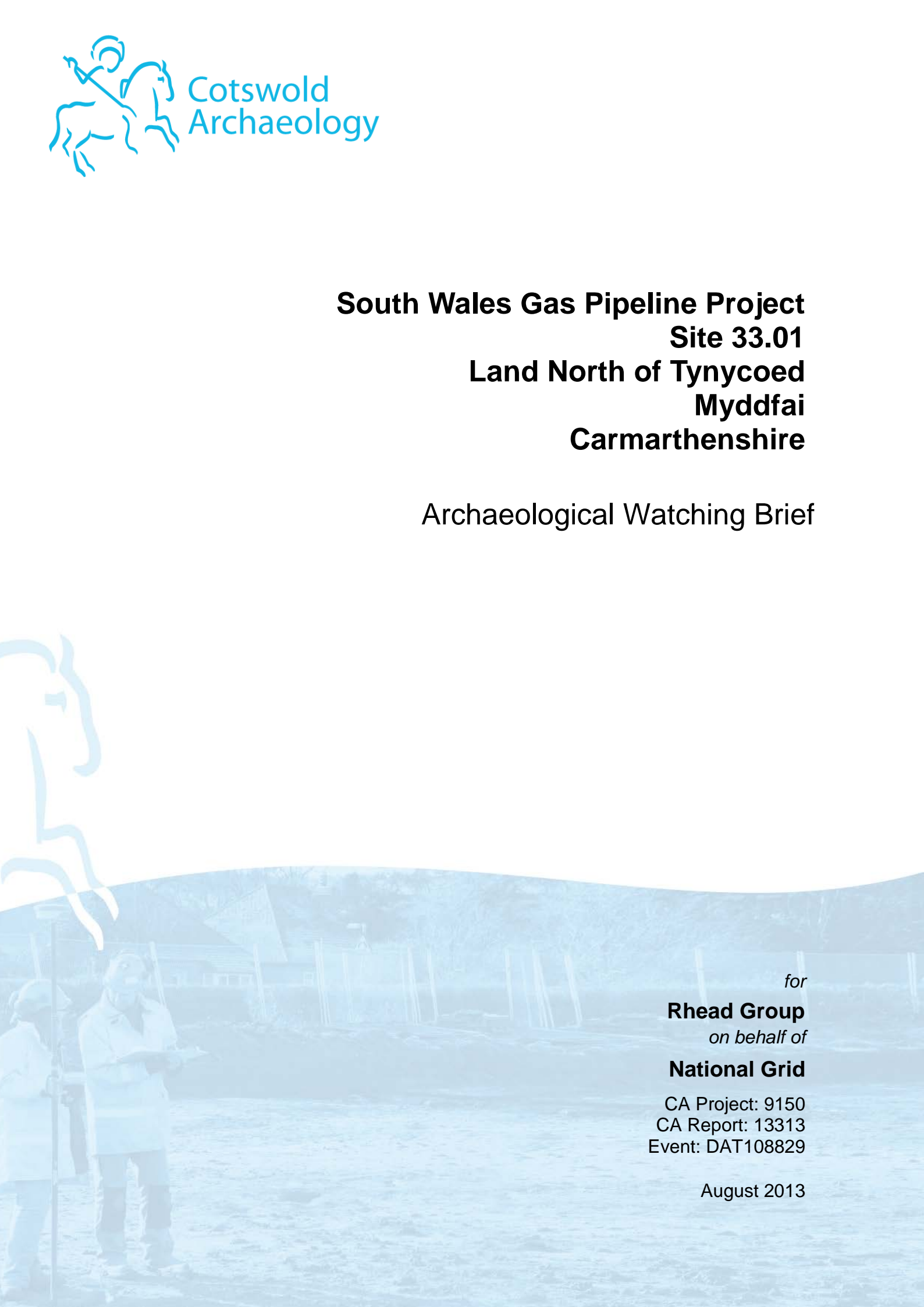


**South Wales Gas Pipeline Project
Site 33.01
Land North of Tynycoed
Myddfai
Carmarthenshire**

Archaeological Watching Brief



for
Rhead Group
on behalf of
National Grid


CA Project: 9150
CA Report: 13313
Event: DAT108829

August 2013

South Wales Gas Pipeline Project Site 33.01

Archaeological Watching Brief

CA Project: 9150
CA Report: 13313
Event: DAT102846

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CONTENTS

SUMMARY	2
1. INTRODUCTION.....	3
<i>The site</i>	3
<i>Archaeological background</i>	4
<i>Archaeological objectives</i>	4
<i>Methodology</i>	4
2. RESULTS (FIG. 2)	5
3. PROJECT TEAM	7
4. REFERENCES.....	8
APPENDIX A: CONTEXT DESCRIPTIONS	11
APPENDIX B: THE PALAEOENVIRONMENTAL EVIDENCE BY JAMES RACKHAM....	11
APPENDIX C: RADIOCARBON DATING BY SEREN GRIFFITHS	16

LIST OF ILLUSTRATIONS

Fig. 1 Site location plan (1:25,000)

Fig. 2 Plans and sections of hearths 33.01.004 and 33.01.006 (1:20 and 1:10)

GLOSSARY

CA – Cotswold Archaeology

CAP – Cambrian Archaeological Projects

CPAT – Clwyd Powys Archaeological Trust

DAT – Dyfed Archaeological Trust

GGAT - Glamorgan Gwent Archaeological Trust

FTP – Felindre to Brecon gas pipeline

HER – Historic Environment Record

MHA – Milford Haven to Aberdulais gas pipeline

NAL – Network Archaeology Ltd

NLMJV – Nacap Land & Marine Joint Venture

UPD – Updated Project Design

SUMMARY

Project Name:	South Wales Gas Pipeline Project
Location:	Site 33.01, Land North of Tynycoed, Myddfai, Carmarthenshire
NGR:	SN 74 31
Type:	Watching Brief
Date:	13–30 April 2007
Location of Archive:	To be deposited with RCAHMW (original paper archive) and Carmarthenshire Museum (material archive and digital copy of paper archive; accession number CAASG 2008.0282)
Site Code:	FTB07

An archaeological watching brief was undertaken by Cambrian Archaeological Projects during groundworks associated with construction of gas pipelines (part of the South Wales high pressure gas pipeline scheme) between Milford Haven and Aberdulais, and Felindre and Brecon, which were conducted between 2005 and 2007.

Two small stone-lined hearths and a pit containing charred plant remains were identified within a field towards the top of the southern side of the River Towy valley. The hearths were undated by finds but the pit contained a cereals assemblage typical of an early medieval or medieval date. Radiocarbon dating of charred plant remains from the pit returned date ranges in the late 13th to mid 15th centuries AD. It is possible that all of these features related to medieval crop-processing.



1. INTRODUCTION

- 1.1 NACAP Land and Marine Joint Venture (NLMJV), on behalf of National Grid, commissioned RSK Environment (part of the RSK Group) to manage the archaeological works (non-invasive surveys, desk based assessment, evaluation, watching brief, and open area excavation) on a 216km-long section of pipeline from Milford Haven (Pembrokeshire) to Brecon (in Powys). The high pressure gas pipeline (part of the 316km-long pipeline route from Milford Haven to Tirley in Gloucestershire) was required to reinforce the gas transmission network. The archaeological work performed in advance of this pipeline was undertaken in a number of sections by a number of archaeological companies. The westernmost section of 122km, from Milford Haven to Aberdulais, was investigated by CA (then Cotswold Archaeological Trust) during 2005–2007 with some additional excavation work carried out by CAP. The section of 89km, from Felindre to Brecon was investigated by CA during 2006–2007 and CAP during 2007. Assessment reports on the works were completed in January 2012 (NLM 2012a, 2012b) and the current reporting stage was commissioned in February 2013.
- 1.2 Between 13–30 April 2007 CAP carried out an archaeological watching brief at Site 33.01, Land North of Tynycoed, Myddfai, Carmarthenshire (centred on NGR: SN 74 31; Fig. 1). The objective of the watching brief was to record all archaeological remains exposed during the pipeline construction.
- 1.3 The watching brief was carried out in accordance with professional codes, standards and guidance documents (EH 1991; IfA 1999a, 1999b, 2001a, 2001b and IfA Wales 2008). The methodologies were laid out in an *Archaeological Framework Document* (RSK 2007) and associated *Written Statements of Investigation* (WSIs) and *Method Statements*.
- The site**
- 1.4 The site is located within a field towards the top of the southern side of the River Towy valley (Fig. 1). A small watercourse runs along the north-eastern field boundary and the River Towy is 800m to the north. The site lies at approximately 120m AOD on land that slopes down to the valley floor.

- 1.5 The underlying solid geology of the area is mapped as the Cherwerfri Formation (Mudstone) of the Silurian and Ordovician Periods; no superficial deposits are recorded (BGS 2013).

Archaeological background

- 1.6 No archaeological remains were identified within the site during the preliminary *Archaeology and Heritage Survey* (CA 2006). During the pipeline construction, a post-medieval trackway and ditch were exposed at Site 32.07, 400m west of the current site (CA 2013).

Archaeological objectives

- 1.7 The objectives of the archaeological works were:-
- to monitor groundworks, and to identify, investigate and record all significant buried archaeological deposits revealed on the site during the course of the development groundworks; and
 - at the conclusion of the project, to produce an integrated archive for the project work and a report setting out the results of the project and the archaeological conclusions that can be drawn from the recorded data.

Methodology

- 1.8 The fieldwork followed the methodology set out within the *WSI*. An archaeologist was present during intrusive groundworks comprising stripping of the pipeline easement down to a layer of colluvium (Fig. 1). The natural substrate was not exposed.
- 1.9 The site was not georeferenced and is shown on the figures accompanying this report at a nominal location along the pipeline centre line within the field within which it was located. In addition, the fieldwork plans do not provide information regarding the spatial relationships between the features, and some of the features were not planned.
- 1.10 The post-excavation work was undertaken following the production of the UPD (GA 2012) and included re-examination of the original site records. The archaeological background to the site was assessed using the following resources:-
- the *Archaeology and Heritage Survey* which was undertaken in advance of the pipeline construction and which examined a 1km-wide corridor centred on the pipeline centre line, including the then existing HER record (CA 2006);

- Dyfed Archaeological Trust HER data (received July 2014); and
- other online resources, such as Google Earth and Ordnance Survey maps available at <http://www.old-maps.co.uk/index.html>.

All monuments thus identified that were relevant to the site were taken into account when considering the results of the fieldwork.

- 1.11 The archive from the watching brief is currently held by CA at their offices in Kemble. The palaeoenvironmental remains will be deposited with Carmarthenshire Museum under accession number CAASG 2008.0282, along with a digital copy of the paper archive. The original paper archive will be deposited with the RCAHMW.

2. RESULTS (FIG. 2)

- 2.1 This section provides an overview of the watching brief results; detailed summaries of the recorded contexts, environmental samples (palaeoenvironmental evidence) and radiocarbon dating are to be found in Appendices A, B and C. Full, original versions of the specialist reports are contained within the archive.
- 2.2 The earliest exposed deposit was layer 33.01.008, a light brown silty sand with stones. Given the site's hillside location, this was probably a layer of colluvium. It was cut by two hearths and a pit.
- 2.3 Hearth 33.01.004 comprised an oval cut 0.8m long, 0.65m wide and 0.25m deep with a bowl-shaped profile. The underlying colluvium had been scorched and the cut's sides had been lined with large, flat stones, which were also scorched (33.01.007). The hearth was filled with red-brown silty clay 33.01.001 which included frequent lumps of charcoal, amongst which were oak and alder/hazel fuelwood fragments. Hearth 33.01.006 was similar in shape and size and also showed evidence of scorching around its edges. Its fill (33.01.002) was a dark grey silt with frequent lumps of charcoal. Large burnt stones located towards the cut edges within this fill were probably the remains of a lining although this was not *in situ*.
- 2.4 Pit 33.01.003, (not illustrated as no site plans were drawn), was circular in plan and was 1.45m in diameter and 0.35m deep with steep sides and an irregular base. It contained a brown silt fill (also numbered as 33.01.003) which included frequent lumps of charcoal fuelwood, comprising mostly of mature oak, with occasional

pieces of alder/hazel (Appendix B). A sample from the fill yielded fragments of hazel nutshell, charred oats and weed seeds compatible with an early medieval or medieval date (Appendix B). Radiocarbon dating of the nut shells and the oat grains returned statistically consistent dates of cal. AD 1270–1390 and 1310–1440 respectively (SUERC-57284 and 57285; Appendix C).

Discussion

- 2.5 Both the radiocarbon dating and the composition of the charred grain assemblage from pit 33.01.003 are indicative of a medieval date for the feature. The fill of the pit contained oat grains, which are not known to have been used as a crop until the post-Roman period (see Appendix B). This supports the late 12th to mid 15th century radiocarbon dates and it is therefore probable that the pit was in some way associated with crop-processing during the later medieval period. Unfortunately as there were no site drawings of the pit it is difficult to further interpret the feature, other than to note Rackham's suggestion in Appendix B that the feature may have been the remains of a field kiln used to process cereals and that such field kilns were often located outside settled areas, within the agricultural hinterland.
- 2.6 It is unclear whether the hearths were associated with this activity as they were undated and contained only fuelwood with no cereal remains and since their spatial relationships to the pit and to one another are unknown. The charcoal assemblage in hearth 33.01.004 was markedly different from that of pit 33.01.003. The assemblage from the hearth contained large fragments of alder, hazel and oak, including significant quantities of hazel roundwood, the latter including evidence for coppicing. The charcoal from the pit, by contrast, contained much smaller charcoal pieces and was almost entirely composed of mature oak charcoal. The clear distinction between the assemblages may indicate that the features had different functions or dates but this is far from certain.
- 2.7 The features were exposed following benching works which removed layers that were not recorded in the field. It is possible, given the site's hillside location, that these were colluvial layers and that *in situ* parts of these deposits seal further archaeological remains in the immediate vicinity of the site.

3. PROJECT TEAM

Fieldwork was undertaken by Cambrian Archaeological Projects. This report was written by Peter Busby with comments by Jonathan Hart and illustrations prepared by Daniel Bashford. The archive has been compiled by Jonathan Hart and prepared for deposition by Hazel O'Neill. The fieldwork was managed for CAP by Kevin Blockley and the post-excavation work was managed for CA by Karen Walker.



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APPENDIX A: CONTEXT DESCRIPTIONS

Context No.	Fill of	Context interpretation	Description	L (m)	W (m)	Depth (m)
33.01.000		Topsoil	Red-brown silty sand			0.30
33.01.001	33.01.004	Hearth pit fill	Red-brown silty clay containing frequent lumps of charcoal	0.8	0.65	0.25
33.01.002	33.01.006	Hearth pit fill	Dark grey silt with frequent lumps of charcoal and frequent large burnt stones	0.8	0.3	0.15
33.01.003		Pit	An irregular cut containing a brown silt with frequent lumps of charcoal		1.45	0.35
33.01.004		Hearth pit	Oval in plan with bowl-shaped profile. Underlying substrate was scorched	0.8	0.65	0.25
33.01.005			Context not used			
33.01.006		Hearth pit	Semi-circular in plan with bowl-shaped profile. Underlying substrate was scorched	0.8	0.3	0.15
33.01.007	33.01.004	Hearth pit lining	Large burnt stones around the cut edges	0.25	0.1	0.1
33.01.008		colluvium	light brown silty sand			

APPENDIX B: THE PALAEOENVIRONMENTAL EVIDENCE BY JAMES RACKHAM**Animal Bone**

No bone was recovered from this site either by excavation or from the samples although flecks of burnt bone were noted in the field when the sample from hearth pit 33.01.004 was taken. It is assumed that the burial environment was unsuitable for the survival of unburnt bone.

Environmental soil samples

This site exposed three oval features; two interpreted as hearths and the third an irregular shaped pit. Samples were taken from all three of these features: contexts 33.01.001 (the only fill of hearth pit 33.01.004), 33.01.002 (the only fill of hearth pit 33.01.006) and 33.01.003 the cut/fill of a third irregular pit (Table 1), the latter originally interpreted on site as a possible tree bole. None of the features produced any archaeologically datable finds but oat grains and hazel nutshell from pit 33.01.003 have been radiocarbon dated to the medieval period (Table 1). The two hearths remain undated but it has been presumed that all three features may be related although no plan exists to illustrate how close they were to each other and the analyses below suggests a re-evaluation of this presumption is needed.

Table 1. Bulk environmental samples from Site 33.1

sample no	context no	feature	description	Wt kg.	Vol. l.*
33.01.3001	33.01.001	33.01.004	Hearth pit fill	31	40
33.01.3002	33.01.002	33.01.006	Hearth pit fill	8.5	10
33.01.3003	33.01.003		Cut/fill pit	12	10

* volume recorded on site – not accurate

The samples were processed in the manner described in the assessment report (Carruthers 2008). The residues from all three samples had been retained and were refloats, and the 2nd flots noted in Table 2, and their dried residues checked for a magnetic component.

The CAP processing records indicate that no archaeological finds were recovered from the samples (Table 2) although a little fire-cracked stone was recorded from the residue of sample 33.01.3001 during the refloating, and fired earth was present in samples 33.01.3001 and 33.01.3002.

Table 2. Data for the environmental samples from Site 33.1

sample no	context no	pro-cessed wt kg	1st flot vol ml	2nd flot vol	residue wt g	burnt clay	burnt stone	coal	magnetic g.	burnt bone
33.01.3001	33.01.001	31	1240	28	3225	+	++	+	175	+
33.01.3002	33.01.002	8.5	76	7	3690	+	++		1	
33.01.3003	33.01.003	12	124	8	4347				52	

+ - present but not quantified; ++ present and quantity described as moderate, but not measured;

The site sample record sheets record burnt bone in sample 3001 and burnt stone in sample 3002, although these were not recorded during the processing. A little coal occurred in hearth pit 33.01.004 but this could be natural in the local soils. A large magnetic component in the residue from hearth pit 33.01.004 is comprised almost entirely of burnt/baked mudstone and indicates relatively high concentrations of fired mineral material in the deposit, but its relative absence from the second hearth pit might suggest a very much lower burnt mineral element in this feature. It is possible that this variation may reflect the proportion of the underlying scorched earth that was included when the samples were taken. A fairly large amount of magnetic material, comprising burnt/baked mudstone, was recovered from pit 33.01.003, a proportionately similar quantity to sample 3001, suggesting that this feature also contained a significant amount of hearth debris.

The flots of all three samples are dominated by charcoal, but sample 3001 is particularly rich with alder and alder/hazel roundwood, and oak being recorded during the assessment (Schmidl *et al* 2009). All three charcoal assemblages have been selected for study as examples of post-Roman assemblages and for the association of sample 3003 with crop processing debris (see below).

Charred Plant remains (Wendy J. Carruthers)

A single sample was examined in detail, sample 33.01.3003, the fill of pit 33.01.003, context 33.01.003, a brown silt fill which included frequent lumps of charcoal. The other two samples from undated hearths 33.01.004 and 33.01.006 were probably associated with the pit, although they contained only charcoal and no cereal remains. Sorting was carried out using an Olympus SZX7 stereoscopic microscope. Flots were first separated into 3 fractions (minimum mesh 250 microns) to facilitate sorting. All modern material was removed prior to measuring the flot volume. Stace (2010) and Zohary and Hopf (2000) were used for nomenclature.

Results

The results of the analysis are presented in Table 3 below. Habitat preferences are given in the key below the table.

Interpretation

The large flot contained abundant charcoal, suggesting that it may have derived from material swept out of the nearby hearths. The state of preservation was reasonably good, apart from silt encrustation of the charred plant remains. The origin of the apparently mineralised sedge seed (cf. *Carex* sp.) is uncertain, but some redeposited faecal or midden material may have been lying around the site. The principal components of the assemblage

were oat grains (*Avena* sp.) and small weed seeds typically found as crop weeds (mainly corn marigold (*Glebionis segetum*) and nipplewort (*Lapsana communis*)). Because no chaff was found the oats cannot be identified with any certainty beyond *Avena* sp., however an attempt has been made to separate well-preserved grains with typical *A. sativa* and *A. strigosa* morphology in case it is possible at a later date to look at areas where the different oat species have been cultivated along the pipeline as a whole. Characters used for tentative grouping include the length of grains, the point at which they are at their widest, the presence of long hairs on the grain surface and their apical end shapes (see Carruthers 2010).

Table 3. Charred plant remains from Site 33.1

		1 st flot	1 st flot	2 nd flot
	Context type	Pit fill	Pit fill	Pit fill
	Context no.	33.01.002	33.01.003	33.01.003
	Sample no.	33.01.3002	33.01.3003	33.01.3003
	Wt .proc. soil kg.	8.5	12	
	Vol. flot ml.	76	120	5
TAXA	COMMON NAME			
Cereal grains				
<i>Avena</i> sp. (<i>sativa</i> -type)	long-grained elongated ovate oat grains		10	
<i>Avena</i> sp. (<i>strigosa</i> -type)	shorter-grained obovate oat grains		7	
<i>Avena</i> sp.	indeterminate oat grains		49	
Cerealia	indeterminate cereal grains		28	
Other				
<i>Vicia/Lathyrus</i> sp.	vetch/tare seed (2.5mm) GCD		1	
<i>Trifolium/Lotus/Medicago</i> sp.	clover/bird's-foot-trefoil/medick GCD		1	
<i>Corylus avellana</i> L.	hazelnut shell fragment HSW	1		2 / <0.1g
<i>Raphanus raphanistrum</i> ssp. <i>raphanistrum</i>	wild radish mericarp CD		1	
<i>Persicaria</i> sp.	bistort/persicaria/redshank CDo		5	
<i>Spergula arvensis</i> L.	corn spurrey seed Csa		1	
<i>Galeopsis</i> sp.	hemp-nettle nutlet AD		1	
<i>Lapsana communis</i> L.	nipplewort achene WoHCD		17	
<i>Glebionis segetum</i> (L.)Fourr.	corn marigold achene ADY		51	
cf. <i>Luzula</i> sp.	cf. wood-rush seed G		2	
cf. <i>Carex</i> sp.	cf. sedge nutlet		1#	
Poaceae indeterminate	small grass seeds GC		2	
Total		1	176	2
charred fragments per litre		0.1		17.8
Charcoal sorted from residue				400ml

HABITAT/SOIL KEY TO TABLES

A = arable; C = cultivated; D = disturbed; E = heath; G = grassland; H = hedgerow; M = marsh/bog; P = ponds, ditches etc.; S = scrub; W = woods; Y = waysides

a = acidic soils; b = basic soils; d = dry soils; o = open ground; s = sandy soils; w = damp to wet soils

- mineralized seed

Identifying crop processing waste on sites where only oats are present is difficult, as the very papery glumes surrounding the spikelets easily burn away when exposed to fire. Sometimes large quantities of awn fragments are preserved, but this was not the case at Site 33.01. Instead, it is necessary to look at the distribution of arable weeds that can become concentrated in areas where crop processing has taken place. In hearths where cereal processing waste is burned, and in pits where charred waste is deposited, the small weed seeds can trickle down through the feature, becoming concentrated towards the base. It is likely that the frequency of corn marigold and nipplewort seeds is due to this type of effect, as there are no known uses for these common weed seeds of cultivated and disturbed places. The presence of corn spurrey (*Spergula arvensis*) and a wild radish mericarp (*Raphanus raphanistrum* ssp. *raphanistrum*) indicate the cultivation of acidic, sandy soils. Oats would be one of

the only crops to grow well on such soils. Oats are often harvested semi-ripe so that they do not shed their grain, so drying may be required after harvesting. In the processing of oats the hulled grain or groats can fairly easily be threshed from the spikelets, and in this form they are quite stable and easily stored. Once de-husked, however, there is some degradation leading to the grain turning 'sour'. In order to de-husk the groats they need to be heated in some way (over a fire, in an oven or with hot stones) so that the brittle chaff can be removed using a quern or by pounding. This is likely to be the stage at which some grain becomes charred. Although oats have been present as a weed since the Neolithic period (Fairweather and Ralston 1993) there is little dated evidence from assemblages containing oat chaff to suggest that they were grown as a crop until the post-Roman period. Oat grains begin to increase in numbers on sites dating from the Iron Age but the radiocarbon dates indicate that this assemblage dates to the medieval period (Table 1).

Charcoal (*Dana Challinor*)

Of the three samples taken from the hearths and pit at Site 33.01, two produced abundant material, but sample 33.01.3002 contained very fragmented material, with only a couple of fragments >4mm in size which did not merit analysis. Three taxa were positively identified: *Quercus* sp. (oak), *Alnus glutinosa* (alder) and *Corylus avellana* (hazel). The character of the two assemblages was relatively different, belying the suggestion that they related to the same activity (see above). The assemblage from hearth 33.01.004 was very rich, with large fragments preserved and significant quantities of hazel roundwood. Growth ring analysis on the hazel roundwood show an age range of 10–15 years (with one more mature at 27 years), mean stem radius of 14mm and an average ring width (ARW) ranging between 0.5mm and 2.1mm. There was little oak heartwood, and some sapwood confirmed. In contrast, the assemblage from pit fill 33.01.003 was smaller in quantity and fragment size and dominated by mature oak; many fragments exhibiting tyloses and no ring curvature recorded.

The evidence from the cereal remains in pit fill 33.01.003 suggests that the grain may have become charred in the post-harvesting drying process and the charcoal, therefore represents the fuel used for crop-drying (at least in this instance). The use of mature oak for this purpose suggests a plentiful supply of oak woodland and that, if (as might be expected) woodland management was being practiced in the 13th–15 centuries AD, this was either a rare felling of an oak standard, or the woodland was being coppiced on a long (>25year) cycle. The hazel from hearth 33.01.004 was, clearly, harvested on a shorter cycle of 10–15 years, but the variation in age ranges suggests that the assemblage encompasses a range of material from different managed and/or some unmanaged sources. The contrast in the two assemblages from this site does not support a correlation between the activities, or even that the deposits were contemporary; albeit, without compelling evidence to the contrary.

Table 4: Charcoal from pits at Site 33.1

	Feature type	hearth	pit fill
	Feature number	33.01.004	33.01.003
	Context number	33.01.001	33.01.003
	Sample number	33.01.3001	33.01.3003
<i>Quercus</i> sp.	oak	10 (hs)	26 (h)
<i>Alnus glutinosa</i> Gaertn.	alder	2 (r)	
<i>Corylus avellana</i> L.	hazel	18 (r)	3
<i>Alnus/Corylus</i>	alder/hazel		1
Total		30	30

h=heartwood;s=sapwood; r=roundwood; (brackets denotes presence in some frags only)

Discussion

The site lies on a west facing hillside overlooking the Towy Valley at approximately 120m AOD. The hill continues to rise to a height of just over 160m AOD approximately four hundred metres to the south east of the site. Springs rise some 60m to the west and 115m to the north east of the site. Unfortunately the relationship of the three sampled features, two hearths and a pit, has not been recorded and they cannot be assumed to be associated, and as the charcoal analyses has suggested feature 33.01.003 has no similarity to hearth 33.01.004. Radiocarbon dates were obtained from 33.01.003 to date the charred cereal assemblage it contained, and the dates for hazelnut and oats grains from this feature would suggest a date in the late 12th to early 15th century AD, with the dated items probably deriving from different events. There is nothing to indicate that the two hearths are contemporary with the cereal rich deposit. In fact the lack of charred grain in either hearth and the clear difference in the charcoal assemblages in samples 33.01.002 and 33.01.003 would tend towards a conclusion that the hearths are probably not associated or contemporary with the cereal assemblage. In the absence of the cereal assemblage these two hearths would probably have been tentatively viewed as of prehistoric date, on the basis of the lack of food items except the hazel nutshell in 33.01.002. The two hearths must therefore be treated as undated in the absence of any radiocarbon dates. The charcoal assemblage from hearth 33.01.004 shows a typical oak and hazel assemblage with a little alder, the latter presumably collected from alongside the streams downslope to the west and north. The hazel is likely to have been coppiced on a 10-15 year cycle.

The charred plant assemblage in 33.01.003 is suggestive of the de-husking stage of a harvested oat crop, when the oat grains steam and swell over heat helping to separate the husks from the kernel and ease their removal by using a quern or pounding and subsequent winnowing. This evidence does not necessarily imply a medieval occupation site at this location since these processes can take place in the fields, potentially using a field kiln, and the farmstead might be some distance away like the present farm, Tynycoed, just over a 100m to the south-west of the site. The inconsistency of the two dates suggests that the hazelnut derives from earlier medieval activity on the site and is residual in the cereal assemblage, but this presumes that the three oat grains that made up the sample for the second date were all contemporary. If a field kiln was located nearby this feature, or the feature is itself a surviving part of a field kiln (the high magnetic component including burnt mudstone is consistent with a hearth) then it may have been used over a period of time and the recovered assemblage a mixture. Only oats have been identified, although both cultivated varieties may be present, suggesting that this was the only cereal being processed at this feature. The local soils are seasonally wet acid loamy soils developed from the underlying mudstone bedrock, with acid loamy soils over sandstone approximately two hundred metres to the east (<http://www.landis.org.uk/soilscapes/>; <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>), soils more suited at this altitude and location to the cultivation of oats than other cereals. The charcoal from the deposit is dominated by mature oak with a little hazel indicating collection from local woodland – oak and hazel woodland survives today on the top of the hill to the east and just downslope from the site to the north, and was present to the immediate north and south of the field in the 19th century (OS 1st edition 1:2500, 1887). If the fuel was being obtained from managed woodland the charcoal would suggest a coppice cycle for the oak of over 25 years. The selection of mature oak might fit better with a specific function, such as a drying kiln, rather than a domestic fire, but such an interpretation is somewhat speculative, although this west facing hillside would have been a suitable location for the threshing, drying, pounding and winnowing of the crop.

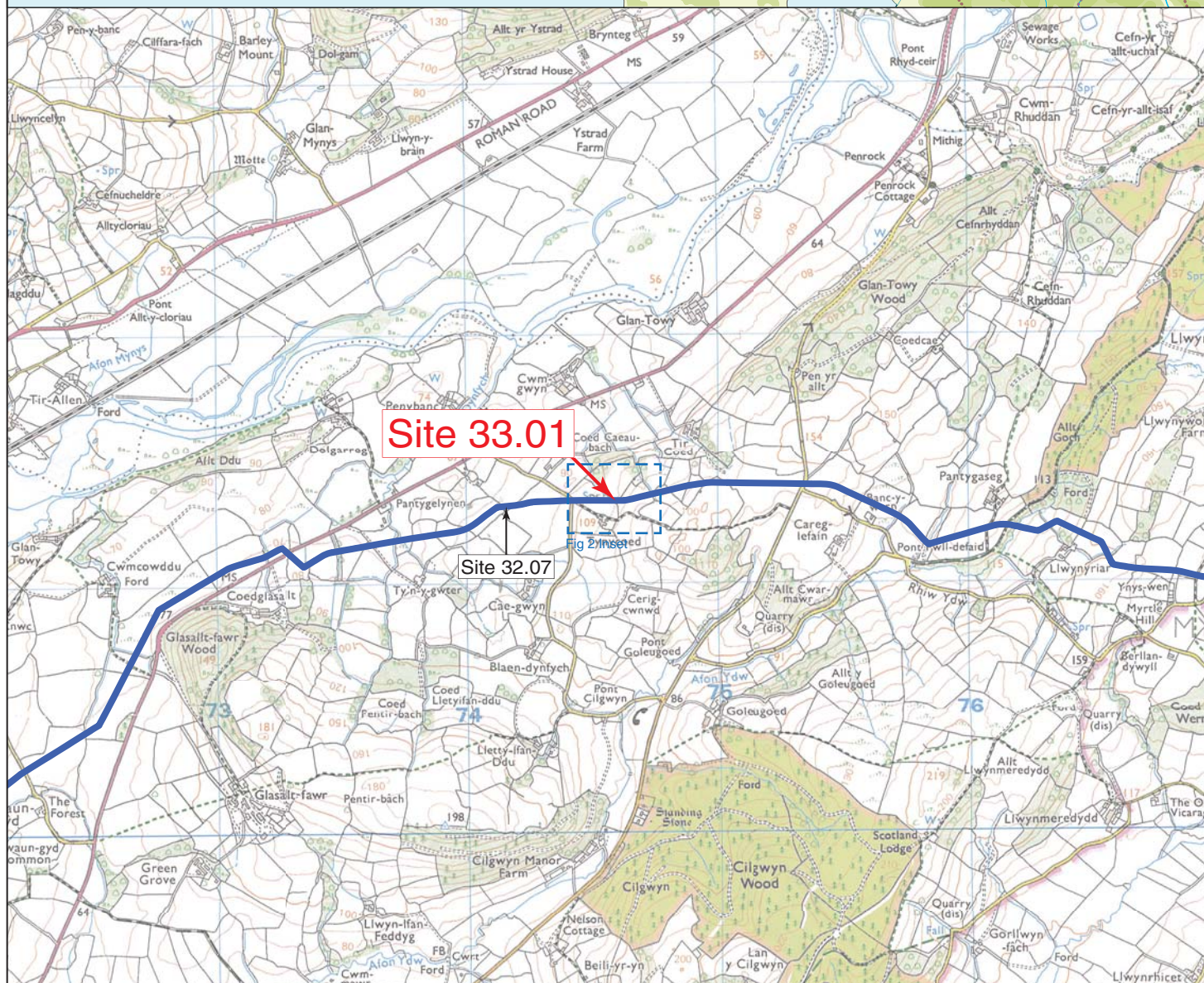
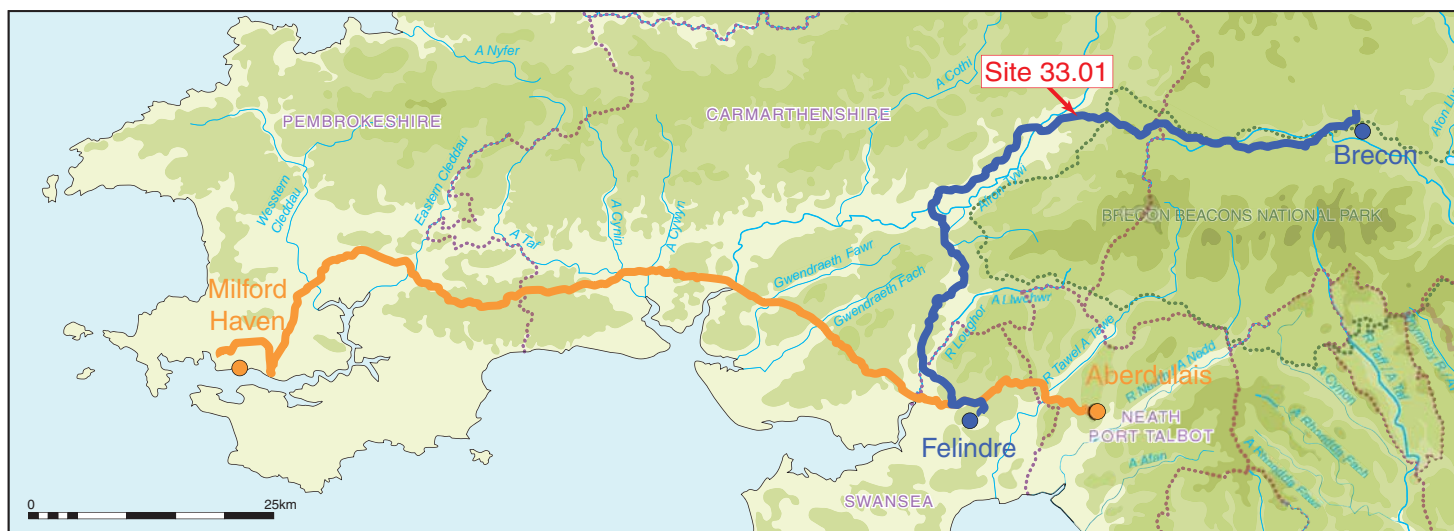
While we cannot be at all confident feature 33.01.003 might be a surviving part of, or associated with a field kiln where husked oats were dried/heated after threshing to loosen the husk or hulls, before pounding or grinding to release the grain before a final winnowing. Its relative isolation and lack of any recorded occupation features nearby would support such a conclusion.

APPENDIX C: RADIOCARBON DATING BY SEREN GRIFFITHS

For the analysis, radiocarbon measurements were produced on short-life, single entity charred plant remains. Samples with the 'SUERC-' laboratory code were pretreated using an acid-base-acid process. Samples were combusted and graphitized and then dated by Accelerator Mass Spectrometry (AMS). The results are conventional radiocarbon ages, quoted according to the international standard set at the Trondheim Convention. The results have been calibrated using IntCal13, and OxCal v4.2. The date ranges have been calculated using the maximum intercept method, and have the endpoints rounded outward to 10 years.

Two statistically inconsistent ($T'=10.0$; $T'5\%=3.8$; $df=1$; Ward and Wilson 1978) results were produced on charred plant macrofossils from site 33.1, context 331003. These results indicate medieval activity at the site.

Sample	Context	Sampled material	Lab. Ref.	Result	$\delta^{13}C$	Calibrated date (95% prob)
33.01.003	33.01.003	Hazel nutshell x2	SUERC-57284	684 ± 30	-25.9 ‰	Cal AD 1270–1390
33.01.003	33.01.003	Avena grains x5	SUERC-57285	550 ± 30	-25.3 ‰	Cal AD 1310–1440



- Milford Haven to Aberdulais pipeline
- Felindre to Brecon pipeline
- 0-75m contour
- 75m contour
- 200m contour
- 400m contour
- 600m contour



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PROJECT TITLE

South Wales Pipeline. Site 33.01, Land North of Tynycoed, Carmarthenshire

FIGURE TITLE

Site location plan

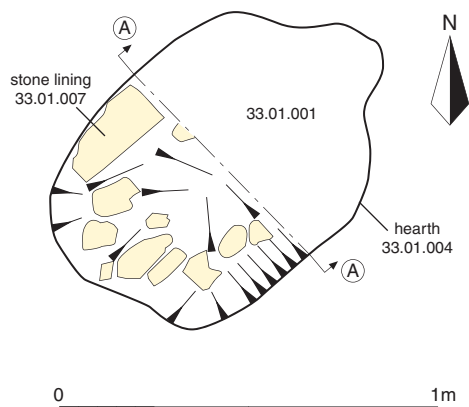
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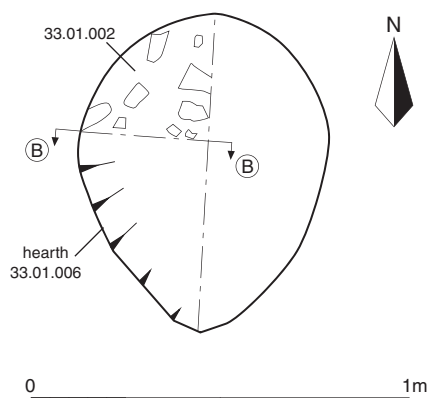
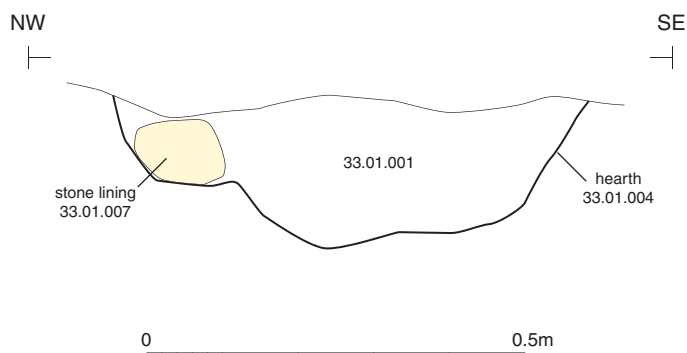
PROJECT NO. 9150 DATE 14-08-2013
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APPROVED BY PJM SCALE@A4 1:25,000

FIGURE NO.

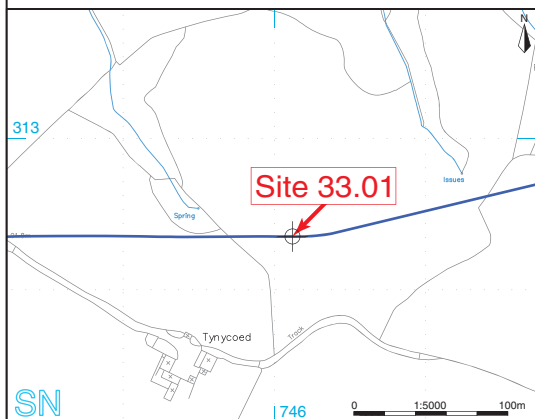
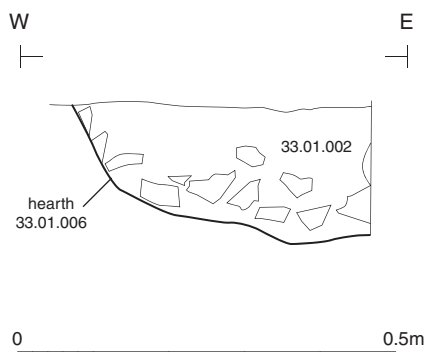
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Section AA



Section BB



- pipeline centreline
- ⊙ site (not georeferenced)

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PROJECT TITLE

South Wales Pipeline. Site 33.01, Land North of Tyncoed, Carmarthenshire

FIGURE TITLE

Plans and sections of hearths 33.01.004 & 33.01.006

PROJECT NO. **9150** DATE **15-08-2013**
DRAWN BY **DJB** REVISION **00**
APPROVED BY **PJM** SCALE@A4 **1:20 1:10**

FIGURE NO.

2