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The Results of an Archaeological Field Evaluation by Trial Trenching and Archaeological Excavation near Overton Farm, Kirkliston (Land Parcel 19)

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Report Status: Approved



Executive Summary

Headland Archaeology conducted an archaeological evaluation by trial trenching near Overton Farm, Kirkliston (Land Parcel 19), NGR: NT 13345 74322 (centred), to assess the presence/absence of archaeological features in an area identified as having good archaeological potential in the Forth Replacement Crossing Environmental Statement (Jacobs Arup, 2009a). The work was commissioned by Transport Scotland, managed and monitored by Jacobs Arup and undertaken in advance of the proposed commencement of construction works.

Eleven trenches with a total area of 1700 m² were excavated between the 28th March and the 13th of April 2011 comprising a 5% sample of Land Parcel 19. The trial trenching revealed a curvilinear ditch around which a larger area (311 m²) was opened to reveal its full extent. This was revealed to be small feature is of post-medieval date and may reflect small-scale agricultural or industrial activity. Evidence of post-medieval agricultural activity on site was revealed in the form of furrows and a drainage ditch. No other features of archaeological interest were encountered.

ARCHAEOLOGICAL EVALUATION
Forth Replacement Crossing: Land Parcel 19, Overton near Kirkliston

PROJECT SUMMARY SHEET (FRCE10)

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<i>Consultant</i>	Jacobs Arup
<i>National Grid Reference</i>	NT 13345 74322
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<i>Schedule</i>	
Fieldwork	29 th March to 13 th April 2011
Report	June 2011

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1 Introduction

1.1 General

1.1.1 This Data Structure Report is submitted as a report on a programme of archaeological trial trenching and excavation to Jacobs Arup and Transport Scotland in respect of the proposed Forth Replacement Crossing (hereinafter 'FRC'), and in accordance with the mitigation measures recommended in the FRC Environmental Statement Chapter 14 (Cultural Heritage; Jacobs Arup 2009a) wherein the requirement for a programme of trial trenching was identified.

1.1.2 Between the 8th and the 14th March 2011, Headland Archaeology (UK) Ltd. undertook a programme of archaeological evaluation by trial trenching and excavation on Land Parcel 19 in advance of the M9 Junction 1a improvements for the FRC (Illus 1). The project was managed by Edward Bailey (Project Manager), the fieldwork and reporting was overseen by Jamie Humble (Project Officer). Five additional staff assisted during the fieldwork.

1.2 Project Background

1.2.1 In December 2007, following the completion of the FRC Study as part of the Strategic Transport Project Review (hereinafter 'STPR'), the Scottish Government confirmed the intention to provide a new cable-stayed bridge to the west of the existing Forth Road Bridge. Jacobs Arup (as a joint venture) was commissioned in January 2008 to assist Transport Scotland to develop the FRC proposals, to undertake an Environmental Impact Assessment (hereinafter 'EIA') and to prepare an Environmental Statement (hereinafter 'ES') (Jacobs Arup 2009a).

1.2.2 The purpose of the cultural heritage component of the EIA was to identify the cultural heritage baseline, evaluate the likely significant impacts that the proposed development would have on this resource, and provide mitigation measures to ameliorate any impacts. .

1.2.3 The cultural heritage baseline data for the EIA was obtained via a desk-based assessment and walkover survey undertaken in 2008-2009 in accordance with the principles set out in DMRB Volume 11, Section 3 Part 2 'Cultural Heritage' (HA 208/07; Highways Agency 2007). Further information was also gathered during archaeological watching briefs on Ground Investigations for the proposed scheme carried out during 2008 and 2009 by variously Jacobs Arup, Glasgow University Archaeology Research Division and Headland Archaeology Ltd in accordance with the requirements of Historic Scotland to whom the results were reported (Transport Scotland 2010, 30).

1.2.4 Based on the results of the EIA the ES recommended that a programme of invasive and non-invasive archaeological works be undertaken, to include resistivity survey and evaluation by trial trenching (Jacobs Arup 2009a).

1.3 Aims and Objectives of the Archaeological Works

1.3.1 The general objectives of the programme of archaeological works (Transport Scotland 2010) were to:

- ensure that significant archaeological or palaeoenvironmental remains shall be neither needlessly destroyed, nor destroyed without record;
- identify any unknown archaeological remains that may be affected by the scheme;
- enable a more confident assessment of the impact of construction of the proposed scheme on archaeological remains;
- enable the identification and design of any measures that may be necessary to mitigate the impact of the proposed scheme on newly identified archaeological remains;
- enhance available information about known archaeological remains, where existing information is insufficient to enable a full assessment of impact or the design of mitigation measures.

1.3.2 Following the results of the evaluation the objectives of the excavations were to:

- Clarify the nature, character and extent of the features identified during the evaluation and obtain a plan of any additional features identified during the excavation.
- Identify any structures or activity areas and the date and duration of any settlement remains
- Obtain artefactual and environmental evidence for the purposes of dating and interpretation of the site

2 Site Background

2.1 *Archaeological and Historical Background*

2.1.1 Within a study area ranging in extent from 500m from the proposed route to 6km from the proposed main crossing a total of 356 cultural heritage sites were identified by the ES, whilst a desk-based assessment of a wider study area undertaken at route selection stage, identified a total of 1200 cultural heritage sites (Transport Scotland 2010, 30). The results from these studies show that the scheme is located in a landscape containing archaeological evidence dating from the Mesolithic period, through the prehistoric and medieval periods, up to post-medieval and modern times.

2.1.2 Within the vicinity of the of the M9 Junction 1a improvements (Illus 1) prehistoric activity has been recorded in the form of a Late Bronze Age socketed axe found near Kirkliston. Latterly there are written records from 1513 that refer to a Kirliston House acquired by the Commandery of Torphichen although the exact location of the house is not recorded. Based on the coordinates provided by the Royal Commission on the Ancient and Historic Monuments of Scotland both these sites are located within 1 km of Land Parcel 21 (approximately 250 m south-east of Land Parcel 19) and indicate the potential for prehistoric and medieval settlement in the area.

2.2 *Site Topography and Land Use*

2.2.1 Land Parcel 19 comprised the northern edge of a field that sloped gently from the southeast to the north-west. The northern edge of the land parcel was defined by the M9 with the large loop of Junction 1a projecting southwards into the land parcel. The southern edge of Land Parcel 19 was defined by the limit of the land take. The field was under young crop at the time of the evaluation. The site is under the ownership of C E MacLachlan.

2.3 *Site Geology*

2.3.1 The results of geotechnical investigations (Jacobs Arup 2009b) carried out demonstrate that the subsurface stratigraphy generally constitutes glacial till deposits of varying thickness; these are predominantly comprised firm to very stiff boulder clay deposits with occasional granular till deposits. The trial trenching (below) identified a band of bedrock within Trench 4.

2.3.1 The solid geology of the site is typified by igneous alkali dolerite (British Geological Survey 2008). The alkaline nature of the bedrock geology has the effect of breaking up the structure of clays within the soil matrix which negatively affects its water holding capacity, similar to the effect agricultural lime has on arable soils.

3 **Methodology**

3.1 All works were undertaken in accordance with the specification in the contract documents (Transport Scotland 2010), which had been agreed with Historic Scotland and Transport Scotland. The total area of the Land Parcel measured 33,161 m², of which a 5% sample (1700 m²) was investigated by trial trenching. An indicative trench plan was agreed with the consultant archaeologists, Jacobs Arup. Trenches were sited to provide good spatial coverage of the entire site. Following the discovery of features within Trench 11 a further area totalling 311 m² was stripped to expose the full extent of these features.

3.2 All trenches were individually numbered and a pole-mounted Trimble G6 differential GPS programmed with the relevant coordinates was utilised to identify and mark out the locations of trenches. The trenches were excavated using a single 13 ton 360° tracked mechanical excavator, fitted with a 2 m wide flat-bladed ditching bucket, with the additional area excavated by a JCB fitted with a 1.6 m wide flat-bladed ditching bucket. Both machines operated under continuous archaeological supervision and turf, topsoil and subsoil were removed down to the first archaeological horizon or clean geological deposits, whichever was met first. Topsoil and subsoil were stored separately. Any potential features identified were hand cleaned and investigated appropriately. Archaeological features and deposits were hand excavated and recorded using standard archaeological methods and pro-forma record sheets. The excavated trenches and any archaeological contexts were recorded using a Trimble G6 differential GPS, as well as hand drawing where appropriate. Photographs were taken using colour slide film, black and white film, and digital.

3.3 Bulk soil samples were collected from secure archaeological contexts for processing and assessment. Where possible a minimum 30-litre sample was collected from each

archaeological deposit and given a unique number (Transport Scotland 2010, 59). Samples were processed in laboratory conditions using a standard floatation method (cf. Kenward *et al* 1980). All plant macrofossil samples were analysed using a stereomicroscope at magnifications of x10 and up to x100 where necessary to aid identification. Identifications were confirmed using modern reference material and seed atlases including Cappers *et al* (2006).

- 3.4 All finds were recorded by individual context and their cleaning, storage and conservation undertaken in accordance with the Institute for Archaeologists Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials (Transport Scotland 2010, 65-66).

4 Results of Fieldwork (Illus 2 & 3)

4.1 Trial Trenching and Excavation

- 4.1.1 Eleven trenches were excavated across Land Parcel 19 (Illus 2) with a combined total area of 1700 m². Full detailed descriptions of each trench and individual contexts can be found in the Appendix 1 and Appendix 2. Results are summarised below.

- 4.1.2 The natural geology seen in the trenches was largely orange grey clay [022], although outcropping of limestone bedrocks was seen within Trench 4. In general this was overlain by between 0.10 m and 0.20 m of subsoil or interface material – orangey brown sandy silt [020]. Topsoil [019] was between 0.30 m and 0.50 m deep and contained frequent recent ceramic material.

- 4.1.3 Colluvial deposits were identified in two trenches (Trenches 4 & 5) and were up to 0.90 m in depth, comprising mid brown silty clay [021]. This material appeared to have filled in a slight hollow on gently sloping ground, and was removed to ensure that no possible features were masked by the material.

- 4.1.4 Archaeological features were found in four trenches (Trenches 5, 7, 10 & 11).

- 4.1.5 Along the western edge of Trench 10 a section of shallow curvilinear ditch was identified [017]. After initial investigation within the evaluation trench a larger area around this feature was stripped to reveal its full extent and any associated features. No further features were identified within the stripped area. Curvilinear ditch [017] was 4.52 m long by 0.34 m wide and up to 0.06 m deep with gently sloping sides and a concave base. It was filled with a homogenous brownish grey compact silty clay [018] within which were occasional large stones that may have been post packing; however the heavily truncated nature of the feature made this difficult to be certain. The shallow truncated nature of the feature also meant it was not possible to establish whether the terminals of the feature were real or an artefact of the truncation. If this was the case then it is possible the feature represented one side of a circular structure with a possible diameter of between 4.50 m and 5.00 m.

- 4.1.6 Furrows [001, 003, 005, 007, 009, 011 & 013] were identified in Trenches 5, 7 and 11. In Trenches 5 and 7 only one or two furrows were seen, rather than the furrows extending across the whole area. Within Trench 11 furrows were present across the

entire length of the trench. The furrows were between 0.80m and 2.00 m wide, and up to 0.27 m in depth. They had shallow sloping sides and were filled with compact brown grey silty clay [002, 004, 006, 008, 010, 012 & 014] respectively. The furrows seen in Trenches 5 and 11 ran approximately north-west to south-east while the furrow in Trench 7 ran north-east to south-west. Within Trench 11 a section of ditch [015] on the same north-west to south-east alignment as the furrows was identified. Ditch [015] was 1.12 m wide and 0.21 m deep with shallow sloping sides and a rounded base. The fill [016] was dark grey silty clay containing frequent large stones within which pieces of modern pottery and glass were found.

5 Palaeoenvironmental Report

Sarah-Jane Haston

5.1 *Plant remains*

5.1.1 Two samples were taken from Ditch [017]. The results of the sample processing are provided in Tables 1 (Retent finds, Appendix 6) and 2 (Floatation finds, Appendix 7). Suitable material for AMS dating is also identified within each table. All plant remains were preserved through charring.

5.1.2 The concentration of archaeological remains recovered from the samples was very low and only amounted to small quantities of wood charcoal and the occasional charred weed seed.

5.1.3 Wood charcoal was recovered from both of the samples; however, this was present only in very small quantities and all of the charcoal fragments were less than 1 cm in diameter. The quantity and size of the charcoal recovered is not suitable for identification and/or Accelerated Mass Spectrometry AMS dating. The small sizes of the fragments suggest that they may have been become incorporated in the sampled deposits by mechanisms such as windblow and surface run-off rather than being a result of deliberate or accidental deposition.

5.1.4 A single charred weed seed of downy-hemp nettle (*Galeopsis segetum*) was recovered in Sample 1 and is commonly found on arable field margins and disturbed ground. The origin of the single carbonised weed seed is uncertain and does not warrant further study.

5.2 *Other finds*

5.2.1 Other finds present include a sherd of post-medieval pottery (late 18th to 20th century, Julie Framnklin pers comm.), a fragment of brick and a small amount of magnetic residue in Sample 1. The small amount of magnetic residue may offer evidence for small scale industrial activities taking place within the immediate area. Two small fragments of burnt mammal bone were also recovered in Sample 1. Low concentrations of coal and cinders were recovered from both of the samples indicating that coal was being utilised in the area as a source of fuel. This was not retained for further analysis.

5.3 *Discussion*

5.3.1 The collective assemblage from the ditch deposit is indicative of the re-working and re-depositing of domestic/industrial material.

5.4 *Recommendations*

5.4.1 No further work on the palaeoenvironmental remains is recommended.

6 Conclusions

6.1 The evaluation has established that this area appears not to have been extensively used for human activity. At the very north-west of the land parcel a single feature [017] was identified containing finds evidence dating to the post-medieval period. It is hard to say what the ditch represents due to its shallow truncated nature however it is likely that it is a bedding slot trench for a small wall forming one side of an oval or circular structure. This feature probably represents small-scale agricultural or industrial activity on the site and is may be associated with other post-medieval activity identified on site.

6.2.1 The only other features identified relate to post-medieval agricultural activity in the area, with a few surviving agricultural furrows running across the site on a north-west to south-east or north-east to south-west alignment. The rubble filled ditch [015] was on a similar alignment to the furrows in Trench 11 suggesting that these features are probably contemporary. The limited number of furrows present may be the result of later ploughing activity; however, no specific evidence was seen to suggest this was the case.

6.2.2 Based on the results of the archaeological trial trenching and excavation and subsequent post-excavation assessment the archaeological archive is assessed as having no further potential and therefore no additional works are recommended.

7 References

7.1 Bibliographic References

Cappers, R T J, Bekker, R M and Jans, J E A 2006 *Digital seed atlas of the Netherlands*. Barkhuis Publishing and Groningen University Library, Groningen.

Clapham, A R, Tutin, T G and Warburg, E F 1962 *Flora of the British Isles (2nd Edition)*. Cambridge University Press, Cambridge.

Highways Agency *et al* 2007 *DMRB Volume 11 Cultural Heritage, Section 3, Part 2, Revision HA 208/07*. The Highways Agency, Transport Scotland, Welsh Assembly Government and the Department for Regional Development Northern Ireland, August 2007.

Jacobs Arup 2009a *Forth Replacement Crossing: Environmental Statement*. November 2009.

Jacobs Arup 2009b *Transport Scotland Forth Replacement Crossing: Network Connections – South Ground Investigations Report*. Jacobs Arup November 2009.

Kenward, H K, Hall, A R and Jones, A K G 1980 'A tested set of techniques for the extraction of plant and animal macrofossils from waterlogged archaeological deposits', *Science and Archaeology* 22, 3-15.

Transport Scotland 2010 *Forth Replacement Crossing*. 'Competition for the Land Based Invasive and Non-Invasive Archaeological Survey and Evaluation Contract Volume 2: Tender Document.'

6.2 Cartographic References

British Geological Survey 2008 *Linlithgow, S032W, (version B&Sup), 1: 50 000*.

8 Appendices

Appendix 1: Trench Register

Trench No	Length (m)	Depth (m)	Description
1	30	0.3	Oriented E-W, no features.
2	100	0.4	Oriented NW-SE, no features.
3	20	0.4	Oriented SW-NE, no features.
4	100	0.4	Oriented SE-NW, no features.
5	100	0.8	Oriented NE-SW, furrows [001 & 003] run NW-SE across trench.
6	100	0.4	Oriented E-W, no features.
7	100	0.4	Oriented NW-SE, furrow [005] runs N-S across trench.
8	100	0.35	Oriented NE-SW, no features.
9	50	0.5	Oriented N-S, no features.
10	100	0.5	Oriented N-S, curvilinear feature [017] runs for 5.5m along western edge of trench. Where [017] runs into trench edge the trench was extended E-W for 2m.
11	50	0.4	Oriented E-W, furrows [007, 009, 011 & 013] run NW-SE across trench. Drainage ditch [015] runs for 1.9m NW-SE across trench before terminating.

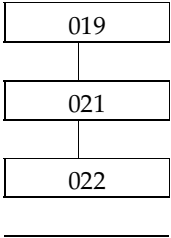
Appendix 2: Context Register

Context No.	Trench	Description
1	5	Cut of furrow. Linear in plan, oriented NW-SE, with gently sloping sides flat base and gradual breaks of slope. Measures 2.00 m by 0.78 m and 0.12 m deep.
2	5	Fill of [001]. Mid brown compact silty clay with frequent small stones.
3	5	Cut of furrow. Linear in plan, oriented NW-SE, with gently sloping sides, rounded base and gradual break of slope. Measures 2 m by 1.26 m and 0.27 m deep.
4	5	Fill of [003]. Dark brown grey compact silty clay with occasional small stones.
5	7	Cut of furrow. Linear in plan, oriented N-S, with gently sloping sides, flat base and gradual break of slope. Measures 0.96 m wide and 0.09 m deep.
6	7	Fill of [005]. Yellow brown compact silty clay with occasional small stones.
7	11	Cut of furrow. Linear in plan, oriented NW-SE, with gently sloping sides rounded base and gradual break of slope. Measures 1.22 m wide by 0.06 m deep.
8	11	Fill of [007]. Brownish grey compact silty clay with occasional small stones.
9	11	Cut of furrow, linear in plan oriented NW-SE, with gently sloping sides rounded base and gradual break of slope. Measures 1.58 m wide by 0.11 m deep.
10	11	Fill of [009]. Brownish grey compact silty clay with occasional small stones.
11	11	Cut of furrow. Linear in plan, oriented NW-SE with gently sloping sides flat base and gradual breaks of slope. Measures 2.04 m wide by 0.13 m deep.
12	11	Fill of [011]. Dark brownish grey compact silty clay with occasional small stones.
13	11	Cut of furrow. Linear in plan, oriented NW-SE with gently sloping sides rounded base and gradual breaks of slope. Measures 1.22 m wide and 0.06m deep.
14	11	Fill of [013]. Dark grey compact silty clay with occasional small stones.
15	11	Cut of drainage ditch. Linear in plan, oriented NW-SE with gently sloping sides rounded base and gradual breaks of slope. Ran for 1.9 m from N of trench before terminating, 1.12 m wide and 0.21 m deep.
16	11	Fill of [015]. Dark grey compact clayey silt with frequent large stone.
17	10	Cut of curvilinear ditch. Curvilinear in plan with gently sloping sides rounded base and sharp breaks of slope. Extends for 4.52 m along western edge of trench, 0.34 m wide and 0.06 m deep.

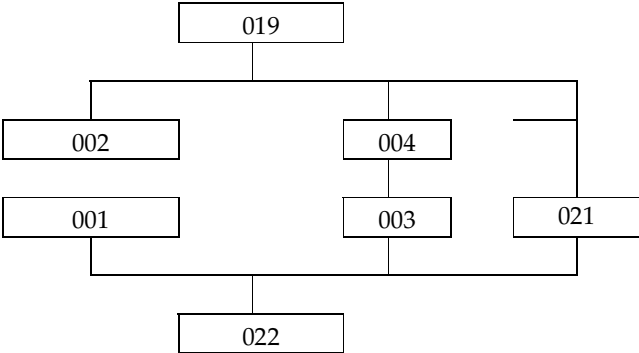
18	10	Fill of [017]. Brownish grey compact silty clay with occasional small stones and rare large stones that may represent post packing within the feature.
19	All	Topsoil. Dark greyish brown sandy silt loam, 0.3 – 0.5 m.
20	All	Subsoil. Orange brown sandy silt, 0.1 – 0.2 m.
21	4 & 5	Colluvium. Mid brown sandy silt, 0 – 0.9 m.
22	All	Natural. Orange – grey clay.

Appendix 3: Trench Matrices

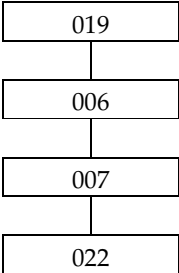
Trench 4



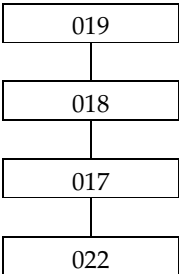
Trench 5



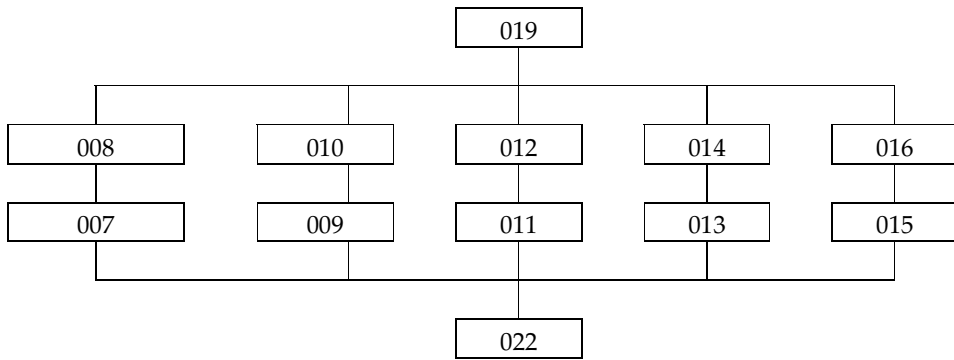
Trench 7



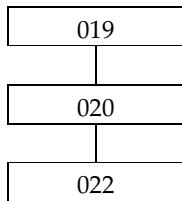
Trench 10



Trench 11



**Other
trenches**



Appendix 4: Photographic Register

Photo No.	Direction facing	Description
1	E	LP19 trench 1
2	E	LP19 trench 2
3	NE	LP19 trench 3
4	SE	LP19 trench 4
5	NW	Furrow [001] trench 5
6	SE	W facing section through [001]
7	W	E facing section of furrow [003] trench 5
8	NE	LP19 trench 5
9	W	LP19 trench 6
10	NW	LP19 trench 7
11	SW	NE facing section through furrow [005] trench 7
12	SW	Detail of furrow [005]
13	W	LP19 trench 8
14	NW	E facing section through furrow [003]
15	SE	W facing section through furrow [003]
16	S	General view of [003]
17	N	LP19 trench 9
18	W	General view of [017] trench 10
19	W	S facing section of [007]
20	N	S facing section of ditch [015]
21		Registration
22	S	N facing section of [009]
23	NE	SW facing section of [017]
24	NW	SE facing section of [017]
25	N	S facing section of furrow [013]
26	E	LP19 trench 11
27	SE	LP19 trench 10
28	S	N facing section of furrow [011]
29	NW	Pre-ex shot of curvilinear ditch [017] - wide view
30	NW	Pre-ex shot of curvilinear ditch [017] - detail
31	S	Pre-ex shot of curvilinear ditch [017] - wide view
32	S	Pre-ex shot of curvilinear ditch [017] - wide view
33	SW	Pre-ex shot of curvilinear ditch [017] - wide view
34	N	Post-hole with curvilinear ditch [017]
35	W	E-facing section through S terminus of curvilinear ditch [017]
36	S	N-facing section through N terminus of curvilinear ditch [017]
37	NW	W-facing half-section of stone-hole
38	NW	Post-ex shot of curvilinear ditch [017]
39	W	Post-ex shot of curvilinear ditch [017]

Appendix 5: Sample Register

Sample No.	Context No.	Description
001	018	Fill of curvilinear feature [017]
002	018	Fill of Curvilinear feature [017]

Appendix 6: Retent sample results

Table 1: FRCE10 LP19: Retent Sample Results

Context Number	Sample Number	Sample Vol (l)	Ceramic		Industrial Waste	Burnt bone	Material available for AMS Dating	Cinders	Coal
			Pottery	CBM					
			Medi-PM	Brick	Mag res	Mammal			
18	1	20	+	+	+	+	-	+	
18	2	30					-		+

Key: + = rare, ++ = occasional, +++ = common and ++++ = abundant
NB charcoal over 1cm is suitable for identification and AMS dating

Appendix 7: Flotation sample results

Table 2: FRCE10 LP19 Flotation Sample Results

Context Number	Sample Number	Feature	Total flot Vol (ml)	Charred plant remains	Charcoal Quantity	Charcoal Max size (cm)	Material available for AMS
18	1		10	<i>Galaeopsis segetum</i> +	+	<0.5	-
18	2		20		++	0.6	-

Key: + = rare, ++ = occasional, +++ = common and ++++ = abundant
NB charcoal over 1cm is suitable for identification and AMS dating