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Geophysical Survey

A91/B9124 Greenyards Roundabout, Bannockburn, Stirlingshire, Archaeological Excavation

Report No. 1752

🕐 0131 273 4380 🌈 0131 273 4381 🥑 info@cfa-archaeology.co.uk 🙌 www.cfa-archaeology.co.uk

CFA ARCHAEOLOGY LTD

The Old Engine House Eskmills Business Park Musselburgh East Lothian EH21 7PQ

Tel: 0131 273 4380 Fax: 0131 273 4381 email: info@cfa-archaeology.co.uk web: www.cfa-archaeology.co.uk

Author	Stuart Mitchell MA AIfA
Illustrator	Graeme Carruthers MA MAAI&S
Editor	Bruce Glendinning BSc PgDip MIfA
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A91/B9124 Greenyards Roundabout, Bannockburn, Stirlingshire, Archaeological Excavation

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1. INTRODUCTION

1.1 General

- 1.1.1 This report presents the results of an archaeological excavation undertaken by CFA Archaeology Ltd (CFA) in February 2010 within the area of a proposed roundabout and associated slip roads at the junction of the A91 and the B9124 at Bannockburn, Stirlingshire (centred on NGR: NS 8175 9018) (Fig. 1). The work was commissioned by Stirling Council: Roads, Transport & Open Space.
- 1.1.2 The excavation resulted from an evaluation carried out by CFA (Suddaby 2009) during November 2009. The evaluation identified a number of shallow negative features, including a concentration of postholes set in a curvilinear alignment. Prior to the evaluation, no previous invasive archaeological fieldwork is known to have taken place within the proposed development area. This report should be read in conjunction with the evaluation report.
- 1.1.3 Prior to the excavation an addendum to the Written Scheme of Investigation (WSI) was produced by CFA, refining the scope of works presented in the WSI. The addendum was approved in advance by the Archaeology Officer for Stirling Council.

1.2 Objectives

- 1.2.1 The aims of the excavation were:
 - to excavate an area measuring approximately 20m by 20m, which was identified in the 2009 evaluation report as containing a concentration of archaeological features;
 - to characterise the features in this area;
 - identify if they form part of a post-built structure; and
 - if appropriate, recover suitable samples for dating and/or environmental analysis.

2. WORKING METHODS

2.1 General

2.1.1 Work was conducted with regard to the relevant Institute for Archaeologists' (IfA) guidance.

2.2 Excavation Strategy

- 2.2.1 Topsoil was stripped from the excavation area under archaeological supervision by an earth-moving machine equipped with a smooth-bladed ditching bucket.
- 2.2.2 The stripped area was cleaned by hand down to the natural subsoil surface. The features were cleaned by hand and all further excavation required to fulfil the aims of the excavation were be carried out by hand. All features of archaeological interest revealed within the stripped area were to be recorded, fully excavated and all artefacts recovered. The contents of all potentially significant archaeological features were sampled with a view to recovering material suitable for dating and/or environmental analysis.
- 2.2.3 All excavation and on-site recording was carried out according to standard CFA procedures, principally by drawing of plans and sections, by photography and by completing standard CFA record forms.
- 2.2.4 The location and extents of the features were recorded using industry standard electronic surveying equipment.
- 2.2.5 The trench will be backfilled upon completion.

3. ARCHAEOLOGICAL RESULTS

3.1 General

- 3.1.1 The trench was located on a small plateau which had been heavily overgrown and was surrounded by waist high surface vegetation consisting of thistles, foxgloves and small trees. In general, the soil profile within the site consisted of around 0.3m topsoil (001) which overlay an orange-brown homogeneous silty sand subsoil (002) which reached depths of up to 0.3m. Natural subsoil (000) was coarse reddish sandy gravel.
- 3.1.2 The excavation revealed the remains of a single post-built roundhouse (Structure 1) with the remains of a possible porch, part of a possible second roundhouse (Structure 2) and several isolated pits. The horizons of the cuts were clear and the features were uniformly filled with firm dark grey soil.
- 3.1.3 No artefacts were recovered during the excavation or from the sieving of the soil samples. An assessment of the palaeoenvironmental remains recovered from the soil samples has been carried out and the results are presented in section 4 below.
- 3.1.4 Numbers in bold and parentheses refer to contexts, a full list of which is contained in Appendix 1.

3.2 Structure 1

- 3.2.1 Structure 1 comprised a circular post-built roundhouse, the post-ring measuring c. 5.75m in diameter. It featured a double-ring of posts on its western half, and had an entrance oriented to the south-east with the possible remains of a porch (032, 034). The outer ring consisted of eight postholes (013, 029, 040, 042, 044, 064, 065, 070) ranging in diameter from 0.25m to 0.3m and in depth from 0.1m to 0.23m. The partial inner ring consisted of six postholes (015, 018, 035, 061, 066, 068) varying in diameter from 0.25m to 0.35m and depth from 0.1m to 0.2m. These postholes, outer and inner, are interpreted as the foundations for load bearing posts that would have supported a ring beam onto which a pitched roof would have been fastened.
- 3.2.2 Two shallow pits (032, 034) were situated c. 1.5m to the south-east of the postulated entrance to Structure 1. Both comprised a truncated shallow pit measuring c.1m by 0.5m and 0.05m deep. They most likely represent postholes which have either collapsed together or been replaced. These features are interpreted as being the foundations for posts which would have formed a porch entrance to Structure 1.

3.3 Possible Second Structure

3.3.1 Two pairs of postholes (035/053, 038/057), an oval pit (025) and a single posthole (022) forming a semi-circle roughly 5m in diameter, were located just to the south of Structure 1. These features are tentatively interpreted as potentially being part of a second roundhouse. The postholes ranged from a

diameter of 0.25m to 0.3m and varied in depth from 0.15m to 0.35m. The pit (**025**) measured 0.8m by 0.35m and was 0.2m deep, and is interpreted as being either the remains of two postholes which have collapsed together or a post replacement pit. The layout and alignment of the postholes closely parallel those of Structure 1, with the paired postholes on the west appearing to reflect a structure with a double post-ring. It remains possible that the features are a fortuitous scatter of isolated pits, however.

3.4 External and Isolated Features

- 3.4.1 A shallow pit (028) was located c.5.5m to the south-east of Structure 1. It measured 1m by 0.5m and 0.1m deep. Its shallow irregular base and loose, stony, disturbed fill (027) makes any firm interpretation difficult although it is likely that is associated with the roundhouse feature.
- 3.4.2 Five further small pits (003, 005, 008, 048, 050) were also discovered. Pits 048 and 050 were respectively located 3.5m and 5m to the south-west of Structure 1. Both measured c.0.3m by 0.4m and were c.0.14m deep.
- 3.4.3 Pits **005** and **008** were located towards the west of the trench. Pit **005** measured 0.4m in diameter and was 0.2m deep. It had two fills; the primary fill (**006**) was 0.15m depth of silty sand, while the upper fill (**007**) was dark silt. Pit **008** was 0.2m in diameter and 0.2m deep with a fill (**009**) of dark grey silty soil.
- 3.4.4 An isolated shallow sub-oval pit (**003**) was discovered towards the north-west corner of the trench. It measured 1.35m by 0.45m and was 0.05m deep. Its shallow irregular profile and isolated position renders interpretation difficult.

4. SAMPLE ASSESSMENT By Mhairi Hastie

4.1 Methodology

4.1.1 A total of twenty-nine samples were retained during the excavation. The soil samples were subjected to a system of flotation and wet sieving. The floating debris (flot) was collected in a 250μ m sieve and, once dry, scanned using a low-powered microscope. The material remaining in the flotation tank (retent) was wet-sieved through a 1mm mesh and air-dried. The retents were then sorted for any archaeological significant material.

4.2 Results

- 4.2.1 No small finds or palaeoenvironmental remains were recovered from the retents. Low concentrations of charred cereal grain and wood charcoal were present in the flots. A summary of the results is presented below in Table 1. The findings are expressed quantitatively using the following criteria: + = rare, ++ = occasional, +++ = common and ++++ = abundant.
- *Cereal grain:* Small quantities of cereal grain were present in sixteen of the flots. The grains were generally poorly preserved. The cereals were dominated principally by hulled wheat (emmer or spelt) and naked barley. In addition, a small assemblage of flax seeds was recovered from three of the samples along with the cereal grain, and small fragments of hazelnut shell were present in one sample.

The recovery of flax seeds along with hulled wheat and naked barley is a common element of early prehistoric sites, particularly of Neolithic date, and their presence here would suggest a potential early prehistoric date for the majority of features.

One sample (no. 1) did, however, stand out due to its composition. The flot contained concentrations of cinders and several oat grains, one of which was identified as possible black oat. Black oat is more commonly found on medieval sites and its presence in this pit fill may suggest that this feature is of a later date than the other features uncovered.

The presence of cereal grain, albeit in small quantities, suggests that some crop processing or food preparation was being carried out in the area and suggests a domestic function for the structures/features.

Wood charcoal: Very low concentrations of wood charcoal were recovered from the flots; in most cases the charcoal fragments are less than 2mm in diameter and would not be suitable for identification. Only three flots, Samples 10, 21 and 32a, contained sufficiently large enough fragments of charcoal for AMS dating.

4.3 Radiocarbon Dating

- 4.3.1 A single cereal grain from each of Samples 9 and 30 were sent for radiocarbon dating. Sample 9 comprises a grain of barley/wheat from context 020, the lower fill of posthole 018. Sample 30 comprises a wheat grain from context 071, the fill of posthole 070. Context 020 is the lower fill of posthole 018 from the inner ring of postholes, while context 071 is the fill of posthole 070 from the outer ring of postholes, both from Structure 1.
- 4.3.2 The results from the two samples submitted for radiocarbon dating are presented in Table 1 below (and also see Appendix 6). The calibrated age ranges are determined from the University of Oxford Radiocarbon Accelerator Unit calibration program (OxCal3).

Lab Code	Context	Material	Radiocarbon	Cal date at	Cal date at	δ ¹³ C value
			Age BP	1-sigma	2-sigma	
SUERC-29174	020	Cereal Grain :	3345 ± 30	1690-1540	1740-1520	-23.4 ‰
(GU-21385)	(Posthole	Hordeum/Triticum		BC	BC	
	018)	indet				
SUERC-29619	071	Cereal Grain :	3350 ± 30	1690-1600	1740-1530	-24.8 ‰
(GU-21386)	(Posthole	Triticum sp. (wheat)		BC	BC	
	070)					

- 4.3.3 The dates calibrate at 2-sigma to give the range 1740-1520 BC, the later part of the Early Bronze Age, and correspond very well with each other.
- 4.3.4 Sufficient carbonised plant remains for additional AMS dating, should this be required in the future, are present in a further five samples. These are highlighted by a '•' in Table 2. Identification of the cereal grain / wood species should be carried out prior to any further radiocarbon dating.

Comments		Cinders ++ Oat x 5 (1 = black oat) cf. Barlev indet x 2		Barley indet x 1 \Flax seed x 1	Cereal indet x 1		Barley indet x 1	Cinders +	Wheat (emmer / spelt) +	Barley indet +	Extremely small fragments of burnt bone	Flax x 8 (some still partially fused	together)	Barley / Wheat x 2	Wheat indet x 1 (poss emmer / spelt)	Cereal indet x 3	Radiocarbon dated cereal orain	SUERC-29174	Cereal indet x 2	Barley indet x 1	Cereal indet x 3			Cereal indet x 1			Flax seed x 1	cf. Barley indet x 1 Cereal indet x 2		Cinders +
Burnt	Bone								+																					
Hazelnut	Shell																													
Flax	Seeds			+								+															+			
Charcoal	AMS Dating																		•										•	
	Qty	+		+	+	+	+	+	+			+							++	+	++	+	+	+	+	+	++	+	++	
real grain	AMS Dating	•							•			•																		
C	Qty	+		+	+		+		+			+							+	+	+			+				+		
Sample	vol (litres)	10	N/A	5	5	3	2	2	3			1							10	1	10	1	1	1	1	-	1	10	10	N/A
Context type		Fill of pit 003		Upper fill of pit 005	Primary fill of pit 005	Fill of posthole 008	Fill of 015	Fill of pit 003	Upper fill of posthole	018		Lower fill of posthole	018						Fill of posthole 022	Fill of posthole 023	Fill of pit 028	Fill of post cut 029	Fill of posthole 035	Fill of posthole 050	Fill of pit 053	Fill of posthole 055	Fill of posthole 048	Fill of posthole 038	Fill of posthole 034	
Context	number	004	N/A	007	900	600	014	012	019			020							021	024	027	030	036	051	054	056	049	037	033	N/A
Sample	number	1	2	3	4	5	6	7	8			6							10	11	13	14	15	16	17	18	19	20	21	22

Table 2. Composition of flots

GYAR/1752/0

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Comments								Barley indet + (one or two well-preserved	grains show characteristics of naked	barley)	One grain sent for C14 dating but returned			Wheat indet X 2	Barley indet x 1	Cereal indet x 4	Radiocarbon dated cereal grain SUERC-	29619	Barley indet +	Barley indet x 5	Cereal indet x 3	Barley indet x 2	Cereal indet x 2	Hazelnut shell frags x 2
Burnt	Bone																							
Hazelnut	Shell																							
Flax	Seeds																							
harcoal	AMS Dating																			•				
	Qty		+		+	+	+	‡				+	-	ł					+	+++++		+++++		
real grain	AMS Dating	1						•						•						•				
Ce	Qty							+					-	ł					+	+		+		
Sample	vol	(litres)	1	N/A	1	1	1	10				-	-	1					1	1		1		
Context type			Fill of posthole 057		Fill of posthole 061	Fill of posthole 064	Fill of posthole 066	Fill of posthole 042				Fill of nosthole 068	E11 af a 241 a1 a070	FIII OT postnole U/U					Fill of posthole 042	Fill of posthole 032		Fill of posthole 032		
Context	number		058	N/A	062	065	067	039				690	120	1/1	_				041	031		031		
Sample	number		23	24	25	26	27	28				29	00	50					31	32a		32b		

Key: += rare, ++ = occasional, +++ = common and ++++ = abundant
• = samples containing sufficient material for AMS dating

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5. **DISCUSSION**

- 5.1 One roundhouse (Structure 1), part of a possible second roundhouse, and a suite of isolated features were discovered by the excavation at the site of the proposed A91/B9124 Greenyards roundabout. Radiocarbon dating suggests this structure dates to the Early Bronze Age.
- 5.2 Structure 1 is defined by an outer ring of eight postholes and a partial inner ring of six postholes. The entrance faces the south-east and appears to be framed by a porch. No internal features were discovered. A possible second structure may be indicated by a postulated outer ring of three postholes and an inner ring of two postholes. Pit **025** forms part of both inner and outer ring, and probably represents either a post replacement or collapse between the two postholes at the time of excavation. The purpose and date of the outlying pits are unclear, as is their relationship, if any, with the postulated roundhouses.
- 5.3 Structures 1 appears likely to be the remains of a timber roundhouse, and the possibility exists that a second roundhouse lies to its south. If so, however, they are located very close together and it would seem unlikely that they were in simultaneous use. The roof eaves of the postulated second structure would probably have overlapped with the space required by the porch of Structure 1, thus two phases of occupation would be required. The post-ring structure, therefore, is suggestive of a single unenclosed residence which may have been replaced by, or the replacement for, the second potential roundhouse.
- 5.4 The postholes of Structure 1 show little evidence for re-building or replacing of posts, suggesting that it may have been a relatively short-lived structure. The fill deposits are not suggestive of in situ burning of posts or of the remains of degraded posts, which is either a result of poor preservation and truncation, or, that the posts may have been removed and the cuts either backfilled or allowed to infill naturally.
- 5.5 Such timber structures probably consisted of a circle of timber uprights that supported rafters, without having a central post. The rafters would have supported the weight of a pitched roof, with an outer wall running concentrically with the post-ring. The outer wall may have been turf or even stone, and would not often survive in the archaeological record. At Greenyards, the post-ring is about 6m in diameter; if the outer wall was contiguous with the posts of the porch then its diameter is likely to have been about 10-11m.
- 5.6 Cereal remains, including emmer/spelt wheat and barley (probably the naked variety) were recovered in small quantities from some of the samples, along with a small quantity of burnt bone. These included postholes 015, 018 and 042 from Structure 1, postholes 022 and 038 from the putative second structure, and isolated pits 005 and 028. This suggests an earlier prehistoric date and the presence of cereal grain does suggest that some crop processing or food preparation was being carried out in the area, indicating a domestic function for the structure. It is unfortunate that no artefacts were recovered as these can be helpful in determining the date and function of such structures.

The function of this structure is problematic given the lack of artefactual evidence obtained.

- 5.7 Two single entity cereal grains from two different postholes within the inner and outer rings have been radiocarbon dated, resulting in a date range of 1740-1520 BC, the later part of the Early Bronze Age.
- 5.8 Given the proximity of the structure to the other Neolithic sites in the vicinity, a Neolithic date initially could not be ruled out, and indeed oval post-built structures excavated at Forrest Road, Kintore have been dated to the Late Neolithic (Cook and Dunbar 2008). However, there were structural discrepancies, as posts of such Neolithic structures tend to be tightly packed, with only 0.35-0.45m between the posts, whereas at Greenyards they range from 1-2m, which is more suggestive of later prehistoric roundhouses, and the radiocarbon dates indicate an Early Bronze Age date.
- 5.9 Comparable structures which share the dimensions, the double-walled rear and south-east facing entrance porch, have been excavated at Gleneagles (O'Connell & Gray 2008; O'Connell & Gray forthcoming) and have been dated to the Middle Bronze Age through to the Early Iron Age, although the earlier structures tended to be ring-ditch structures rather than post-rings. In Angus, such structures have been dated to the latter half of the first millennium BC and the early centuries AD (Dunwell and Ralston 2008). At Kintore, post-ring type roundhouses are not being constructed until the Late Bronze Age (Cook & Dunbar 2008). Similar post-ring structures were excavated at Dalladies, Kincardineshire (Watkins 1980) and date to the Iron Age. Entrances facing approximately south-east are a common characteristic. Indeed, most excavated examples of post-rings in Angus, for example, have dated to later prehistoric periods (Dunwell and Ralston 2008). However, there is evidence that Angus has a different chronology of round-house architecture to that from other north-east areas (Dunwell and Ralston 2008), and it is entirely possible that Stirlingshire is also different; care should be taken when transferring regional models from one area to another.
- 5.10 Such structures and the temporal and geographical relationships between them, have been the subject of much on-going debate, which is only recently gaining some clarification in the north-east of Scotland through excavation and dating of suites of roundhouses such as at Kintore in Aberdeenshire (Cook & Dunbar 2008, Dunwell and Ralston 2008).
- 5.11 The Greenyards roundhouse thus increases the data set of known prehistoric post-ring houses, particularly in this area of Stirlingshire, and pushes the dating back into the Early Bronze Age. No other timber built roundhouses of this date are known from Stirlingshire at this time.
- 5.12 The site lies in an area of archaeological sensitivity, with a number of prehistoric sites known in the vicinity, including two large Neolithic ritual enclosures, a defended Iron Age homestead and a number of other, undefended, homesteads. These sites were first identified through aerial photography and later excavated in advance of the construction of the A91

Eastern Distributor road and new residential housing. To the north of the proposed roundabout two other homesteads have been identified, one of which has been partially excavated in advance of road construction, and a few kilometres to the east a number of important Mesolithic and Neolithic finds have been made at Chapelfield in Cowie.

6. SUMMARY

- 6.1 One roundhouse (Structure 1), part of a possible second roundhouse, and a suite of isolated features were discovered during the excavation at the site of the proposed A91/B9124 Greenyards roundabout. Radiocarbon dating results indicate a date of 1740-1520 BC.
- 6.2 The discovery at Greenyards is especially significant as no similar structures are known in the area (Lorna Main, pers comm.).
- 6.3 The project archive, comprising all CFA record sheets, maps and reports will be deposited with the National Monuments Record of Scotland (NMRS) and copies of reports will be lodged with Stirling Council Sites & Monuments Record.
- 6.4 A summary statement of the results of this evaluation will be submitted for publication in *Discovery and Excavation in Scotland 2011* (Appendix 5). The online OASIS record will also be completed.

7. **REFERENCES**

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APPENDIX 1: Context Register

Context	Fill of	Description
000		Natural
001		Topsoil
002		Buried soil
003		Cut of possible shallow pit, sub-oval in plan
004	003	Mid grey silt with fine gravel inclusions
005		Cut of possible circular pit, unclear horizon
006	005	Mid brown-orange sandy silt with gravel inclusions
007	005	Upper fill of 005, dark grey soil, merges slightly with (006)
008		Steep sided cut of small post-hole
009	008	Dark grey silt soil, firm compaction
010		Void
011		Void
012	013	Mid brown gravel silt, occasional small stone inclusions
013		Small circular pit/post-hole, close to [015]
014	015	Mid brown gravel silt, occasional small stone inclusions
015		Small circular pit/post-hole, close to [013]
016		Void
017		Void
018		Small circular pit/post-hole
019	018	Dark brown sandy soil, small stone inclusions
020	018	Dark-medium brown sandy soil, lower fill of 018
021	022	Dark brown pea gravel silt, occasional small stone inclusions
022		Possible circular cut of post-hole
023		Possible circular cut of post-hole
024	023	Medium brown sandy silt, small stone inclusions
025		Cut of substantial oval pit
026	025	Dark-mid grey soil silt, frequent small gravel inclusions
027	028	Grey brown sandy silt, frequent small stone inclusions
028		Cut of shallow sub-rectangular pit
029		Cut of circular pit/post-hole
030	029	Medium dark brown fill, small to medium stone inclusions
031	032	Medium dark brown sandy soil, stone and gravel inclusions
032		Two possible post-hole cuts
033	034	Dark medium brown silt sand, stone and gravel inclusions
034		Cut of shallow oval pit
035		Oval cut of possible post-hole
036	035	Medium dark brown sandy soil, stone and gravel inclusions
037	038	Mid grey sandy silt, infrequent charcoal fragments
038		Cut of circular post-hole, adjacent to [057]
039	040	Dark medium brown sandy soil, stone and gravel inclusions
040		Cut of disturbed post-hole/possible linear feature
041	042	Dark medium brown sandy soil, stone and gravel inclusions
042		Cut of post-hole
043	044	Dark medium brown sandy soil, stone and gravel inclusions
044		Cut of post-hole
045	046	Medium dark brown fill, small to medium stone inclusions
046		N/A
047		N/A
048		Oval cut of small post-hole
049	048	Mid brown grey silt
050		Oval cut of small post-hole
051		Medium dark brown fill, small to medium stone inclusions
052		N/A
053		Disturbed post-hole/possible elongated pit

054	053	Dark medium brown sandy soil, small stone inclusions
055		Cut of post-hole
056	055	Mid brown grey silt
057		Cut of circular post-hole, close to [038]
058	057	Dark medium brown sandy soil, small stone inclusions
059		N/A
060		N/A
061		Cut of possible post-hole
062	061	Dark medium brown sandy soil, small stone inclusions
063		N/A
064		Possible post-hole
065	064	Dark medium brown sandy soil, small stone inclusions
066		Possible post-hole
067	066	Mid brown grey silt
068		Possible post-hole
069	068	Mid brown grey silt
070		Possible post-hole
071	070	Mid brown grey silt

APPENDIX 2: Photo Register

Colour Slides

Photo No	Description	Taken From
Film 1		
1	Registration	
2-3	003 pre-ex	Е
4-5	003 section	S
6-7	General view of site 02/02/10	SE
8-9	General view of site 02/02/10	S
10-11	005 pre-ex	S
12	007 pre-ex	S
13-14	Finished feature shot of (010)	F
15-16	North facing section of (010)	N
17-18	South facing section of (010)	S
19-20	Feature/post? Pre-ex shot [035]	W
21-22	Pre-ex [013]& [015]	W
23-24	Pre-ex shot of [012]	W
25-26	Half section of cuts [013] & [015]	W
27-28	Pre-ex possible Post hole [016]	W
29-30	N/A	
31-32	Post-ex shot of South facing section of [018]	S
33-34	Post-ex of cuts [013] and [015]	W
Film 2		
1	Registration	
2-3	Pre-ex of post hole cot [022]	S
4-5	Half section of cut [022] south west facing	SW
6	Pre-ex and 025	W
7	Pre-ex 025	W
8-9	Pre-ex sot of [023] post-hole	W
10	Post-ex of [023]	W
11	Post-ex of [023]	W
12-13	Post East facing section of cut x fill [023] and[024]	Е
14-15	Post-ex of cut [022]	SW
16-17	Pre-ex of cut feature [cut 028]	Е
18-19	Section 025	N

20-21	East facing section of cut [028]	Е
22-23	Post-ex cut [028]	Е
24-25	Pre-ex shot of [029] cut	W
26-27	025 Fully excavated	NW
28-29	N/A	Ν
30-31	Pre-ex of feature Cut 032	NE
32-33	Detail of pad stone at the bottom of (029)	W
34	Post-ex shot of [029] west facing section	W
35	Post-ex shot of [029] west facing section	W
36-37	Pre-ex of feature cut 034	
Film 3	·	•
1	Registration	
2	North face section of cut [35]	W
3-4	Pre-ex of cut [038]	W
5-6	Pre-ex of cut [040]	Ν
7-8	Pre-ex of cut [042]	Ν
9-10	Pre-ex of cut [044]	W
11-12	Pre-ex of cut [046]	W
13-14	Pre-ex of cut [048]	SW
15-16	Pre-ex of cut [050]	S
17-18	Post-ex detail of the stone at the bottom of [029] cut	W
19-20	N/A	
21-22	General shot of site 04/02/10	SE
23-24	General shot of site 04/02/10	S
25-26	Working shot, removing plastic	S
27-28	Post-ex shot of [035] West facing section	W
29-30	Pre-ex shot of cut [053]	W
31-32	Post-ex shot of West facing section of [053]	W
33-34	Section 050	S
35-36	Section 048	NW
Film 4		
1	Registration	
2	Post-ex [053]	SW
3	Post-ex [053]	W
4-5	Mid-ex [055]	S
6-7	050 fully excavated	S
8-9	048 fully excavated	W
10-11	038 section and 057 fully excavated	SW
12-13	[034] Post-ex	SW
14-15	[055] South facing section	S
16-17	South facing section [059]	SE
18-19	038 and 057 fully excavated	NW
20-21	Pre-ex [061]	S
20 21	N/A	SW
24-25	Post-ex shot of South-west facing section of [040]	SW
26-27	Pre-ex cut [064]	W
28-29	Pre-ex cut [066]	S
30-31	South facing section through [061]	ŝ
32-33	Pre-ex [068]	S
34-35	Post-ex of North-east facing section of cut [032]	NE
36	Pre-ex of [070]	S
		1

Digital Photos

Photo No	Description	Taken From
1	003 pre-ex	Е
2	003 section	S
3	General view of site 02/02/10	SE
4	General view of site 02/02/10	S
5	005 pre-ex	S
6	007 pre-ex	S
7	Finished feature shot of (010)	F
8	North facing section of (010)	N
9	South facing section of (010)	S
10	Feature/post? Pre-ex shot [035]	W
11	Pre-ex [013]& [015]	W
12	Pre-ex shot of [012]	W
13	Half section of cuts [013] & [015]	W
14	Pre-ex possible Post hole [016]	W
15	Post-ex shot of South facing section of [018]	S
16	Post-ex of cuts [013] and [015]	W
17	Pre-ex of post hole cot [022]	S
18	Half section of cut [022] south west facing	SW
19	Pre-ex and 025	W
20	Pre-ex 025	W
21	Pre-ex sot of [023] post-hole	W
22	Post-ex of [023]	W
23	Post-ex of [023]	W
24	Post East facing section of cut x fill [023] and [024]	Е
25	Post-ex of cut [022]	SW
26	Pre-ex of cut feature [cut 028]	Е
27	Section 025	N
28	East facing section of cut [028]	Е
29	Post-ex cut [028]	Е
30	Pre-ex shot of [029] cut	W
31	025 Fully excavated	NW
32	Pre-ex of feature Cut 032	NE
33	Detail of pad stone at the bottom of (029)	W
34	Post-ex shot of [029] west facing section	W
35	Post-ex shot of [029] west facing section	W
36	Pre-ex of feature cut 034	
37	Pre-ex of post hole cot [022]	S
38	Half section of cut [022] south west facing	SW
39	Pre-ex and 025	W
40	Pre-ex 025	W
41	Pre-ex sot of [023] post-hole	W
42	Post-ex of [023]	W
43	Post-ex of [023]	W
44	Post East facing section of cut x fill [023] and [024]	Е
45	Post-ex of cut [022]	SW
46	Pre-ex of cut feature [cut 028]	Е
47	Section 025	N
48	East facing section of cut [028]	Е
49	Post-ex cut [028]	Е
50	Pre-ex shot of [029] cut	W
51	025 Fully excavated	NW
52	Pre-ex of feature Cut 032	NE
53	Detail of pad stone at the bottom of (029)	W
54	Post-ex shot of [029] west facing section	W

55	Post-ex shot of [029] west facing section	W
56	Pre-ex of feature cut 034	
57	North face section of cut [35]	W
58	Pre-ex of cut [038]	W
59	Pre-ex of cut [040]	N
60	Pre-ex of cut [042]	Ν
61	Pre-ex of cut [044]	W
62	Pre-ex of cut [046]	W
63	Pre-ex of cut [048]	SW
64	Pre-ex of cut [050]	S
65	Post-ex detail of the stone at the bottom of [029] cut	W
66	General shot of site 04/02/10	SE
67	General shot of site 04/02/10	S
68	Working shot, removing plastic	S
69	Post-ex shot of [035] West facing section	W
70	Pre-ex shot of cut [053]	W
71	Post-ex shot of West facing section of [053]	W
72	Section 050	S
73	Section 048	NW
74	Post-ex [053]	SW
75	Post-ex [053]	W
76	Mid-ex [055]	S
77	050 fully excavated	S
78	048 fully excavated	W
79	038 section and 057 fully excavated	SW
80	[034] Post-ex	SW
81	[055] South facing section	S
82	South facing section [059]	SE
83	038 and 057 fully excavated	NW
84	Pre-ex [061]	S
85	Post-ex shot of South-west facing section of [040]	SW
86	Pre-ex cut [064]	W
87	Pre-ex cut [066]	S
88	South facing section through [061]	S
89	Pre-ex [068]	S
90	Post-ex of North-east facing section of cut [032]	NE
91	Pre-ex of [070]	S

Sample No.	Context	Description	Comment	Volume (l)
1	004	Fill of pit		10
2	N/A			
3	007	Upper fill of 005		5
4	006	Lower fill of 005	?Burnt material	5
5	009	Fill of 008		3
6	014	Fill of 015		2
7	012	Fill of 013		2
8	019	Upper fill of 018		3
9	020	Lower fill of 018		1
10	021	Fill of 022		10
11	024	Fill of 023		1
12	026	Fill of 025		10
13	027	Fill of 028		10
14	030	Fill of 029		1
15	036	Fill of 035		1
16	051	Fill of 050		1
17	054	Fill of 053		1
18	056	Fill of 055		1
19	049	Fill of 048		1
20	037	Fill of 038	Charcoal	10
21	033	Fill of 034		10
22	060	Fill of 059		1
23	058	Fill of 057		1
24	N/A			
25	062	Fill of 061		1
26	065	Fill of 064		1
27	067	Fill of 066		1
28	039	Fill of 042		10
29	069	Fill of 068		1
30	071	Fill of 070	Charcoal	1
31	041	Fill of 042		1
32	031	Fill of 032		1

APPENDIX 3: Samples Register

APPENDIX 4: Field Drawings Register

Drawing	Sheet	Description	Sec/Plan	Scale
No.	No.			
1	1	003/004	Р	1:20
2	1	003/004	S	1:10
3	1	005/007	Р	1:20
4	1	005/006/007	S	1:10
5	1	008/009	Р	1:20
6	1	008/009	S	1:10
7	1	N/A		
8	1	N/A		
9	1	013/015	Р	1:20
10	1	013/015	S	1:10
11	1	N/A		
12	1	N/A		
13	1	022	Р	1:20
14	1	022	S	1:10
15	1	023	S	1:10
16	1	023	Р	1:20

17	1	025/026	S	1:10
18	1	025/026	Р	1:20
19	1	028	Р	1:20
20	1	028	S	1:10
21	2	024	S	1:10
22	2	028	Р	1:20
23	2	035	S	1:10
24	2	035	S	1:10
25	2	048/049	Р	1:20
26	2	048/049	S	1:10
27	2	050/051	Р	1:20
28	2	050/051	S	1:10
29	2	053/054	S	1:10
30	2	053/054	Р	1:20
31	2	055/056	S	1:10
32	2	055/056	Р	1:20
33	2	037/038	Р	1:20
34	2	037/038	S	1:10
35	2	033/034	S	1:10
36	2	033/034	Р	1:20
37	2	059/060	S	1:10
38	2	059/060	Р	1:20
39	2	039/040	S	1:10
40	2	039/040	Р	1:20
41	2	031/032	S	1:10
42	2	031/032	Р	1:20
43	2	042	S	1:10
44	2	042	Р	1:20
45	3	070/071	S	1:10
46	3	070/071	Р	1:20
47	3	066/067	S	1:10
48	3	066/067	Р	1:20
49	3	069/068	S	1:10
50	3	069/068	Р	1:20
51	3	064/065	S	1:10
52	3	064/065	Р	1:20
53	3	061/062	S	1:10
54	3	061/062	Р	1:20
55	3	035/036	S	1:10
56	3	035/036	Р	1:20
57	4	Plan of trench	P	1:50

APPENDIX 5: Discovery and Excavation in Scotland Entry

LOCAL AUTHORITY:	Stirling			
PROJECT TITLE/SITE NAME:	A91/B9124 Greenyards Roundabout, Bannockburn, Stirling			
PROJECT CODE:	GYAR			
PARISH:	St Ninians			
NAME OF CONTRIBUTOR:	Stuart Mitchell			
NAME OF ORGANISATION:	CFA Archaeology Ltd			
TYPE(S) OF PROJECT:	Evaluation & Excavation			
NMRS NO(S):	None			
SITE/MONUMENT TYPE(S):	Post-built roundhouse			
SIGNIFICANT FINDS:	None			
NGR (2 letters, 8 or 10 figures)	NS 8175 9018			
START DATE (this season)	November 2009			
END DATE (this season)	February 2010			
PREVIOUS WORK (incl. DES ref.)	None			
MAIN (NARRATIVE) DESCRIPTION: (May include information from other fields)	A trial trenching evaluation at the site of the proposed Greenyards Roundabout revealed three pairs of small post-holes and several isolated negative features. Further excavation revealed the remains of a post-built roundhouse c.10-11m in overall diameter with a post-ring measuring c.6m in diameter. The roundhouse was double-walled towards the north and west, and open towards the south-east. Further post-holes indicated a possible porch entrance. No interior features or deposits survived. A series of postholes located nearby may have been the remains of a second roundhouse. A number of isolated pits were also recorded. No finds were discovered in any of the deposits. Soil samples retained have been sieved and the palaeoenvironmental remains analysed. The cereals were dominated principally by hulled wheat (emmer or spelt) and naked barley. In addition, a small assemblage of flax seeds was recovered and small fragments of hazelnut shell were present. The recovery of flax seeds along with hulled wheat and naked barley is a common element of early prehistoric sites. One isolated pit feature did, however, stand out due to its composition; it contained concentrations of cinders and several oat grains, one of which was identified as possible black oat. Black oat is more commonly found on medieval sites and its presence in this pit fill may suggest that this feature is of a later date than the other features uncovered. Cereal grain recovered from post-holes of the inner and outer post-ring of the structure produced dates of 3345 ± 30 BP (SUERC-29174) and 3350 ± 30 BP (SUERC-29619) which give a calibrated range at 2-sigma of 1740-1520 BC.			
PROPOSED FUTURE WORK:	-			
CAPTION(S) FOR ILLUSTRS:	Site plan			
SPONSOR OR FUNDING BODY:	Stirling Council: Roads, Transport & Open Space			

CFA

ADDRESS OF MAIN CONTRIBUTOR:	The Old Engine House, Eskmills Business Park, Musselburgh, East Lothian EH21 7PQ
EMAIL ADDRESS:	isuddaby@cfa-archaeology.co.uk
ARCHIVE LOCATION (intended/deposited)	NMRS / Stirling SMR

APPENDIX 6: Radiocarbon Dating Results



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

24 May 2010

Laborate	ory Co	de	SUERC-29174 (GU-21385)			
Submitte	er		Sue Anderson CFA Archaeology Ltd. Old Engine House Eskmills Park Musselburgh EH21 7PQ			
Site Refe Sample I	erence Referei	nce	A91/B9124 Greenyards Roundabout, Bann GYAR context 020 s.9	nockburn		
Material			Cereal Grain : Hordeum/Triticum indet			
δ ¹³ C rela	tive to	VPDB	-23.4 ‰			
Radioca	rbon A	ge BP	3345 ± 30			
N.B.	1.	The above ¹⁴ 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 standard and blank and the random machine error.				
	2.	The calibrated ag Radiocarbon Acc	e ranges are determined from the University elerator Unit calibration program (OxCal3)	y of Oxford		
	3.	Samples with a S Environmental R any reports within Radiocarbon Lab after the SUERC g.cook@suerc.gla	UERC coding are measured at the Scottish esearch Centre AMS Facility and should be n the scientific literature. Any questions dire oratory should also quote the GU coding gi code. The contact details for the laboratory <u>a.ac.uk</u> or Telephone 01355 270136 direct	Universities quoted as such in ected to the ven in parentheses are email line.		
Conventi	onal ag	ge and calibration a	age ranges calculated by :-	Date :-		
Checked	and sig	ned off by :-		Date :-		
U of	nive Glas	rsity gow				
The University of	Glasgow, ch	narity number SC004401		The University of Edint registered in Scotland, with regis		

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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

15 June 2010

Laborate	ory Co	de	SUERC-29619 (GU-21386)	
Submitte	er		Sue Anderson CFA Archaeology Ltd. Old Engine House Eskmills Park Musselburgh EH21 7PQ	
Site Refe Sample I	erence Referen	ice	A91/B9124 Greenyards Roundabout, Banne GYAR context 071 s.30	ockburn
Material			Cereal Grain : Triticum sp. (wheat)	
δ ¹³ C rela	tive to	VPDB	-24.8 ‰	
Radiocai	rbon A	ge BP	3350 ± 30	
N.B.	1.	The above ¹⁴ C age error, which is exp components from standard and blan	e is quoted in conventional years BP (before pressed at the one sigma level of confidence, the counting statistics on the sample, moder k and the random machine error.	1950 AD). The includes n reference
	2.	The calibrated age Radiocarbon Acce	e ranges are determined from the University elerator Unit calibration program (OxCal3).	of Oxford
	3.	Samples with a SI Environmental Re any reports within Radiocarbon Labo after the SUERC g.cook@suerc.gla	UERC coding are measured at the Scottish U esearch Centre AMS Facility and should be c in the scientific literature. Any questions direct pratory should also quote the GU coding give code. The contact details for the laboratory a <u>Lac.uk</u> or Telephone 01355 270136 direct literature.	iniversities puoted as such in ted to the en in parentheses re email ne.
Conventi	onal ag	e and calibration a	ge ranges calculated by :-	Date :-
Checked	and sig	ned off by :-		Date :-
I of	Glas	gow		

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014 012 025 $026West facing section North east facing section$	
037 058 013 067 013 067 West facing section South facing section	
062 061 South facing section	
	1m
Key: Fig. No: 3 Revision: A Client: Stirling Council Title: Sections of postholes Project: A Client: Stirling Council A A Scale: 4.000044 Greenyards Roundabout, Cowie, Stirling Drawn by: Page N	CFA ARCHAEOLOGY LTD The Old Engine House Exemits Park Masseburgh East Lothan, EH21 7PO t 0131 273 4380 t 0131 273 4381 e intideCta-archeology.co.uk w www.cla-archeology.co.uk
1:20@A4 GC GC	1190

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Fig. 4 Working shot showing conditions and protection measures



Fig. 5 038 and 057 fully excavated

Key:	Fig. No:	4-5	Revision: A	Client: Stirling Council	CE	CFA The C	ARCHAEOLOGY LTD 3d Engine House
	Title:					- A Estim	ilis Park elburgh Lothan, EH21 7PQ
	Project:						11 273 4380 11 273 4381 xBcta-archaeology.co.uk ww.cfa-archaeology.co.uk
Scale:		Freeny	ards Round	about, Cowie, Stirling	Drawn by: GC	Page No:	Report No: 1190

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Fig. 6 022 half section



Fig. 7 View of Structure 1

Key:	Fig. No:	6-7	Revision: A	Client: Stirling Council	CEA	CFA ARCHAEOLOGY LTD The Old Engine House
	Title:				$(-\Delta$	Esknills Park Musseburgh East Lothan, EH21 7PQ
	Project:					t. 0131 273 4380 t. 0131 273 4381 e: infolicta-archaeology.co.uk
Scale:	G	reeny	ards Round	about, Cowie, Stirling	Drawn by: Page No:	Report No: 1190



Fig. 8 View of possible second structure

Кеу:	Fig. No: 8	Revision: A	Client: Stirling Council		CFA The C	ARCHAEOLOGY LTD 3d Engine House
	Title: Project:				- A Estre	Eskmills Park Musselburgh East Lothan, EH21 7PQ
						I1 273 4380 I1 273 4381 Kilcla-archaeology.co.uk wy.cla-archaeology.co.uk
Scale:	Greeny	ards Rounda	about, Cowie, Stirling	Drawn by: F	Page No:	Report No: 1190