this fracture extends into the corpus of the mandible, stopping *c.* 10mm from the inferior edge. These cuts were probably continuations of the cuts visible in the right temporal.
Occipital – a small fragment of the right squama has a bevelled cut through the squama close to the lambdoid suture/ asterion, on a similar angle to the cuts in the right temporal and right mandibular ramus. Probably the same cut as cut 4 on the temporal bone. This same fragment has a second cut on a completely different angle. Superior to

the right nuchal crest, at the medial edge of the fragment (which is close to the midline), a very shallow cut has skimmed the cortex and removed a sliver of bone over a *c.* 10mm area; the diploë are not exposed; clear striations are visible under magnification; this cut presumably delivered from the left of the victim by a right handed assailant.

Left temporal – three cuts visible. 1) cut skimmed the surface of the mastoid process; 2) broadly vertical, shallow and slightly bevelled cut located superior to the mastoid and inferior to the parietal notch; the end of this cut stops *c.* 7mm inferior to the parietomastoid suture, but the other end extents to the edge of the fragment. It has just penetrated 1-2mm into the cortex; 3) the third cut is 9mm anterior to cut 2, on the same alignment, but this time penetrates right through the bone. A small fragment of the anterior mastoid displays a vertical cut from the tip to the superior edge of the fragment. This cut has completely severed the mastoid process, and is probably the same cut as cut 3. Unfortunately, the left temporal was extremely fragmented. Cuts 2 and 3 would have been delivered from the left side, by a right-handed assailant either facing or slightly to the left of the victim.

Left mandible – the corner of the left gonial angle has been sliced off. Almost certainly the same blow as that which caused cut 3 in the right temporal.

Atlas – cut through the anterior part of the left superior facet and the anterior arch, detaching it from the rest of the vertebra. On same angle as cuts to left gonial angle of mandible, and cut 3 in temporal; probably the same cut. There is no evidence of a cut to the dens of the axis, so the blade must have passed immediately anterior to the dens.

Occipital – there is a short straight cut from the left that terminates *c.* 2mm anterior to the foramen magnum, at the midline. The internal cortex has flaked away, being bevelled and roughened; at the end of the cut, a small crack continues in the bone, curving to follow the contour of the foramen magnum (a fracture continuing the line of force from the blow). This is presumably the termination of the deep cut through the temporal, mandible and atlas.

Two other fragments of cranium show cuts, but it was impossible to identify how these relate to the cuts already identified. One fragment (probably part of a parietal) has a shallow cut penetrating the outer layer of the cortex, one end of the cut is visible in the fragment, the other extends beyond the fragment end. Another fragment (possibly of sphenoid greater wing) apparently has two cuts, one angled at 45º to the cortex surface, and the other angled more horizontally to the cortex surface, meeting the base of the first cut.

Decapitation – C1, 2 and 3 were all in articulation and located with the skull when the bones were washed (by the author); C7-L5 were all located with the torso bones. One virtually complete cervical vertebra was pieced together from fragments, but it was not possible to tell if this was C4, 5 or 6. The right arch of this vertebra has a horizontal cut superior to the inferior apophyseal facet, and inferior to the superior apophyseal facet (detaching the superior facet). This cut passed just superior to the body of the vertebra. Unfortunately the left half of the arch could not be identified amongst the fragments.

Two small fragments of cervical vertebra show cuts – one lower left facet has a horizontal cut; and a right cervical lamina has a shallow horizontal cut on the posterior surface. It was not possible to work out which vertebrae these belonged to.

Right clavicle – four cuts visible. 1) superficial cut *c.* 4mm long on the superior posterior surface above the conoid tubercle; 2) longer (7mm) and deeper cut located *c.* 10mm lateral to cut 1; 3) 3mm lateral to cut 2

there is a yet longer and deeper cut (1mm long, 5-6mm deep); 4) 3mm lateral to cut 3 there is a large cut (at least 12mm long and 10mm deep) that has removed the acromial end of the clavicle. The anterior part of the cut terminates in a perimortem fracture of the acromial end of the clavicle. All four were on a similar shallow angle and orientation, and must have been delivered from behind, with the direction of the blow angled from medial towards lateral.
Right humerus – the proximal epiphysis is incomplete, but the medial part is present; a deep cut has penetrated the posterior half of the epiphysis, while the anterior part has broken along a similar line to the cut (possibly a perimortem fracture). The cut probably resulted from the same blow that caused cut 4 on the clavicle.
Right scapula – a short and relatively shallow cut is present at the base of the coracoids process, on the posterior surface, *c.* 9mm long, 1-2mm deep and 0.5mm wide. Possibly caused by the tip of a blade.

Infection: a clearly delineated elongated oval lesion was located on the medial side of the left fifth metacarpal. There was a ridge of irregular and roughened bone surrounding the lesion (woven bone in transition to lamellar), and the internal surface of the lesion was irregular. A small area of thin lamellar bone was located on the shaft surrounding the lesion. Periostitis, possibly indicating an overlying ulcer?

Dental Pathology: 31 teeth present, 32 tooth positions
1 tooth lost PM
25/31 teeth with calculus (mainly moderate to heavy)
24/31 teeth with multiple DEH lines
Slight crowding of both mandibular canines, & slight rotation of LP_2, RP^1 and LP^1

Wear		U	2	3	2	2	2	2	4	3	/	2	2	2	3	2	U	
Calculus		U		F	F	S	S	S	F	F	/	S	S	F	S	F	U	
DEH		U	L	L	L	L	L	L	L	L	/	L	L	L			U	
Caries		U									/						U	
Teeth Present	R	U	7	6	5	4	3	2	1	1	/	3	4	5	6	7	U	L
		U	7	6	5	4	3	2	1	1	2	3	4	5	6	7	U	
Caries		U															U	
DEH		U		L	L	L	L	L	L	L	L	L	L	L	L	L	U	
Calculus		U	F	F		S	F	S	S	S	S	F	F	F	S	F	U	
Wear		U	2	4	2	2	2	3	5	4	3	2	2	2	4	2	U	

Key

Teeth Present / = lost postmortem, X = lost antemortem, NP = tooth not present, U = unerupted, I = impacted, - = tooth socket missing
Dental Disease
Wear: scale from 1-8, with 1 = minimal/no wear, and 8 =extremely heavy wear
Calculus: F = flecks, S = slight, M = moderate, H = heavy
DEH: P = pits, L = lines, G = grooves
Caries S = small, M = medium, L = large
o = occlusal, d = distal, m = mesial, b = buccal, l = lingual, a = all

Table 16.33 (- Appendix IV: Catalogue of disarticulated human bone)

Context	Bone Element	Detailed Description	Side	%	SP	No. Frags	Age	Sex	Other
4033	Long bone end	Possibly ulna or fibula?	?	20	3	1	Neonate?	-	-
4052	Scapula	Glenoid area	R	30	2	1	Neonate?	-	-
	Hand phalanx	Diaphysis intact; intermediate?	?	90	1	1	Neonate?	-	-
	Hand phalanx	Distal diaphysis; intermediate?	?	70	1	1	Neonate?	-	-
	Hand phalanx	Distal diaphysis; intermediate?	?	50	1	1	Neonate?	-	-
	Hand phalanx	Proximal two-thirds diaphysis; proximal?	?	70	1	1	Neonate?	-	-
	Hand phalanx	Proximal two-thirds diaphysis; proximal?	?	70	1	1	Neonate?	-	-
	Long bone shaft		?	30	2	1	Neonate?	-	-
	Rib	Sternal end	L?	20	3	1	Neonate?	-	-
	Rib	Sternal end	R?	20	3	1	Neonate?	-	-
	Fragments	Parts of vertebrae?	?	10	2	2	Neonate?	-	-
	Above bones all probably from the same individual, probably part of skeleton (4053), which was not lifted. Size of bones and stage of development consistent with *c.* birth (late foetus/ neonate/ young infant)								
4101	Clavicle	Shaft fragment	?	20	2	1	Neonate?	-	-
	Humerus	Diaphysis	R	80	2	2	Neonate?	-	*c.* 64mm long
	Radius	Distal diaphysis	L	20	2	1	Neonate?	-	-
	Long bone	Shaft fragments; probably radius, ulna or fibula	?	20	2	7	Neonate?	-	-
	Scapula	Glenoid area	R	30	2	1	Neonate?	-	-
	Metacarpal	Almost intact diaphysis	?	90	2	1	Neonate?	-	-
	Metacarpal	Proximal end	?	30	2	1	Neonate?	-	-
	Metacarpal	Proximal end	?	30	2	1	Neonate?	-	-
	Foot phalanx	Proximal?	?	90	2	1	Neonate?	-	-
4101	Cranium	Vault fragments	?	20	2	14	Neonate?	-	-
	Cervical vertebra	Body	-	30	2	1	Neonate?	-	Not fused to arches
	Vertebra	Lumbar(?) arch	R	30	2	1	Neonate?	-	Not fused to body, or fused to L arch

	Vertebra	Lumbar(?) arch	R	30	2	1	Neonate?	-	Not fused to body, or fused to L arch
	Vertebra	Lumbar(?) body	-	30	2	1	Neonate?	-	Not fused to arches
	Vertebra	Lumbar(?) body	-	30	2	1	Neonate?	-	Not fused to arches
	Ribs	Shaft fragments	?	30	2	15	Neonate?	-	-
	Fragments	Unidentifiable	?	10	2	*c.*100 +	Neonate?	-	-
	Above bones all probably from the same individual, probably part of skeleton (4102), which was not lifted. Size of bones and stage of development consistent with *c.* birth (late foetus/ neonate/ young infant)								

SP = surface preservation, grades according to McKinley (2004)

Table 16.34 (- Appendix V: Catalogue of cremated human bone)

Context 4007: Vessel 1	
Preservation:	Good
Total Weight:	610.9g
Weight >10mm:	348.8g
Largest Fragment:	71.55mm
Age:	Adult
Sex:	?
Non-metric traits:	Parietal foramen (? side)
Pathology:	Joint Degeneration: Inferior left facet of a cervical vertebra enlarged by osteophytes and affected by porosity. Inferior left facet of thoracic vertebra (probably T1 or T2) enlarged by osteophytes. Fragment of vertebral body with osteophyte formation at the margins. Two distal hand phalanges with proximal joint surfaces enlarged by osteophyte formation. Dental: possible AMTL LM_3?

Fragments Identified:

Skull: 84 fragments, 82.2g

- 71 vault fragments
- Occipital & parietal bones – small fragment of lambdoid suture (unsided)
- Occipital bone – 6 fragments of squama
- Parietal bone – sagittal suture and parietal foramen (unsided)
- Frontal bone – medial part of left orbital margin, supraorbital notch, part of glabellar region and medial supraorbital ridge. Not enough present to determine sex
- Temporal bone, R – posterior part of mastoid & supramastoid area, digastrics groove, occipitomastoid suture

- Zygoma, L – maxillary process
- Mandible – posterior L alveolar bone & small part of ramus, 1 partially remodelled tooth socket, possibly LM_3 lost AM? Half molar socket present, possibly LM_2 lost PM

Axial: 52 fragments, 44.9g

- 24 fragments of rib shaft
- R rib – part of shaft
- Atlas – small part of L anterior arch, part superior & inferior facets & small part of facet for dens
- Cervical vertebra – body
- Cervical vertebra – body
- Cervical vertebra – body, L pedicle and part superior and inferior apophyseal facets (in 3 pieces). Inferior left facet enlarged by osteophytes and affected by porosity.
- Cervical vertebra? – part spinous process?
- Thoracic vertebra – tip of spinous process
- Thoracic vertebra – L inferior facet & part lamina; probably T1 or T2. Facet enlarged by osteophytes.
- Thoracic vertebra – superior facet
- Thoracic vertebra – superior facet
- Thoracic vertebra – R lamina & small part R inferior facet
- Lumbar vertebra – L lamina & L inferior facet
- Lumbar vertebra – L lamina & part L inferior facet
- Lumbar vertebra – L lamina & L inferior facet
- Lumbar vertebra – R inferior facet
- Lumbar vertebra – laminae (spinous process lost post-mortem) & part R inferior facet
- Lumbar vertebra – spinous process
- Lumbar vertebra – L5? Part R body & transverse process?
- Lumbar vertebra – R lamina & part R inferior & superior facets
- Lumbar vertebra – spinous process
- Vertebra – posterior body, possibly upper thoracic
- Vertebra – posterior body
- Vertebra – posterior body & part of pedicle, probably thoracic
- Vertebra – superior body & part of pedicle, probably lower thoracic or lumbar
- Vertebra – body fragment, osteophytes around margin

Upper limb: 32 fragments, 56.0g

- Scapula – axillary border, unsided
- Scapula, L – part acromion process
- Humerus? – part of head, unsided; (possibly femur?)
- Humerus – medial part of head, unsided
- Humerus? – part of head
- Humerus – part of trochlea, unsided
- Humerus – posterior distal shaft, unsided
- Humerus – distal third shaft, medial epicondylar line & small nutrient foramen (in 2 pieces); possibly right side
- Radius – part head (in two pieces), articular facet for ulna, unsided
- Radius? – part head?
- Radius? – part head?
- Radius – shaft, unsided
- Radius – shaft fragments x10

- Ulna, R – proximal end, part coronoid process, medial part lunar notch
- Hand phalanx (intermediate or proximal) – distal end
- Hand phalanx (distal) – intact; joint surface enlarged by osteophytes
- Hand phalanx (distal) – complete, but in 2 fragments; joint surface enlarged by osteophytes
- Hand phalanx (proximal) – proximal end, part proximal joint; probably first digit

Lower Limb: 20 fragments, 56.0g

- Os coxa – part ilium, part auricular surface, unsided; too eroded to determine age
- Os coxa – part ilium
- Femur – shaft, linea aspera (in 2 pieces)
- Femur – shaft, linea aspera (in 3 pieces)
- Femur – shaft, linea aspera
- Femur – distal end, fragment of medial condyle & edge of intercondylar notch, unsided
- Tibia? – posterior shaft, nutrient foramen
- Tibia? – anterior border
- Fragments of femur/ tibia? X4
- Patella, R – part lateral and medial articular facets & superior border
- Talus, L – lateral facet, part trochlea & subtalar surface
- Talus – part trochlea, unsided
- Metatarsal? – shaft
- MT1? – proximal end?

Long Bone: 107 fragments, 154.0g

Animal Bone: 1 fragment, 0.3g

Context 4007: Vessel 2

Preservation:	Good
Total Weight:	1539.3g
Weight >10mm:	789.2g
Largest Fragment:	69.91mm

Age:	Adult
Sex:	Male??
Non-metric traits:	Double atlas facet (R)

Pathology: -

Fragments Identified:

Skull: 74 fragments, 70.0g

- 64 vault fragments
- Occipital – external occipital protuberance, large & pronounced
- Occipital – fragment of squama & transverse sulcus x2
- Occipital? – part squama?
- Temporal, R – root of zygomatic process & small part of glenoid fossa

- Mandible – R condyle
- Parietal – part squamous suture x3
- Fragment of cranial base?

Axial: 81 fragments, 63.6g

- 44 fragments of rib shaft
- Rib 1 – fragment shaft
- Atlas – anterior arch & facet for dens
- Atlas – R superior & inferior facets, transverse foramen, part R arch; double atlas facet
- Thoracic vertebra – R superior & inferior facets, lamina
- Thoracic vertebra – L lamina & part L pedicle
- Thoracic vertebra – R lamina & part R inferior facet
- Thoracic vertebra – part spinous process
- Thoracic vertebra – superior facets x8
- Thoracic vertebra – superior R facet
- Thoracic vertebra – R lamina & inferior facet
- Thoracic vertebra – L lamina & part superior facet
- Lumbar vertebra – R half body & part pedicle
- Lumbar vertebra – R lamina & inferior facet
- Lumbar vertebra – L inferior facet
- Lumbar vertebra – part L inferior facet?
- Lumbar vertebra – L lamina & part L inferior facet
- Lumbar vertebra – part L inferior facet
- Lumbar vertebra – part inferior facet
- Vertebra – body; lumbar or lower thoracic
- Vertebra – body fragment; upper thoracic or cervical
- Vertebra – body fragments x4
- Vertebra – facet fragments; probably thoracic
- Sacrum – part auricular surface
- Sacrum? – border auricular surface & part ala?
- Sacrum? – part apophyseal facet?
- Sacrum – border auricular surface & part ala

Upper limb: 23 fragments, 44.5g

- Scapula – part spine?
- Scapula? – part acromion process?
- Humerus, L – distal joint surface (trochlea & half capitulum)
- Humerus, R? – distal joint surface (half trochlea & half capitulum)
- Ulna – part proximal joint surface (lunar notch), unsided
- Ulna – part distal joint surface (styloid process), unsided
- Radius, L – distal joint surface
- Radius – proximal shaft & radial tuberosity
- Radius – shaft (in 3 pieces)
- Radius – shaft fragment
- Ulna? (/ radius?) – shaft fragments x4
- MC – shaft fragment
- MC? – shaft fragment?
- MC – head fragment
- Hand phalanx (intermediate or distal) – proximal ends x2
- Hand phalanx (distal) – half lengthways (in 2 pieces)

Lower Limb: 54 fragments, 270.9g

- Os coxa – ilium, border of auricular surface (not enough to determine age)
- Os coxa – small part ilium (ASIS?)
- Femur – posterior shaft, linea aspera (in 7 pieces); probably right side
- Femur – popliteal surface (in 6 pieces); probably left side
- Femur – part distal joint surface (patellar surface)
- Femur – part distal joint surface (part condyle)
- Femur – shaft fragments x5
- Femur – posterior shaft, linea aspera
- Femur? – shaft fragments x5
- Tibia – anterior border x 11 fragments (including 4 pairs of joined fragments)
- Tibia, L – posterior proximal shaft, soleal line & nutrient foramen (in 2 pieces)
- Tibia, R - posterior proximal shaft, soleal line & nutrient foramen (in 3 pieces)
- Tibia? – part condyle?
- Patella, R – superior half
- Patella, L? – part superior half
- Fibula, R – distal joint surface & fossa
- Fibula – shaft (in 2 pieces)
- Fibula? – shaft
- Talus, R – trochlea, lateral joint surface, part subtalar joint surface (in 2 pieces)
- Talus, L – trochlea, lateral joint surface, part subtalar joint surface, part neck
- Talus – part head and small part subtalar joint surface, unsided
- MT1? – proximal joint surface?
- MT1 – part head
- MT? – shaft?
- MT? – shaft?

Long Bone: 210 fragments, 289.9g

Animal Bone: 4 fragments, 0.1g

Context 4007: Vessel 3 (Red)

Preservation:	Moderate
Total Weight:	480.0g
Weight >10mm:	39.2g
Largest Fragment:	30.86mm

Age:	Adult
Sex:	?
Non-metric traits:	-

Pathology: -

Fragments Identified:

Skull: 39 fragments, 18.9g

- 39 vault fragments

Axial: 2 fragments, 1.4g

- Vertebra – part L half body & pedicle; probably cervical, possibly T1 or T2
- Cervical vertebra – part inferior facet and pedicle

Upper limb: 1 fragment, 0.6g
- Hand phalanx (intermediate or proximal) – distal end

Lower Limb: 5 fragments, 8.9g
- Femur? – part shaft (in 3 pieces)
- Femur? – part shaft (in 2 pieces)

Long Bone: 101 fragments, 69.0g

Context 4007: Vessel 3 (Black)

Preservation:	Poor
Total Weight:	250.3g
Weight >10mm:	40.9g
Largest Fragment:	53.90mm

Age:	Adult/ adolescent?
Sex:	?
Non-metric traits:	-

Pathology: -

Fragments Identified:

Skull: 33 fragments, 15.6g
- 33 vault fragments

Lower Limb: 1 fragment, 8.1g
- Tibia – anterior border?

Long Bone: 78 fragments, 58.6g

Animal Bone: 1 fragment, 1.4g

Context 4007: Vessel 3 (From Red and/or Black)

Preservation:	Moderate
Total Weight:	108.9g
Weight >10mm:	7.6g
Largest Fragment:	28.79mm

Age:	Adult
Sex:	?
Non-metric traits:	-

Pathology:	Joint Degeneration: Distal hand phalanx with joint surface affected by osteophytes and porosity, also contours of joint altered. Distal joints of two intermediate or proximal hand phalanges affected by osteophytes and porosity, and distal joints of another two intermediate or proximal hand phalanges enlarged by osteophytes

Fragments Identified:

Skull: 6 fragments, 2.9g
- 6 vault fragments

Axial: 5 fragments, 1.9g
- 3 fragments of rib shaft
- Cervical vertebra – part body & pedicle
- Thoracic vertebra – part superior facet

Long Bone: 6 fragments, 3.9g

Animal Bone: 2 fragments, 2.4g

Context 4110: Vessel 4

Preservation:	Good
Total Weight:	1626.0g
Weight >10mm:	1017.1g
Largest Fragment:	107.36mm

Age:	Mature Adult? (45+ years)
Sex:	Male??
Non-metric traits:	Parietal foramen (R)

Pathology:	Trauma: four rib shaft fragments have well-healed fractures Dental: LM_3 lost AM?

Fragments Identified:

Skull: 153 fragments, 166.1g
- 122 vault fragments
- Mandible – part L ramus, lingula, mylohyoid foramen, extramolar sulcus
- Tooth – lower molar, probably second; unsided; roots intact and development complete, crown shattered
- Tooth – crown fragment, probably molar
- Occipital – squama, external occipital protuberance & part R nuchal crest (in 3 pieces)
- Occipital – part L condylar area, hypoglossal canal, posterior half L condyle (in 2 pieces)
- Parietal, R – posterior medial corner: parietal foramen, posterior third sagittal suture, medial half lambdoid suture (in 2 pieces; articulates with L parietal fragments above)

- Parietal, L – posterior medial corner: posterior half sagittal suture, medial third lambdoid suture (in 3 pieces; articulates with R parietal fragments above)
- Parietal – part sagittal suture
- Parietal, R – anterior medial corner: tiny part sagittal suture & medial quarter coronal suture (in 2 pieces)
- Parietal – part temporal suture
- Parietal & occipital – part lambdoid suture
- Maxilla, L – anterior half palate, interpalatine suture, half incisive foramen (no alveolar bone)
- Maxilla – small piece alveolar bone, part root socket
- Temporal, R – petrous, small part internal auditory meatus
- Temporal, L – anterior half glenoid fossa, root zygomatic arch, sphenotemporal suture
- Temporal, L – superior & anterior border of external auditory meatus
- Temporal, L – small part zygomatic arch
- Temporal – part mastoid area
- Temporal, R? – part mastoid process & digastric groove
- Cranial fragments x 5

Axial: 83 fragments, 53.4g

- 40 fragments of rib shaft; 4 show well-healed fractures
- Rib – head fragment
- Atlas – anterior arch, facet for dens
- Axis – dens, facet for atlas
- Cervical vertebra – body
- Cervical vertebra – left half arch, superior & inferior facets; x3
- Cervical vertebra – right part arch, superior & inferior facets
- Thoracic vertebra – part spinous process
- Thoracic vertebra – part left arch & spinous process, inferior facet; x2
- Thoracic vertebra – left pedicle & part of body, rib facet
- Thoracic vertebra – part left arch, inferior facet; x2
- Thoracic vertebra – part left arch, superior & inferior facets
- Thoracic vertebra – transverse process
- Thoracic vertebra – part right arch, inferior facet
- Thoracic vertebra – part right arch, inferior facet & transverse process
- Thoracic vertebra – inferior facet, unsided
- Thoracic vertebra – left superior facet & pedicle
- Thoracic vertebra – part arch & part spinous process
- Thoracic vertebra – superior facets x8
- Lumbar vertebra – left part arch, inferior facet; x2
- Lumbar vertebra – left inferior facet
- Lumbar vertebra – right part arch, inferior facet
- Lumbar vertebra – superior facet; x3
- Lumbar vertebra – part inferior facet
- Vertebra – part body; probably lumber or thoracic
- Vertebra – part body; probably upper thoracic
- Vertebra – part body; x2
- Sacrum? – small part auricular surface?; x2
- Ossified thyroid cartilage?

Upper limb: 45 fragments, 108.4g

- Scapula, L – part acromion
- Scapula, R – part acromion
- Scapula, R? – part spine

- Scapula, R – medial part spine
- Scapula? – part axillary border?
- Humerus – proximal
- Humerus, R – distal end, trochlea, olecranon fossa, coronoid fossa
- Humerus – small part distal joint (part trochlea)
- Humerus, R – posterior distal shaft, lateral supracondylar crest (in 4 pieces)
- Humerus, L? – medial distal shaft, medial supracondylar ridge (in 3 pieces)
- Humerus – shaft; x6 fragments (including 1 pair & 1 trio of joined fragments)
- Humerus – shaft, deltoid tuberosity (in 5 pieces)
- Humerus? – midshaft, nutrient foramen (in 2 pieces)
- Humerus? - midshaft
- Ulna, R – proximal end, coronoid process, ulnar tuberosity, radial notch
- Ulna – shaft; x3
- Ulna – shaft, possibly distal end?
- Ulna/ radius – shaft; x5
- Radius – small part head
- Radius – shaft; x2
- Hamate, R – intact
- Hand phalanx (intermediate or distal) – proximal end
- Hand phalanx (proximal or intermediate) – distal end

Lower Limb: 100 fragments, 458.9g

- Os coxa, R – pubic symphysis; probably stage 6 (Suchey/Brookes method), complete lack of billowing, surface appears irregular and degenerated, formation of lip on dorsal margin, some porosity on ventral demiface
- Os coxa – ilium, small part greater sciatic notch; x2 (not enough to determine sex)
- Os coxa – ilium, part auricular surface? (not enough to determine age)
- Os coxa – acetabulum
- Os coxa – ilium, iliac crest
- Femur, L – proximal third of shaft (spiral line, pectineal line, linea aspera, nutrient foramen); in 9 pieces
- Femur, R – proximal half shaft (spiral line, nutrient foramen, linea aspera); in 9 pieces
- Femur, L – small part neck (in 2 pieces)
- Femur, L – part distal third shaft, linea aspera where diverges into lateral and medial ridges (in 3 pieces)
- Femur, R – popliteal surface, lateral ridge (in 2 pieces)
- Femur – midshaft (in 3 pieces)
- Femur – shaft fragments x9
- Femur – head, fovea capitis; x2
- Femur, L? – distal joint surface
- Femur – distal, part condyle
- Patella – superior part, unsided
- Tibia, L – posterior surface of shaft, soleal line, nutrient foramen, interosseous crest (in 7 pieces)
- Tibia, R – posterior surface of shaft, soleal line, nutrient foramen, interosseous crest (in 6 pieces)
- Tibia – proximal, small part posterior condyle & part posterior shaft
- Tibia, R? – distal, articular area for fibula, part of posterior joint surface
- Tibia – distal, part joint surface; x2
- Tibia – anterior border; x6
- Fibula, R – distal joint surface & fossa
- Talus, L – entire superior half

- Talus, L – inferior part head, part neck, small part anterior calcaneal facet
- Navicular, L – almost intact
- Cuboid, L – posterior (calcaneal) facet, plantar surface & part facet for lateral cuneiform
- Medial Cuneiform – medial surface
- Calcaneus, R – medial surface, posterior part articular surface for talus
- Cuneiform (lateral or intermediate) – dorsal posterior part
- Talus/ calcaneus – part joint surface
- Intermediate cuneiform – small part dorsal surface
- Calcaneus – posterior, attachment for Achilles; x2
- Calcaneus? – part facet for talus?
- MT1 – head
- MT – head; x3
- MT – head fragment; x2
- MT – shaft fragment
- Foot phalanx (proximal) – distal end
- Foot phalanx (first proximal) – distal end

Long Bone: 99 fragments, 177.1g

Animal Bone: 35 fragments, 5.1g

Context 4064: Vessel 5

Preservation:	Good
Total Weight:	22.7g
Weight >10mm:	0.0g
Largest Fragment:	11.88mm

Age:	-
Sex:	-
Non-metric traits:	-

Pathology: -

Fragments Identified:

Animal Bone: 2 fragments, <0.1g

Table 16.35 (- Appendix VI: Non-metric traits)

Cranial non-metric traits: Adults

Midline Traits	Part Present	Trait Absent	Trait Present	%
Ossicle at Lambda	1	1	0	0.0
Ossicle at Bregma	1	1	0	0.0
Metopic Suture	2	2	0	0.0
Palatine Torus	0	-	-	-
Precondylar Tubercle	2	2	0	0.0

	Right				Left			
Paired Traits	Part Present	Trait Absent	Trait Present	%	Part Present	Trait Absent	Trait Present	%
Highest Nuchal Line	1	1	0	0.0	1	1	0	0.0
Lambdoid Ossicle	1	0	1	100	0	-	-	-
Coronal Ossicle	0	-	-	-	0	-	-	-
Ossicle at Asterion	0	-	-	-	0	-	-	-
Ossicle at Parietal Notch	0	-	-	-	0	-	-	-
Ossicle at Pterion	0	-	-	-	0	-	-	-
Parietal Foramen	0	-	-	-	2	1	1	50.0
Auditory Torus	2	2	0	0.0	2	2	0	0.0
Foramen of Huschke	2	2	0	0.0	2	2	0	0.0
Mastoid For. Extrasutural	0	-	-	-	0	-	-	-
Sutural Mastoid Foramen	0	-	-	-	0	-	-	-
Open Post. Condylar Canal	0	-	-	-	0	-	-	-
Double Condylar Facet	2	2	0	0.0	2	2	0	0.0
Double Ant. Condylar Canal	2	2	0	0.0	1	1	0	0.0
For. Ovale Incomplete	1	1	0	0.0	1	1	0	0.0
Open For. Spinosum	0	-	-	-	0	-	-	-
Access. Less. Palat. For.	0	-	-	-	0	-	-	-
Maxillary Torus	0	-	-	-	1	1	0	0.0
Mandibular Torus	2	1	1	50.0	2	1	1	50.0
Staphne's Defect	2	2	0	0.0	2	2	0	0.0
Zygomatic. Facial For. Abs.	0	-	-	-	2	2	0	0.0
Access. Infra-orb. For.	0	-	-	-	0	-	-	-
Access. Supraorbital For.	2	1	1	50.0	2	0	2	100.0
Bridging Supraorbital Notch	2	2	0	0.0	1	1	0	0.0
Anterior Ethmoid For. Ex.	0	-	-	-	0	-	-	-
Posterior Ethmoid For. Ex.	0	-	-	-	0	-	-	-

Post-cranial non-metric traits: Adults

Midline Traits	Part Present	Trait Absent	Trait Present	%
Sternal Foramen	0	-	-	-

Paired Traits	Right				Left			
	Part Present	Trait Absent	Trait Present	%	Part Present	Trait Absent	Trait Present	%
Lateral Atlas Bridging	2	2	0	0.0	2	2	0	0.0
Double Atlas Facet	2	2	0	0.0	2	2	0	0.0
Posterior Atlas Bridging	2	2	0	0.0	2	2	0	0.0
Transverse For. Bipartite	2	1	1	50.0	2	2	0	0.0
Suprascapular Foramen	2	2	0	0.0	2	2	0	0.0
Accessory Acromial Facet	2	2	0	0.0	2	2	0	0.0
Circumflex Sulcus	2	1	1	50.0	2	1	1	50.0
Supracondyloid Process	2	2	0	0.0	2	2	0	0.0
Septal Aperture	1	1	0	0.0	2	2	0	0.0
Accessory Sacral Facet	0	-	-	-	0	-	-	-
Acetabular Crease	1	0	1	100.0	2	1	1	50.0
Allen's Fossa	1	1	0	0.0	1	1	0	0.0
Poirier's Facet	1	1	0	0.0	1	1	0	0.0
Plaque	1	0	1	100.0	1	0	1	100.0
Hypotrochanteric Fossa	2	2	0	0.0	2	2	0	0.0
Exostosis in Troch. Fossa	2	0	2	100.0	1	0	1	100.0
Third Trochanter	2	1	1	50.0	2	2	0	0.0
Emarginate Patella	1	1	0	0.0	1	1	0	0.0
Vastus Notch	1	1	0	0.0	1	1	0	0.0
Vastus Fossa	1	1	0	0.0	1	1	0	0.0
Med. Tib. Squatting Facet	0	-	-	-	1	1	0	0.0
Lat. Tib. Squatting Facet	0	-	-	-	1	1	0	0.0
Peroneal Tubercle	0	-	-	-	0	-	-	-
Double Ant. Calc. Facet	0	-	-	-	1	0	1	100.0
Absent Ant. Calc. Facet	0	-	-	-	1	1	0	0.0
Double Inf. Talar Facet	0	-	-	-	0	-	-	-
Med. Talar Facet	0	-	-	-	1	1	0	0.0
Lat. Talar Extension	0	-	-	-	1	1	0	0.0
Os Trigonium	0	-	-	-	1	1	0	0.0

Cranial non-metric traits: Non-adults

Midline Traits	Part Present	Trait Absent	Trait Present	%
Ossicle at Lambda	0	-	-	-
Ossicle at Bregma	0	-	-	-
Metopic Suture	1	1	0	0.0
Palatine Torus	1	1	0	0.0
Precondylar Tubercle	1	1	0	0.0

	Right				Left			
Paired Traits	Part Present	Trait Absent	Trait Present	%	Part Present	Trait Absent	Trait Present	%
Highest Nuchal Line	0	-	-	-	0	-	-	-
Lambdoid Ossicle	0	-	-	-	0	-	-	-
Coronal Ossicle	0	-	-	-	0	-	-	-
Ossicle at Asterion	0	-	-	-	0	-	-	-
Ossicle at Parietal Notch	0	-	-	-	0	-	-	-
Ossicle at Pterion	0	-	-	-	0	-	-	-
Parietal Foramen	0	-	-	-	1	0	1	100.0
Auditory Torus	0	-	-	-	0	-	-	-
Foramen of Huschke	0	-	-	-	0	-	-	-
Mastoid For. Extrasutural	0	-	-	-	0	-	-	-
Sutural Mastoid Foramen	0	-	-	-	0	-	-	-
Open Post. Condylar Canal	0	-	-	-	1	0	1	100.0
Double Condylar Facet	1	1	0	0.0	1	1	0	0.0
Double Ant. Condylar Canal	1	1	0	0.0	1	1	0	0.0
For. Ovale Incomplete	1	1	0	0.0	0	-	-	-
Open For. Spinosum	1	1	0	0.0	0	-	-	-
Access. Less. Palat. For.	0	-	-	-	0	-	-	-
Maxillary Torus	1	1	0	0.0	1	1	0	0.0
Mandibular Torus	1	1	0	0.0	1	1	0	0.0
Staphne's Defect	1	1	0	0.0	1	1	0	0.0
Zygomatic. Facial For. Abs.	0	-	-	-	0	-	-	-
Access. Infra-orb. For.	0	-	-	-	0	-	-	-
Access. Supraorbital For.	1	0	1	100.0	1	0	1	100.0
Bridging Supraorbital Notch	1	1	0	0.0	1	1	0	0.0
Anterior Ethmoid For. Ex.	0	-	-	-	0	-	-	-
Posterior Ethmoid For. Ex.	0	-	-	-	0	-	-	-

Post-cranial non-metric traits: Non-adults

Midline Traits	Part Present	Trait Absent	Trait Present	%
Sternal Foramen	0	-	-	-

Paired Traits	Right				Left			
	Part Present	Trait Absent	Trait Present	%	Part Present	Trait Absent	Trait Present	%
Lateral Atlas Bridging	1	1	0	0.0	1	0	1	100.0
Double Atlas Facet	1	1	0	0.0	1	1	0	0.0
Posterior Atlas Bridging	1	1	0	0.0	1	1	0	0.0
Transverse For. Bipartite	1	1	0	0.0	1	1	0	0.0
Suprascapular Foramen	1	1	0	0.0	0	-	-	-
Accessory Acromial Facet	0	-	-	-	0	-	-	-
Circumflex Sulcus	1	1	0	0.0	1	1	0	0.0
Supracondyloid Process	1	1	0	0.0	1	1	0	0.0
Septal Aperture	1	1	0	0.0	1	1	0	0.0
Accessory Sacral Facet	1	1	0	0.0	1	1	0	0.0
Acetabular Crease	1	1	0	0.0	1	1	0	0.0
Allen's Fossa	1	1	0	0.0	1	1	0	0.0
Poirier's Facet	1	1	0	0.0	1	1	0	0.0
Plaque	1	1	0	0.0	1	1	0	0.0
Hypotrochanteric Fossa	1	0	1	100.0	1	0	1	100.0
Exostosis in Troch. Fossa	1	1	0	0.0	1	1	0	0.0
Third Trochanter	1	1	0	0.0	1	1	0	0.0
Emarginate Patella	1	1	0	0.0	1	1	0	0.0
Vastus Notch	1	1	0	0.0	1	1	0	0.0
Vastus Fossa	1	0	1	100.0	1	0	1	100.0
Med. Tib. Squatting Facet	0	-	-	-	-	-	-	-
Lat. Tib. Squatting Facet	0	-	-	-	-	-	-	-
Peroneal Tubercle	0	-	-	-	-	-	-	-
Double Ant. Cal*c.* Facet	0	-	-	-	-	-	-	-
Absent Ant. Cal*c.* Facet	0	-	-	-	-	-	-	-
Double Inf. Talar Facet	0	-	-	-	-	-	-	-
Med. Talar Facet	0	-	-	-	-	-	-	-
Lat. Talar Extension	0	-	-	-	-	-	-	-
Os Trigonium	0	-	-	-	-	-	-	-

(Appendix VII) - Plates 16.14 - 16.25

Plate 16.14: Scoliosis of the spine in skeleton (4037), T4-8 (anterior)

Plate 16.15 Bennett's fracture of right first metacarpal (arrow), normal left metacarpal for comparison (skeleton 4039)

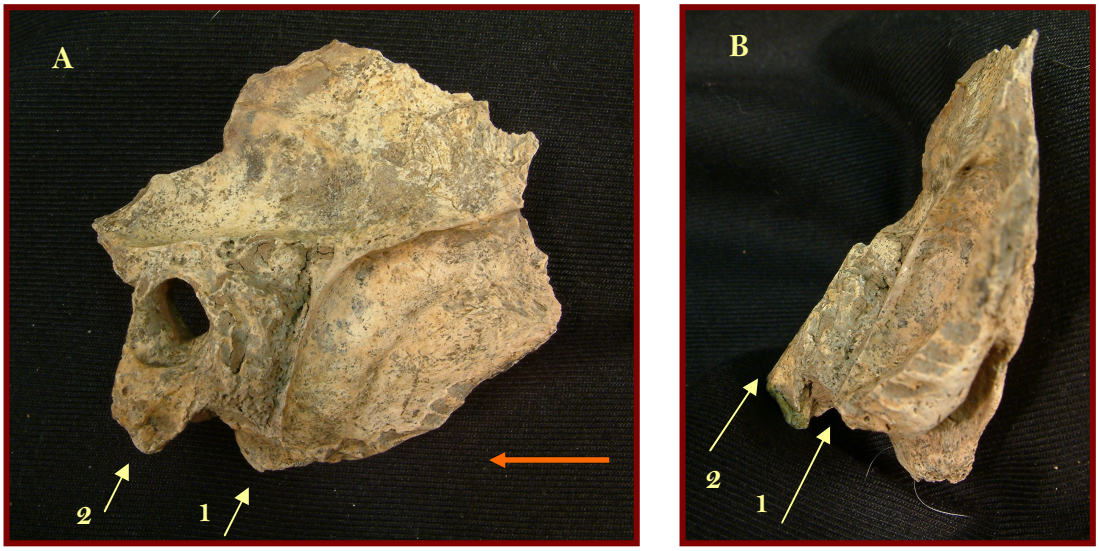


Plate 16.16: Skeleton (4050), right temporal: A – view of internal surface, with two cuts delivered from behind (orange arrow showing direction of blow), (1) terminated in the petrous part of the temporal, and (2) cut right through the petrous part; B – posterior view of cuts

Plate 16.17: Skeleton (4050), atlas: cut through left side of anterior arch

Plate 16.18: Skeleton (4050), cervical vertebra: cut through superior right arch

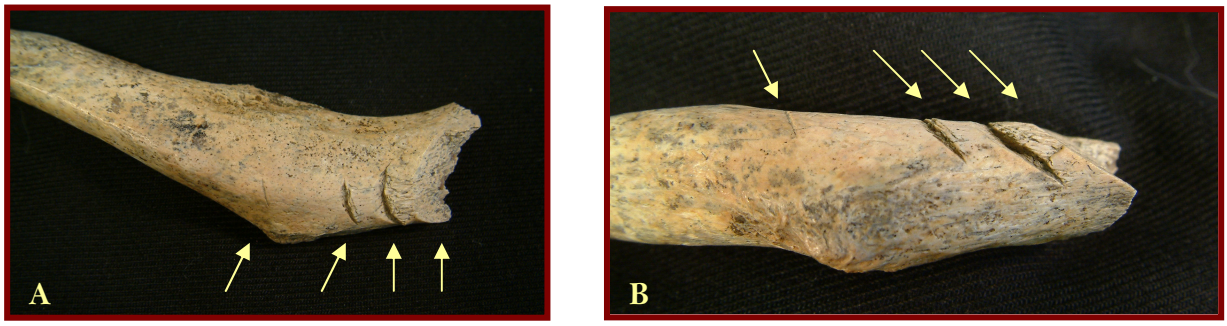


Plate 16.19: Skeleton (4050), acromial end of right clavicle: A – superior view of cuts; B – posterior view of cuts

Plate 16.20: Skeleton (4050), left fifth metacarpal (medial view): periostitis probably caused by an overlying skin ulcer

Plate 16.21: Skeleton (4039), left scaphoid: eburnation of facet for trapezoid

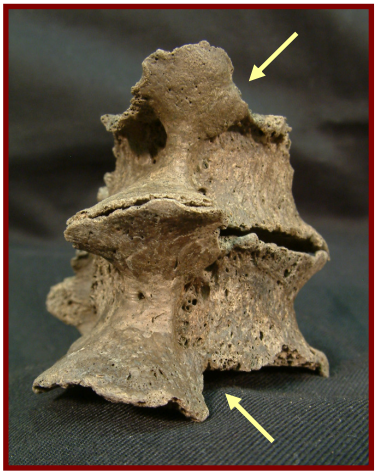


Plate 16.22: Skeleton (4039): anterior view of T10 and T11, showing prominent 'candle-wax' type osteophytes on the right side of the bodies

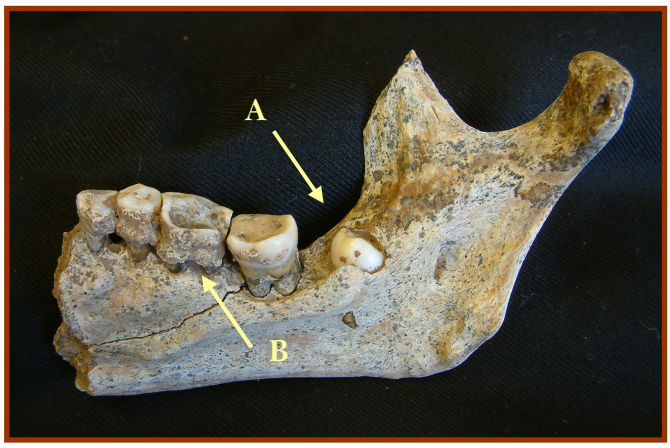


Plate 16.23: **Skeleton (4037), adult female: impaction of lower right third molar (A); calculus deposits (B)**

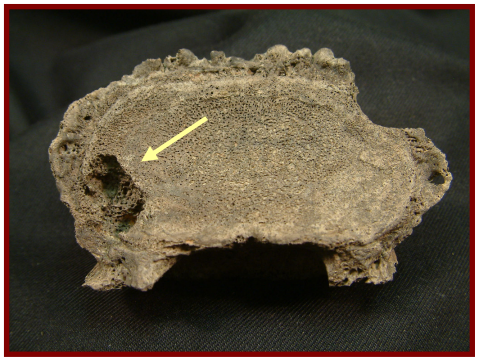


Plate 16.24: Lytic lesion in the upper body surface of the fifth lumbar vertebra, Skeleton (4039)

Plate 16.25: Skeleton (4037), adult female: possible congenital absence/ impaction of upper left premolar, with unusual position of remaining premolar

Fig. 16.1 (- Appendix VIII: Data from AMS radiocarbon dating and calibration)

BETA ANALYTIC INC.
DR. M.A. TAMERS and MR. D.G. HOOD
4985 S.W. 74 COURT
MIAMI, FLORIDA, USA 33155
PH: 305-667-5167 FAX:305-663-0964
beta@radiocarbon.com

REPORT OF RADIOCARBON DATING ANALYSES

Ms. Jennifer Jones — Report Date: 7/28/2008

Durham University — Material Received: 6/26/2008

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 245906	1890 +/- 40 BP	-23.7 o/oo 15N/14N = + 9.4 o/oo	1910 +/- 40 BP

SAMPLE : LTM07SK4039
ANALYSIS : AMS-Standard delivery
MATERIAL/PRETREATMENT : (tooth): collagen extraction: with alkali
2 SIGMA CALIBRATION : Cal AD 10 to 210 (Cal BP 1940 to 1740)

Dates are reported as RCYBP (radiocarbon years before present, "present" = AD 1950). By international convention, the modern reference standard was 95% the 14C activity of the National Institute of Standards and Technology (NIST) Oxalic Acid (SRM 4990C) and calculated using the Libby 14C half-life (5568 years). Quoted errors represent 1 relative standard deviation statistics (68% probability) counting errors based on the combined measurements of the sample, background, and modern reference standards. Measured 13C/12C ratios (delta 13C) were calculated relative to the PDB-1 standard.

The Conventional Radiocarbon Age represents the Measured Radiocarbon Age corrected for isotopic fractionation, calculated using the delta 13C. On rare occasion where the Conventional Radiocarbon Age was calculated using an assumed delta 13C, the ratio and the Conventional Radiocarbon Age will be followed by "*". The Conventional Radiocarbon Age is not calendar calibrated. When available, the Calendar Calibrated result is calculated from the Conventional Radiocarbon Age and is listed as the "Two Sigma Calibrated Result" for each sample.

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-23.7:lab. mult=1)

Laboratory number: **Beta-245906**

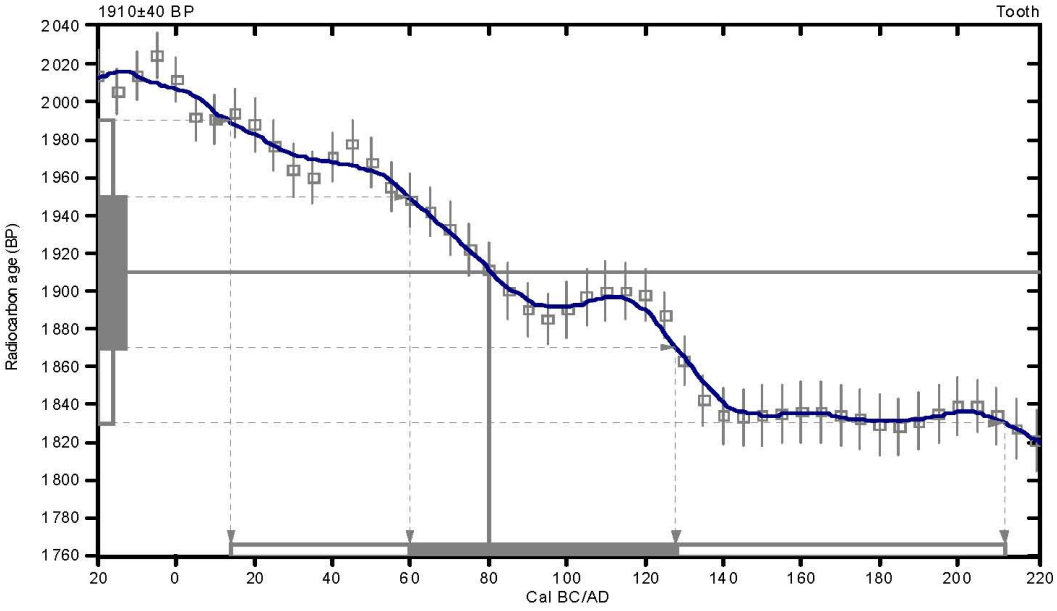
Conventional radiocarbon age: **1910±40 BP**

2 Sigma calibrated result: (95% probability) **Cal AD 10 to 210 (Cal BP 1940 to 1740)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 80 (Cal BP 1870)

1 Sigma calibrated result: (68% probability) Cal AD 60 to 130 (Cal BP 1890 to 1820)



References:

Database used

INTCAL04

Calibration Database

INTCAL04 Radiocarbon Age Calibration

IntCal04: Calibration Issue of Radiocarbon (Volume 46, nr 3, 2004).

Mathematics

A Simplified Approach to Calibrating C14 Dates

Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com