

# GUARD ARCHAEOLOGY



## Bannockburn Visitor Centre Data Structure Report Project 3520

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## **Bannockburn Visitor Centre Data Structure Report**

**On behalf of:** The National Trust for Scotland

**NGR:** NS 7964 9057

**Project Number:** 3520

**Report by:** Iraia Arabaolaza

**Illustrations:** Fiona Jackson

**Project Manager:** John Atkinson

**Approved by:**



**Date:**

25/05/2012

*This document has been prepared in accordance  
with GUARD Archaeology Limited standard operating procedures.*

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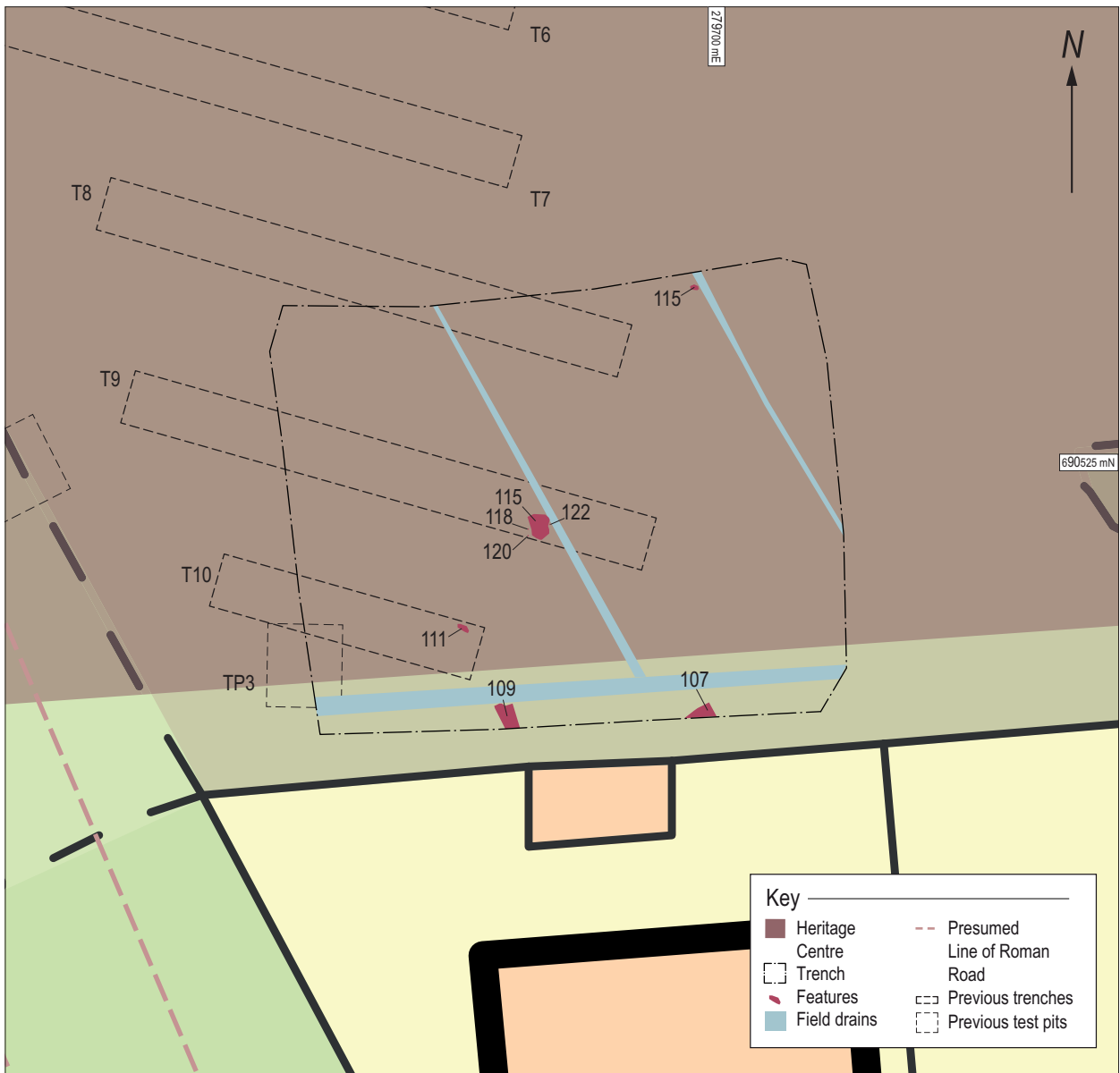
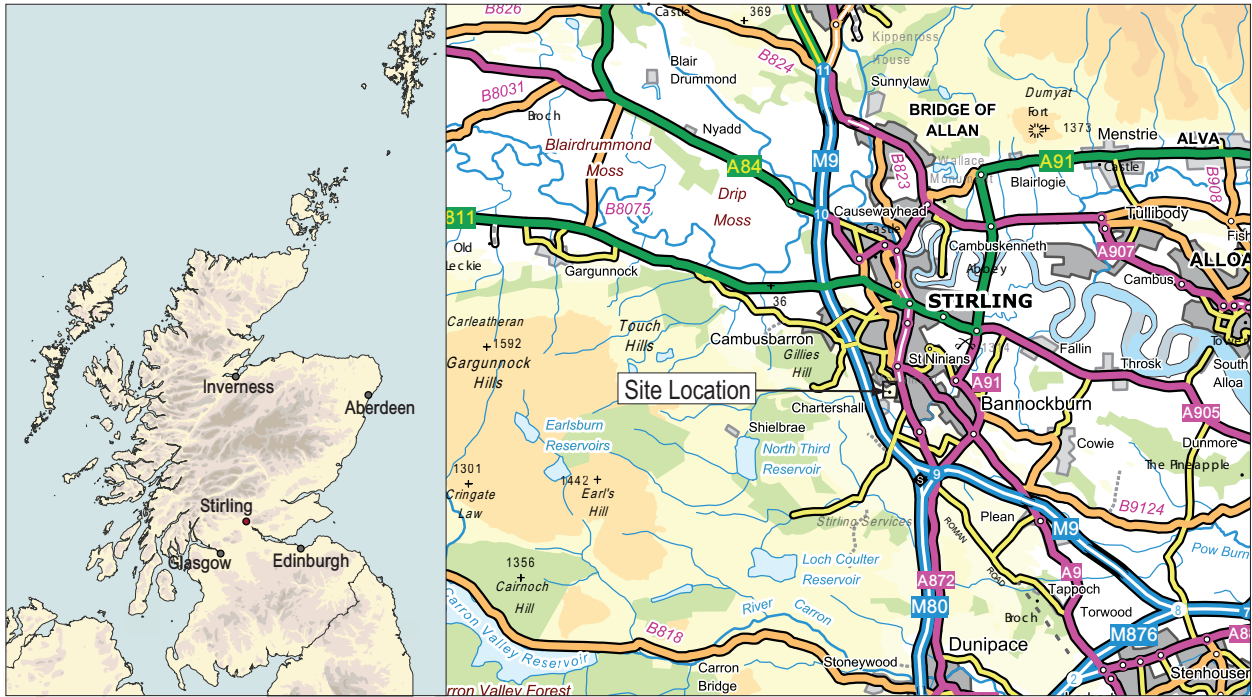


Figure 1: Site location.

## Executive Summary

- 1.1 An archaeological excavation was carried out by GUARD Archaeology Limited in collaboration with Glasgow University's Centre for Battlefield Archaeology on an area proposed for the development of a new visitor centre at Bannockburn Heritage Centre car park. The programme of work was conducted on behalf of The National Trust for Scotland. Four possible pits, three possible stake holes and a possible furrow were encountered during the excavation work conducted between 7<sup>th</sup> and 11<sup>th</sup> of May 2012.

## Introduction

- 2.1 This report sets out the results of an archaeological fieldwork undertaken by GUARD Archaeology Limited in collaboration with Glasgow University's Centre for Battlefield Archaeology on behalf of The National Trust for Scotland on a site proposed for the construction of the new Bannockburn Visitor Centre at Bannockburn, Stirling. The excavation centred on two possible pits found during a previous evaluation, one of which was dated to Late Neolithic/early Bronze Age, and covered a total area of 300 square metres (Arabaolaza, 2011). It revealed four possible pits, three stake holes and a furrow.

## Site Location, Topography and Geology

- 3.1 The site is located within the current car park of the Bannockburn Heritage Centre and to the south of the city of Stirling (NGR NS 7964 9057). It is bounded to the south by the Whins of Milton School, to the east by the Heritage Centre building and to the north and west by the Bannockburn park area. It currently consists of a relatively level tarmac surface utilised by the centre as its main car park (Figure 1).
- 3.2 The underlying drift geology consists of Devensian Blairdaff Moraine Formation, while the solid geology consists of Aberdeen formation unknown bedrock (Geology Digimap <http://digimap.edina.ac.uk/>).

## Archaeological Background

- 4.1 Between 23-24 June 1314 the Battle of Bannockburn, between the armies of Robert the Bruce and Edward II was fought at this battlefield site (SMR:1183.03). The victory of Robert the Bruce signified one of the most important events in the Scottish Wars of Independence. Associated with this Battle a Category A listed monument (HB number 49860; NMRS NS79SE.15.2) including a rotunda, memorial cairn, flagpole and statue of King Robert I (NMRS NS79SE15.02) are situated west of the development area. To the east of the development area Bannockburn Heritage Centre (NMRS: NS79SE.15) is found.
- 4.2 A Bore stone (SMR:783; NMRS NS79SE 15.01) situated at the top of Brock's Brae, north west of the development area, is described in 1859 as having been nearly circular, 3' in diameter and 2' thick, with a 3" wide hole in the centre. Little is known about the origin of the stone or the purpose of the hole, but the tradition that Bruce's standard was set in it at the Battle of Bannockburn does not appear in written accounts before 1723. A small trial trench was excavated in 2001 (SMR No 783.01) over the site of the original bore stone to determine if anything survived *in situ*. Excavation revealed the remains of a concrete foundation that appears to have been for a low wall which surrounded the stone and is shown on photographs of the site. Nothing was found of the bore stone itself, supporting the report that it had been removed in the 1960s and its pieces incorporated into the nearby cairn.
- 4.3 A possible iron arrowhead (NMRS: NS79SE 879; SMR: 5394) with a pinched-in waist was found in topsoil during evaluation trenching work just down slope and to the south of the bore stone; 35 mm in length and weighing 4 g. Interpreted as the head of an iron arrowhead, which is missing its socketed end which may have broken off. It is thought to be a bodkin arrowhead,

which had no barbs and was used for penetrating armour. This type of arrowhead was current at the time of the Battle of Bannockburn (Alexander, 2004). A single pit was also found during this archaeological field evaluation (SMR: 5718.02) conducted during the filming of the “Two Men in a trench” archaeology programme about the site, which also included a geophysical survey of the area (SMR: 5718.02). Another implement of unknown period was found at Halbert’s Bog (SMR: 2131) to the west of the current development site.

- 4.4 A metal detector survey (SMR: 5711) was also carried out at Bannockburn, to the south of the development area during an archaeological field evaluation on an area known as New Line Road (SMR: 5710). It revealed 18<sup>th</sup> century buttons, coins and musket balls possibly related to Jacobite activity (NMRS NS79SE.884) (Sneddon, 2007).
- 4.5 Finally, on the First Ordnance Survey map of 1865 a possible Roman Road is depicted east of the development site (Figure 2). None of the previous maps, including Roy’s Military Survey map of Scotland 1752-1755 depicts this road. Two Men in a trench archaeological TV programme surveyed the area of the Roman road to assess its course opening a trench further south, at Plean, confirming its line (SMR: 5718.02; Pollard & Oliver 2002). Stirling Field and Archaeological Society also conducted investigations further to the north in the early 1970s, which revealed the presence of the Roman Road under the entrance to the King’s Park in Stirling (Milne 1974, 65-6; Cachart 2010, 2).

## Aims and Objectives

- 5.1 The aims and objectives of the archaeological work were to:
  - establish the presence or absence of archaeological resources within the area of development under targeted archaeological conditions
  - determine the character, extent and significance of any archaeological deposits encountered;
  - excavate and record any significant archaeological remains should they be encountered;
  - undertake funded post-excavation analysis and publication of the results on the archaeological works should they be warranted.

## Methodology

- 6.1 An archaeological excavation was conducted between 7 and 11 May 2012. The trench measuring 15 m by 20 m was centred on two possible pits discovered during a previous evaluation work and extended to 300 m<sup>2</sup> (Figure 1). The tarmac was planed off the trench and overburden was removed in spits to the surface of the subsoil or the first archaeological horizon.
- 6.2 All features were then cleaned and photograph and a pre-ex plan was drawn at a scale of 1:20. Half section drawings at a scale of 1:10 were also drawn before full excavation. All on-site recording, written, drawn and photographic, was to the standards normally pertaining in archaeological fieldwork. The trench and features were surveyed and located within the National Grid using a sub – centimetre DGPS. Weather conditions for the programme of work were mostly dry with occasional rain.

## Results

- 7.1 The trench was laid out centred on two features encountered in a previous evaluation (Arabaolaza, 2011). The sequence of layers began with a variety of subsoils: light grey sandy silt or/and orange yellow clayish silt with occasional cobbles (105), which was sealed by a made ground deposit. The made ground was a 0.25 m thick and consisted of mixed grey brown silty clay (104). Overlaying this layer another band of made ground, consisting of dark grey/blue silty

clay (103) with occasional cobbles and modern finds 150 mm thick was encountered, which in turn was covered by 80 mm thick layer of mixed red blaze and broken debris (102) made ground. Large angular cobble-rich (101) made ground 0.2 m thick was overlaying this deposit. All these layers were overlain by a 60 mm thick tarmac cap (100). A full description of fills and layers is provided in Appendix A of this report.

- 7.2 During the course of the excavation eight possible feature of archaeological significance were encountered. Two of the features were previously found during the evaluation: an oval shaped possible shallow pit (111) filled by mid grey silt and a sub-oval shaped pit (113) filled by mid reddish brown silt from which a sample of oak charcoal was radiocarbon dated to late Neolithic/ Early Bronze Age. Around this pit three stake holes were discovered; two at its west side (118 & 120) and one (122) at its east. They measured approximately 50 mm in diameter and in depth (Plate 2) and they were filled with grey brown/dark brown silt (119, 121 & 123). Another two features were situated on the southern edge of the trench. One of them (109) a linear shallow feature filled by mid brown clayish silt was interpreted as a possible furrow. The other features (107) full extent and shaped were unknown as only one edge was exposed in the edge of the baulk, however it had a wide 'U' shape in section (Plate 1). It was filled by a re-deposited light grey silt with patches of charcoal smear and it measured 0.9 m east/west by 0.18 m north/south and 0.18 m deep. The last feature (115) was found at the north eastern corner of the trench, close to a field drain. It measured 0.3 m north-east/south-west by 0.24 m and 0.13 m deep and it was filled by brown grey silt with inclusions of some small charcoal flecks and pebbles.
- 7.3 During the excavation a background scatter of artefacts was recorded from made ground deposits across the area, including modern ceramic and glass. However, no finds were present in any of the archaeological features although traces of charcoal were noted in some fills.



Plate 1: North facing section showing feature 107.



Plate 2: Pre-ex of possible stakes and post-ex of pit 113.

## Discussion

- 8.1 Apart from pit (113) found during the evaluation and dated to late Neolithic/Early Bronze Age none of the features found in the excavation could be dated to any period. However the close proximity to the pit 113 of the three stake holes would suggest an association between them (Plate 2). Three further features were interpreted as pits: 107, 111 and 115, with feature 107 being the closest in appearance to feature 113, which may imply a possible prehistoric origin.
- 8.2 A possible shallow furrow was also recorded on the south side of the trench; similar features were encountered during an earlier phase of evaluation conducted elsewhere at Bannockburn (Banks et al., 2011) and dated to post-medieval times. Nevertheless the lack of any other furrows close to it suggests that it could also be prehistoric in origin and may be an elongated pit.

## Recommendations

- 9.1 The excavation work has proved that some significant archaeologically sensitive deposits or features exist within the excavated trench. The presence of several pits, stake holes and furrows

imply that further features could be present outside the area of trenching. This being so, it would seem sensible that any further ground-breaking works within the general vicinity should be monitored to avoid any loss of significant information. This is particularly important in relation the area to the south and east of the excavation trench where no prior evaluation has occurred.

- 9.2 Given the likely prehistoric nature of the features encountered here it is also recommended that the samples are processed for further ecofacts and any artefacts and ultimately form part of a post-excavation project associated with the Visitor Centre Project.

## Acknowledgements

- 10.1 GUARD would like to thank Derek Alexander of The National Trust of Scotland and the staff of the Bannockburn Heritage Centre for their assistance. Plant and drivers were supplied by Brown Plant Hire. Technical support was from Aileen Maule and John Kiely. A survey of the trench location and its features was conducted by Fiona Jackson. The report was desk top published by Gillian McSwan. The project was managed for GUARD by John Atkinson.



**Bannockburn Visitor Centre  
Data Structure Report**

**Section 2: Appendices**



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## Appendices

### Appendix A: Bibliography

Alexander, D 2004 'Bannockburn (St Ninians parish), medieval arrowhead', *Discovery Excav Scot*, 129.

Arabaolaza, I 2011 '*Bannockburn Visitor Centre*', Guard Archaeology report 3357, Glasgow.

Banks, I, Ferguson, N and Arabaolaza, I 2011 '*Bannockburn Tree Planting Evaluation*' DRAFT report by the Centre for Battlefield Archaeology for the National Trust for Scotland.

Milne, D 1974 'Roman Road', *Discovery Excav Scot*, 65-6.

Ovenden, S 2011 '*Bannockburn Ground Penetrating Radar Survey preliminary report*', Rose Geophysical Consultants.

Pollard, T and Oliver, N 2002 *Two Men in a Trench: Battlefield Archaeology – The Key to Unlocking the Past*, Michael Joseph.

Pollard, T and Oliver, N 2003 '*Two Men in a Trench II: Uncovering the Secrets of British Battlefields*'. Michael Joseph.

Sneddon, D 2007 *Bannockburn Cemeteries metal detector survey and archaeological evaluation*, GUARD report 2417, Glasgow.

### Appendix B: List of Contexts

Context No.	Area	Description	Interpretation
100	-	Tarmac	Top surface
101	-	Angular cobbles	Made up ground
102	-	Mixed red blaze and broken debris	Made up ground
103	-	Dark grey/blue silty clay	Made up ground
104	-	Grey brown silty clay	Made up ground
105	-	Light yellow sandy silt or orange yellow clayish silt or light grey sandy silt	Subsoil
106	-	Light grey silt	Fill of feature
107	-	U' shaped cut of feature filled by (106)	Cut of feature
108	-	Mid brown clayish silt	Fill of possible furrow
109	-	Shallow linear cut filled by (108)	Cut of possible furrow
110	-	Mid grey silt	Fill of possible pit
111	-	Oval shaped cut filled by (110)	Cut of possible pit
112	-	Mid reddish brown silt	Fill of pit
113	-	Sub-oval shaped cut filled by (112)	Cut of pit
114	-	Brown grey silt	Fill of possible pit?
115	-	Sub-oval shaped cut filled by (114)	Cut of possible pit?
116	-	Mixed coarse silt with sub-angular stones	Non-archaeological
117	-	Void	Non-archaeological
118	-	Oval shaped cut filled by (119)	Cut of possible stakehole
119	-	Dark brown silt	Fill of possible stakehole
120	-	Oval shaped cut filled by (121)	Cut of possible stakehole
121	-	Grey brown silt	Fill of possible stakehole
122	-	Oval shaped cut filled by (123)	Cut of possible stakehole
123	-	Grey brown silt	Fill of possible stakehole

### Appendix C: List of Finds

Find No.	Area	Context No.	No. of Pieces	Material	Description
9	6.3	050	1	Ceramic	Late medieval reduced green glaze fragment

## Appendix D: List of Samples

Sample No.	Area	Context No.	Size	Reason for Sampling				Application/Comments
				Pot	Bone	Lithics	Botanics	
1	car park	108	M				x	-
2	car park	114	M				x	-
3	car park	106	M				x	-
4	car park	110	M				x	-
5	car park	119	S				x	-
6	car park	121	S				x	-
7	car park	123	S				x	-

## Appendix E: List of Drawings

Drawing No.	Area	Sheet No.	Subject	Scale
1	Car park	1	Pre-ex plan of features	1:20
2	Car park	2	SE facing section of [115]	1:10
3	Car park	2	Post-ex of [115]	1:20
4	Car park	2	N facing section of [109]	1:10
5	Car park	2	N facing section of [107]	1:10
6	Car park	2	Post-ex of [113]	1:20
7	Car park	2	S facing section of [111]	1:10
8	Car park	2	Post-ex of [111]	1:20
9	Car park	2	Post-ex of [107]	1:20

## Appendix F: List of Photographs

### Digital

Frame	Area	Context No.	Subject	Taken from
1	-	-	ID shot	-
2	-	-	Pre-ex of trench area	E
3	-	-	Pre-ex of trench area	E
4	-	-	Working shot	W
5	-	-	N facing section of trench	N
6	-	-	N facing section of trench	N
7	-	106/107	N facing section of feature	N
8	-	106/107	Pre-ex of feature	E
9	-	108/109	Pre-ex of feature	N
10	-	108/109	Pre-ex of feature	W
11	-	110/111	Pre-ex of feature	SW
12	-	112/113	Pre-ex of feature	SW
13	-	112/113	Pre-ex of feature	W
14	-	114/115	Pre-ex of feature	S
15	-	116/117	Pre-ex of feature	S
16	-	114/115	Post-ex (half section)	E
17	-	115	Post-ex	NE
18	-	109	Post-ex	N
19	-	116	Post-ex /non-archaeological	SSW
20	-	107	N facing section	W
21	-	109	N facing section	N
22	-	113	Post-ex of feature	SE
23	-	113	Post-ex of feature	NE
24	-	110/111	S facing section	S
25	-	111	Post-ex of feature	S
26	-	111	Post-ex of feature	E
27	-	113/118/120/122	Pit with possible stakeholes pre-ex	NE

Frame	Area	Context No.	Subject	Taken from
28	-	113/118/120/122	Pit with possible stakeholes pre-ex	N
29	-	113/118/120/122	Pit with possible stakeholes post-ex	N
30	-	113/118/120/122	Pit with possible stakeholes post-ex	W

### Black and White

Frame	Area	Context No.	Subject	Taken from
1	-	-	ID shot	-
2	-	106/107	N facing section of feature	N
3	-	106/107	Pre-ex of feature	E
4	-	108/109	Pre-ex of feature	N
5	-	108/109	Pre-ex of feature	W
6	-	110/111	Pre-ex of feature	SW
7	-	112/113	Pre-ex of feature	SW
8	-	112/113	Pre-ex of feature	W
9	-	114/115	Pre-ex of feature	S
10	-	114/115	Pre-ex of feature	E
11	-	116/117	Pre-ex of feature	S
12	-	115	Post-ex (half section)	E
13	-	115	Post-ex	NE
14	-	109	Post-ex	N
15	-	116	Post-ex /non-archaeological	SSW
16	-	107	N facing section	W
17	-	109	N facing section	N
18	-	113	Post-ex of feature	SE
19	-	113	Post-ex of feature	NE
20	-	110/111	S facing section	S
21	-	111	Post-ex of feature	S
22	-	111	Post-ex of feature	E
23	-	113/118/120/122	Pit with possible stakeholes pre-ex	NE
24	-	113/118/120/122	Pit with possible stakeholes pre-ex	N
25	-	113/118/120/122	Pit with possible stakeholes post-ex	N
26	-	113/118/120/122	Pit with possible stakeholes post-ex	W

**Appendix G: Discovery And Excavation Scotland Entry**

LOCAL AUTHORITY:	Stirling
PROJECT TITLE/SITE NAME:	Bannockburn Visitor Centre
PROJECT CODE:	3520
PARISH:	St Ninians
NAME OF CONTRIBUTOR(S):	Iraia Arabaolaza
NAME OF ORGANISATION:	Guard Archaeology Ltd
TYPE(S) OF PROJECT:	Excavation
NMRS NO(S):	
SITE/MONUMENT TYPE(S):	
SIGNIFICANT FINDS:	
NGR (2 letters, 6 figures)	NS 7964 9057
START DATE (this season)	7/05/12
END DATE (this season)	11/05/12
PREVIOUS WORK (incl. DES ref.)	Evaluation (2011)
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	An archaeological excavation was carried out by GUARD Archaeology Ltd, on behalf of The Centre of Battlefield Archaeology acting for National Trust for Scotland, on an area proposed for development at Bannockburn Heritage Centre car park. The trench covered 300m <sup>2</sup> of the south area of the car park. Eight significant archaeological features were encountered during the excavation work: four possible prehistoric pits, three stake holes and a post-medieval furrow . The work was undertaken between 7th and 11th of May 2012.
PROPOSED FUTURE WORK:	
SPONSOR OR FUNDING BODY:	National Trust for Scotland
CAPTION(S) FOR ILLUSTRS:	
ADDRESS OF MAIN CONTRIBUTOR:	52 Elderpark Workspace, 100 Elderpark Street, Glasgow, G51 3TR
EMAIL ADDRESS:	Iraia.arabaolaza@guard-archaeology.co.uk
ARCHIVE LOCATION (intended/deposited)	Archive to be deposited in NMRS

## Appendix H: Excavation Method Statement

### GUARD 3520: Bannockburn Visitor Centre Excavation Method Statement

#### 1.0 Introduction

This document sets out GUARD Archaeology's excavation methodology and is provided as a written scheme for the investigation of the area around two pits of possible prehistoric date within the car-park to the west of the existing Visitor Centre at Bannockburn, Stirling. Material from one of the pits dated to the late Neolithic / early Bronze Age period (Appendix A) warranting further investigation ahead of the ensuing construction works for the new Visitor Centre. The methods employed here may be varied dependant upon knowledge and understanding of the site and the needs and requirements of the National Trust for Scotland during the project. The strategy will include the monitoring of the machine excavation of a 15m by 20m area around the two previously discovered pits (Figure 1). The area will be inspected by an archaeologist for the presence of any archaeological deposits and in particular for features that may relate to the previously discovered prehistoric pits (Arabaolaza 2012).

On completion of all excavation works a report to data structures level and an accompanying post-excavation research design (PERD) and costing will be submitted for agreement with the National Trust for Scotland. The PERD will also outline arrangements for final publication of the site.

#### 2.0 Aims and Objectives

The aims and objectives of archaeological trenching are as follows:

- establish the presence or absence of any archaeological remains, and their character, date and extent if surviving.
- determine the character, extent and significance of any archaeological deposits encountered at the site.
- excavate and record any significant features and recover any significant artefacts and ecofacts for subsequent analysis.

#### 3.0 Methodology

The strategy to be employed during the excavation will consist of the following:

- An area measuring 15m (N-S) by 20m (E-W) will be stripped of overburden to investigate the area around the two previously found pits (Figure 1).
- The excavation area is placed to investigate and characterise the nature of both locations and reveal any significant archaeological remains relating to the pits and its use through time.
- The excavation location will be based approximately on the locations as shown in Figure 1, but may be modified to avoid services or obstructions.
- Excavation will be by machine and undertaken by professional archaeologists at all times.
- The excavation area will be demarcated by heras fencing and signage to restrict public access and reduce the likelihood of accidents and covered by gazebo if weather permits.
- After initial tarmac removal; the overburden will be removed in spits to the first archaeological horizon or, where none is found, to the natural subsoil. Any archaeological features encountered will be cleaned by hand to determine the date of the deposits, their character and extent. Such features will be recorded by written description on *pro forma* recording sheets, by photograph and by measured drawing.
- All spoil will be stored separately by material near the excavation area, so that reinstatement can be achieved adequately at the end of the project.
- All archaeological features encountered will be dealt with by the on-site archaeologists. Should negative-cut features be encountered they will be 50% sample excavated in order to determine their significance, date and function. In the event that they are deemed to be important discoveries, they will be fully excavated. Recording will include *pro forma* sheets, drawings and photographs.
- All archaeological finds will be dealt with by the on-site archaeological team. The general practice will be to bulk recover all artefacts by context which date from the later phases of activity (e.g. modern waste materials). Should finds be encountered from the earlier occupation phases of the site they will be three-dimensionally recorded prior to up-lifting.

- All excavated feature fills and horizons may be sampled for palaeo-environmental evidence. This will also include micromorphological sampling in order to address key issues on soil development at the site.
- The trench locations will be surveyed using a sub-centimetre or sub-metre GPS or total station EDM. This information will inform any further work that may be required.
- The excavation area will be backfilled on completion of recording and no trench will be left open unless this is instructed by the client. If a trench is left open it will be demarcated with hazard tape to restrict access.

On completion of the excavation phase of work, a report suitable for submission to the Planning Authority and the National Monuments Record for Scotland (NMRS) will be produced. This report will be accompanied by the post-excavation research design and costing in order to bring the results forward for analysis and publication should this be required.

#### 4.0 **Products**

The products of a programme of work will be:

- a preliminary data structure report, after completion of all fieldwork suitable for submission to the Planning Authority, the NMRS and the local Sites and Monuments Record;
- a brief summary of results of the fieldwork will be submitted to *Discovery and Excavation in Scotland* and included within the OASIS online database;
- Post-excavation research design;
- Preparation and disposal of the site archive and finds.

#### 5.0 **Copyright**

Copyrights of the reports and all other information, including electronic information will rest on the client but the consultant will have the right to use the report and the survey results free of charge in relation to non-commercial activities or to promote its work.

#### 6.0 **Archive Arrangements**

Once all fieldwork is completed, all materials from the programme of work will be prepared to the appropriate archive standard. GUARD Archaeology will undertake to deposit the resultant archive to the National Monuments Record for Scotland (NMRS) on completion of the report for publication.

All finds will be reported to the Treasure Trove Advisory Panel, and GUARD Archaeology will undertake to ensure their safe deposition within the designated museum at the appropriate time.

#### 7.0 **Timetable**

Works will commence on site on Monday 7 May 2012 and be completed by Friday 11 May 2012. A draft data structures report will be submitted for comment by 31 May 2012.

#### 8.0 **Staffing**

The excavation will be led by Iraia Arabaolaza, one of GUARD Archaeology's experienced project staff with support from Maureen Kilpatrick. Full CVs for Iraia and Maureen can be made available on request.

#### 9.0 **Health and Safety and Insurance**

##### 9.1

All archaeological working practices will be subject to a risk assessment prior to commencement of the work where likely health and safety issues associated with the site will be highlighted.

##### 9.2

GUARD Archaeology adheres to all standard Health and Safety regulations governing fieldwork projects. We also possess appropriate insurance cover, proof of which may be supplied upon request.

#### 10 **References**

Arabaolaza, I. 2011 *Bannockburn Visitor Centre Data Structure Report*, GUARD Archaeology Ltd Project Code: 3457, Glasgow



Figure 1: 3357 trench evaluation, showing area of investigation around pits in Trenches 9 & 10.



Appendix A: Radiocarbon Dating Certificate



**Scottish Universities Environmental Research Centre**

Director: Professor A B MacKenzie Director of Research: Professor R M Ellam  
Rankine Avenue, Scottish Enterprise Technology Park,  
East Kilbride, Glasgow G75 0QF, Scotland, UK  
Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc

**RADIOCARBON DATING CERTIFICATE**

19 April 2012

<b>Laboratory Code</b>	SUERC-39335 (GU26715)
<b>Submitter</b>	John Atkinson GUARD Archaeology Limited 52 Elderpark Workspace 100 Elderpark Street Glasgow G51 3TR
<b>Site Reference</b>	Bannockburn Visitor Centre
<b>Context Reference</b>	012
<b>Sample Reference</b>	001
<b>Material</b>	Charcoal : corylus
<b><math>\delta^{13}\text{C}</math> relative to VPDB</b>	-24.8 ‰
<b>Radiocarbon Age BP</b>	4185 ± 35

**N.B.** The above  $^{14}\text{C}$  age is quoted in conventional years BP (before 1950 AD). The error, which is expressed at the one sigma level of confidence, includes components from the counting statistics on the sample, modern reference standards, background standards and the random machine error.

The calibrated age ranges are determined using the University of Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.1 (Bronk Ramsey 2009). Terrestrial samples are calibrated using the IntCal09 curve while marine samples are calibrated using the Marine09 curve.

Samples with a SUERC coding are measured at the Scottish Universities Environmental Research Centre AMS Facility and should be quoted as such in any reports within the scientific literature. Any questions directed to the Radiocarbon Laboratory should also quote the GU coding given in parentheses after the SUERC code. The contact details for the laboratory are email [g.cook@suerc.gla.ac.uk](mailto:g.cook@suerc.gla.ac.uk) or Telephone 01355 270136 direct line.

Conventional age and calibration age ranges calculated by :-

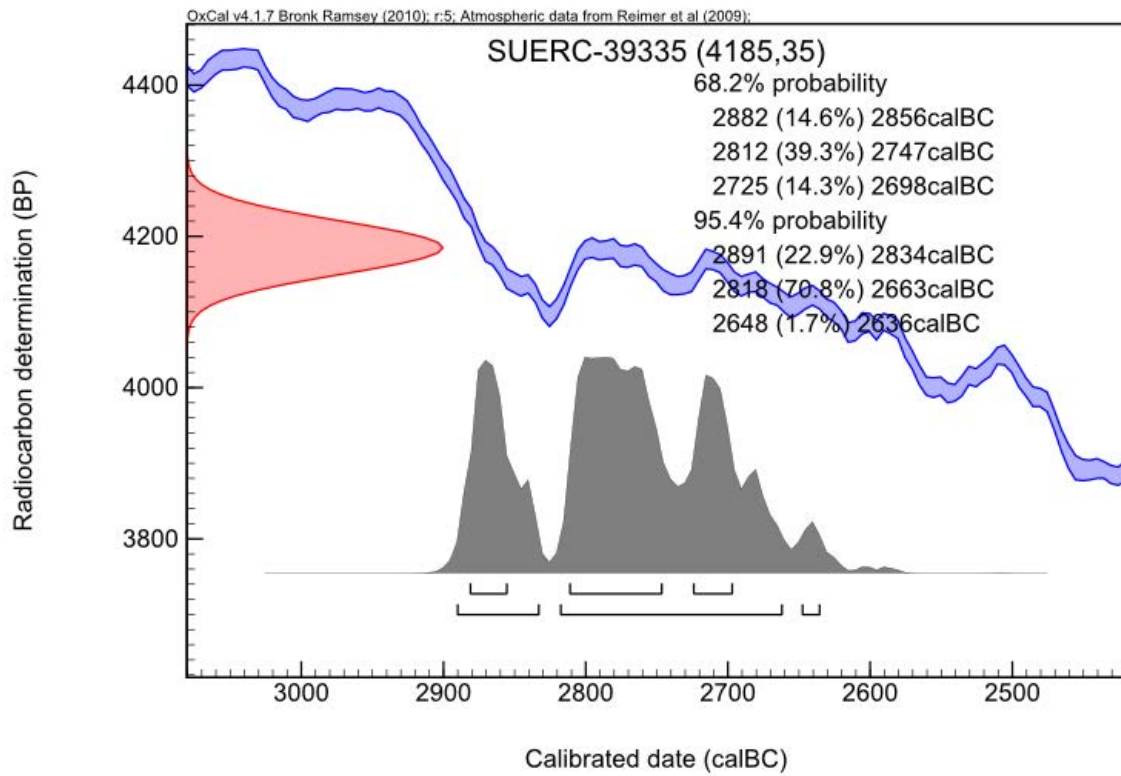
Date :-

Checked and signed off by :-

Date :-



Calibration Plot



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