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## Arnhall Quarry Phases 9/2 & 10/1 Edzell by Brechin, Aberdeenshire.

Archaeological Watching Brief  
Report No. 3564

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**Arnhall Quarry Phases 9/2 & 10/1  
Edzell by Brechin, Aberdeenshire**

**Watching Brief**

**Report No. 3564**

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## **1. INTRODUCTION**

### **1.1 General**

This report presents the results of a watching brief undertaken by CFA Archaeology Ltd (CFA) in May and August 2017 at Arnhall Quarry, near Edzell, Aberdeenshire (NO 6051 7030, Figs. 1 & 12). The work was commissioned by CgMs Consulting on behalf of Breedon Aggregates.

Planning permission was granted by Aberdeenshire Council in 2005 (APP/2004/4532) and was subject to a condition requiring that works were accompanied by a programme of archaeological works.

A Written Scheme of Investigation (WSI) was produced by CgMs Consulting on 01 September 2014 and was approved by Aberdeenshire Council's Principal Archaeologist prior to the fieldwork.

### **1.2 Background**

Previous phases of topsoil stripping from 2006-2009 were accompanied by archaeological monitoring, excavation and recording undertaken by Headland Archaeology (Aberdeenshire SMR NO67SW0104 & 0108). This work recorded plough truncated features cut into sand and gravel and sealed by topsoil. These features included a hearth, possible structure and several pits. Some artefacts were recovered from the pits and these included flint flakes and pottery of early and middle Neolithic date. Radiocarbon dating of charcoal fragments returned a date range of 3780BC-3640BC from one feature. A series of furrows were interpreted as deriving from post-medieval cultivation.

To the north of the Phase 10 area is the recorded site of a cropmark that was interpreted as a possible enclosure (Woodmyre: Aberdeenshire SMR NO67SW0008). This was recorded on aerial photographs taken in 1979 and is tentatively dated as prehistoric.

### **1.3 Objectives**

The project's aims and objectives were, in general, to mitigate and offset adverse effects on historic environment assets. Specifically, it was:

- To monitor topsoil stripping in advance of extraction and identify any archaeological features that would be damaged or destroyed by the development.
- To undertake archaeological recording where necessary of any archaeological features or finds identified.

## **2. WORKING METHODS**

### **2.1 General**

CFA follows the Chartered Institute for Archaeologists' Standards and Guidance and Code of Conduct as appropriate.

### **2.2 Watching Brief**

This report covers the stripping of the remaining Phase 9 area which was not stripped during the 2009 works and part of the southern portion of Phase 10. The areas covered in this report are shown on Figs. 1 & 12.

All ground-breaking work was undertaken by a machine equipped with a flat bladed ditching bucket. All excavation of archaeological features and deposits was undertaken using hand tools.

All excavation and on-site recording was carried out according to standard CFA procedures, principally by drawing, by photography and by completing standard CFA record forms. The positions of archaeological features were recorded using industry standard survey equipment.

### 3. ARCHAEOLOGICAL RESULTS

#### 3.1 General

Numbers in bold refer to contexts, a full list of which is contained in Appendix 1.

Across the development area the soils generally consisted of 0.3m of dark brown silty loam topsoil (001) and medium greyish beige sandy silt subsoil (002) in lower-lying areas overlying free-draining orange-brown sand or sandy gravel natural (003).

Eighteen features were identified during the watching brief in the Phase 9 area. Twenty-five features were identified in the part of the Phase 10 area that was stripped.

#### 3.2 Phase 9/2 Archaeological Features

The features consisted of eighteen pits. Their locations are shown on Fig. 1. Examples of excavated pits are shown in Figs. 2-11. Further details of key features are given in the following text.

The pits were mostly situated in the central part of the stripped area along a low ridge above a relict course of the River North Esk. The pits are described in the table below.

Context No (Cut).	Description
004	Sub circular pit, with gently sloping sides and a flat base. Measured 1.5m in length by 1.3m wide. Filled by (005), a light brown to grey gravelly sand containing a lot of stones of varying sizes <0.1m. Charcoal inclusions were present in the middle of the fill.
006	Circular pit measuring 0.9m in diameter by 0.15m deep. Filled with dark brown to black sandy silt deposit (007) including some small stones.
008	Small circular pit measuring 0.9m in diameter by 0.15m deep. Filled with dark brown to black organic silt (009). (Fig. 2)
010	Oval pit, measuring 1.1m in length by 0.55 wide by 0.23m deep. Filled with dark brown to black silty sand (011) with some charcoal inclusions. (Fig. 5)
012	Small circular pit 0.3m in diameter by 0.09m deep. Filled by a mid brown silty sand (013) containing small pebbles.
014	Oval pit measuring 0.9m in length and 0.6m in width. 0.24m deep. Filled with mid brown silty sand (015) with no inclusions. Moderate compaction. (Fig. 3)
016	Small circular pit 0.3m in diameter by 0.05m deep. Filled with dark brown sandy silt with charcoal inclusions (017). (Fig. 10)
018	Oval pit measuring 0.55m in length by 0.4m wide by 0.9m deep. Filled with dark orange brown silty sand with charcoal inclusions (019). (Fig. 4)
020	Sub circular pit measuring 0.26m in diameter by 0.1m deep. Filled with dark orange to brown silty sand with no inclusions (021). (Fig. 4)
022	Circular pit measuring 0.2m in diameter by 0.1m deep. 'U' shaped in section. Filled with dark orange brown silty sand (023) with no inclusions. (Fig. 4)
024	Circular pit with sloping sides and a flat base measuring 0.3m in diameter by 0.07m deep. Filled with dark brown to black sandy silt with charcoal inclusions (025).
026	Circular pit measuring 0.5m in diameter by 0.15m deep. Filled with dark brown silty sand with charcoal inclusions, some small stones <0.1m in size. (007). (Fig. 11)
028	Circular pit measuring 0.5m in diameter by 0.09m deep. Filled with mid yellow to brown silty sand (029). (Fig. 6)
030	Circular pit measuring 1m in diameter by 0.19 m deep. Filled with dark brown sandy silt with charcoal inclusions (031).
032	Circular pit measuring 0.6m in diameter by 0.08m deep. Filled with mid brown silty

Context No (Cut).	Description
	sand (033).
034	Circular pit with vertical sides and a flat base 1.4m in diameter by 0.4m deep. Filled with dark brown sandy silt (035) with charcoal inclusions. (Fig. 7)
036	Circular pit with vertical sides and a flat base measuring 0.5m in diameter by 0.17m deep. Stones set around the edge. Filled with dark brown to grey sandy silt (037). (Fig. 8)
038	Oval pit measuring 0.9m in length by 0.7m wide by 0.1m deep. Filled with mottled yellow and brown silty sand (039) with a concentration of charcoal towards the top. (Fig. 9)

### 3.3 Phase 10/1 Archaeological Features

The stripped part of the Phase 10 area contained a curving scarp which was formed by a former course of the River North Esk and this landform is visible in Figs. 13-14. Within this former watercourse on the western side of the site, soils were deeper and sand formed the natural subsoil. On the higher ground to the east of the scarp, soils were shallower and the natural subsoil was a compact sandy gravel.

Traces of three furrows (054) were recorded with a wavelength of 5-6m (Fig. 15). They were aligned SSE-NNW. The width of each furrow was around 1.2m and the depth was 0.1m (Fig. 16). No finds were recovered.

A linear ditch (056) ran parallel to the furrows (Fig. 15). This had a width of 0.5m and a depth of 0.1m. The base was irregular with frequent steps (Fig. 16) which may represent spade digging. No finds were recovered.

Twenty-three pit features were recorded and examples are shown in Figs. 17-24. These appeared to be randomly distributed within the area although a slight increase in the density of the features towards the north was noticed. These pits lie on the same terrace as those found in Phase 9/2 and probably represent a continuation of the same broad group of features. All the features from Phase 10/1 are shown in Fig. 12. Descriptions are provided in the table below.

Context No (Cut).	Description
040	Sub-circular pit measuring 1.8m in length by 1.5m in width by 0.2 m deep. Filled with a mixed grey to black silty sand (041), containing discreet lenses of charcoal and patches of gravel. Some heat affected stones.
042	Sub oval pit measuring 1.5 m in length by 0.7m in width by 0.3m deep. Filled with a homogenous dark orange to brown silty sand with charcoal flecks and gravel inclusions (043). Some patches of sandy grit, cobbles 0.2m near the base.
044	Oval pit measuring 0.5m in length by 0.4m in width by 0.12m deep. Filled with a dark orange to brown silty gritty sand with some charcoal inclusions (045).
046	Irregular shaped pit with sloping sides and a flat base, measuring 1.4m in length by 0.9m in width by 0.12m deep. Filled by three distinct deposits. A dark orange to brown silty gritty sand with charcoal flecks and gravel (047). A creamy white silty sand (048), possibly heat affected was identified in the middle of the pit, possibly re deposited natural subsoil. The primary fill of the pit was light orange silty sand (049) which contained charcoal flecking and appeared to be re deposited natural.
050	Sub circular pit measuring 1.1m in diameter by 0.2m deep. Steep sides with a level base. Filled with a mottled dark brown silty sand (051) containing patches of orange re deposited natural, heat affected cobbles and charcoal inclusions.
052	Circular pit with sides sloping at a 45 degrees to a level base measuring 1.3m in



Context No (Cut).	Description
	diameter by 0.15m deep. Filled with a mixed silty sand deposit (053) with charcoal flecking.
058	Sub-circular pit measuring 1.35m by 1.2m by 0.2m deep. Filled with a dark gray to black charcoal rich sandy silt (059), and a mixed silty sand (060). The charcoal deposit lined the base in a thin 0.05m thick lens. The upper layer (060) contained charcoal flecking towards the base, but no stones.
061	Sub-circular pit measuring 1.4m by 1.3m by 0.2m deep. The upper fill, a mid orange to brown silty sand (063) contained a mixture of cobbles. The lower fill (062) was a mottled mixture of grey black charcoal rich silty sand with patches of grey orange silty sand with cobbles.
064	Oval pit measuring 0.9m in length and 0.83 wide by 0.1m deep. Filled with a blue black silt and charcoal deposit (065) with occasional pebble inclusions, and possible heat affected stones.
066	Oval pit measuring 1.7m in length by 1.1m in width by 0.1m deep. Filled by a black to grey-black silty sand deposit (067).
068	Sub-circular pit measuring 1.4m by 1.3m. Filled with a dark brown to black gritty silt and pebble deposit (069), a mid orange to brown silty sand (070), and a light orange to brown silty sand and gravel deposit (071).
072	Sub-circular pit measuring 1.1m in diameter by 0.15m deep. Filled by a grey to black silty sand (073) and an orange to brown silty sand (074). (074) was the upper fill, rich in charcoal. (073) was similarly charcoal rich and included charcoal rich lenses of material (075 and 076). Heat affected stones were present in the natural at the base.
077	Sub-circular pit 1.2m in diameter by 0.15m deep. The upper fill (080) was a silty sand with some pebbles and charcoal fragments. The lower fill (079) was charcoal rich gritty silt overlying a pink/red heat affected sand.
078	Sub-circular pit measuring 1.15m in diameter by 0.15deep. The upper fills (081) and (082) were both disturbed by burrows and roots composed of orange and grey silty sand. The lower fill (083) was a black to grey sandy silt with charcoal and heat affected stones. The natural gravel and sand at the base of the feature were burnt orange.
084	Irregular pit with straight sides and a level base measuring 0.7m long by c.0.5m wide by 0.1m deep. Filled with (085) a grey to black silty sand with gravel and charcoal inclusions.
086	Oval pit with sides sloping at c.45 degrees and a flat base measuring 1.8m by 1.4m by 0.2m deep. Cut by furrow feature [054]. The lower fill (087) was a mid orange brown silty sand with flecks of charcoal. The upper fill (088) was a black to dark grey sandy silt with cracked and degraded heat affected stones.
090	Oval pit measuring 1.6m by 1m by 0.3m deep. Filled with (091) a mixed deposit containing lenses of charcoal and re deposited natural. Some cobbles and patches of stones in the centre.
092	Irregular pit measuring 1.3m by 0.7m by 0.2m deep. Filled by a mixed deposit (093) of charcoal rich silty sand, clean sand and gravel, and an orange brown silty sand with stones.
094	Oval pit measuring 0.6m by 0.35m by 0.05m deep. Filled with (095) dark orange to brown silty sand and gravel with some charcoal.
096	This pit ran out of the stripped area. The exposed portion indicated that it was probably an oval pit and measuring 1.25m by 1.1m (as exposed) by 0.25m deep. The upper fill (100) was a grey to black silty sand with charcoal inclusions and a few pebbles. This overlay a thin layer of re deposited natural which in turn overlay the primary fill (099), a black to dark grey charcoal and gritty silty sand with a few fire cracked stones.
097	Sub-square pit with 45 degree sloping sides and a level base measuring 1.25m by 1.2m by 0.2m deep. Filled with a dark orange to brown silty gritty sand (102) with occasional chunks of charcoal and degraded heat affected stones at the base.
101	Pit measuring 1.9m by 1m by 0.1m deep. Filled with mixed sandy silt (106) with patches of charcoal, heat affected soil and broken stones.

Context No (Cut).	Description
107	Oval pit measuring 0.8m by 0.5m by 0.2m deep. Filled with a mottled silt (108) with occasional pebbles. The natural at the base of this feature appeared to have been heat affected.

### 3.4 Environmental Sample Assessment by Mhairi Hastie

#### Introduction

The Aberdeenshire Council Archaeologist requested two radiocarbon dates be obtained from the pits excavated in Area 9/2, one from each of two separate features. To recover dating material, samples from four separate features were sieved. Material from pits 030 and 034 has been sent for dating and the results are awaited.

#### Methodology

Eleven samples were retained during archaeological investigations in Phase 9/2 at Arnhall Quarry, Aberdeenshire. Four of the samples (Samples 3, 7, 9 and 11), were sieved to try and recover dating material.

Each soil sample was processed through a system of flotation. The floating debris (flot) was collected in a 250 $\mu$ m sieve and the remaining material (retent) in the tank was washed through a 1mm mesh. Both the flot and retents fractions were then air-dried under controlled conditions.

The retents were sorted by eye for small finds and non-buoyant archaeobotanical remains and scanned with a magnet to pick up ferrous debris. Any archaeological significance material was removed and bagged.

The flots were scanned using a binocular microscope (x10-x100 magnifications) and the presence of any charred plant remains and other archaeologically significance material recorded. Identifications of archaeobotanical material were carried out with reference to seed atlases and in-house reference collection.

Where very large quantities of wood charcoal were present, the sample was subdivided and a proportion of the sample sorted. The proportion of sample assessed is noted Table 1.

The results are summarised in Appendix 4, Table 1 (Composition of Flots) and Table 2 (Composition of Retents).

## Results

### Small finds

*Iron Object:* A fragment of curved iron strap was recovered from sample 003, fill of pit (010).

*Burnt Bone:* Small and much abraded fragments of unidentifiable burnt bone were recovered from the fill of pit (010). No other bone fragments were recovered from the samples.

### Carbonised Plant Remains:

Wood charcoal dominated the samples; with only charcoal being recovered from the fills of pits [010] & [026]. Other carbonised plant remains, including some cereal grain, weed seeds and rhizome (underground stem) fragments, were found preserved in the fills of two pits [030] & [034] which were clustered together at the southern edge of the excavated features.

*Cereal grains:* Occasional charred cereal grains were recovered from pits (030 & 034). The cereal grains were in a poor condition being much abraded and fragmentary. Where preservation allowed grains of hulled barley (*Hordeum var vulgare*) and oat (*Avena* sp.) were noted. The oat grains were not sufficiently preserved to identify between the wild or cultivated species. No chaff remains were recovered from the samples.

*Weed seeds:* Small assemblages of carbonised weed seeds (or seeds from wild taxa) were recovered from both pits (030 & 034). The assemblages were dominated by seeds of heath-grass (*Danthonia decubens*), together with lesser amounts of seeds from buttercup (*Ranunculus* sp.), fat hen (*Chenopodium Album*), common cinquefoil (*Potentilla* cf. *erecta*) and grass seeds (Gramineae indet).

*Rhizome:* Small fragments of carbonised rhizomes (underground stem remains) were noted in the fills of two pits (030 & 034).

*Hazelnut shell:* Occasional, small fragments of hazelnut shell were found in the fills of pits [030 & 034].

*Wood charcoal:* Each sample was dominated by wood charcoal. An initial scan of the wood charcoal indicated that three of the pits (026, 030 & 034) contained a charcoal assemblage consisting of a mixture of oak (*Quercus* sp.) and non-oak (i.e. birch, hazel, willow etc) round wood; while, the charcoal from pit (010) was all oak. Small amounts of heather charcoal were also recovered from the fills of pits (030 & 034).

## Discussion

The seed assemblages from pits (030 & 034) are dominated by heath-grass (*Danthonia decumbens*). Today heath-grass is commonly found on heaths on sandy or peaty soils, which are often damp. It is not a weed today but it has been suggested by Hillman (1981) and Van der Veen (1992) that it may have been an arable weed in the past. Hillman (1981 & 1982) suggesting that it was eradicated from arable fields as a result of changes in crop husbandry, as a result of the change in use of the ard plough to more efficient mouldboard plough (Hillman 1981 & 1982). Given the presence of the heath-grass seeds together with other species commonly associated with arable fields, including fat hen and persicaria, it would suggest that the charred seeds from these pits likely represent the remnants of crop-processing waste.

Other carbonised plant remains, including small amounts of carbonised cereal grains and hazelnut shell, suggest that small scale crop processing or food preparation was carried out on site; while the presence of charred rhizome (underground stems) and heather charcoal would suggest that heathy turfs were being collected and used possibly to dampen down fires/hearths.

Together the plant assemblage is indicative of low levels of burnt food remains, crop processing waste and fire fuel which was either dumped into the pits from a domestic fire, or was midden waste that had fallen into the open pits.

## Recommendation

- **Carbonised Plant Remains:** Further detailed analysis of the carbonised plant remains recovered from the site would add little to that provided above.

### 3.5 Radiocarbon Dates

Two dates were obtained and the dating forms are provided at Appendix 5. Pit **030** was dated to between 1285-1397AD and Pit **034** was dated to between 1278-1391AD.

#### 4. CONCLUSION

A watching brief was carried out in advance of quarrying in Phase 9/2 and Phase 10/1 at Arnhall Quarry, Aberdeenshire.

In Phase 9/2 eighteen pits were identified. Most of the pits were located on the ridge above the former course of the River North Esk. The majority of the features appeared to have been deliberately excavated, rather than being stone holes or similar. Most contained charcoal and the samples from two of the pits were processed. The only find was a tiny portion of an iron strap recovered during the processing of samples.

In Phase 10/1 twenty-three pit features were identified along with some furrows from rig-and-furrow cultivation and another undated linear feature.

Many of the pits exhibited traces of burning in their fills, including charcoal and heat affected stones. Some even had what appeared to be heat affected natural at the base suggesting that burning *in situ* was taking place. It certainly seems that many of these features may have been small fire pits.

The result of the sample processing suggests that small scale crop-processing or food preparation was being carried out on site with low levels of burnt food remains, crop processing waste and fire fuel being present in the pits.

The dates from the pits in Phase 9/2 provide a Medieval date and it is considered that the pits from both phases were a continuation of the same group of features. Certainly at least one of the pits (086) from Phase 10/1 was stratigraphically earlier than the furrows.

This group of pits is therefore likely to be considerably later than the features identified in the earlier phases of work where features included a hearth, a possible structure and several pits. Artefacts recovered from the pits included flint flakes and pottery of early and middle Neolithic date and radiocarbon dating of charcoal fragments returned a date range of 3780BC-3640BC from one feature.

A summary statement of the results of this programme of works will be submitted for publication in *Discovery and Excavation in Scotland* on completion of the whole project. An online *OASIS* entry will be completed.

The project archive, comprising all CFA record sheets, maps and reports, will be deposited with Historic Environment Scotland and copies of reports will be lodged with the Aberdeenshire Council Sites and Monuments Record.

## 5. REFERENCES

Hillman, G. 1981 Reconstructing crop husbandry practices from charred remains of crops. In Mercer, R. (ed.), *Farming Practice in British Prehistory*. Edinburgh, Edinburgh University Press, 123-162.

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## APPENDIX 1: Context Register

Context	Fill of	Description
<b>Area 9</b>		
001		Topsoil
002		Subsoil
003		Natural
004		Cut of oval pit
005	004	Brown to grey gravel and sand
006		Cut of circular pit
007	006	Dark brown to black sandy silt
008		Cut of circular pit
009	008	Dark brown to fine black silt
010		Cut of oval pit
011	010	Dark brown to black silty sand with charcoal
012		Cut of circular pit
013	012	Mid to light brown silty sand with pebbles
014		Cut of oval pit
015	014	Mid to light brown silty sand
016		Cut of circular pit
017	016	Dark brown sandy silt with charcoal
018		Cut of oval pit
019	018	Dark orange to brown silty sand with charcoal
020		Cut of oval pit
021	020	Dark orange to brown silty sand
022		Cut of circular pit
023	022	Dark orange to brown silty sand
024		Cut of circular pit
025	[024]	Dark brown to black sandy silt with charcoal
026		Cit of circular pit
027	[026]	Dark brown silty sand with charcoal
028		Cut of circular pit
029	028	Mid yellow to brown silty sand
030		Cut of circular pit
031	030	Dark brown sandy silt with charcoal
032		Cut of circular pit
033	032	Mid brown silty sand
034		Cut of circular pit
035	034	Dark brown sandy silt with charcoal
036		Cut of circular pit
037	036	Dark brown to grey sandy silt
038		Cut of oval pit
039	038	Yellow to light brown silty sand with charcoal
<b>Area 10</b>		
040		Cut for large sub-circular pit
041	040	Mixed black and grey silty sand with charcoal
042		Cut for sausage shaped pit
043		Mixed fill. Mostly dark brown silty sand with charcoal flecks
044		Cut for oval pit
045	044	Dark orange brown silty sand with charcoal and possibly burnt bone fragments
046		Cut for pit
047	046	Dark orange-brown gritty sandy silt & gravel. Charcoal flecks
048	046	Creamy-white sand & gravel with charcoal flecks
049	046	Ginger silty sand & gravel with charcoal flecks
050		Cut for sub-circular pit
051	050	Mixed deposit. Orange-brown silty sand, redeposited orange natural subsoil, heated & unheated cobbles & charcoal

052		Cut for sub-circular pit
053	052	Mixed deposit. Orange-brown silty sand, redeposited orange natural subsoil, heated & unheated cobbles & charcoal
054		Cut for NNW-SSE aligned furrows
055	054	Mid brown silty sand & cobbles
056		Cut for narrow ditch parallel with furrows
057	056	Mid yellow-brown silty sand & cobbles
058		Cut for circular pit
059	058	Black silt & charcoal
060	058	Mottled yellow-grey, yellow-orange & grey silty sand with pebbles and charcoal flecks
061		Cut for pit
062	061	Mottled grey-black silty sand & charcoal
063	061	Mid orange-brown silty sand & cobbles
064		Cut for pit
065	064	Mottled blue-black silt & charcoal with mid-brown silty sand
066		Cut for pit
067	066	Mottled blue-black silt & charcoal with mid-brown silty sand
068		Cut for pit
069	068	Grey-black gritty silt, cobbles & charcoal
070	068	Mid orange-brown silty sand & cobbles with charcoal
071	068	Light orange-brown silty sand & cobbles
072		Cut for pit
073	072	Grey & grey-black streaky silty sand & pebbles
074	072	Orange-brown & black streaky silty sand & pebbles
075	072	Charcoal lens
076	072	Charcoal lens in base
077		Cut for sub-circular pit
078		Cut for sub-circular pit
079	077	In-situ charcoal & silt fill
080	077	Mixed disturbed fill
081	078	Mixed disturbed fill
082	078	Mid orange-grey-brown silty sand & charcoal flecks
083	078	Grey-black & black sandy silt & charcoal & heated stones
084		Cut for oval pit
085	084	Grey-black & black silty sand, pebbles & charcoal
086		Cut for pit
087	086	Mid orange-brown silty sand
088	086	Mixed black silt & charcoal & redeposited natural subsoil & stones, some heated
089	054	Mixed deposit
090		Cut for pit
091	090	Mixed deposit of dark orange-brown silty sand with black patches with cobbles & charcoal
092		Cut for pit
093	092	Mixed deposit of dark orange-brown silty sand with black patches with cobbles & charcoal
094		Cut for pit
095	094	Mixed deposit of dark orange-brown silty sand with black patches with cobbles & charcoal
096		Cut for possible pit, Not fully exposed
097		Cut for pit
098	096	Brownish-orange heated? Redeposited natural with cobbles & charcoal flecks
099	096	Black & grey-black charcoal & silty sand. Much charcoal & a few pebbles
100	096	Grey-black gritty silty sand & charcoal
101		Cut for probable pit
102	097	Dark orange-brown silty sand
103	097	Black gritty silt & charcoal



104	097	Black gritty silt & charcoal
105	097	Dark orange-brown silty sand
106	101	Mixed deposit
107		Cut for pit
108	107	Mottled brown & orange silt. Possibly burnt turf

## APPENDIX 2: Photograph Register

Number	Description	Taken from
	<b>Phase 9/2</b>	
1	general shot of stripped area	NW
2	pre- ex shot of Pit 004	SE
3	Pit 004 in section	SE
4	Pre- ex shot of pit 006	NW
5	Pit 006 in section	NE-E
6	general shot of stripped area	SE
7	general shot of stripped area	S
8	general shot of stripped area	NW
9	general shot of stripped area	N
10	general shot of stripped area	W
11	Pre- ex of pit 008	NE
12	Pit 008 in section	NW
13	general shot of stripped area	S
14	Pre- ex of pit 010	N
15	SE- facing section of pit 010	SE
16	Pit 012 in section	SE
17	Pre- ex of pit 014	
18	SE- facing section of pit 014	SE
19	Pre- ex of pit 016	S
20	S- facing section of pit 016	S
21	Pre- ex of pit 018	S
22	Pits 018, 020, 022 in section	S
23	Pre- ex of pit 024	S
24	half sectioned pit 024	S
25	Pre- ex of pit 026	S
26	Pit 026 in section	S
27	general shot of stripped area	E
28	general shot of stripped area	SE
29	general shot of stripped area	S
30	Pre- ex of Pit 028	S
31	Pits 028 in section	S
32	Pre- ex of pit 032	S
33	Pit 032 in section	S
34	Pit 030 in section	S
35	Pre- ex of 034	S
36	Pit 034 in section	S
37	Pre- ex of pit 036	S
38	Pit 036 in section	S
39	Working shot showing gravel/ sand natural	S
40	Working shot showing gravel/ sand natural	SW
41	general shot of stripped area	NW
42	Pit 038 in section	S
43	general shot of stripped area	E
44	general shot of stripped area	N
45	general shot of stripped area	S

	Phase 10/1	
46-48	Pre-ex views of the southern part of Area 10	SSW
49-50	View of the section through the natural gravels and the boundary between Area 9 and Area 10	SSE
51-52	Pre-ex views of the southern part of Area 10	SE
53-54	Views of the stripped area 16/8/17	SW
55	Furrows 054 and ditch 056 general view	NNW
56	Furrows 054 and ditch 056 general view	SSE
57	Furrow on the WSW side and adjacent ditch	SSE
58	Pit 040 pre-ex	S
59-60	Pit 040 section	W
61	Pit 042 pre-ex	NNW
62-63	Pit 042 section	SSE
64	Pits 044, 046 pre-ex not cleaned	SSE
65	Pit 044 pre-ex not cleaned	SSE
66	Pit 046 pre-ex not cleaned	SSE
67	Pit 046 pre-ex cleaned	SSE
68-69	Pit 046 section	NE
70-71	Pit 044 section & plan view	SE
72	Pit 050 pre-ex	SSW
73	Pit 050 general view	S
74	Pit 050 section	SSW
75	Pit 050 plan view of half section	SSW
76	Pit 052 pre-ex	NW
77	Pit 050 general view including pit 050	NW
78	Pit 052 section	SW
79-80	Furrows 054 & ditch 056 pre-ex	SSE
81	Furrows 054 & ditch 056 pre-ex	SSW
82	Furrows 054 & ditch 056 pre-ex	NNW
83-84	Furrows 054 & ditch 056 exc	NNW
85	Furrow 054 section	NNW
86	Ditch 056 section	NNW
87	General view of the furrow and ditch area	SSE
88	Pit 058 pre-ex general view	W
89	Pit 058 pre-ex close-up	W
90-91	Pit 058 section views	SSW
92	Pit 061 pre-ex	NE
93-94	Pit 061 pre-ex & general view	SE
95	Ditch 056 post-ex showing uneven base	NW
96	Pit 061 section	NW
97	Pit 066 showing truncation of 0.1m by unmonitored machine	S
98	Pit 064 pre-ex	SSE
99	Pit 064 pre-ex general view	SE
100	Pit 064 plan view of exc half	SSE
101	Pit 064 section	SSE
102	Pit 068 pre-ex	NE
103-104	Pit 068 section	NE
105	Pit 068 plan view of exc half showing infilled cobble holes	N
106	Pits 068, 072 general view	NE
107	Pit 072 section	SSW
108-110	General view of the site	SSW
111	Pit 066 pre-ex	SE
112	Pit 066 pre-ex showing plough scores through the fill	NW
113	Pit 066 section	SW
114	Pits 077, 078 pre-ex	S
115	Pit 077 pre-ex	S
116	Pit 077 plan view of exc half	ENE

117	Pit 077 section	ENE
118	Pit 078 pre-ex	SW
119	Pit 078 section	NE
120	Pit 078 plan view of exc half	NE
121	Charcoal deposit in furrow 054 fill pre-ex	NE
122	Charcoal deposit in furrow 054 fill pre-ex	NE
123-124	Charcoal deposit in furrow fill excavated and section	SE
125	Pit 084 pre-ex	SW
126	Pit 084 section	SW
127	General view of furrow 054 alignment. Looks like it runs through pit 086	SE
128	Pit 086 pre-ex	SSE
129	Pit 086 pre-ex	ENE
130	Pit 086 section	SSE
131	Pit 086 plan view of exc half	ENE
132	Pit 090 pre-ex	NE
133	Pit 090 section	NE
134	Pit 092 pre-ex	ENE
135	Pit 092 section	SSE
136	Pit 094 pre-ex	NW
137	Pit 094 section	NW
138	Pit 097 pre-ex shoeing machine truncation	NE
139	Probable pit 096 pre-ex	SE
140-142	Probable pit 096 section	SE
143	Pit 097 pre-ex showing machine truncation	N
144	Pit 097 general view	NE
145	Machine truncation of features	SE
146-147	Pit 097 section	E
148	Pit 101 pre-ex	SSW
149	Pit 101 section	SSW
150	Pit 107 pre-ex	SSW
151-152	Pit 107 section	SSW
153-154	Post stripping views of the southern half of Area 10	SW/W

### APPENDIX 3: Drawings Register

Drawing Number	Sheet Number	Description	Sec/ Plan	Scale
1	1	Section of pit 004	Sec	1:10
2	1	Plan of pit 004	Plan	1:20
3	1	NE- facing section of pit 006	Sec	1:10
4	1	Plan of pit 006	Plan	1:20
5	1	NW- facing section of pit 008	Sec	1:10
6	1	Plan of pit 008	Plan	1:20
7	1	SE- facing section of pit 010	Sec	1:10
8	1	Plan of pit 010	Plan	1:20
9	1	SE facing section of pit 012	Sec	1:10
10	1	Plan of pit 012	Plan	1:20
11	1	SE facing section of pit 014	Sec	1:10
12	1	Plan of pit 014	Plan	1:20
13	2	S- facing section of pit 016	Sec	1:10
14	2	Plan of pit 016	Plan	1:20
15	2	Plan of group of pits 018, 020 & 022	Plan	1:20
16	2	S- facing section of pit 018	Sec	1:10
17	2	S- facing section of pit 020	Sec	1:10
18	2	S- facing section of pit 022	Sec	1:10
19	2	Plan of pit 024	Plan	1:20

20	2	S- facing section of pit 024	Sec	1:10
21	2	Plan of pit 026	Plan	1:20
22	2	S- facing section of pit 026	Sec	1:10
23	2	Section of pit 028	Sec	1:10
24	2	Plan of pit 028	Plan	1:20
25	2	Plan of pit 030	Plan	1:20
26	2	S- facing section of pit 030	Sec	1:10
27	2	Plan of pit 032	Plan	1:20
28	2	S- facing section of pit 032	Sec	1:10
29	2	S- facing section of pit 034	Sec	1:10
30	2	Plan of pit 034	Plan	1:20
31	2	Plan of pit 036	Plan	1:20
32	2	S- facing section of pit 036	Sec	1:10
33	2	Plan of pit 038	Plan	1:20
34	2	S- facing section of pit 038	Sec	1:10
		<b>Area 10</b>		
35	12	Pit 040 W facing section	Sec	1:20
36	12	Pit 040 half section plan	Plan	1:20
37	12	Pit 042 SSE facing section	Sec	1:20
38	12	Pit 042 half section plan	Plan	1:20
39	12	Pit 046 NE facing section	Sec	1:10
40	12	Pit 046 half section plan	Plan	1:20
41	12	Pit 044 SE facing section	Sec	1:10
42	12	Pit 044 half section plan	Plan	1:20
43	12	Pit 050 SSW facing section	Sec	1:10
44	12	Pit 050 half section plan	Plan	1:20
45	13	Pit 052 SW facing section	Sec	1:20
46	13	Pit 052 half section plan	Plan	1:20
47	13	Furrow 054 & ditch 056 sections	Sec	1:20
48	13	Furrow 054 & ditch 056 post-ex plan	Plan	1:20
49	13	Pit 058 SSW facing section	Sec	1:20
50	13	Pit 058 half section plan	Plan	1:20
51	13	Pit 061 NW facing section	Sec	1:20
52	13	Pit 061 half section plan	Plan	1:20
53	14	Pit 064 SSE facing section	Sec	1:20
54	14	Pit 064 half section plan	Plan	1:20
55	14	Pit 068 NE facing section	Sec	1:10
56	14	Pit 068 half section plan	Plan	1:20
57	14	Pit 072 SSW facing section	Sec	1:10
58	14	Pit 072 half section plan	Plan	1:20
59	14	Pit 066 SW facing section	Sec	1:10
60	14	Pit 066 half section plan	Plan	1:20
61	14	Pit 077 ENE facing section	Sec	1:10
62	14	Pit 077 half section plan	Plan	1:20
63	15	Pit 078 NE facing section	Sec	1:10
64	16	Pit 078 half section plan	Plan	1:20
65	16	Pit 084 SW facing section	Sec	1:10
66	16	Pit 084 half section plan	Plan	1:20
67	16	Pit 086 SSE facing section	Sec	1:10
68	16	Pit 086 half section plan	Plan	1:20
69	16	Pit 090 NE facing section	Sec	1:10
70	16	Pit 090 half section plan	Plan	1:20
71	16	Pit 092 SSE facing section	Sec	1:10
72	16	Pit 092 half section plan	Plan	1:20
73	16	Pit 094 NW facing section	Sec	1:10
74	16	Pit 094 half section plan	Plan	1:20
75	16	Pit 096 SE facing section	Sec	1:10
76	16	Pit 096 half section plan	Plan	1:20

77	16	Pit 097 E facing section	Sec	1:10
78	16	Pit 097 half section plan	Plan	1:20
79	16	Pit 101 SSW facing section	Sec	1:20
80	16	Pit 101 half section plan	Plan	1:20
81	16	Pit 107 SSW facing section	Sec	1:10
82	16	Pit 107 half section plan	Plan	1:20

## APPENDIX 4: Sample Processing Results

**Table 1. Composition of Flots**

Sample Number	Context Number	Fill of	Feature type	Approx. Flot Vol (ml)	% of Sample Sorted	Cereal Grain			Weed seeds		Rhiz.	HShell	HC	Wood Charcoal	
						Qty	Pres	Id	Qty	Id					
003	011	010	Pit	1000	25%									++++	oak
007	027	026	Pit	500	25%									++++	oak & non-oak
009	031	030	Pit	250	100%	+	f, ma	oat ( <i>Avena</i> sp.)	+++	heath-grass ( <i>Danthonia decumbens</i> ) dock ( <i>Rumex</i> sp.) buttercup ( <i>Ranunculus</i> sp.) fat hen ( <i>Chenopodium album</i> ) grass family (Gramineae indet.) common cinquefoil ( <i>Potentilla</i> cf. <i>erecta</i> )	+	+(SF)	+	++++	oak & non-oak
011	035	034	Pit	250	100%	+	f, a	hulled barley ( <i>Hordeum</i> var <i>vulgare</i> ) oat ( <i>Avena</i> sp.)	++	heath-grass ( <i>Danthonia decumbens</i> ) persicaria ( <i>Polygonum persicaria/lapathifolium</i> ) fat hen/orache (Chenopodiaceae indet.) grass family (Gramineae indet.) Pink family (Caryophyllaceae indet)	++	+(SF)	++	++++	oak & non-oak

**Table 2. Composition of Retents**

Sample Number	Context Number	Fill Of	Feature type	Approx. Sample Vol (litre)	Iron Obj	Burnt Bone	Wood Charcoal
003	011	010	Pit	10	+	+(SF)	++
007	027	026	Pit	10			++
009	031	030	Pit	10			++
011	035	034	Pit	20			++

**Key:** += rare (1-10 items), ++ = occasional (11-50 items), +++ = common (51-100 items) and ++++ = abundant (>101 items)  
 Rhiz. = rhizomes (underground stem); HShell = Hazelnut Shell; HC = Heather Charcoal; FP = Fire Pit  
 SF = small fragments (<5mm in diameters)  
 f = fragmentary, a = abraded, ma = much abraded



Scottish Universities Environmental Research Centre

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Director: Professor F M Stuart Tel: +44 (0)1355 223332 Fax: +44 (0)1355 229898 www.glasgow.ac.uk/suerc



**RADIOCARBON DATING CERTIFICATE**

13 November 2017

**Laboratory Code** SUERC-75860 (GU45419)

**Submitter** Christina Hills  
CFA Archaeology Ltd  
Old Engine House, Eskmills Park  
Musselburgh  
East Lothian, EH21 7PQ

**Site Reference** AQUA  
**Context Reference** 31  
**Sample Reference** 9

**Material** Charcoal : Corylus

**$\delta^{13}\text{C}$  relative to VPDB** -27.2 ‰

**Radiocarbon Age BP** 636 ± 29

**N.B.** The above  $^{14}\text{C}$  age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, 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.

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. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon* 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at [suerc-c14lab@glasgow.ac.uk](mailto:suerc-c14lab@glasgow.ac.uk).

Conventional age and calibration age ranges calculated by : E. Dunbar

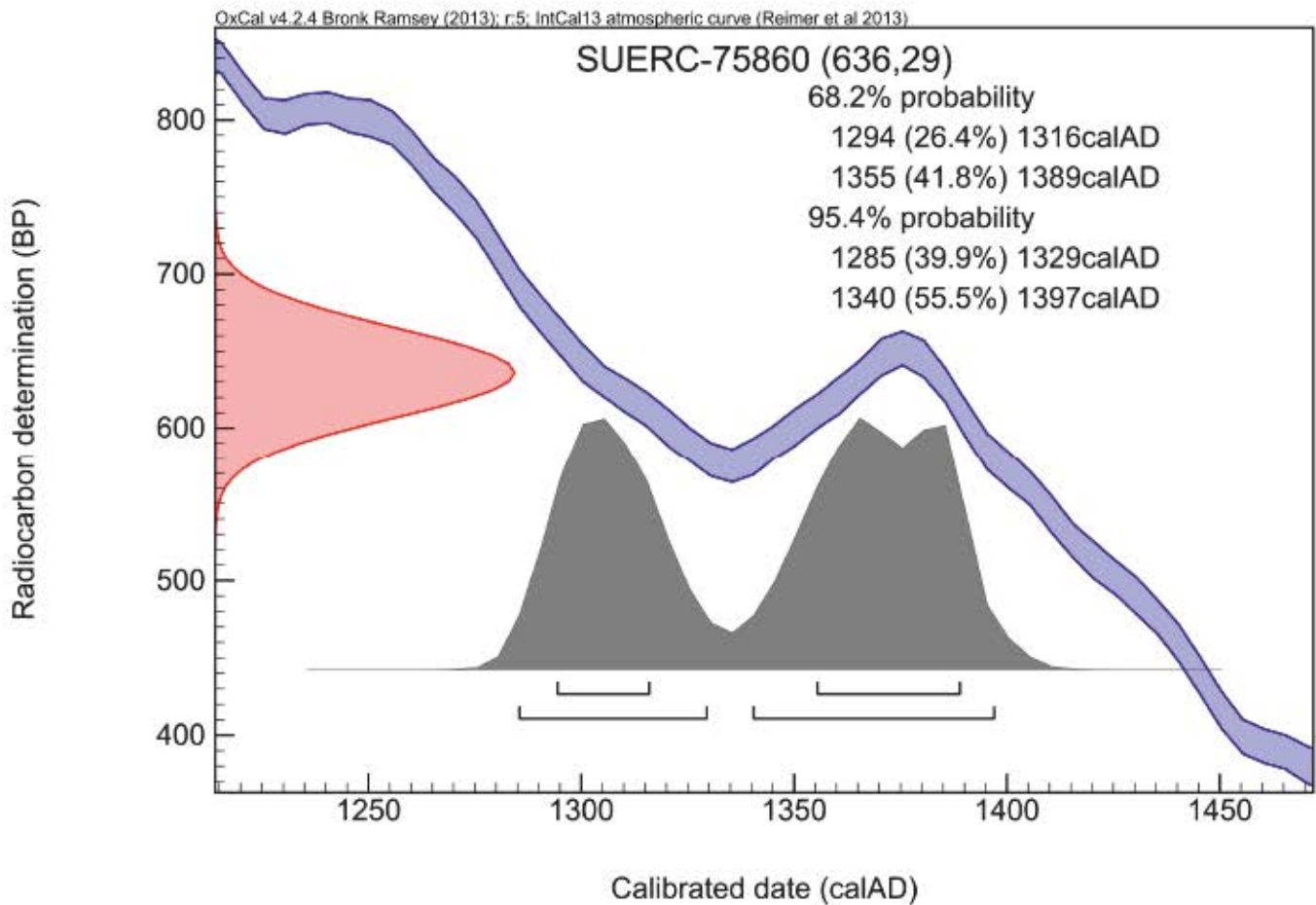
Checked and signed off by : P. Nayson



The University of Glasgow, charity number SC004401



The University of Edinburgh is a charitable body, registered in Scotland, with registration number SC005336



The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.\*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

\* Bronk Ramsey (2009) *Radiocarbon* 51(1) pp.337-60

† Reimer et al. (2013) *Radiocarbon* 55(4) pp.1869-87





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**RADIOCARBON DATING CERTIFICATE**

13 November 2017

**Laboratory Code** SUERC-75864 (GU45420)

**Submitter** Christina Hills  
CFA Archaeology Ltd  
Old Engine House, Eskmills Park  
Musselburgh  
East Lothian, EH21 7PQ

**Site Reference** AQUA  
**Context Reference** 35  
**Sample Reference** 11

**Material** Charcoal : Corylus

**$\delta^{13}\text{C}$  relative to VPDB** -28.0 ‰

**Radiocarbon Age BP** 662  $\pm$  26

**N.B.** The above  $^{14}\text{C}$  age is quoted in conventional years BP (before 1950 AD) and requires calibration to the calendar timescale. The error, 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.

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. The laboratory GU coding should also be given in parentheses after the SUERC code.

Detailed descriptions of the methods employed by the SUERC Radiocarbon Laboratory can be found in Dunbar et al. (2016) *Radiocarbon* 58(1) pp.9-23.

For any queries relating to this certificate, the laboratory can be contacted at [suerc-c14lab@glasgow.ac.uk](mailto:suerc-c14lab@glasgow.ac.uk).

Conventional age and calibration age ranges calculated by :

E. Dunbar

Checked and signed off by :

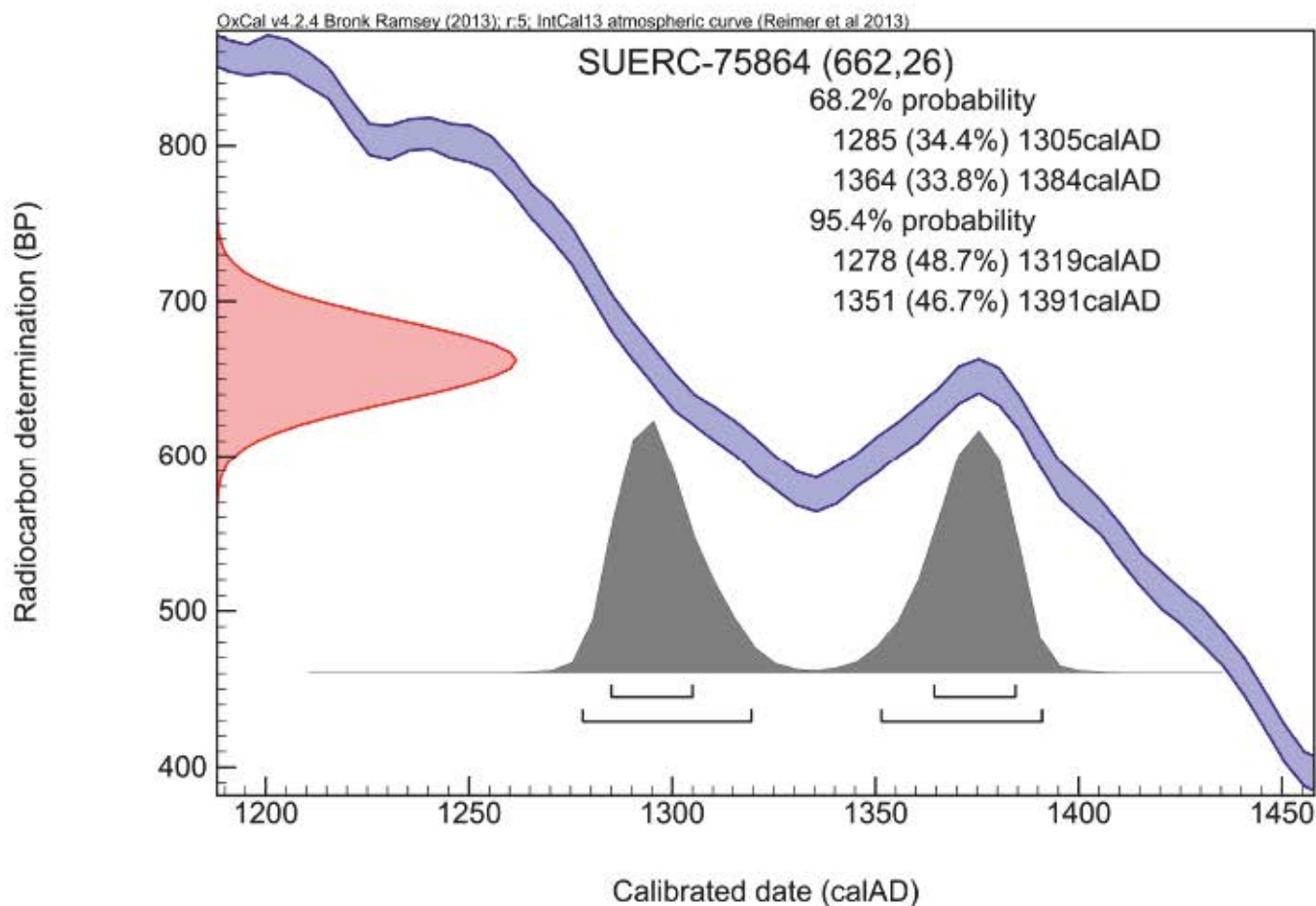
P. Nayantub



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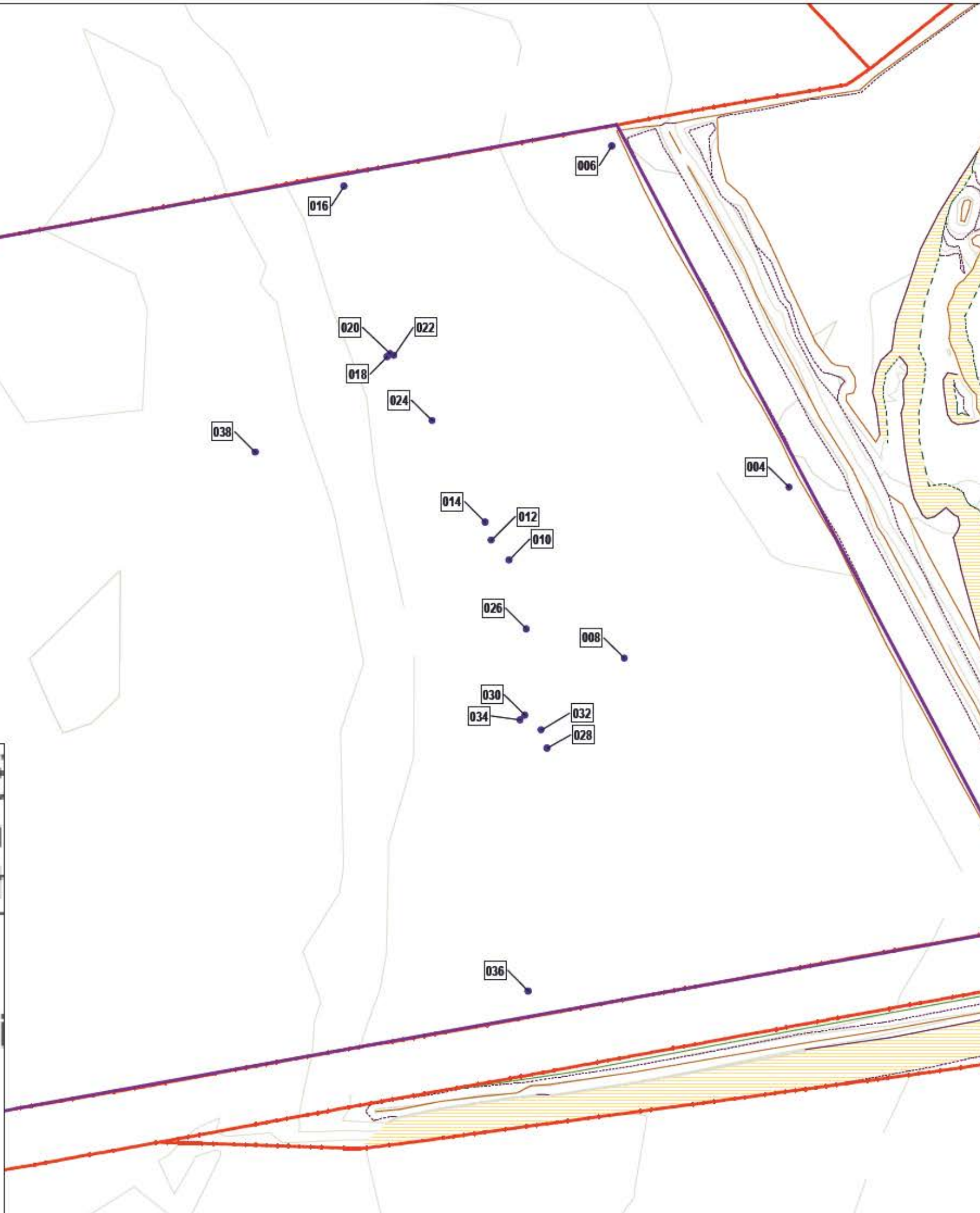
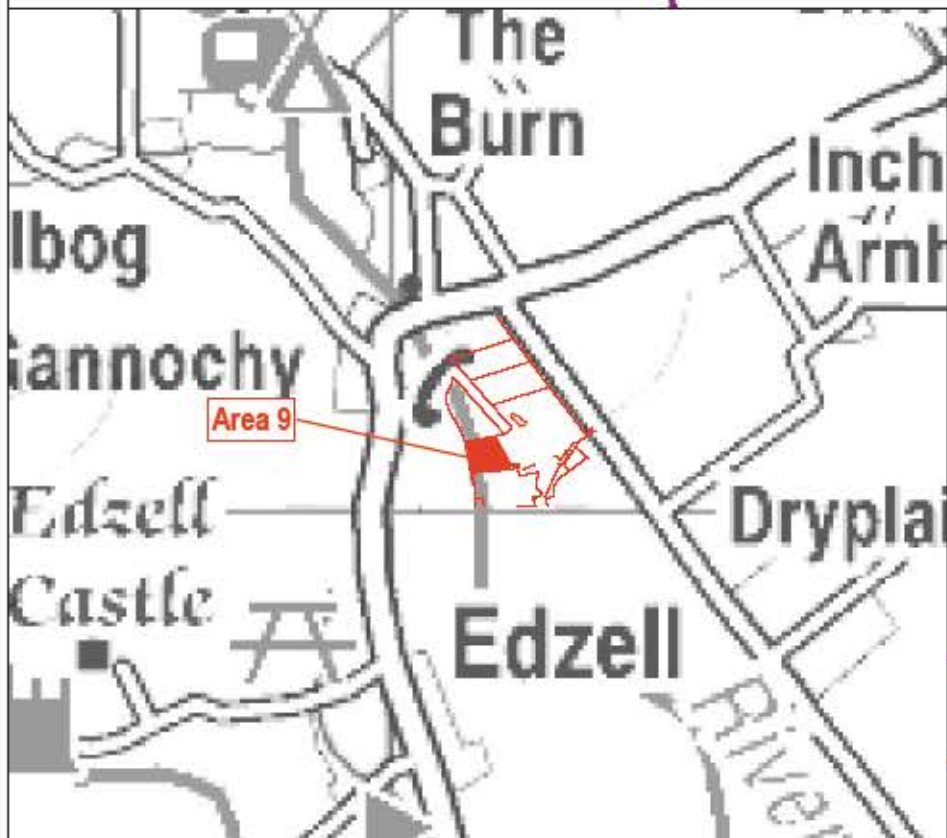
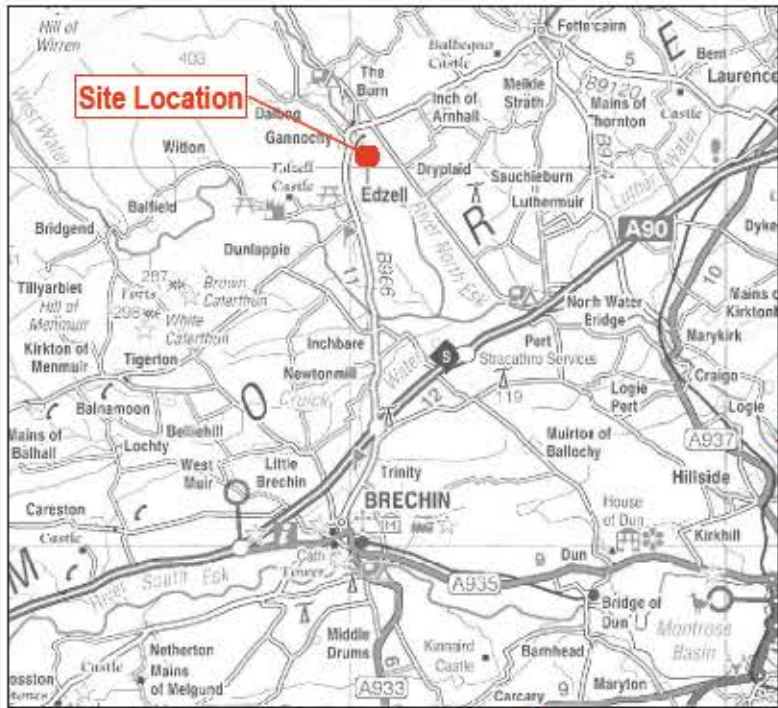
The radiocarbon age given overleaf is calibrated to the calendar timescale using the Oxford Radiocarbon Accelerator Unit calibration program OxCal 4.\*

The above date ranges have been calibrated using the IntCal13 atmospheric calibration curve†

Please contact the laboratory if you wish to discuss this further.

\* Bronk Ramsey (2009) *Radiocarbon* 51(1) pp.337-60

† Reimer et al. (2013) *Radiocarbon* 55(4) pp.1869-87



**Key:**

- Redline Boundary
- Striped Area
- Archaeological Feature

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**Title:**  
Location Map of Area no 9 at  
Breedon Edzell Quarry  
showing archaeological features

**Project:**  
Arnhall Quarry, near Edzell

**Client:**  
CgMs Consulting on behalf of  
Breedon Aggregates

**Scale at A3:**  
1:800

<b>Drawn by:</b> SW	<b>Checked:</b> BG	<b>Date:</b> 30/10/2017
<b>Report No:</b> 3564	<b>Fig. No:</b> 1	



Fig. 2 - Pre-ex shot of Pit 008



Fig. 3 - Pit 014 in section

Project:  
Arnhall Quarry, near Edzell



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Client:  
CgMs Consulting on behalf of Breedon Aggregates

Drawn by: SW	Checked: BG	Date: 01/11/17
Report No: 3564		Fig. No: 2 - 3



Fig. 4 - Pits 018, 020 and 022 in section



Fig. 5 - Pit 010 in section

Project:  
**Arnhall Quarry, near Edzell**



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Drawn by: <b>SW</b>	Checked: <b>BG</b>	Date: <b>01/11/17</b>
Report No: <b>3564</b>		Fig. No: <b>4 - 5</b>



Fig. 6 - Pre-ex shot of Pit 028



Fig. 7 - Circular Pit 034 in section

Project:  
Arnhall Quarry, near Edzell



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Client:  
CgMs Consulting on behalf of Breedon Aggregates

Drawn by: SW	Checked: BG	Date: 01/11/17
Report No: 3564		Fig. No: 6 - 7



Fig. 8 - Pit 036 in section



Fig. 9 - Pit 038 in section

Project:  
Arnhall Quarry, near Edzell



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Drawn by: SW	Checked: BG	Date: 01/11/17
Report No: 3564		Fig. No: 8 - 9



Fig. 10 - Pit 016 in section



Fig. 11 - Pit 026 in section

Project:  
Arnhall Quarry, near Edzell

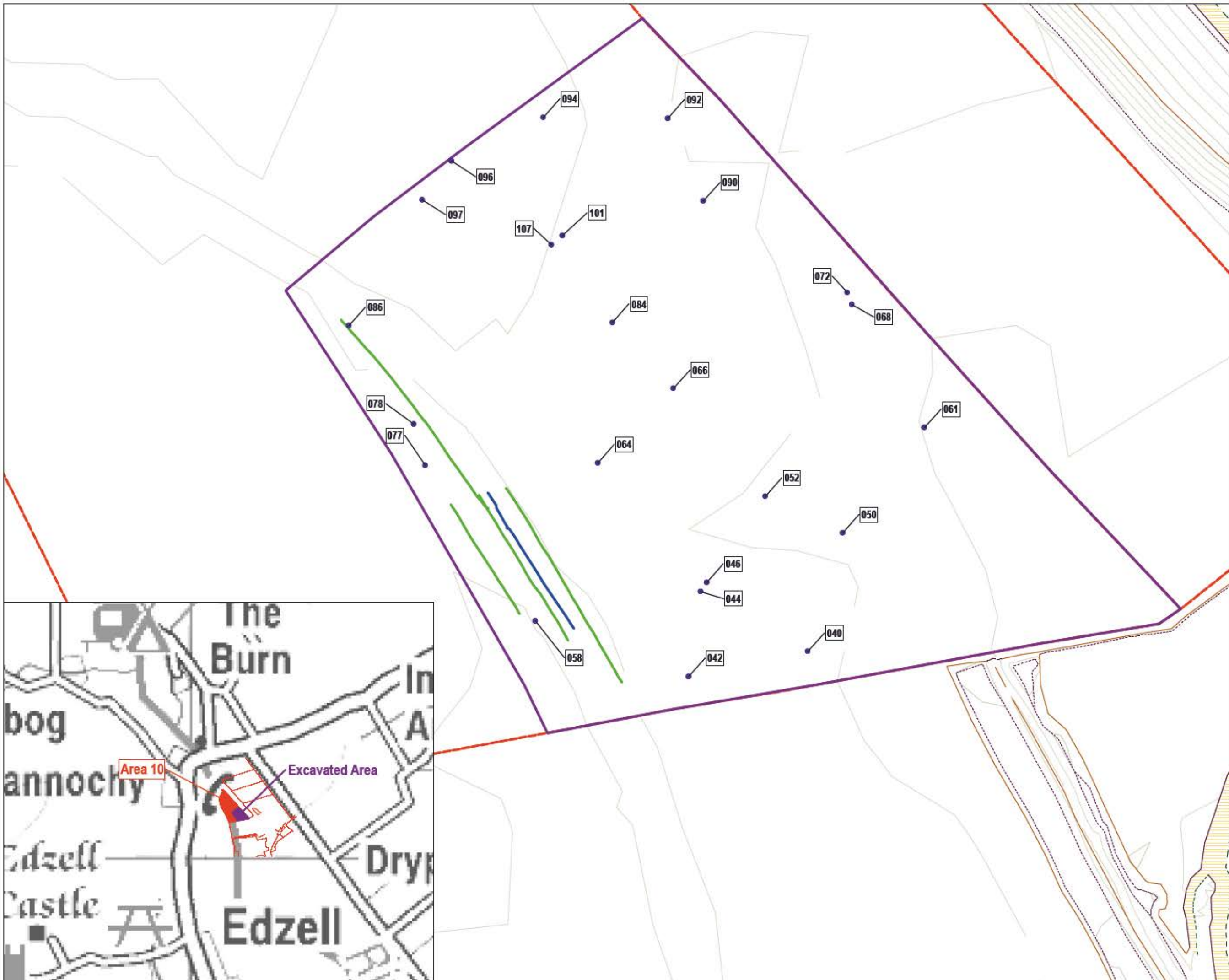


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Client:  
CgMs Consulting on behalf of Breedon Aggregates

Drawn by: SW	Checked: BG	Date: 01/11/17
Report No: 3564		Fig. No: 10 - 11





**Key:**

- Redline Boundary
- Stripped Area
- Ditch 056
- Furrow
- Archaeological Feature



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**Title:**  
 The location of Phase 10/1 within Arnhall Quarry and a plan of the archaeological features

**Project:**  
 Arnhall Quarry, near Edzell

**Client:**  
 CgMs Consulting on behalf of Bredon Aggregates

**Scale at A3:**  
 1:700

<b>Drawn by:</b> SW	<b>Checked:</b> BG	<b>Date:</b> 16/11/2017
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<b>Report No:</b> 3564	<b>Fig. No:</b> 12
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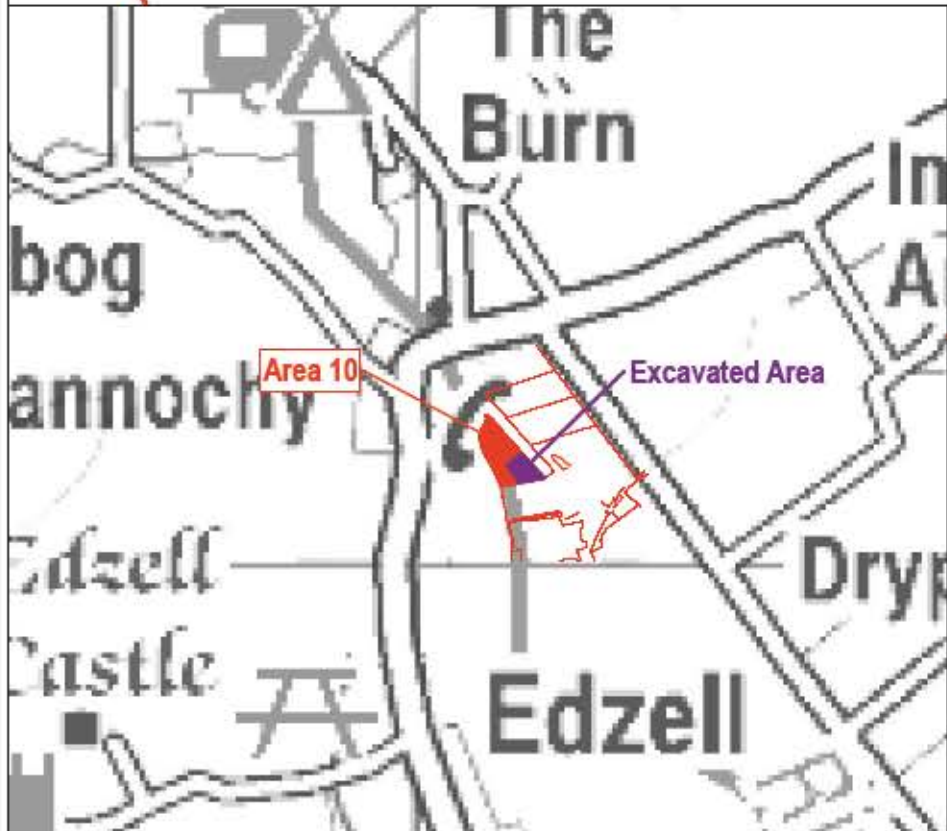




Fig. 13 - Phase 10/1 pre-stripping



Fig. 14 - General view of the site from the SW

Project:  
Arnhall Quarry, near Edzell



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Client:  
CgMs Consulting on behalf of Breedon Aggregates

Drawn by: MP	Checked: SW	Date: 23/10/17
Report No: 3564		Fig. No: 13-14



Fig. 15 - Furrow 054 and parallel ditch 056 pre-ex from SSE



Fig. 16 - Furrow 054 and parallel ditch 056 sections from NNW

Project:  
Arnhall Quarry, near Edzell



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Client:  
CgMs Consulting on behalf of Breedon Aggregates

Drawn by: MP	Checked: SW	Date: 23/10/17
Report No: 3564		Fig. No: 15-16



Fig. 17 - Pit 050 section from SSW



Fig. 18 - Pit 058 section from SSW

Project:  
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Fig. 19 - Pits 068, 072 general view from NE



Fig. 20 - Pits 077, 078 general view from S

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Fig. 21 - Pit 077 section from ENE



Fig. 22 - Pit 078 section from NE

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Fig. 23 - Pit 096 section from SE



Fig. 24 - Pit 097 pre-ex from the NE

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