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The Results of an Archaeological Field Evaluation by Trial Trenching at Echline Fields, South Queensferry (Land Parcel 5)

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Report Status: Approved



Executive Summary

Headland Archaeology conducted an archaeological evaluation by trial trenching at Echline, South Queensferry, NGR: NT 11135 77960 (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, 2009). The work was commissioned by Transport Scotland, managed and monitored by Jacobs Arup and undertaken in advance of the proposed commencement of construction works. .

A total of 58 trenches (5346m²) were excavated comprising a 7.5% sample across three fields. Trenches were targeted following assessment of the results of a geophysical survey undertaken between 27th 30th August and the 16th September 2010 and also included trenches sited to ensure good spatial coverage. The trial trenching revealed ditches and furrows relating to post-medieval agricultural activity on site. No other features of archaeological interest were encountered.

ARCHAEOLOGICAL EVALUATION
Forth Replacement Crossing: Land Parcel 5, Echline Fields

PROJECT SUMMARY SHEET (FRCE10)

<i>Client</i>	Transport Scotland
<i>Consultant</i>	Jacobs Arup
<i>National Grid Reference</i>	NT 11135 77960
<i>Project Manager</i>	Edward Bailey
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<i>Schedule</i>	
Fieldwork	8 th – 14 th March 2011
Report	March 2011

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1 Introduction

1.1 General

1.1.1 This draft Data Structure Report is submitted as a report on a programme of archaeological trial trenching 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) 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 on Land Parcel 5 on the southern side of the landfall for the FRC (Illus 1). The project was managed by Edward Bailey (Project Manager), the fieldwork and reporting was overseen by Kirsty Dingwall (Senior Archaeologist). Three additional staff members were involved throughout the evaluation.

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, 2009).

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 (1993) (Archaeological Assessment Stages 1-2). Further information was also gathered during an archaeological watching brief on the Ground Investigations for the proposed scheme that was carried out during 2008 and 2009 by 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).

1.3 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.

2 Site Background

2.1 *Archaeological and Historical Background*

- 2.1.1 The ES identified a total of 356 sites (within a study area ranging from 500m from the development corridor to 6km from the proposed main crossing), whilst an archaeological desk-based assessment of a wider study area undertaken at route corridor selection stage of the proposed scheme, identified a total of 1200 cultural heritage sites. The results from these studies show that the proposed development corridor and the wider study area collectively constitute 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 Land parcel 5 (Illus 1) was highlighted as a site of potential cultural heritage significance against a background of human activity dating from the Mesolithic onwards. Evidence for prehistoric activity includes two cairns which may date to the Neolithic or Bronze Age in the vicinity of Inchgarvie House to the north-east of Land Parcel 5. Trial trenching undertaken as part of the mitigation measures recommended by the ES on the adjacent LP4 and resultant excavation identified prehistoric settlement immediately to the south-west of Inchgarvie House (Humble and Bailey 2011, Humble forthcoming). Roman artefacts including several silver medals of Marcus Antoninus (138-161AD) and a sherd of Samian pottery were recovered within the vicinity of Inchgarvie House, whilst long cists which probably date to the early Medieval period were also identified during ground improvement and levelling works undertaken in the grounds of the house during the 19th century (Transport Scotland 31-32).
- 2.1.3 Further medieval activity has been recorded near the site, with the possible presence of medieval ruins suggested by the presence of a carved stone window, a square pillar and hewn stones uncovered near Inchgarvie House during the 18th century and later removed to Dunkirk (OSA: Vol 1, 238, 1791-9). The Royal Burgh of South Queensferry also has its origin in the medieval period.
- 2.1.4 Within the land parcel there was one known cultural heritage site, a linear cropmark recorded aligned north-west to south-east. This cropmark also ran through Land Parcel 4 where trial trenching revealed no evidence of the feature.
- 2.1.5 The ES identified Land Parcel 5 as having high archaeological potential and recommended that an earth resistance survey should be undertaken, the results of which would be used to inform the trial trenching phase. The resistance survey was carried out by Headland Archaeology (UK) Ltd during September 2010 and

identified a number of geophysical anomalies across land parcel 5 (Harrison & Lyons 2010). Although none of these could be identified definitively as archaeological in nature without testing, the survey facilitated target trial trenching of potential archaeological features.

2.2 *Site Topography and Land Use*

2.2.1 The site was divided into two areas (Area A in the east and Area B in the west) during the evaluation, defined by a stone wall which ran north-south across the site. At the north of Area A, a hedge ran north-west to south-east. The majority of Area A and B was under young crop at the time of evaluation, with a small area beyond the hedge in Area A comprising rough grassland traversed by paths. Currently this grassland is used as an amenity area. The site is under the ownership of S N M Bowlby.

2.3 *Site Geology*

2.3.1 The results of geotechnical investigations carried out demonstrate that the subsurface stratigraphy underlying the development corridor generally constitutes glacial till deposits of varying thickness; these are predominantly comprised of firm to very stiff boulder clay deposits with occasional granular till deposits. The trial trenching (below) has identified small patches of free-draining sands and larger bands of bedrock.

2.3.1 The solid geology of the site is typified by igneous alkali dolerite (BGS Livingstone 32W). 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**

3.1.1 The total area to be evaluated was 70,152 m² and 7.5% of this was investigated by trial trenching, the total area of which comprised 5261 m². An indicative trench plan was agreed with the consultant archaeologists, Jacobs Arup. Targeted trenches were centred on geophysical anomalies identified during the earth resistance survey, whilst random trenches were sited to test blank areas and to provide good spatial coverage of the entire site. It was ensured that no trenches were placed close to overhead power lines running along the west and north of the site. As a result of the presence of the power lines, one trench was not excavated at the north of Area A and the location of two in the north-west of Area B was altered. A number of trenches were extended to ensure the full sample area was excavated.

3.1.2 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 one 13 ton 360° tracked mechanical excavator, fitted with a 2m wide flat-bladed ditching bucket. The machine operated under continuous archaeological supervision and turf, topsoil and subsoil were removed down to the first archaeological horizon or clean geological deposits, whichever was encountered first. Turf, 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.

- 3.1.3 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). 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)

4.1 Trial Trenching

- 4.1.1 Fifty-eight trenches were excavated across Land Parcel 5 (Illus 2) with a combined total area of 5346 m². Full detailed descriptions of each trench and individual contexts can be found in Appendix 1 and Appendix 2. Results are summarised below.
- 4.1.2 The natural geology seen in the trenches was largely yellowy grey clay, although outcropping of limestone bedrock was seen across the whole site, more frequently towards the south where the ground rises up slightly. In general this was overlain by between 0.10 m and 0.20 m of subsoil or interface material – an orangey brown sandy silt. Topsoil was between 0.30 m and 0.50 m deep and contained little in the way of recent ceramic material.
- 4.1.3 Colluvial deposits were identified in four trenches (Trenches 20, 21, 25 and 31) and were up to 0.70 m in depth, comprising orangey brown clayey silt. This appeared to have filled in a slight hollow in the centre of Area A, and was removed to ensure that no possible features were masked by the material.
- 4.1.4 Archaeological features were found in seven trenches (Trench 4, 14, 18, 44, 52, 53 and 54). These were concentrated in the north of Area A and in the middle part of Area B.
- 4.1.5 Within Trench 4, two sections of ditch were identified [004 and 018] running approximately north-south and east-west. [004] was not fully exposed within the limits of the trench, but measured 1.35 m wide and was 0.25 m deep. Ditch [018] to the west was 0.70 m wide and up to 0.30 m deep. Both sections of ditch had steep sides and flat bases. They may have formed two sides of an enclosure. To the south of [018] was an oval shaped pit [002], which measured 0.55m by 0.50m and 0.09m deep and filled with charcoal rich sandy silt. This appeared to be an *in situ* burnt deposit.
- 4.1.6 Furrows [006, 010, 012, 014, 016 & 019] were identified in Trenches 14, 44, 51, 52, 53, and 54. In each case only one or two sections of furrow were visible, and did not extend across the whole area. The furrows were between 0.70 m and 1.60 m wide, and up to 0.14 m in depth. They had shallow sloping sides and were filled [007, 011, 013, 015 017 and 020] with a compact grey silty clay. The furrow visible in Trench 14

was aligned approximately north-south while those in Trenches 44, 51, 52 and 53 ran roughly east-west.

5 Conclusions

- 5.1.1 The evaluation has established that there is little evidence of settlement activity. At the very north of the land parcel, there is a small concentration of features which currently undated, but likely to be contemporary with the possible post-medieval field system recorded during excavation of Land Parcel 4 to the north-east (Humble forthcoming).
- 5.1.2 The only other features identified relate to agricultural activity in the area, with a few surviving furrows present across the site and aligned north-south or east-west. This alignment respects existing field boundaries. The limited number of furrows present may be the result of later deep plough activity; however, no specific evidence was noted to confirm this.

6 References

6.1 Bibliographic References

Harrison, S and Lyons, D 2010 *Results of an Earth Resistance Survey of Echline Fields, South Queensferry*. Unpublished client report. Headland Archaeology (UK) Ltd

Humble, J (forthcoming) *Results of an Archaeological Excavation at Echline Fields, South Queensferry*. Unpublished client report. Headland Archaeology (UK) Ltd

Humble, J and Bailey, E 2011 *Results of an Archaeological Evaluation by Trial Trenching of Echline Fields, South Queensferry*. Unpublished client report. Headland Archaeology (UK) Ltd

Jacobs Arup (2009). Forth Replacement Crossing: Environmental Statement. November 2009.

Old Statistical Account: Vol 1, 238, 1791-9

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

7 Appendices

Appendix 1: Trench Register

Trench No	Length (m)	Depth (m)	Description
1	12.2	0.64	N-S running. No features.
2	25.7	0.64	N-S running. No features.
3	20.5	0.66	SW-NE running. No features.
4	13.7	0.8	SW-NE running. Contains ditches [004] and [018] and pit [002].
5	35	0.8	NW-SE running. No features.
6	45.2	0.6	NW-SE running. No features.
7	26	0.69	E-W running. No features.
8	47.5	0.64	E-W running. No features.
9	72.5	0.52	E-W running. No features.
10	29.6	0.58	N-S running. No features.
11	45.3	0.58	NE-SW running. No features.
12	45.4	0.6	N-S running. No features.
13	74.3	0.95	E-W running. No features.
14	90.8	0.45	E-W running. Furrow [006].
15	46.2	0.6	NE-SW running. No features.
16	19	0.55	N-S running. No features.
17	46.2	0.55	NW-SE running. No features.
18	40.3	0.48	NE-SW running.
19	48.9	0.42	E-W running. No features.
20	46.4	0.6	N-S running. No features. Hillwash appears at 7 m and continues throughout trench.
21	37.7	0.75	E-W running. No features. Hillwash present.
22	26.4	0.45	E-W running. No features.
23	36.6	0.6	E-W running. No features.
24	45	0.7	NE-SW running. No features.

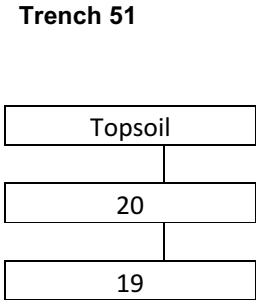
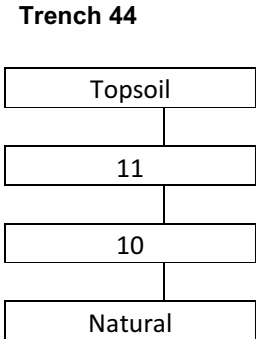
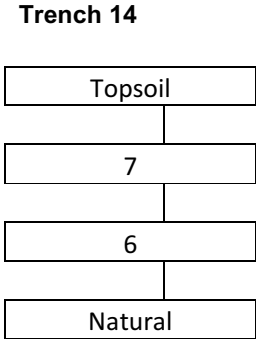
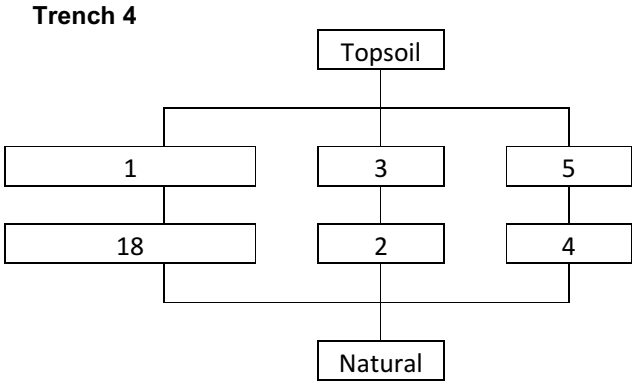
Trench No	Length (m)	Depth (m)	Description
25	38.2	0.9	N-S running. No features. Hillwash present and increases in depth at N end.
26	45.2	0.65	E-W running. No features.
27	51	0.8	SW-NE running. No features. Slight slope northwards.
28	51.2	0.55	NW-SE running. No features.
29	46.7	0.47	N-S running. No features.
30	46	0.65	NE-SW running. No features.
31	46	1.2	E-W running. No features. Hillwash present from 7m to 30m.
32	46	0.7	E-W running. No features.
33	46.4	0.7	NW-SE running. No features.
34	45.2	0.55	NW-SE running. No features.
35	22	0.7	NW-SE running. No features.
36	45.2	0.7	E-W running. No features.
37	47.4	0.7	NE-SW running. No features. Modern disturbance relates to pipe trench backfill at W end.
38	46.9	0.7	NE-SW running. No features.
39	47.2	0.65	NW-SE running. No features.
40	78.6	0.9	E-W running. No features.
41	32.3	0.55	N-S running. No features.
42	47.3	0.45	E-W running. No features.
43	43.3	0.8	E-W running. No features.
44	46.4	0.7	NE-SW running. Contains furrow [010].
45	21	0.45	E-W running. No features.
46	34.4	0.4	E-W running. No features.
47	29	0.55	N-S running. No features.
48	40.4	0.5	E-W running. No features.

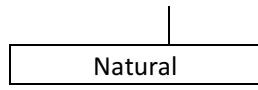
Trench No	Length (m)	Depth (m)	Description
49	24	0.5	NE-SW running. No features. Bedrock seen across most of trench.
50	33	0.6	E-W running. No features.
51	67.5	0.4	N-S running. Contains furrow [010].
52	96.6	0.75	N-S running. Contains furrow [012].
53	160	0.6	N-S running. Contains furrow [014]. Bedrock seen across most of southern half of trench.
54	89.7	0.75	N-S running. Contains furrow [016].
55	46.4	0.95	NW-SE running. No features. Bedrock seen across most of trench.
56	44	0.95	NE-SW running. No features.
57	38.7	0.45	N-S running. No features.
58	53.3	0.65	E-W running. No features.

Appendix 2: Context Register

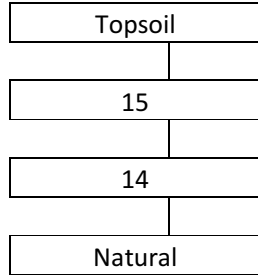
Context No.	Area	Description
001	TR 4	Fill of ditch [018]. Soft dark grey clayey silt with frequent small stones.
002	TR 4	Cut of pit. Semi-circular in plan with irregular base. Measures 0.55m by 0.50m and 0.09m deep.
003	TR 4	Fill of pit [002]. Loose dark blackish grey sandy silt with frequent charcoal and small stones
004	TR 4	Cut of ditch. North-south aligned linear with steeply sloping sides and flat base. Measures 2.2m by 1.35m and 0.25m deep.
005	TR 4	Fill of ditch [004]. Compact greyish brown clayey silt with frequent small, medium and large stones.
006	TR 14	Cut of furrow. Linear in plan, with gently sloping sides and a flat and stony base. Measures 2.5m by 1.17m and 0.07m deep.
007	TR 14	Fill of furrow [006]. Very compact brownish grey silty clay with frequent small to medium stones.
008	TR 18	Void.
009	TR 18	Void.
010	TR 44	Cut of furrow. Linear in plan with gently sloping sides, curved base and gradual break of slope. Measures 2m by 1.57m and 0.14m deep
011	TR 44	Fill of furrow [010]. Semi-compacted dark brownish grey clayey silt with occasional small stones.
012	TR 52	Cut of furrow. Linear in plan with gently sloping sides, rounded base and gentle break of slope. Measures 1.8m by 1.2m and 0.12m deep.
013	TR 52	Fill of [012]. Firm grey silty clay with very rare charcoal.
014	TR 53	Cut of furrow. Linear in plan with sloping sides, rounded base and gradual break of slope. Some animal disturbance at East end. Measures 2m by 0.90m and 0.06m deep.
015	TR 53	Fill of furrow [014]. Semi-compacted dark grey silty clay with occasional small stones.
016	TR 54	Cut of furrow. Linear in plan with gently sloping sides, rounded base and gentle break of slope. Measures 3.1m by 0.73m and 0.03m deep
017	TR 54	Fill of furrow [016]. Firm grey silty clay fill with very rare charcoal.
018	TR 4	Cut of ditch. East-west aligned linear with near vertical sides and irregular base. Runs E-W. Measures 6.00M (visible) by 0.68m and 0.30m deep
019	TR 51	Cut of furrow. Linear in plan with gently sloping sides, curved base and gradual break of slope. Measures 2m by 1.44m. Continuation of furrow [010] in trench 44. Not excavated.
020	TR 51	Fill of furrow [019]..

Appendix 3: Trench Matrices

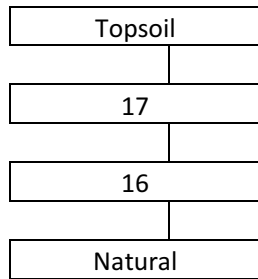




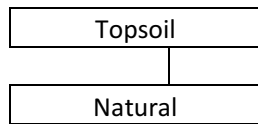
Trench 53



Trench 54



**Remaining
Trenches**



Appendix 4: Photographic Register

Photo No.	Direction	Description
01		ID shot
02	E	W-facing section through [018] and [002].
03	S	N-facing section through [004].
04	W	General shot of Trench 4
05	NE	General shot of Trench 5
06	SE	General shot of Trench 3
07	NE	General shot of Trench 1
08	NE	General shot of Trench 2
09	SW	Rubble drain in Trench 7
10	W	General shot of Trench 7
11	W	General shot of Trench 8
12	W	General shot of Trench 6
13	W	General shot of Trench 9
14	N	General shot of Trench 10
15	SW	General shot of Trench 11
16	S	General shot of Trench 12
17	E	General shot of Trench 13
18	SE	NW-facing section through [006]
19	W	General shot of Trench 14
20	S	General shot of Trench 15
21	S	General shot of Trench 16
22	W	General shot of Trench 17
23	S	General shot of Trench 18
24	S	N-facing section through possible pit [008] - now void
25	W	General shot of Trench 19
26	S	General shot of Trench 20
27	W	General shot of Trench 21
28	W	General shot of Trench 22
29	W	General shot of Trench 23
30	S	General shot of Trench 24
31	S	General shot of Trench 25
32	E	General shot of Trench 26
33	S	General shot of Trench 27
34	S	General shot of Trench 28
35	S	General shot of Trench 29
36	SW	General shot of Trench 30
37		ID Record Shot
38	W	General shot of Trench 31
39	W	General shot of Trench 32
40	E	General shot of Trench 33
41	NW	General shot of Trench 34

Photo No.	Direction	Description
42	NE	General shot of Trench 35
43	N	General shot of Trench 36
44	SW	General shot of Trench 37
45	W	General shot of Trench 38
46	W	General shot of Trench 39
47	E	General shot of Trench 40
48	S	General shot of Trench 41
49	E	General shot of Trench 42
50	E	General shot of Trench 43
51	S	General shot of Trench 44
52	SW	E-facing section through [010]
53	E	General shot of Trench 45
54	E	General shot of Trench 46
55	S	General shot of Trench 47
56	W	General shot of Trench 48
57	SW	General shot of Trench 49
58	W	General shot of Trench 50
59	S	General shot of Trench 51
60	S	General shot of Trench 52
61	SW	E-facing section through [012]
62	S	General shot of Trench 53
63	SW	E-facing section through [014]
64	NW	SE-facing section through [016]
65	S	General shot of Trench 54
66	S	General shot of Trench 55
67	S	General shot of Trench 56
68	S	General shot of Trench 57
69	E	General shot of Trench 58
70	S	General shot of Trench 29

Appendix 5: Drawing Register

Drawing No.	Plan	Section	Description
500		1:10	W-facing section through [018] and [002]

Appendix 6: Sample Register

Sample No.	Context No.	Description
001	5	Fill of ditch [004]
002	1	Fill of ditch [018]
003	3	Fill of pit [002]
004	7	Fill of furrow [006]
005	9	Fill of furrow [008]