

**Project code:** FRCE10  
**Client:** Transport Scotland  
**Date:** 26<sup>th</sup> April 2011

## **The Results of an Archaeological Field Evaluation by Trial Trenching at Dundas Home Farm, South Queensferry (Land Parcel 12)**

**Archaeological Consultant:** Jacobs Arup  
**Report Authors:** Jamie Humble  
**Report Status:** Approved



## **Executive Summary**

*Headland Archaeology conducted an archaeological evaluation by trial trenching at Dundas Home Farm, South Queensferry, NGR: NT 12600 77327 (centred), to assess the presence/absence of archaeological features in an area identified as having good archaeological potential and to target Newbigging Cobbled Surface (Site 150) revealed during previous works and noted 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 32 trenches totalling 3208m<sup>2</sup> were excavated comprising just under a 5% sample of Land Parcel 12. Trenches were sited to provide good spatial coverage while avoiding a BP pipeline that ran through the centre of the land parcel, and an overhead electricity cable to the north. The trenches were excavated between the 7<sup>th</sup> and 12<sup>th</sup> April 2011. The trial trenching revealed ditches and furrows relating to the post-medieval agricultural activity on site. The evaluation specifically targeted the area of Site 150, Newbigging Cobbled Surface that was identified during the archaeological evaluation works for the M9 extension & A90 upgrading. No evidence of a cobbled surface or any other features of archaeological significance were discovered during the works.*

## ARCHAEOLOGICAL EVALUATION

Forth Replacement Crossing: Land Parcel 12, Dundas Home Farm

### PROJECT SUMMARY SHEET (FRCE10)

<i>Client</i>	Transport Scotland
<i>Consultant</i>	Jacobs Arup
<i>National Grid Reference</i>	NT 12600 77327
<i>Project Manager</i>	Edward Bailey
<i>Senior Archaeologist</i>	Kirsty Dingwall
<i>Text</i>	Jamie Humble
<i>Illustrations</i>	Julia Bastek
<i>Evaluation Team</i>	Samira Ben Mohammed Kirsty Dingwall Jamie Humble Emma Searle Jurgen van Wessel Don Wilson
<i>Schedule</i>	
Fieldwork	7 <sup>th</sup> – 12 <sup>th</sup> April 2011
Report	April 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; Jacobs Arup 2009a) wherein the requirement for a programme of trial trenching was identified.

1.1.2 Between the 7<sup>th</sup> and the 12<sup>th</sup> April 2011, Headland Archaeology (UK) Ltd. undertook a programme of archaeological evaluation by trial trenching on Land Parcel 12 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). 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 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.

## **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 lies near Dundas Castle, the present keep of which dates to the 15<sup>th</sup> century, although the castle may originate as early as the 12<sup>th</sup> century (Jacobs Arup 2009a, 32). Previous evaluation works within the confines of Land Parcel 12 by CFA Archaeology Ltd in advance of the M9 extension and A90 upgrading revealed the presence of archaeological remains, most notably a possible cobbled surface bounded to the north by a ditch. A sherd of medieval pottery was recovered from the cobbled surface. Occasional areas of rig and furrow were also identified (CFA Archaeology 2003, Site 150 in EIA).

## 2.2 *Site Topography and Land Use*

- 2.2.1 Land Parcel 12 occupied the north western corner of a field under young crop at the time of the evaluation. The land parcel was divided in two by a BP pipeline orientated approximately east to west across the site, the route of the pipeline and a 15m buffer either side was marked out and this area was avoided. An overhead power line ran northwest to southeast along the northern boundary of the site from which a distance of 10 m was maintained for all trenches. The site was under the ownership of AWG Residential Ltd and Taylor Wimpy Developments Ltd.

## 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. The trial trenching identified bands of bedrock protruding through the glacial 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 66,864 m<sup>2</sup>, of which a sample, just under 5% (3208m<sup>2</sup>) 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. It was ensured that no trenches were placed within 10m of the overhead power lines running along the north of the site or within 10m of the centreline of the BP pipeline. Following on-site instructions from the BP Wayleave team the exclusion area around the gas pipeline was increased from 10 m to 15 m. This meant that the total area excavated was reduced from 3343 m<sup>2</sup> to 3208 m<sup>2</sup>. Where possible, trenches were relocated, although in some cases this was not possible.
- 3.2 All trenches were individually numbered and located using a pole-mounted Trimble G6 differential GPS programmed with the relevant 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. 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 Thirty two trenches were excavated across Land Parcel 12 (Illus 2) with a combined total area of 3208 m<sup>2</sup> comprising just under a 5% sample of the Parcel. 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 [021] seen in the trenches was largely yellowy grey clay. In areas this was overlain by up to 0.20 m of subsoil [020] – an orangey brown sandy silt. The dark brown humic sandy clay topsoil [019] was between 0.20 m and 0.40 m deep and contained frequent inclusions of modern ceramic material.

4.1.3 Archaeological features were found in five trenches (Trenches 9, 12 & 13, 23 & 25). These were found in two concentrations one at the north and one at the east of the land parcel.

4.1.4 A ditch [001/003] was identified in Trenches 9, 12 and 13 oriented approximately east to west it continued for over 70 m. In Trenches 9 & 12 sections were excavated across the feature. The ditch [001/003] measured between 0.56m and 1.89m wide and was between 0.31 m and 0.12 m in depth. Where the ditch was better preserved in Trench 12 it had steeply sloping sides, a concave base and sharp breaks of slope. The single fill [002/004] of the ditch was dark grey silty clay with frequent large water rounded stones, up to 0.15 m in diameter (Illus 3). To the south of the ditch in Trench 9 and at the northern end of Trench 10 concentrations of water rounded stones (maximum dimensions 0.3 m x 0.2 m x 0.1 m) were exposed. The concentrations of stones were however of natural origin with the stones being set in and in places overlain by the glacial till.

4.1.5 Furrows were identified in Trenches 9, 23 and 25. In Trench 9 only a single section of furrow [005] was exposed, while in Trenches 23 [007, 009, 011] and 25 [013, 015, 017] the furrows were staggered across the length of the trench. The furrows were between 0.60 m and 1.60 m wide. They had shallow sloping sides and were uniformly filled with compact brown silty clay (fills [006, 008, 010, 012, 014, 016, 018] respectively). Furrow [005] was excavated while those in trenches 23 and 25 were left unexcavated. The furrow in Trench 9 [005] ran approximately east to west while those in Trenches 23 and 25 [007, 009, 011 and 013, 015, 017 respectively] ran approximately north to south (illus 2).

## **5 Conclusions**

5.1 The evaluation has established that this area appears not have been extensively used for human settlement activity. Towards the north of the land parcel ditch [001/003] ran approximately east to west across the site. Currently undated it is likely to be contemporary with the post-medieval field system recorded during evaluation and excavation of Land Parcel 4 to the north-west. The field system recorded on Land Parcel 4 matches that shown on Gordon's 1757 estate plan. This shows a field system extending east to encompass fields that are now part of Land Parcel 12.



- 5.2 The only other features identified during the course of the works relate to post-medieval agricultural activity in the area, with a few surviving furrows running across the site on a north-south or east-west 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.
- 5.3 Newbigging Cobbled Surface (Site 150) has been re-interpreted as a result of the evaluation. Concentrations of water-rounded stones were exposed in Trenches 9 and 10 in the location of Site 150. These stones are interpreted as being of natural origin due to their being part of and overlain by the natural glacial till. This concentration of stones was bounded to the north by a field boundary ditch [001/003].
- 5.4 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

Dingwall, K 2011 *Results of an Archaeological Evaluation by Trial Trenching at Echline Fields, South Queensferry (Land Parcel 5)* Unpublished client report. Headland Archaeology (UK) Ltd.

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.

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

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.

CFA Archaeology, 2003, *M9 Extension & A90 Upgrading, Edinburgh, Archaeological Evaluation*. (Data structure report 767). Unpublished Client Report.

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.

Gordon L, 1757, *Plan of the Dundas Estate*.

## 7 Appendices

### Appendix 1: Trench Register

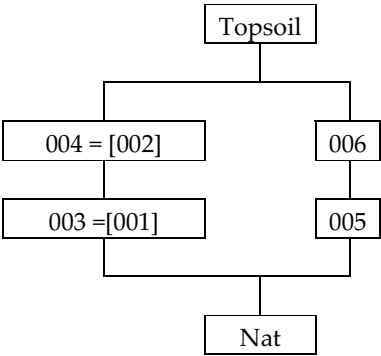
Trench No	Length (m)	Depth (m)	Description
1	50	0.3	Oriented E-W, no features.
2	50	0.4	Oriented NE-SW, no features.
3	50	0.3	Oriented NE-SW, no features.
4	45	0.5	Oriented NW-SE, no features.
5	50	0.4	Oriented NW-SE, no features.
6	50	0.4	Oriented NW-SE, no features.
7	50	0.35	Oriented E-W, no features
8	50	0.35	Oriented NE-SW, no features.
9	108	0.35	Oriented NW-SE, Furrow [005] runs E-W across trench. Ditch [003 same as 001] runs E-W across trench and continues into trenches 12 and 13.
10	31	0.4	Oriented N-S, no features.
11	50	0.4	Oriented E-W, no features.
12	50	0.4	Oriented SE-NW. Ditch [001 same as 003] runs E-W across the trench and continues in to trenches 9 and 13.
13	50	0.35	Oriented N-S. Ditch [001 same as 003] measuring 1.3m wide runs E-W across the trench and continues in trenches 9 and 12. Ditch [001 same as 003] was not excavated in trench 13.
14	50	0.4	Oriented E-W, no features.
15	50	0.5	Oriented NW-SE, no features.
16	50	0.5	Oriented E-W, no features.
17	50	0.4	Oriented NW-SE, no features.
18	50	0.4	Oriented NW-SE, no features.
19	50	0.4	Oriented N-S, no features.
20	50	0.5	Oriented NW-SE, no features.
21	50	0.7	Oriented N-S, no features.
22	50	0.5	Oriented NW-SE, no features.
23	50	0.5	Oriented NE-SW. Three furrows [007, 009 and 011] between run N-S across the trench.
24	50	0.45	Oriented E-W, no features.
25	50	0.5	Oriented NE-SW. Three furrows [013, 015 and 017] between 1.0m and 1.6m wide run N-S across the trench.
26	50	0.4	Oriented NW-SE, no features.
27	50	0.4	Oriented E-W, no features.
28	50	0.4	Oriented N-S, no features.
29	50	0.5	Oriented NE-SW, no features
30	20	0.4	Oriented E-W, no features.
31	45	0.4	Oriented NW-SE, no features.
32	55	0.5	Oriented N-S, no features.

## Appendix 2: Context Register

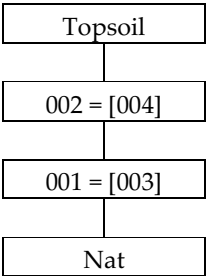
Context No.	Area	Description
001	Tr 12	Cut of linear ditch oriented E-W. Measures 9 m in length, 0.92 m wide by 0.3 m deep with steeply sloping sides, rounded base and sharp breaks of slope. This feature continues into trench 9 where it is recorded as 003 and trench 13 where it was unexcavated.
002	Tr 12	Fill of 001. Dark grey silty clay containing rare stones up to 0.15m diameter. Same as (004)
003	Tr 9	Cut of linear ditch oriented E-W. Measures 2 m in length, 0.56 m wide and 0.12 m deep with steeply sloping sides, rounded base and sharp breaks of slope. This feature continues into trench 12 where it is recorded as 001 and trench 13 where it was unexcavated.
004	Tr 9	Fill of 003. Dark grey silty clay. Same as (002)
005	Tr 9	Cut of furrow oriented E-W. Measures 2 m in length, 0.66 m wide by 0.06 m deep with gently sloping sides flat base and gentle breaks of slope.
006	Tr 9	Fill of 005. Mid brown silty clay.
007	Tr 23	Cut of Furrow oriented N-S, measures 2 m long, 1.1 m wide, unexcavated.
008	Tr 23	Fill of 007.
009	Tr 23	Cut of furrow oriented N-S, measures 2 m long, 1.0 m wide, unexcavated.
010	Tr 23	Fill of 009.
011	Tr 23	Cut of furrow oriented N-S, measures 2 m long, 1.3 m wide, unexcavated.
012	Tr 23	Fill of 011.
013	Tr 25	Cut of furrow oriented N-S, measures 2 m long, 1.1 m wide, unexcavated.
014	Tr 25	Fill of 013.
015	Tr 25	Cut of furrow oriented N-S, measures 2 m long, 1.6 m wide, unexcavated.
016	Tr 25	Fill of 015.
017	Tr 25	Cut of furrow oriented N-S, measures 2 m long, 1.0 m wide, unexcavated.
018	Tr 25	Fill of 017.
019	All	Topsoil. Greyish brown sandy silt loam. Depth: 0.20 – 0.40 m.
020	All	Subsoil. Orange brown sandy silt. Depth: 0 – 0.20 m.
021	All	Natural. Yellowish grey clay.

Appendix 3: Trench Matrices

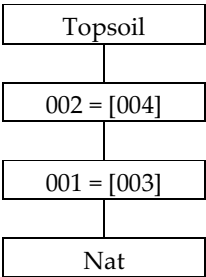
Trench 9



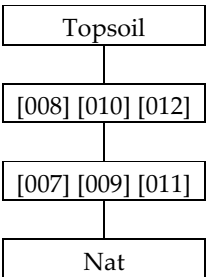
Trench 12

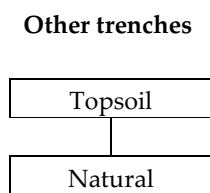
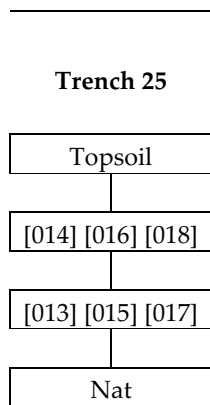


Trench 13



Trench 23





#### Appendix 4: Photographic Register

Photo No.	Direction facing	Description
001	W	Trench 1
002	NE	Trench 2
003	E	Trench 3
004	SE	Trench 4
005	E	Trench 5
006	NW	Trench 6
007	NE	Trench 7
008	SW	Trench 17
009		ID Shot
010	NE	Trench 8
011	W	Trench 9
012	S	Trench 10
013	SW	Linear feature in trench 9
014	E	Stony area in trench 9
015	W	Stony area in trench 9
016	W	Trench 11
017	NW	SE facing section of 001/002
018	NW	001/002 in trench 12
019	W	Trench 12
020	W	Trench 14
021	NNE	Trench 13
022	W	Trench 15
023	NE	Trench 16
024	NW	Trench 17
025	SE	Trench 18
026	SE	Trench 19
027	NW	Trench 20
028	N	Trench 21
029	N	Trench 22
030	E	Trench 23
031	NW	Trench 24
032	SE	Trench 25
033	NNW	Trench 26
034	NW	Trench 27
035	SW	Trench 28
036	SE	Trench 29
037	WNW	Trench 30
038	NW	Trench 31
039	NNE	Trench 32
040	S	Boundary ditch 001/002 with adjacent field drain
041	N	Boundary ditch 001/002 with adjacent field drain
042	NW	SE facing section through ditch in Trench 9
043	SE	NW facing section through ditch in Trench 9