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Wind Turbines at Roseland Farm, Shirebrook, Derbyshire

Archaeological Evaluation Report

Ref: 103360.01
March 2014

archaeology

Wind Turbines at Roseland Farm, Shirebrook, Derbyshire

Archaeological Evaluation

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Summary

Wessex Archaeology was commissioned by ECUS Ltd. on behalf of the Roseland Community Energy Trust to undertake a programme of archaeological evaluation trenching in advance of the proposed installation of wind turbines and associated access tracks at Roseland Farm, Shirebrook, Derbyshire, NGR 450575 367583.

Three trenches were excavated, two located over proposed turbine bases and one to investigate a cropmark located within the area of the proposed access track.

Only one feature of archaeological interest was observed: a ditch within Trench 1, targeted over Turbine 5. The ditch was likely related to agricultural activity, possibly a field boundary. The date is unclear, though Romano-British pottery has previously been recorded in the area of Turbine 5 and the ditch may be similarly dated. The cropmark within Trench 2 was shown to be the result of a natural depression in the bedrock.

The archive is currently held at the offices of Wessex Archaeology in Sheffield, under the project code 103360. The archive will be deposited with Museums Sheffield under the accession number SHEFM2014.19. An OASIS form will be submitted at the time of deposition.

Wind Turbines at Roseland Farm, Shirebrook, Derbyshire

Archaeological Evaluation

Acknowledgements

The project was commissioned by ECUS Ltd. on behalf of Roseland Community Energy Trust and Wessex Archaeology is grateful to Paul White in this regard. The project was monitored for Derbyshire County Council by Steve Baker.

Fieldwork was carried out by Sam Fairhead with the assistance of Charlotte Burton. The report was compiled by Sam Fairhead with illustrations by Chris Swales. Samples were processed and analysed by Ellen Simmons.

The project was managed for Wessex Archaeology by Lucy Dawson.

Wind Turbines at Roseland Farm, Shirebrook, Derbyshire

Archaeological Evaluation

1 INTRODUCTION

1.1 Project background

1.1.1 Wessex Archaeology was commisioned by ECUS Ltd. (hereafter 'the Client') on behalf of the Roseland Community Energy Trust to undertake a programme of archaeological evaluation trenching in advance of the proposed installation of wind turbines and associated access tracks at Roseland Farm, Shirebrook, Derbyshire, NGR 450575 367583 (hereafter 'the Site').

1.1.2 A limited amount of evaluation trenching had previously been carried out on the Site (Headland Archaeology 2011b). This, combined with a desk-based assessment (DBA) (ECUS 2012) and previous geophysical survey (Headland Archaeology 2011a) suggested an increased archaeological potential in the area of Turbines 5 and 6, and further evaluation trenching was requested by the Derbyshire Development Control Archaeologist.

1.2 The Site

1.2.1 The Site is located on land at Roseland Farm, 1.3km west of Shirebrook, Derbyshire, NGR 450575 367583 (**Figure 1**) and is bordered to the north by Roseland Wood and by arable land to the east, west and south. The Site itself comprises arable land, located between 137m and 150m aOD. The underlying geology is Dolostone of the Cadeby Formation (British Geological Survey online).

2 ARCHAEOLOGICAL BACKGROUND

2.1 Introduction

2.1.1 The following is summarised from the DBA (ECUS 2012).

2.1.2 The DBA revealed that the overall potential for below ground archaeology was low, but with the potential for truncated remains of Romano-British or Prehistoric activity. Isolated find spots of Roman pottery and worked flint within the development boundary, along with two proximal crop mark sites suggested that surviving archaeology may be encountered. However, a long history of ploughing from the medieval period onwards indicates that this may now be heavily truncated.

2.1.3 Near to the location of Turbine 5, the Historic Environment Record (HER) records an artefact scatter of Neolithic flints, including blades and waste material along with nine sherds of Romano-British pottery. To the east of Turbine 6 and located on the proposed access track to the turbine, a possible sub-circular cropmark enclosure is recorded.

2.2 Recent investigations in the area

2.2.1 A geophysical survey was undertaken in October 2011, targeting Turbines 1, 2 and 4 (Headland Archaeology 2011a). Anomalies interpreted as possible linear and circular features of moderate or low archaeological potential were revealed.

2.2.2 A limited amount of evaluation trenching followed, targeting the more prominent anomalies (Headland Archaeology 2011b). No features of archaeological significance were revealed, geological variations and plough scarring were shown to be responsible for the geophysical anomalies.

3 METHODOLOGY

3.1 Aims and objectives

3.1.1 The general aims of the project were:

- *to identify the presence or absence of any archaeological deposits within the Site;*
- *to determine the extent, condition, character, significance and date of any archaeological deposits encountered;*
- *to accurately record any revealed archaeological deposits;*
- *to recover artefacts disturbed by the Site works;*
- *to prepare a comprehensive archive, record and report of any archaeological deposits disturbed by the Site works;*
- *to aid the production of a mitigation strategy for the Site (if necessary).*

3.2 Fieldwork methodology

3.2.1 The evaluation comprised the excavation of three trenches (**Figure 1**). The trenches were located by means of a RTK GPS system and tied into the OS grid (within 0.1m). All three trenches were 25m in length, one targeting a cropmark and two to test the footprints of turbine bases.

3.2.2 The location of all trenches was scanned using a CAT to check for uncharted services.

3.2.3 Topsoil or overburden was removed using a mechanical excavator (JCB) fitted with a toothless ditching bucket, working under the continuous direct supervision of a suitably experienced archaeologist. Topsoil was removed in a series of level spits down to the level of the upper archaeological horizon, or the level of the natural geology, whichever was reached first.

3.2.4 All trenches were hand-cleaned (if necessary) to clarify the extent of any revealed archaeological remains. Where archaeological features and deposits were encountered, excavation was carried out by hand. A sufficient sample of each layer/feature type was excavated in order to establish the date, nature, extent and condition of the archaeological remains.

3.2.5 Archaeological features and deposits were investigated and stratigraphically excavated by hand. The percentage of any feature or group of features excavated was dependent on a number of factors. These included the achievement of the aims and objectives, the significance or potential of the archaeological features/deposits, the stratigraphic record, health and safety considerations, and the requirements of Derbyshire County Council (DCC).

3.2.6 All excavation and recording was undertaken by qualified archaeologists employed by Wessex Archaeology. Archaeological remains encountered were recorded, and where necessary excavated in accordance with current industry best practice (IfA 2008). Features of whatever origin requiring clarification were cleaned by hand and recorded in plan at an appropriate scale. All work was carried out in accordance with the approved Written Scheme of Investigation (ECUS 2013).

3.3 Monitoring

3.3.1 The Site was monitored for DCC by Steve Baker.

3.4 Recording

3.4.1 All archaeological features and deposits encountered were recorded using Wessex Archaeology pro forma recording sheets and a continuous unique numbering system. A stratigraphic matrix was compiled to record the relationships between features and deposits (including those within 'blank' trenches).

3.4.2 All trenches were located in relation to the OS grid, and other plans, sections and elevations of archaeological features and deposits were drawn as necessary at 1:10, 1:20 and 1:50 as appropriate. All drawings were made in pencil on permanent drafting film.

3.4.3 The spot height of all principal features and levels was calculated in metres relative to OD, correct to two decimal places. Plans, sections and elevations were annotated with spot heights as appropriate.

3.4.4 Photographs were taken of archaeological features to produce a photographic record consisting of 35mm monochrome prints and digital images (at least 10 megapixel) supplement the photographic record.

3.5 Specialist strategies

Environmental

3.5.1 Bulk environmental soil samples for plant macro-fossils, small animal and fish bones and other small artefacts were taken from appropriate well-sealed archaeological deposits. The collection and processing of environmental samples was undertaken in accordance with English Heritage guidelines (English Heritage 2011).

4 ARCHAEOLOGICAL RESULTS

4.1 Introduction

4.1.1 Only one feature of archaeological interest was revealed, consisting of a ditch within Trench 1.

4.1.2 The topsoil across the Site was a dark greyish-brown clayey silt, typically existing to a depth of 0.3m below ground level (bgl). The natural geology was encountered between 0.3m and 0.44m bgl, and was a light yellow limestone with areas of mid- reddish-brown sandy clay. Subsoil, which was likely a relic ploughsoil, was encountered in Trench 1 from 0.28m to 0.44m bgl, and consisted of mid- brown clayey silt.

4.2 Summary

Trench 1

4.2.1 One feature was observed in this trench: a northeast-southwest aligned ditch towards the southeast end of the trench. The ditch, **104**, was 1.1m wide and 0.5m deep, and filled by a dark reddish-brown silty sand secondary fill, **105** (**Plate 1, Figure 2**). The ditch appeared to be slightly curvilinear but this may have been a result of the ditch narrowing to the southeast. No finds were recovered.

Trench 2

4.2.2 Trench 2 (**Plate 2**) was targeted over a roughly oval cropmark. A feature (**203**) corresponding to this was revealed, but excavation showed it to be a natural depression in the bedrock (**Plate 3**).

Trench 3

4.2.3 No features of archaeological significance were observed in this trench (**Plate 4**).

5 ARTEFACTUAL EVIDENCE

5.1 Introduction

5.1.1 No artefacts were recovered during the evaluation.

6 ENVIRONMENTAL EVIDENCE

6.1 Introduction

6.1.1 One bulk sample was taken from undated ditch fill **105**, in order to evaluate the presence and preservation of palaeo-environmental remains. The sample was processed for the recovery and assessment of charred plant remains and wood charcoal.

6.2 Charred plant remains and wood charcoal

6.2.1 The bulk sample was processed by standard flotation methods using a water separation machine. Floating material was collected on a 300µm mesh, and the remaining heavy residue retained in a 1mm mesh. The flot and heavy residue were air dried. The residue was scanned for metallurgical debris such as hammer scale, using a large magnet and the > 2mm fraction of the heavy residue was fully sorted for organic remains and artefacts and weighed. Where no potential for the recovery of < 2mm artefacts, such as fish bone was noted, the < 2mm fraction of the heavy residue was also then weighed and discarded.

6.2.2 The sample was assessed in accordance with English Heritage guidelines for environmental archaeology assessments (English Heritage 2011). The main aim of this assessment was to determine the concentration, diversity, state of preservation and suitability for use in radiocarbon dating, of any archaeobotanical material present within the sample. A further aim was to evaluate the potential of this material to provide evidence for the function of the contexts, the economy of the site or for the nature of the local environment.

6.2.3 A preliminary assessment of the sample was made by scanning under a low power binocular microscope (x7-x45) and recording the abundance of the main classes of material present. This data is recorded in **Table 1**. Preliminary identification of plant material was carried out by comparison with material in the reference collections at the Department of Archaeology, University of Sheffield and various reference works (e.g. Cappers *et al* 2006). Cereal identifications and nomenclature follow Jacomet (2006). Other plant nomenclature follows Stace (2010).

Samples				Flot								
Feature	Context	Sample	Vol. Ltrs	Flot (ml)	% roots	Charred Plant Remains				Charcoal >4/2mm	Other	Analysis
						Grain	Chaff	Other	Comments			
104	105	101	10	20	95	C	-	C	2 *Triticum* indet grains. 1 vesicular indeterminate material. 1 *Galium aparine* seed	0/5	-	-

Key: A*** = exceptional, A** = 100+, A* = 30-99, A = >10, B = 9-5, C= < 5.

Table 1: ***Environmental data***

6.2.4 Sample 101 from ditch fill **105** was composed of a high proportion of intrusive roots with a low density of charred plant remains and wood charcoal. Two charred indeterminate wheat grains (*Triticum indet*) were present, along with a fragment of vesicular indeterminate material, likely to be fragmented charred cereal grain. Preservation of the cereal grains was poor, with grains lacking epidermis and showing evidence of distortion. Also present was one charred seed of cleavers (*Galium aparine L.*).

7 DISCUSSION

7.1 Summary

7.1.1 A single ditch (**104**) was the only feature of archaeological interest observed. The cropmark targeted by Trench 2 transpired to be of geological origin.

7.2 Conclusions

7.2.1 The purpose of the ditch, **104**, is unclear but given the lack of artefactual or environmental evidence for settlement activity in the immediate area, it seems likely that it was related to agricultural activity, possibly a field boundary. The date is also unclear, though Romano-British pottery has previously been recorded in the area of Turbine 5 and the ditch may be similarly dated.

8 STORAGE AND CURATION

8.1 Museum

8.1.1 The project archive resulting from the excavation will be deposited with Sheffield Museum under the accession code SHEFM2014.19.

8.2 Archive

8.2.1 The complete site archive, which will include paper records, photographic records, graphics, artefacts, ecofacts and digital data, will be prepared following the standard conditions for the acceptance of excavated archaeological material by Sheffield Museum, and in general following nationally recommended guidelines (SMA 1995; IfA 2009; Brown 2011; ADS 2013).

8.2.2 All archive elements will be marked with the site/accession code, and a full index will be prepared.

8.3 Discard policy

8.3.1 Wessex Archaeology follows the guidelines set out in Selection, Retention and Dispersal (SMA 1993), which allows for the discard of selected artefact and ecofact categories which are not considered to warrant any future analysis. Any discard of artefacts will be fully documented in the project archive.

8.3.2 The discard of environmental remains and samples follows nationally recommended guidelines (SMA 1993, 1995; English Heritage 2011).

8.4 Security copy

8.4.1 In line with current best practice (e.g. Brown 2011), on completion of the project a security copy of the written records will be prepared, in the form of a digital PDF/A file. PDF/A is an ISO-standardised version of the Portable Document Format (PDF) designed for the digital preservation of electronic documents through omission of features ill-suited to long-term archiving.

9 REFERENCES

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9.2 Consulted online sources

http://mapapps.bgs.ac.uk/geologyofbritain/home.html

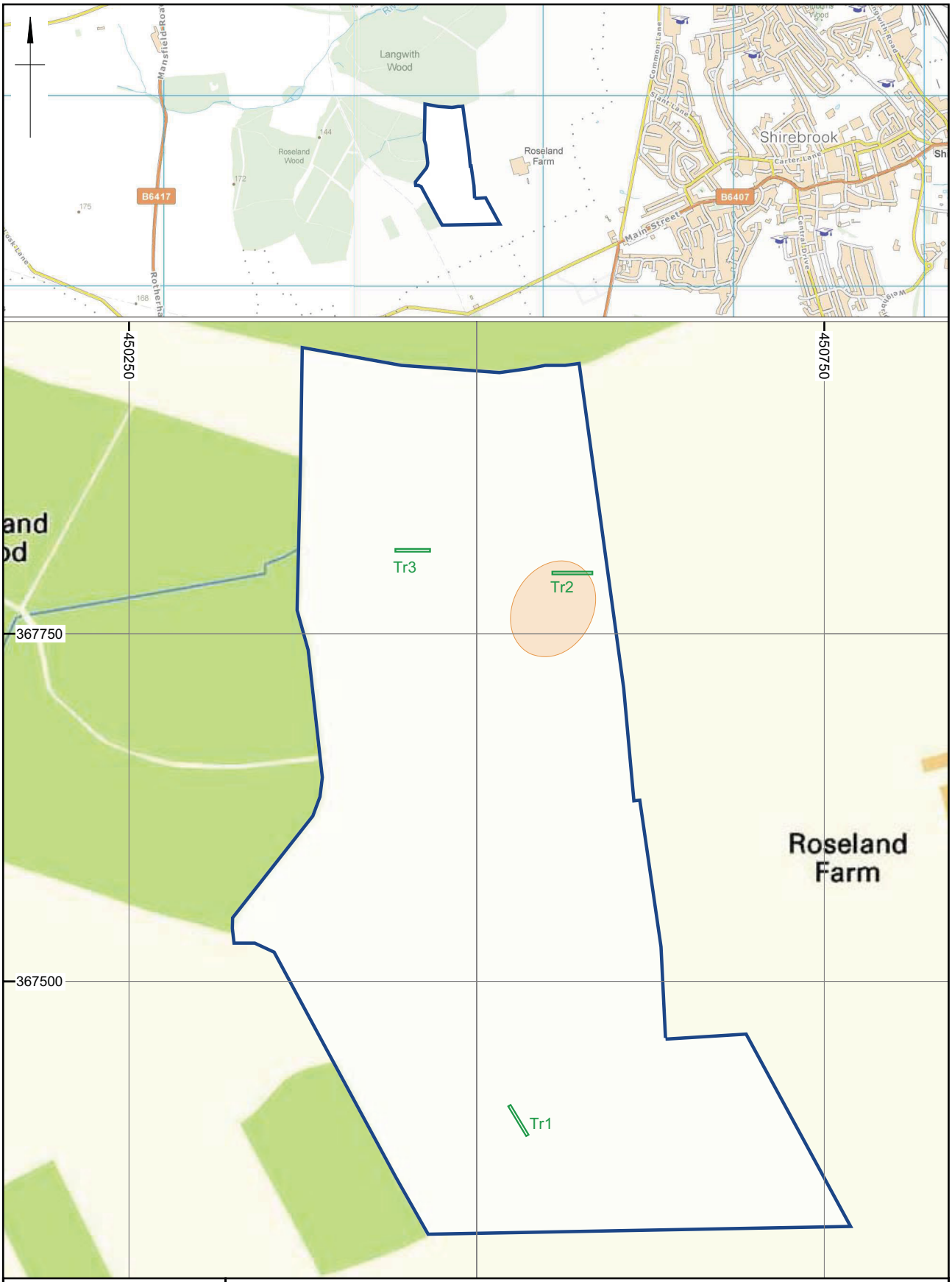
10 APPENDICES

10.1 Appendix 1:Context descriptions

	Trench 1	Max depth: 0.44m
Context	**Description**	**Depth (m)**
101	Topsoil, dark greyish-brown clayey silt, 1% course gravel inclusions	0-0.28m
102	Subsoil, mid brown clayey silt, 5% course gravel inclusions	0.28-0.44m
103	Natural, mid yellow limestone bedrock	0.44m+
104	Cut, NE-SW alligned ditch	0.44-0.94m
105	Fill, secondary fill of **104**.	0.44-0.94m

	Trench 2	Max depth: 0.44m
Context	**Description**	**Depth (m)**
201	Topsoil, dark greyish-brown clayey silt, 1% course gravel inclusions	0-0.4m
202	Natural, mid yellow limestone bedrock	0.4m+
203	Natural, reddish-brown sandy clay filling natural depression	0.4m+

	Trench 3	Max depth: 0.4m
Context	**Description**	**Depth (m)**
301	Topsoil, dark greyish-brown clayey silt, 1% course gravel inclusions	0-0.34m
302	Natural, light brownish-grey sandy clay.	0.34m+



Evaluation area
Evaluation trench
Cropmark

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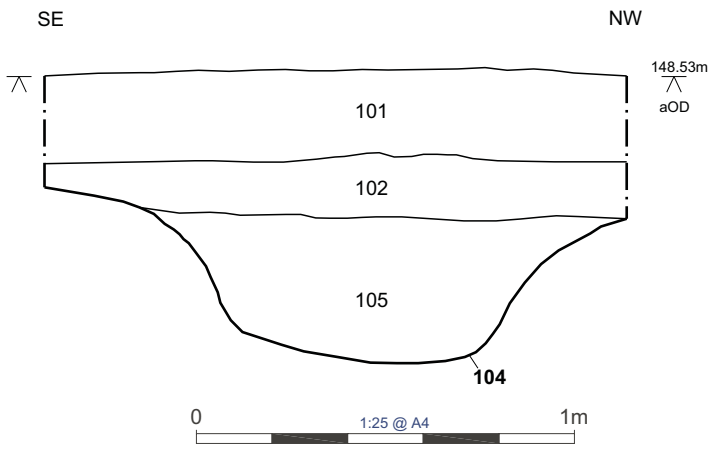
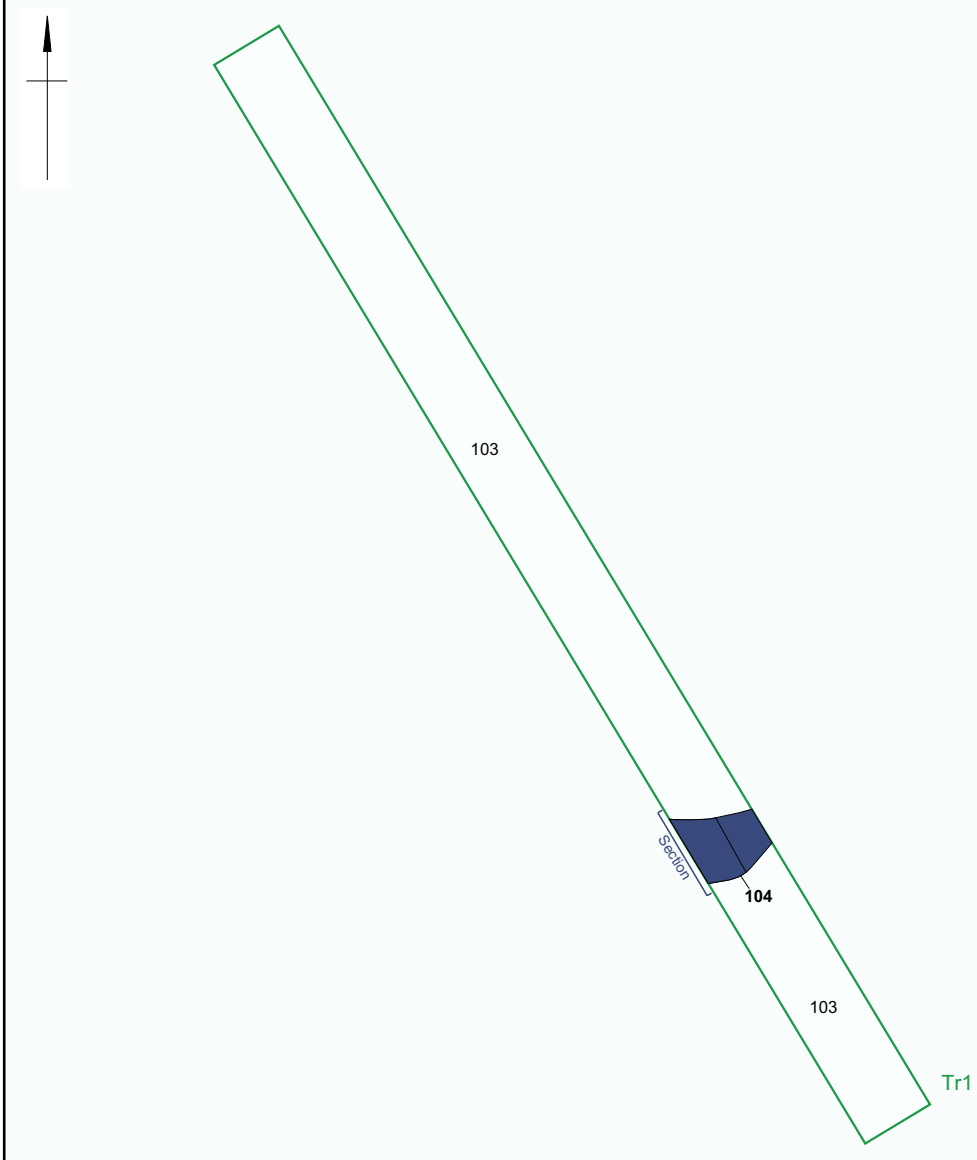
Site and trench locations

Figure 1





Evaluation trench
Evaluation: Ditch
Evaluation: Excavated slot

Date:	13/03/2014	Revision Number:	0
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Trench 1: Plan and sections

Figure 2

Plate 1: **Trench 1**, ditch **104**. Southwest facing shot of section

Plate 2: General shot of **Trench 2**

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Plate 3: **Trench 2**, slot through natural hollow **203**

Plate 4: General shot of **Trench 3**

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