Project code: FRCE10
Client: Transport Scotland
Date: 4th April; 2011

The Results of an Archaeological Field Evaluation by Trial Trenching at Dalmeny, South Queensferry (Land Parcel 14)

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Report Status: Approved

TRANSPORT SCOTLAND

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Executive Summary

Headland Archaeology conducted an archaeological evaluation by trial trenching on the Forth Replacement Crossing at Dalmeny, South Queensferry (Land Parcel 14), NGR: NT 13906 77155 (centred), to establish the presence/absence of archaeological remains or deposits 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.

A total of 16 trenches totalling 1506m² were excavated comprising a 5% sample across two fields. The evaluation was conducted between 31st March and 1st April 2011. Trenches were sited to ensure good spatial coverage across all of Land Parcel 14. The trial trenching revealed furrows relating to the post-medieval agricultural activity on site. No other archaeological remains or deposits were identified during the evaluation.

ARCHAEOLOGICAL EVALUATION
Forth Replacement Crossing: Dalmeny, Land Parcel 14

PROJECT SUMMARY SHEET (FRCE10)

Client	Transport Scotland
Consultant	Jacobs Arup
National Grid Reference	NT 13906 77155
Project Manager	Edward Bailey
Senior Archaeologist	Kirsty Dingwall
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Evaluation Team	Samira Ben Mohammed Jamie Humble Emma Searle
Schedule	
Fieldwork	31st March – 1st April 2011
Report	April 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 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 31st March and the 1st April 2011, Headland Archaeology (UK) Ltd. undertook a programme of archaeological evaluation by trial trenching on Land Parcel 14 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 Jamie Humble (Project Officer). Two 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, 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, and
- 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 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 A number of archaeological sites were identified by the ES in and around South Queensferry. These include prehistoric, Roman and early historic activity, with the Royal Burgh of South Queensferry originating in the medieval period.

2.1.3 The land parcel itself lies immediately to the west of the village of Dalmeny which is medieval in origin.

2.2 Site Topography and Land Use

2.2.1 Land Parcel 14 consisted of two fields, divided by an area of rough woodland orientated north-west to south-east. The northern boundary of the land parcel in the western field was a private road, formerly the Dalmeny to Newbigging road and in the eastern field the northern boundary was inside the northern edge of the field. The southern boundary of the land parcel comprised the current A90 and the eastern boundary was defined by the East Coast rail line. The eastern field of Land Parcel 14 was under young crop at the time of evaluation, while the western field comprised rough unutilised grassland. The site is under the ownership of N. A. Primrose.

2.3 Site Geology

2.3.1 The results of geotechnical investigations (Jacobs Arup 2009b) carried out demonstrate that the subsurface stratigraphy underlying the development corridor generally constitutes glacial till deposits of varying thickness; these are predominantly comprised firm to very stiff boulder clay deposits with occasional granular till deposits.

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 31,765m², of which a5% sample (1588m²) was to be investigated by trial trenching, this was reduced during the works to 1506m² due to on site factors (see 4.1.1 below) . An indicative trench plan was agreed with the consultant archaeologists, Jacobs Arup. Trenches were sited to provide good spatial coverage of the entire site.

3.2 All trenches were individually numbered and located using a pole-mounted Trimble G6 differential GPS programmed with the trench coordinates. The trenches were excavated using a 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.

4 Results of Fieldwork (Illus 2)

4.1 Trial Trenching

4.1.1 Sixteen trenches were excavated across Land Parcel 14 (Illus 2) with a combined total area of 1506m². Due to the presence of woodland and a large drain running across the western field the trenches were relocated, and in some cases shortened, from the agreed indicative trench plan. Full detailed descriptions of each trench are provided in Appendix 1 and individual contexts are presented in Appendix 2. The results of the evaluation are summarised below.

4.1.2 The natural geology [011] seen in the trenches was largely orange grey clay, although outcropping of sandstone bedrock was seen within trench six. This was overlain by

between 0.10m and 0.20m of subsoil [010] – an orangey brown silty clay. Topsoil [009] was between 0.35m and 0.40m deep and contained little in the way of recent ceramic material.

4.1.3 Archaeological features were found in three trenches (Trenches 2, 3 and 5). These were concentrated in the eastern half of the evaluation area.

4.1.4 Furrows [001, 003, 005 & 007] were identified in Trenches 2, 3 and 5. In each trench only one or two sections of furrow were seen, rather than them extending across the whole site. Aligned approximately north-south the furrows were between 1.50m and 2.20m wide, and up to 0.15m in depth. They had shallow sloping sides and were filled with compact grey silty clay [002, 004, 006 & 008].

5 Conclusions

5.1 The only archaeological remains or deposits identified during the evaluation relate to post-medieval agricultural activity in the area, with four surviving furrows running across the site on a north-south alignment. 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.

5.2 Based on the results of the fieldwork in which no environmental samples or finds were retrieved, the archaeological archive is assessed as having no potential and therefore no further works are recommended.

6 References

6.1 Bibliographic References

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*. Jacobs Arup November 2009.

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

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

6.1 Cartographic References

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

7 Appendices

Appendix 1: Trench Register

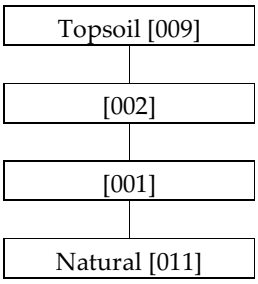
Trench No	Length (m)	Depth (m)	Description
1	50	0.5	Oriented NE-SW, no features.
2	50	0.45	Oriented NW-SE. Furrow [001] runs N-S across trench
3	50	0.45	Oriented NE-SW. Two furrows [003, 005] run N-S across trench
4	50	0.50	Oriented NW-SE, no features.
5	50	0.50	Oriented NE-SW. Furrow [007] runs N-S across trench,
6	38	0.45	Oriented NW-SE, no features.
7	50	0.50	Oriented NE-SW, no features.
8	50	0.50	Oriented NW-SE, no features.
9	50	0.45	Oriented E-W, no features.
10	50	0.50	Oriented NW-SE, no features.
11	50	0.40	Oriented E-W, no features.
12	45	0.45	Oriented NW-SE, no features.
13	50	0.50	Oriented E-W, no features.
14	50	0.45	Oriented E-W, no features.
15	50	0.40	Oriented E-W, no features.
16	20	0.80	Oriented NE-SW, no features.

Appendix 2: Context Register

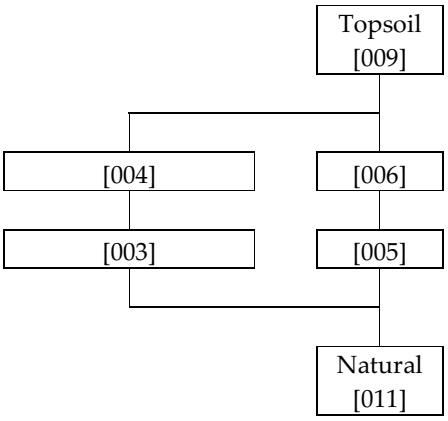
Context No.	Trench	Description
001	2	Cut of furrow, linear in plan with sloping sides, curved base and gentle break of slope. Measures 2.20m wide and 0.15m deep. Aligned north-south.
002	2	Fill of [001]. Compact grey silty clay with frequent small stones.
003	3	Cut of furrow, linear in plan with gently sloping sides, rounded base and gentle break of slope. Measures 1.50m wide by 0.12m deep. Aligned north-south.
004	3	Fill of [003]. Compact grey silty clay with frequent small stones.
005	3	Cut of furrow, linear in plan with gently sloping sides, rounded base and gentle break of slope. Measures 2.20m wide and 0.09m deep. Aligned north-south
006	3	Fill of [005]. Compact grey silty clay with frequent small stones.
007	5	Cut of furrow, linear in plan with gently sloping sides, rounded base and gentle break of slope. Measures 1.80m wide and 0.10m deep. Aligned north-south
008	5	Fill of [007]. Compact grey silty clay with frequent small stones.
009	All	Topsoil. Greyish brown silty clay loam. Depth: 0.35 – 0.40m.
010	All	Subsoil. Orange brown silty clay. Depth : 0.10 – 0.20m.
011	All	Natural. Orange grey clay.

Appendix 3: Trench Matrices

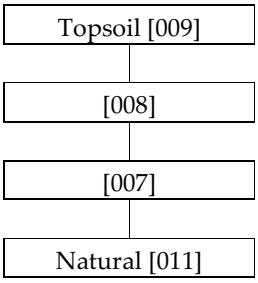
Trench 2



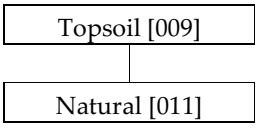
Trench 3



Trench 5



Remaining Trenches



Appendix 4: Photographic Register

Photo No.	Direction facing	Description
1	SW	LP14 trench 1
2	NW	LP14 trench 2
3	SW	LP14 trench 3
4	W	LP14 trench 4
5	SW	LP14 trench 7
6	NW	LP14 trench 8
7	W	LP14 trench 9
8	NW	LP14 trench 10
9	W	LP14 trench 11
10	W	LP14 trench 12
11	E	LP14 trench 13
12	NW	LP14 trench 14
13	W	LP14 trench 15
14	W	LP14 trench 16