

**South Wales Gas Pipeline Project  
Sites 28.08 and 28.08a  
Land East of Bail y Llwyd  
Manordeilo and Salem  
Carmarthenshire**  
Archaeological Excavation



*for*  
**Rhead Group**  
*on behalf of*  
**National Grid**

CA Project: 9150  
CA Report: 13303  
Event: DAT108814

August 2013

# South Wales Gas Pipeline Project Sites 28.08 and 28.08a

## Archaeological Excavation

CA Project: 9150  
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Fig. 1 Site location plan (1:25,000)

Fig. 2 Plans of burnt mounds 288004 and 2808021 (1:100)

Fig. 3 Sections of burnt mounds 288004 and 2808021 (1:20)

## 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

<b>Project Name:</b>	South Wales Gas Pipeline Project
<b>Location:</b>	Sites 28.08 and 28.08a, Land East of Bail y Llwyd, Manordeilo and Salem, Carmarthenshire
<b>NGR:</b>	SN 6769 2767 (Site 28.08); SN 6771 2764 (Site 28.08a)
<b>Type:</b>	Excavation
<b>Date:</b>	22 June–17 July 2007
<b>Location of Archive:</b>	To be deposited with RCAHMW (original paper archive) and Carmarthenshire Museum (digital copy of paper archive; accession number CAASG 2008.0282)
<b>Site Code:</b>	MHA06

An archaeological excavation 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 burnt mounds with associated troughs were recorded adjacent to the course of a small stream and within 40m of one another. Radiocarbon dating of charcoal from each mound produced very similar Middle Bronze Age date ranges, raising the possibility that the mounds may have been contemporary with one another.



## 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 In June and July CAP carried out an archaeological excavation at Sites 28.08 and 28.08a, Land East of Bail y Llwyd, Manordeilo and Salem, Carmarthenshire (centred on NGR: SN 6769 2767 (Site 28.08) and SN 6771 2764 (Site 28.08a); Fig. 1). The objective of the excavation was to record all archaeological remains exposed during the pipeline construction.
- 1.3 The excavation 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 Management Plan* (RSK 2006) and associated *Written Statements of Investigation* (WSIs) and *Method Statements*.
- The sites**
- 1.4 The sites are located within a field on the western valley slope of the River Towy (Fig. 1). They lie at 80m AOD on an east-facing slope and are adjacent to a small tributary of the Towy.

- 1.5 The underlying solid geology of the area is mapped as the Nantmel Mudstone Formation of the Ordovician Period with no overlying superficial deposits (BGS 2013).

### ***Archaeological background***

- 1.6 No archaeological remains were identified within the sites during the preliminary *Archaeology and Heritage Survey* (CA 2006)). The excavations which accompanied the construction of the pipeline recorded a burnt mound at Site 28.14 (CA 2013a; PRN 107281), 500m north-east of the current sites and two more burnt mounds at Site 28.23 (CA 2014; PRNs 107279-80) a further 1km to the north-east. Further mounds were recorded along the length of the pipeline (Hart *et al.* forthcoming). Isolated, undated pits containing burnt material were excavated at pipelines sites 28.12 and 28.18, 500m and 1.4km north-east of the sites respectively (CA 2013b, CA 2013c). Although dating is rare for such sites along the pipelines, those that have been dated have been prehistoric.

### ***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;
  - 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* (NLM 2006). An archaeologist was present during intrusive groundworks comprising stripping of the pipeline easement to the natural substrate (Fig. 1).
- 1.9 The post-excavation work was undertaken following the production of the UPD (GA 2012) and included re-examination of the original site records. Environmental and evidence was taken from the assessment reports (NLM 2012b) except where the UPD recommended further work, in which case the updated reports were used. 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.

- 1.10 The archive from the excavation is currently held by CA at their offices in Kemble. A digital copy of the paper archive will be deposited with Carmarthenshire Museum under accession number CAASG 2008.0282. The original paper archive will be deposited with the RCAHMW.

## 2. RESULTS (FIGS 2–3)

- 2.1 This section provides an overview of the excavation 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.

### *Site 28.08*

- 2.2 The natural geological substrate was cut by a pit and an adjacent posthole and was overlain by a burnt mound. Pit 288006 was circular in plan with steep sides and a flat base and was 0.9m wide and 0.15m deep. It was filled by grey-black silty clay 288005, which included frequent burnt stones and charcoal, the latter derived entirely from fuelwood. Fragments of the charcoal produced radiocarbon dates of 1410–1120 and 1440–1230 cal. BC (SUERC-56042 and -56046). Posthole 288008 was adjacent to the pit's south-western edge and was circular in plan, 0.15m wide and 0.1m deep with vertical sides and a flat base. Its fill was black-brown clay sand 288007 which contained charcoal.
- 2.3 The pit and posthole were overlain by burnt mound 288004. This mound was only partially exposed and its shape in plan is not known. The earliest deposit was yellow-brown sandy clay 288010, 0.6m in diameter and 0.1m thick, located at the

centre of the mound. This was limited in extent and does not appear on the reproduced section (Fig. 3, Section AA), but it may have been a buried soil beneath the mound itself. The relationship of this deposit to the pit and posthole is not known. This possible buried soil was overlain by burnt mound layer 288004 which was at least 7m by 5m in extent and comprised a 0.4m-thick deposit of black-grey clay silt with burnt stones and oak fuelwood charcoal.

#### *Site 28.08a*

- 2.4 The natural geological substrate was cut by a pit and overlain by a burnt mound. Pit 2808000 was sub-rectangular in plan, at least 2.5m long and 0.35m deep with stepped sides and a flat base. Its full width was not exposed and it was not recorded on the field drawings (and so is not illustrated on the figures accompanying this report). It contained two lower fills (2808027 and 2808028) comprising grey silts with charcoal and burnt stone. The upper fill (2808001) was a grey-black deposit with fuelwood charcoal and burnt stones. A sample from the upper fill yielded oak, alder and hazel fuelwood charcoal, fragments of which returned radiocarbon dates of 1440–1230 and 1400–1120 cal. BC (SUERC-56047 and -56048).
- 2.5 The pit was overlain by burnt mound 2808021. This mound was fully exposed and was oval in plan, covering an area 9m long and 6.6m wide. It comprised layers of burnt stone and charcoal in a clay silt matrix overlying both the natural geological substrate and a thin peaty or degraded wood layer (2808016; not illustrated). The mound deposits were recorded collectively as layer 2808021 on section drawings in the field but included several layers recorded with different context numbers. The lowest layer was yellow clay 2808022 which contained burnt stones. This was covered by a 0.15m-thick layer of burnt stones with relatively little charcoal (2808023), which was in turn overlain a thin layer of charcoal, and then by the main body of the mound (2808021), comprising large amounts of burnt stone and charcoal within a dark silt matrix.
- 2.6 Pits 2808002 and 2808010 were located immediately south-east of the burnt mound (these were not drawn in the field and are not illustrated here). They were sub-circular in plan, 0.65m–0.85m in diameter and 0.1m deep with gently sloping sides and flat or concave bases and contained single brown silt fills. Three postholes (2808004, 280806 and 2808008; also not drawn in the field and not illustrated here) were located next to the north-eastern edge of the mound. They were 0.2m–0.3m in



diameter and 0.1m–0.15m deep with generally steep sides and flat bases. None of these features were dateable.

### *Discussion*

- 2.7 The two burnt mounds were located within 40m of one another, alongside the same stream bank. The pits accompanying the mounds are likely to have been troughs used for retaining water, based on comparison with examples found with other mounds along the pipeline route. The charcoal from the sites was dominated by the remains of fuel and it is likely that hearths were provided nearby although none were found.
- 2.8 The samples from both the burnt mounds at sites 28.08 and 28.08a follow the pattern found on the other burnt mounds along the pipeline. Food remains were lacking with just four fragments of charred hazel nutshell and a single charred barley grain from over a quarter of a metric tonne of soil processed. This very low density suggests minimal input of settlement debris and accords with the absence of finds such as flints and pottery. While the species composition of the charcoal assemblage from the burnt mounds is broadly consistent with other examples excavated along the pipeline, the concentration of young wood in all of the samples is perhaps unusual in comparison to other sites and could indicate woodland management and the utilisation of coppiced wood (Appendix B).
- 2.9 The radiocarbon dates from the features underlying the two mounds were statistically similar date ranges in the Middle Bronze Age and could have been contemporary (Appendix C). These features were very likely to have been integral to the use of the mound, especially if they were troughs, therefore it is likely that these dates also apply to the construction of the mounds. What is of note is the proximity of the two mounds to one another, which may suggest that further such monuments may await discovery alongside the same stream but beyond the excavated area.

## **3. PROJECT TEAM**

Fieldwork was undertaken by CAP. This report was written by Christopher Leonard with comments by Jonathan Hart and illustrations prepared by Daniel Bashford and Anne Leaver. 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 was managed for CA by Karen Walker.

#### 4. REFERENCES

- BGS (British Geological Survey) 2013 *Geology of Britain Viewer*. Online resource at <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> accessed 21 August 2013
- CA (Cotswold Archaeology) 2006 *Felindre to Tirley Gas Pipeline: Archaeology and Heritage Survey*. CA typescript report **05140**
- CA (Cotswold Archaeology) 2013a *South Wales Gas Pipeline Project. Site 28.14, Land North-East of Bail y Llwyd, Manordeilo and Salem, Carmarthenshire: Archaeological Watching Brief*. CA typescript report **13305**
- CA (Cotswold Archaeology) 2013b *South Wales Gas Pipeline Project. Site 28.12, Land North of Dôlcoed, Manordeilo and Salem, Carmarthenshire: Archaeological Watching Brief*. CA typescript report **13304**
- CA (Cotswold Archaeology) 2013c *South Wales Gas Pipeline Project. Site 28.18, Land West of Ashfield, Manordeilo and Salem, Carmarthenshire: Archaeological Watching Brief*. CA typescript report **13306**
- CA (Cotswold Archaeology) 2014 *South Wales Gas Pipeline Project. Site 28.23, Land West of Aber-Marlais Park, Llansadwrn, Carmarthenshire: Archaeological Watching Brief*. CA typescript report **13307**
- EH (English Heritage) 1991 *The Management of Archaeological Projects 2*
- EH (English Heritage) 2011 *Burnt Mounds* English Heritage Introductions to Heritage Assets
- GA (Groundwork Archaeology) 2012 *Milford Haven to Aberdulais and Felindre to Brecon High Pressure Gas Pipelines: Updated Project Design*
- Hart, J., Rackham, J., Griffiths, S., and Challinor, D. forthcoming 'Burnt mounds along the Milford Haven to Brecon gas pipeline, 2006-7', forthcoming in *Archaeologia Cambrensis*
- IfA (Institute for Archaeologists) 1999a *Guidelines for Finds Work*. IfA, Birmingham
- IfA (Institute for Archaeologists) 1999b *Standard and Guidance for Finds and Ecofact Studies and Curation*. IfA, Reading
- IfA (Institute for Archaeologists) 2001a *Standard and Guidance for the Collection, Documentation, Conservation and Research of Archaeological Materials*
- IfA (Institute for Archaeologists) 2001b *Standard and Guidance for Archaeological Excavation*

- IfA Wales (Institute for Archaeologists of Wales/Cymru) 2008 *Introducing a Research Framework for the Archaeology of Wales*, online resource at <http://www.archaeoleg.org.uk/intro.html> accessed December 2008
- NLM (Nacap Land and Marine) 2006 *Milford Haven to Aberdulais Natural Gas Pipeline: Scheme of investigation for a programme of archaeological works*
- NLM (Nacap Land and Marine) 2012a *Milford Haven to Aberdulais High Pressure Gas Pipeline: Archaeology Assessment of Potential for Analysis*
- NLM (Nacap Land and Marine) 2012b *Felindre to Brecon High Pressure Gas Pipeline: Archaeology Assessment of Potential for Analysis*
- RSK (RSKENSr) 2006 *Milford Haven to Aberdulais Natural Gas Pipeline: Archaeological Management Plan. Nacap Land and Marine Final*, RSKENSr Environmental Ltd
- Ward, G.K. and, Wilson, S.R. 1978 'Procedures for Comparing and Combining Radiocarbon Age Determinations: a critique', in *Archaeometry* **20**, 19–31



## APPENDIX A: CONTEXT DESCRIPTIONS

## Site 28.08

Context No.	Fill of	Interpretation	Description	L (m)	W (m)	Depth (m)	Spot date
288001		Topsoil	Light grey-brown clay silt			0.2	
288002		Subsoil	Mid yellow-brown clay silt			0.2	
288003		Natural	Orange mudstone				
288004		Burnt mound	Dark black-grey clay silt with frequent charcoal and large burnt stones	7.0	5.0	0.4	
288005	288006	Pit fill	Dark grey-black silty clay with frequent charcoal and large burnt stones	0.9	0.9	0.15	1400–1210 cal BC 1410–1230 cal BC
288006		Pit	Circular in plan with steep sides and flat base	0.9	0.9	0.15	
288007	288008	Posthole fill	Dark black-brown clay sand with occasional charcoal	0.15	0.15	0.1	
288008		Posthole	Circular in plan with vertical sides and flat base	0.15	0.15	0.1	
288009		layer	Disturbed material from burnt mound		3.5	0.3	
288010		layer	Dark yellow-brown sandy clay (buried soil?)	0.6	0.6	0.1	

## Site 28.08a

Context No.	Fill of	Interpretation	Description	L (m)	W (m)	Depth (m)	Spot date
2808000		Pit	Sub-rectangular in plan with stepped sides and a flat base	2.5	>2.1	0.35	
2808001	2808000	Pit fill	Upper fill: dark grey-black clay silt with frequent charcoal and occasional burnt stones	2.5	>2.1	0.35	1400–1190 cal BC 1420–1230 cal BC
2808002		Pit	Sub-circular in plan with gently sloping sides and flat base	0.85	0.7	0.1	
2808003	2808002	Pit fill	Dark grey-black clay silt with occasional small stones	0.85	0.7	0.1	
2808004		Posthole	Square in plan with vertical sides and flat base	0.2	0.2	0.1	
2808005	2808004	Posthole fill	Mid yellow-brown clay silt with common charcoal	0.2	0.2	0.1	
2808006		Posthole	Circular in plan with moderately steep or steep sides and concave base	0.3	0.3	0.15	
2808007	2808006	Posthole fill	Mid grey-brown silty clay	0.3	0.3	0.15	
2808008		Posthole	Circular in plan with steep sides and tapered base	0.25	0.25	0.1	
2808009	2808008	Posthole fill	Mid yellow-brown clay silt with common charcoal	0.25	0.25	0.1	
2808010		Pit	Circular in plan with gently sloping sides and concave base	0.65	0.65	0.1	
2808011	2808010	Pit fill	Mid yellow-brown silty clay	0.65	0.65	0.1	
2808012		Topsoil	Mid grey-brown silty clay			0.2	
2808013		Natural	Orange mudstone				
2808014	2808015	Posthole fill	Mid yellow-grey clay with occasional charcoal and small burnt stones	0.25	0.25	0.15	
2808015		Posthole	Circular in plan with steep sides and concave base	0.25	0.25	0.15	
2808016		Layer	Peaty layer beneath burnt mound	0.4	0.3	0.05	
2808017		Subsoil	Mid brown-orange silty clay with occasional small stones			0.2	

2808018		Land drain	N/S aligned with vertical sides and flat base		0.3	0.35	
2808019	2808018	Land drain fill	Loosely compacted stones		0.3	0.35	
2808020		Natural	Same as 2808013				
2808021		Burnt mound	Dark brown-black clay-silt with frequent charcoal and burnt stones	9.0	6.6	0.4	
2808022		Burnt mound	Dark grey-orange silty clay with frequent burnt stones	0.8	0.8	0.15	
2808023		Burnt mound	Light grey-brown clay-silt with frequent burnt stones and common charcoal	2.0	2.0	0.15	
2808024		Burnt mound	Orange-red silty clay with common burnt rock	0.7		0.15	
2808025		Burnt mound	Dark grey-black silty clay with common burnt stone and occasional charcoal	0.7		0.2	
2808026		Topsoil	Same as 2808012			0.2	
2808027	2808000	Pit fill	Lower fill: dark orange grey clay-silt with moderate charcoal and burnt stones	2.5	>2.1	0.1	
2808028	2808000	Pit fill	2nd fill: light grey silty clay with frequent charcoal and burnt stones	2.5	>2.1	0.3	
2808029	2808000	Pit fill	Same as 2808027				
2808030	2808000	Pit fill	Same as 2808028				
2808031	2808000	Pit fill	Same as 2808028				
2808032	2808000	Pit fill	Same as 2808001				
2808033	2808000	Pit fill	Same as 2808001				
2808034	2808000	Pit fill	Same as 2808027				
2808035	2808000	Pit fill	Same as 2808028				
2808036	2808000	Pit fill	Same as 2808001				
2808037	2808000	Pit fill	Orange grey silty clay with frequent burnt stones		0.2	0.15	
2808038	2808000	Burnt mound	Mid orange brown clay silt with frequent burnt stones and common charcoal flecks				

## APPENDIX B: THE PALAEOENVIRONMENTAL EVIDENCE BY JAMES RACKHAM

### Environmental soil samples

Bulk and column samples were taken from each mound. The samples were processed in the manner described in the assessment report (Carruthers 2008). The residues were located for most of the processed samples and these were refloats, the residues sorted for burnt stone and other archaeological material, and checked for a magnetic fraction. The 2nd flots were measured (see Table 1) and then sorted for charred macrofossils.

**Table 1** Data for the samples from Sites 28.08a and 28.08

Sample	Context	Wt. (kg)	Res. wt. (g)	1st Flot vol. (ml)	2nd Flot vol. (ml)	Burnt clay (g)#	Burnt stone (g)	Magnetic (g)	Burnt bone (g)	Comments
2808001	2808021	16	8907	450	3		8907	2.2		
2808002	2808021	11	5530	250	4		5530	2		
2808003	2808021	21	10535	500	4		10535	1.6		HNSx3
2808004	2808021	20	10190	800	10		10190	1.4		
2808005	2808021	15.5	9475	800	4		9475	2.8		
2808006	2808021	15	7155	200	7		7155	7.6		
2808007	2808021	2	123	400	1		123			
2808009	2808016	2		800	-		wood			
2808010	2808001	9	2955	100 0	5		2955			
2808011	2808030	9	4937	160	4		4937			
2808012	2808031	10	4161	180	4	8	4161	1.6		Barleyx1
2808013	2808029	6	2393	200	3	32.6	2393			
2882001	288004	17	4413	40	26	6.8	4413	4.4		
2882002	288004	25	11076	40	6		11076	3.8		HNSx1; <i>Galium aparine</i> x1
2882003	288004	17	8264	60	16	62.2	8264	6.2		
2882004	288004	16	7953	250	5	130	7953	18.4		
2882005	288004	11	5266	100	32	2	5266	16.2		
2882006	288005	30	9776	600	16	24.2	9776	4		<i>Galium aparine</i> x1
2882008	288005	13	10730	800	13		10730	4		cf <i>Crataegus monogyna</i> x1; <i>Stachys</i> sp. x1
2882009	288004	9	3998	400	3		3998	8.4		

# picked out as fired earth but actually burnt micaceous mudstone; HNS- hazel nutshell fragment

The samples produced no archaeological finds other than burnt stone and a little fired earth (Table 1). The material extracted as fired earth is actually burnt micaceous mudstone and a part of the general burnt stone debris. A magnetic component was present in a number of the samples, particularly in spits 16-20 and 21-25cm of 28.08, but this material is largely mineralised iron rich mud and sandstone rather than burnt material. The proportion of burnt stone varied from 6.1 to 82.5% of the original sample. The 6.1% derives from the basal spit of the column of samples through Site 28.08a suggesting that this spit largely sampled the natural underlying the mound. From the top down the proportion of burnt stone in the burnt mound Site 28.08 column was 55.7%, 50.3%, 50.2%, 50.9%, 61.1%, 47.7% and 6.1%, spit 5 reflecting the highest density. The proportions of burnt stone in the Site 28.08 column were a little less at 26%, 44.3%, 48.6%, 49.7% and 47.9% of the original sample weight. The relatively low figure for the top of the mound suggests weathering and an overburden, probably of colluvial material washing down slope. Although the environmental evidence in the samples is limited with occasional finds of charred hazel nutshell, a grain of barley and one or two other charred seeds (Table 1; Carruthers 2008), the charcoal component in the samples is quite high with up to 11ml of charcoal per kilogramme in some samples, although the three upper spits of the Site 28.08 column have very little suggesting weathering and loss through washing out during rainfall.

The size of the two mounds has been calculated from their extent, thickness and burnt stone density. The approximate area of mound 288004 is 17.1 square metres and that of mound 2808021 51 square metres. With an average thickness of the former of 0.127m and of the latter 0.19m the approximate volume of the mounds have been calculated as 2.17 and 9.69 cubic metres. Based upon the density of burnt stone recorded in the column samples from the two mounds this represents approximately 1.3 and 7.1 tonnes of burnt stone in each mound. Mound 288004 was not completely exposed and having been cut by the modern stream channel may be significantly larger than its planned area but mound 2808021, which was completely exposed, indicates a medium sized mound in terms of the other sites along the pipeline.

### Charcoal (*Dana Challinor*)

Five samples from Sites 28.08 and 28.08a were selected for charcoal analysis, comprising two from the burnt mounds and three from the associated pits (Table 2). Identifications followed standard procedures. Condition was variable, though mostly poor, with some infusion of sediment and heavy orange staining, especially in the samples from 28.08a. Five taxa were positively identified; *Quercus* sp. (oak), *Alnus glutinosa* (alder), *Corylus avellana* (hazel), Maloideae (hawthorn group) and *Ilex aquifolium* (holly). No tyloses were noted in the oak and, although the poor preservation means that this cannot be taken as definite absence, sapwood was positively recorded in several samples. This, along with the evidence for some roundwood, suggests the oak was relatively immature. Roundwood fragments were also frequent in the other taxa, but rarely with pith or bark. Insect tunnels were recorded in one fragment of oak from sample 2882008 and low to strong levels of vitrification were observed in oak fragments in sample 2882009.

**Table 2** Charcoal from burnt mound features at Sites 28.08 and 28.08a

	Site	28.08		28.08a	
	Feature type	pit fill		burnt mound	pit fill
	Feature no.	288006		-	2808000
	Context no.	288005		288004	2808001
	Sample no.	2882006	2882008	2882009	2808010
<i>Quercus</i> sp.	oak	11 (rs)	10 (s)	29 (rs)	9 (r)
<i>Alnus glutinosa</i> Gaertn.	alder	8 (r)	10 (r)	5	4
<i>Corylus avellana</i> L.	hazel	1r		7r	8 (r)
<i>Alnus/Corylus</i>	alder/hazel	4	3	5	5
Maloideae	hawthorn group	6 (r)	7 (r)		
<i>Ilex aquifolium</i> L.	holly				2
Indeterminate	diffuse porous			2	
Indeterminate	bark			1	
Indeterminate				1	2
<b>Total</b>		<b>30</b>	<b>30</b>	<b>30</b>	<b>30</b>

The charcoal assemblage from Sites 28.08 and 28.08a is comparable, in the use of oak, alder and hazel, to those from burnt mound features at other pipeline sites of Middle Bronze Age date. An interesting feature of these sites, however, is the contrast between the oak-dominated assemblage of burnt mound 288004 and the more diverse assemblages of associated pit 288006 and the burnt mound 2808021 and associated pit at Site 28.08a. The latter features indicate that a range of fuel sources was utilised, rather than suggesting a selective preference for oak.

## Discussion

The samples from both the burnt mounds at sites 28.08 and 28.08a follow the pattern found on the other burnt mounds along the pipeline. Food remains are lacking with just four fragments of charred hazel nutshell and a single charred barley grain from over a quarter of a metric tonne of soil processed. Even allowing for a general lack of such debris on Bronze Age sites this is a very low density and suggests minimal input of what might be described as 'domestic' waste, and no flint or pottery was recovered during excavation. The deposits are dominated by burnt stone, the burnt mound deposits averaging about 48% burnt stone by weight.

The size of the two mounds has been calculated from their areal extent, thickness and burnt stone density. The approximate area of mound 288004 is 17.1 square metres and that of mound 2808021 51 square metres. With an average thickness of the former of 0.127m and of the latter 0.19m the approximate volume of the mounds have been calculated as 2.17 and 9.69 cubic metres. Based upon the density of burnt stone recorded in the column samples from the two mounds this represents approximately 1.3 and 7.1 tonnes of burnt stone in each mound. Mound 288004 was not completely exposed and having been cut by the modern stream channel may be significantly larger than its planned area but mound 2808021, which was completely exposed, indicates a medium sized mound in terms of the other sites along the pipeline.

The sites, which are approximately 44m apart, lie on the north eastern side of a small stream or modern drainage channel in a small shallow south-east facing valley. Mound 288004 lies immediately adjacent to, and is cut by, the channel and lies at approximately 73m OD. Mound 2808021 lies within 10m of the stream channel and a metre or two lower altitudinally. The assessment gazetteer describes it as overlying a palaeochannel (Pannet 2008) but this has not been confirmed during the post-excavation analyses. If it were true then this could potentially reflect a change in the course of the stream at this point or a local scoured runoff channel off the slope behind. The proximity to the modern stream course fits the pattern of many of the other sites along the pipeline. The site lies over mudstone the likely primary source for the burnt mudstone in the mound, perhaps from the stream or local tree throws, but some 200m upslope to the north Devensian till occurs and that and the sandstone beds on the higher ground less than a kilometre to the north-west (BGS) could be the origin for the burnt sandstone cobbles in the mound, transported to the site by the stream. The charcoal analysis shows a typical assemblage of oak, alder, hazel and hawthorn group, with the addition of holly, a less common taxon. The exclusive assemblage of oak in sample 2882009 (Table 2) in contrast to the other samples, might suggest that this sample was more specific, such as the material from just one or two fires where only oakwood was used, but without a much larger number of analysed samples such variations defy believable interpretation. The concentration of young wood in all the samples is perhaps unusual in comparison to other sites and could indicate woodland management and the utilisation of coppiced wood. The landscape is currently largely fairly gently sloping pastures with occasional arable fields but it is probable that in the middle to Late Bronze Age the stream valleys were still at least partly wooded (Rackham *et al* in prep) affording a ready supply of fuelwood for the sites, with oak, hazel and alder likely to be the most numerous trees in the area (op cit.).



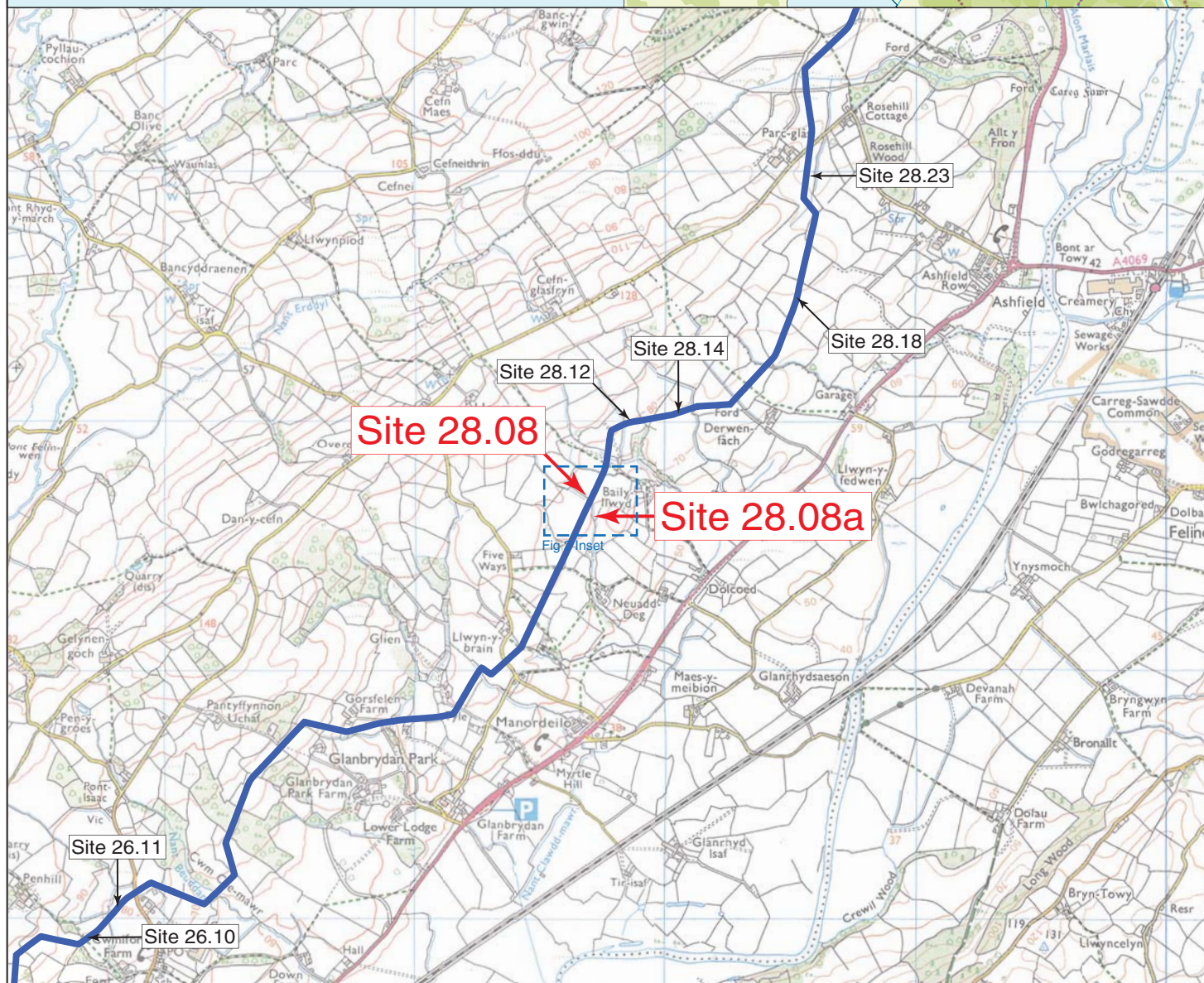
## APPENDIX C: THE RADIOCARBON DATING EVIDENCE BY SEREN GRIFFITHS

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.

Four radiocarbon results produced on shortlife samples from features on sites 28.08 and 28.08a were statistically consistent ( $T'=2.9$ ;  $T'5\%=7.8$ ;  $df=3$ ; Ward and Wilson 1978), and could be of the same actual age.

Site	Context	Sampled material	Laboratory ref	Measured age	$\delta^{13}C$	Calibrated radiocarbon date	Posterior density estimate (95%)
28.08	288005	<i>Alnus</i> sp. charcoal	SUERC-56042	3025 +/- 40	-26.8	1410–1120 cal BC	1400–1210 cal BC
28.08	288005	<i>Maloideae</i> charcoal	SUERC-56046	3081 +/- 40	-26.5	1440–1230 cal BC	1410–1230 cal BC
28.08a	2808001	<i>Alnus</i> sp. charcoal	SUERC-56047	3085 +/- 40	-26.5	1440–1230 cal BC	1420–1230 cal BC
28.08a	2808001	<i>Corylus</i> sp. charcoal	SUERC-56048	3008 +/- 40	-25.3	1400–1120 cal BC	1400–1190 cal BC

(Dating undertaken by Scottish Universities Environmental Research Centre)



- 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 28.08 and 28.08a, Land East of Bail y Llwyd, Manordeilo and Salem, Carmarthenshire

#### FIGURE TITLE

### Site location plan

0 1km

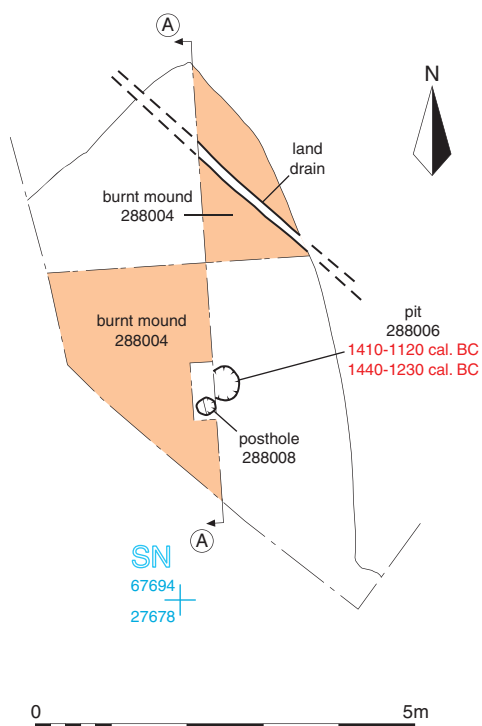
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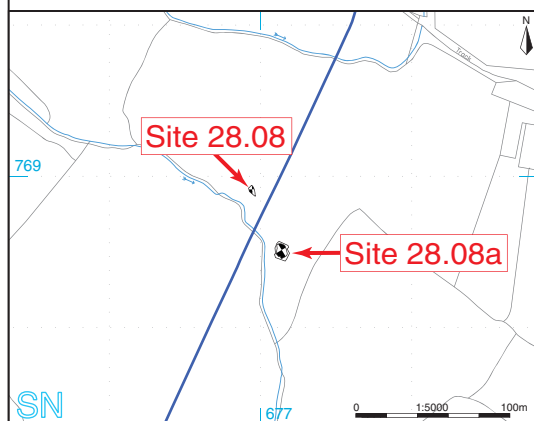
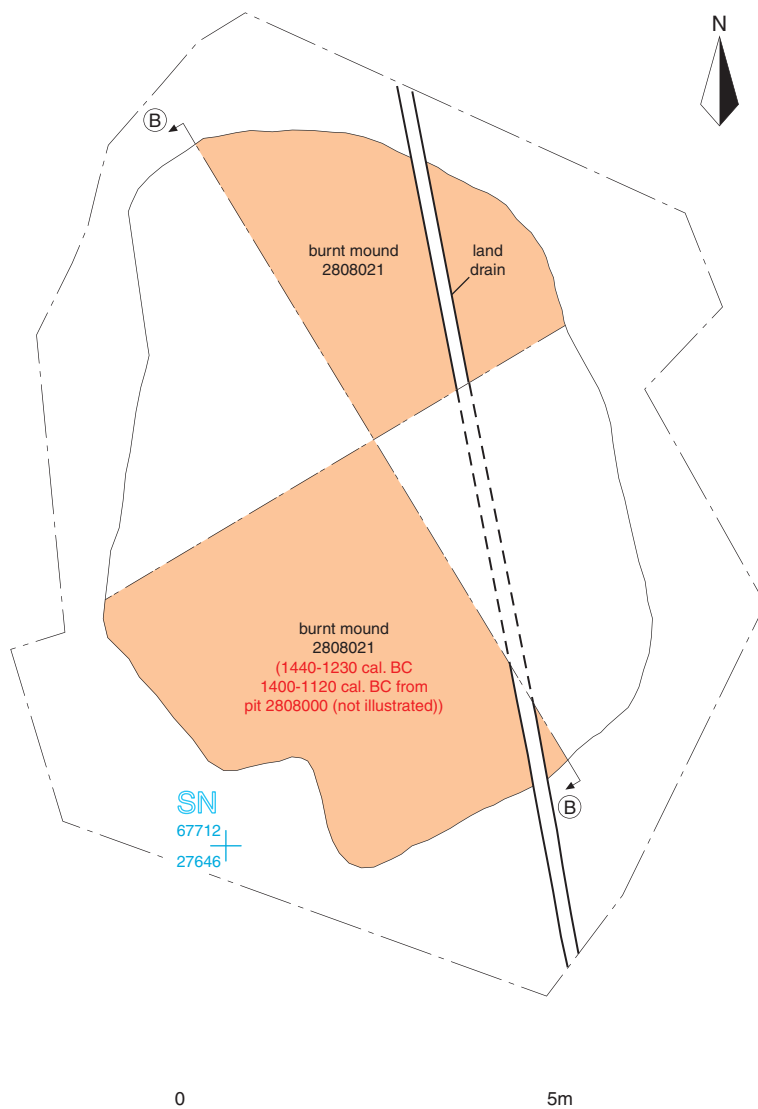
FIGURE NO.

1

detailed plan of site 28.08



detailed plan of site 28.08a



- pipeline centreline
- burnt mound

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PROJECT TITLE

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FIGURE TITLE

**Plans of burnt mounds 288004 and 2808021**

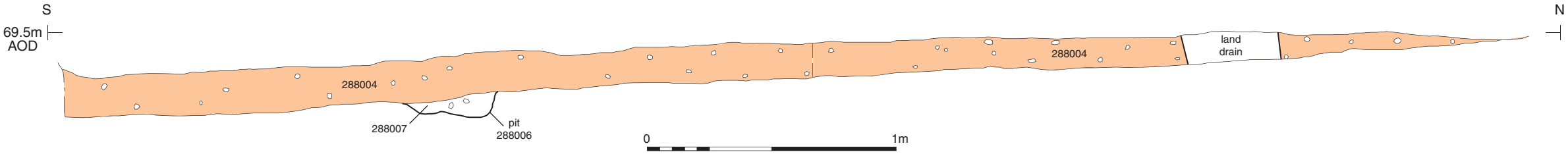
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FIGURE NO.

**2**

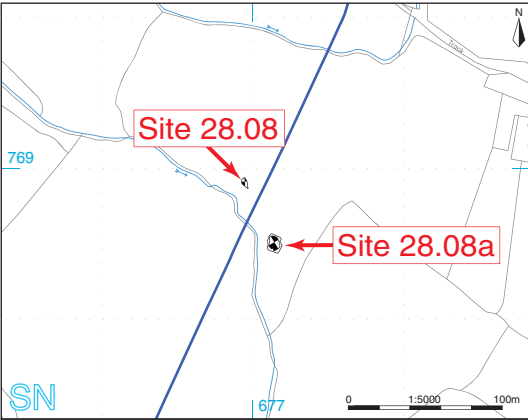
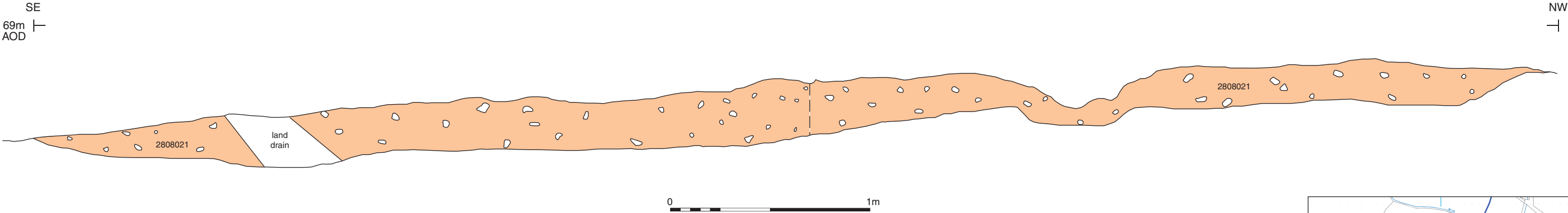
detailed section of burnt mound 288004

Section AA



detailed section of burnt mound 2808021

Section BB



- pipeline centreline
- burnt mound

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PROJECT TITLE  
South Wales Pipeline. Site 28.08 and 28.08a, Land East of Bail y Llwyd, Manordeilo and Salem, Carmarthenshire

FIGURE TITLE  
**Sections of burnt mounds 288004 and 2808021**

PROJECT NO.	9150	DATE	29-08-2013	FIGURE NO.
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APPROVED BY	PJM	SCALE@A3	1:20	