



# Ledbury Trunk Main

## Archaeological Programme of Works

On behalf of  
Dwr Cymru Welsh Water  
Laing O'Rourke

May - November 2007

# BORDER ARCHAEOLOGY



PO Box 36 Leominster Herefordshire HR6 0YQ  
E-mail: [neil@borderarchaeology.com](mailto:neil@borderarchaeology.com)  
[www.borderarchaeology.com](http://www.borderarchaeology.com)

Technical & Commercial Services  
Chapel Walk Burgess Street Leominster  
Herefordshire HR6 8DE  
Tel: 01568 610101  
Tel/fax: 01568 616900  
Email: [borderarch@btconnect.com](mailto:borderarch@btconnect.com)

August 2009



# Contents

<b>Part One: Introduction.....</b>	<b>1</b>
- Duration of the overall programme of works.....	1
- Setting the scene.....	1
- Specific Archaeological and Historical Background to the Scheduled Monument, the settlements and its environs.....	2
- The archaeological landscape excluding the SAM and its environs along the pipeline route.....	8
- Engineering Methodologies and Constraints along the pipeline route	
- being a combination of open cut and directional drilling.....	9
- Scheduled Monument Consent.....	10
- Weather and its impact upon the archaeological programme.....	10
- Water table and waterlogged deposits.....	11
- Summary of results.....	12
- Perhaps the highlights.....	15
- Community awareness, public meetings and acknowledgements.....	17
- Acknowledgements and appreciation.....	18
<b>Part Two: Archaeological Observation.....</b>	<b>21</b>
2.1 Landscape overview: Soils and geology.....	21
2.2 Introduction.....	22
2.2.1 Aim of the archaeological observation.....	22
2.2.2 Methodology.....	22
2.2.3 Results of archaeological observation.....	23
2.3 Topsoil strip & open-cut trenching (Bewdley Bank-Withington) DCWW/LOR scheme maps 1-5.....	24
2.3.1 General introduction.....	24
2.3.2 DCWW/LOR Scheme Map 1.....	25
2.3.3 DCWW/LOR Scheme Map 2.....	29
2.3.4 DCWW/LOR Scheme Map 3.....	34
2.3.5 DCWW/LOR Scheme Map 4.....	39
2.3.6 DCWW/LOR Scheme Map 5.....	43
2.3.7 Summary of results of topsoil strip and open-cut trenching.....	45
2.4 Results of Archaeological Observation of Directional Drilling Access Pit excavations (DCWW/LOR Scheme Maps 6-8) .....	46
2.4.1 Introduction.....	46
2.4.2 DCWW/LOR Scheme Map 6.....	47
2.4.3 DCWW/LOR Scheme Map 7.....	49
2.4.4 DCWW/LOR Scheme Map 8 (Access Pits excavated outside designated area of Roman settlement).....	52
2.4.5 Summary of results of observation of Access Pits (maps 6-8)....	53

## Part Three: Archaeological Excavation..... 54

3.1	Introduction.....	54
3.1.1	Aim of the archaeological excavation.....	54
3.1.2	Methodology.....	54
3.1.3	Description of the pipeline route.....	55
3.2	Access Pit (AP) 1.....	57
3.2.1	Site location.....	57
3.2.2	Description.....	57
3.2.3	Summary Conclusions.....	64
3.3	Access Pit (AP) 2.....	66
3.3.1	Site location.....	66
3.3.2	Description.....	66
3.3.3	Summary Conclusions.....	68
3.4	Access Pit (AP) 3.....	71
3.4.1	Site location.....	71
3.4.2	Description.....	71
3.4.3	Summary Conclusions.....	73
3.5	Access Pit (AP) 4.....	75
3.5.1	Site location.....	75
3.5.2	Description.....	75
3.5.3	Summary Conclusions.....	122
3.6	Access Pit (AP) 5.....	125
3.6.1	Site location.....	124
3.6.2	Description.....	124
3.6.3	Summary Conclusions.....	129
3.7	Access Pit (AP) 6.....	130
3.7.1	Site location.....	130
3.7.2	Description.....	130
3.7.3	Summary Conclusions.....	135
3.8	Access Pit (AP) 7.....	136
3.8.1	Site location.....	136
3.8.2	Description.....	136
3.8.3	Summary Conclusions.....	139
3.9	Access Pit (AP) 8.....	140
3.9.1	Site location.....	140
3.9.2	Description.....	140
3.9.3	Additional Access Pit (AP) 8b.....	147
3.9.4	Summary Conclusions.....	149
3.10	Access Pit (AP) 9.....	152
3.10.1	Site location.....	152
3.10.2	Description.....	152
3.10.3	Summary Conclusions.....	156
3.11	Access Pit (AP) 10.....	157
3.11.1	Site location.....	157
3.11.2	Description.....	157
3.11.3	Summary Conclusions.....	158



3.12	Access Pit (AP) 11.....	159
	3.12.1 Site location.....	159
	3.12.2 Description.....	159
	3.12.3 Summary Conclusions.....	160
3.13	Access Pit (AP) 12.....	161
	3.13.1 Site location.....	161
	3.13.2 Description.....	161
	3.13.3 Summary Conclusions.....	164
3.14	Access Pit (AP) 13.....	164
	3.14.1 Site location.....	164
	3.14.2 Description.....	164
	3.14.3 Summary Conclusions.....	166
 <b>Part Four: Interpretation.....</b>		<b>166</b>
4.1	The Natural Environment.....	166
4.2	Settlement Chronology and Topography.....	168
	4.2.1 Evidence for Prehistoric Activity.....	170
	4.2.2 Evidence for Romano-British and post-Roman settlement.....	170
	4.2.3 Chronology of Settlement.....	170
	4.2.4 Settlement Status and Morphology.....	175
	4.2.5 Economy.....	179
	4.2.6 Contextual Discussion.....	180
	4.2.7 Pathology and Diet.....	182
 <b>Bibliography.....</b>		<b>186</b>
 <b>Glossary.....</b>		<b>189</b>
 <b>Part Five: Appendices (1-16)</b>		
<b>APPENDIX 1:</b>	<b>DCWW/LOR Scheme Maps.....</b>	<b>192-199</b>
	Figure 1.1 DCWW / LOR Scheme Map 1.....	192
	Figure 1.2 DCWW / LOR Scheme Map 2.....	193
	Figure 1.3 DCWW / LOR Scheme Map 3.....	194
	Figure 1.4 DCWW / LOR Scheme Map 4.....	195
	Figure 1.5 DCWW / LOR Scheme Map 5.....	196
	Figure 1.6 DCWW / LOR Scheme Map 6.....	197
	Figure 1.7 DCWW / LOR Scheme Map 7.....	198
	Figure 1.8 DCWW / LOR Scheme Map 8.....	199
 <b>APPENDIX 2:</b>	 <b>Results of open-cut trenching observations.....</b>	 <b>200-236</b>
	Table 2.1 DCWW / LOR Scheme Map 1.....	200
	Table 2.2 DCWW / LOR Scheme Map 2.....	208
	Table 2.3 DCWW / LOR Scheme Map 3.....	213
	Table 2.4 DCWW / LOR Scheme Map 4.....	219

Table 2.5	DCWW / LOR Scheme Map 5.....	224
Table 2.6	DCWW / LOR Scheme Maps 6, 7 & 8.....	229

<b>APPENDIX 3:</b>	<b>Context registers &amp; accompanying Harris matrices for Access Pits (APs) .....</b>	<b>237-274</b>
Table 3.1	Access Pit (AP) 1.....	237
Figure 3.1	Access Pit (AP) 1 Matrix.....	241
Table 3.2	Access Pit (AP) 2.....	241
Figure 3.2	Access Pit (AP) 2 Matrix.....	242
Table 3.3	Access Pit (AP) 3.....	242
Figure 3.3	Access Pit (AP) 3 Matrix.....	242
Table 3.4	Access Pit (AP) 4.....	243
Figure 3.4	Access Pit (AP) 4 Matrix.....	256
Table 3.5	Access Pit (AP) 5.....	257
Figure 3.5	Access Pit (AP) 5 Matrix.....	259
Table 3.6	Access Pit (AP) 6.....	259
Figure 3.6	Access Pit (AP) 6 Matrix.....	259
Table 3.7	Access Pit (AP) 7.....	261
Figure 3.7	Access Pit (AP) 7 Matrix.....	263
Table 3.8	Access Pit (AP) 8.....	263
Figure 3.8	Access Pit AP8 Matrix.....	266
Table 3.9	Access Pit (AP) 8b.....	267
Figure 3.9	Access Pit (AP) 8b Matrix.....	267
Table 3.10	Access Pit (AP) 9.....	268
Figure 3.10	Access Pit (AP) 9 Matrix.....	270
Table 3.11	Access Pit (AP) 10.....	272
Figure 3.11	Access Pit (AP) 10 Matrix.....	270
Table 3.12	Access Pit (AP) 11.....	271
Figure 3.12	Access Pit (AP) 11 Matrix.....	272
Table 3.13	Access Pit (AP) 12.....	272
Figure 3.13	Access Pit (AP) 12 Matrix.....	272
Table 3.14	Access Pit (AP) 13.....	273
Figure 3.14	Access Pit (AP) 13 Matrix.....	274

<b>APPENDIX 4:</b>	<b>Pottery.....</b>	<b>275-291</b>
Table 4.1	Description of forms and fabrics.....	275
	<b>The samian.....</b>	<b>278</b>
Table 4.2	Forms.....	284
Table 4.3a	Access Pits 1 and 3.....	285
Table 4.3b	Access Pits 4 and 8.....	287

<b>APPENDIX 5:</b>	<b>Pottery drawings.....</b>	<b>292-300</b>
Figure 5.1	Everted rim beaker. Fabric: GREY. Occupation layer (4007).....	293
Figure 5.2	Jar decorated with an oblique burnished line lattice. Fabric: DOR BB1. (4064) fill of boundary ditch [4063].....	293
Figure 5.3	Flanged rim hemispherical bowl. Fabric: SVW OX. (4064) fill of boundary ditch [4063].....	293



Figure 5.4	Wide-mouthed jar. Fabric: SVW OX. (4064) fill of boundary ditch [4063].....	294
Figure 5.5	Necked, cordoned jar. Fabric: SVW OX (organic-tempered variant). (4026) fill of linear [4025].....	294
Figure 5.6	Bowl. Fabric: SVW OX. Occupation deposit (4003).....	294
Figure 5.7	Narrow-mouthed jar. Fabric: SVW OX. Occupation deposit (4047).....	294
Figure 5.8	Almost complete everted bifid rim jar. Part of the rim had broken off but was found in the fill. Fabric: SVW OX. Occupation deposit (4007), pot 4.....	295
Figure 5.9	Complete everted rim jar used as a cremation urn Restored. Fabric: SVW OX. Occupation deposit (4007), pot 1.....	295
Figure 5.10	Flared rim cordoned bowl. Fabric: SVW OX. Topsoil (8001) .....	296
Figure 5.11	Everted rim beaker with rouletted decoration. Fabric: GYF. (8006) fill of pit [8005].....	296
Figure 5.12	Handmade jar, slightly burnt. Fabric: DOR BB1. (8006) fill of pit [8005].....	296
Figure 5.13	Hemispherical bowl. Fabric: SVW OX. (8006) fill of pit [8005].....	296
Figure 5.14	Handmade beaded rim jar with an abraded outer surface. Fabric: MAL RE A. (8006) fill of pit [8005].....	297
Figure 5.15	Shallow dish. Fabric: SVW OX. (8006) fill of pit [8005].....	297
Figure 5.16	Wide-mouthed large jar. Fabric: SVW OX. (8006) fill of pit [8005].....	297
Figure 5.17	Tankard. Fabric: SVW OX. (8008) fill of pit [8007].....	297
Figure 5.18	Carinated cup. Fabric: SVW OX. (8008) fill of pit [8007].....	298
Figure 5.19	Shallow dish. Fabric: SVW OX. (8008) fill of pit [8007].....	298
Figure 5.20	Bodysherd from a closed form with a post-firing graffiti. Fabric: SVW RE. (8008) fill of pit [8007].....	298
Figure 5.21	Everted rim jar. Fabric: DOR BB1. (8008) fill of pit [8007].....	298
Figure 5.22	Small jar. Fabric: WSOXID. (8008) fill of pit [8007].....	299
Figure 5.23	Everted rim jar with a bulged shoulder and rusticated decoration. Fabric GREY. (8008) fill of pit [8007].....	299
Figure 5.24	Sharply everted rim beaker. Fabric: GREY. (8008) fill of pit [8007].....	299
Figure 5.25	Wide-mouthed jar. Fabric SVW OX. (8011) upper fill of pit [8013].....	300
Figure 5.26	Small rim sherd from a jar or beaker in a hard grey fabric with sparse limestone. Thin olive green glaze. Fabric: GLAZE. Pit WL02.....	300
Figure 5.27	<i>Mortarium</i> stamp. Fabric: WRX WH. (6016) upper fill of pit [6017].....	300
<b>APPENDIX 6:</b>	<b>Samian rubbings.....</b>	<b>301-304</b>
Figure 6.1	Form 37. Central Gaulish (4047/29).....	301
Figure 6.2	Form 37. Central Gaulish (4047/41).....	301
Figure 6.3	Form 37. Central Gaulish (4003/111).....	301
Figure 6.5	Form 37. Central Gaulish (8006/7) (8008/58).....	302
Figure 6.7	Form 37. Central Gaulish (8006/32) (8008/56).....	302
Figure 6.8	Form 37. Central Gaulish (8008/103).....	302



Figure 6.9	Form 37. Central Gaulish (8006/45).....	303
Figure 6.10	Form 37. Central Gaulish (8006/9, 15).....	303
Figure 6.12	Form 37. Central Gaulish (8001/33).....	303
Figure 6.13	Form 37. Central Gaulish (8101/35).....	304
Figure 6.14	Form 37. Central Gaulish (8004/39).....	304
Figure 6.15	Form 37. Central Gaulish (8004/39).....	304
<b>APPENDIX 7:</b>	<b>Glass.....</b>	<b>305-307</b>
<b>APPENDIX 8:</b>	<b>Metalwork.....</b>	<b>307-309</b>
Table 8.1	X-radiographed objects.....	308
<b>APPENDIX 9:</b>	<b>Coins.....</b>	<b>310-313</b>
Plate 9.1	Pop Romanus (4064/1) SF 021 - Obverse.....	311
Plate 9.2	Pop Romanus (4064/1) SF 021 - Reverse.....	311
Plate 9.3	Constantius II or Constans (4047/1) SF 022 - Obverse.....	311
Plate 9.4	Constantius II or Constans (4047/1) SF 022 - Reverse.....	311
Plate 9.5	Constantine I (4064/1) SF 025 - Obvers.....	312
Plate 9.6	Constantine I (4064/1) SF 025 - Reverse.....	312
Plate 9.7	Constantine I (4075/1) SF 026 – Obverse.....	312
Plate 9.8	Constantine I (4075/1) SF 026 – Reverse.....	312
Plate 9.9	Constantius II (4003/1) SF 028 – Obverse.....	313
Plate 9.10	Constantius II (4003/1) SF 028 – Reverse.....	313
<b>APPENDIX 10:</b>	<b>Bone Artefacts.....</b>	<b>313-315</b>
Plate 10.1	Bone toggle (8006) SF 019.....	314
Plate 10.2	Bone Hairpin (9010) SF 016.....	314
<b>APPENDIX 11:</b>	<b>Coffin.....</b>	<b>316-320</b>
Table 11.1	Condition assessment results.....	310
<b>APPENDIX 12:</b>	<b>Flint.....</b>	<b>311-313</b>
Table 12.1	Summary of the lithic finds.....	319
<b>APPENDIX 13:</b>	<b>Shell and Bone.....</b>	<b>320-345</b>
Table 13.1	Shell remains recovered from sediment samples.....	334
Table 13.2	Shell remains recovered by hand collection.....	336
Table 13.3	Hand collected vertebrate remains.....	337
Table 13.4	Vertebrate remains recovered from sediment samples.....	338
<b>APPENDIX 14:</b>	<b>Wood Technology.....</b>	<b>346-356</b>
Plate 14.1	Stake from (2005).....	349
Plate 14.2	Stake from (2005).....	350



Plate 14.3	Stakes from (2006).....	350
Plate 14.4	Stake from (2006).....	351
Plate 14.5	Stakes from (5018).....	351
Plate 14.6	Stakes from (5018).....	352
Plate 14.7	Stakes from (5018).....	353
Plate 14.8	Stakes from (5018).....	354
Plate 14.9	Stakes from (5018).....	355
Plate 14.10	Stakes from (5018).....	356
<b>APPENDIX 15:</b>	<b>Geoarchaeology.....</b>	<b>357-362</b>
Table 15.1	Access Pit 4.....	358
Table 15.2	Access Pit 2.....	360
Table 15.3	Access Pit 8.....	360
Table 15.4	Access Pit 9.....	362
<b>APPENDIX 16: Plant macrofossil assessment and human bone analysis.....</b>		<b>363-527</b>
<b>Report 1701.....</b>		<b>363</b>
Table 16.1a	Contents of the residues and flot matrices, & charred remains from samples 1 – 18.....	366
Table 16.1b	Waterlogged remains from samples 1 – 18.....	367
Table 16.1c	Contents of the residues and flot matrices, & charred remains from samples 19 – 31, and the burial context (4027).....	368
Table 16.1d	Waterlogged remains from samples 19 – 31, and the burial context (4027).....	369
Plate 16.1	Condition of skeleton (4027) on arrival.....	372
Plate 16.2	Right side of body and right limbs exposed (4027).....	373
Plate 16.3	Left limbs exposed (right limbs removed) (4027).....	373
Plate 16.4	Location of pot 1.....	374
Plate 16.5	Pot 1 close-up.....	374
Plate 16.6	Location of pot 2 and cremated bone fragments.....	374
Plate 16.7	Pot 2 and cremated bone fragments close-up.....	374
Table 16.2	Summary of osteological and palaeopathological results.....	375
Plate 16.8	Skeleton (4027).....	376
Plate 16.9	Skeleton (4027) – left hand.....	376
Table 16.3	Summary of archaeological information.....	377
Table 16.4	The cremated bone.....	379
<b>Report 1740.....</b>		<b>381</b>
Table 16.5	Identifiable animal bone fragments from the bulk samples.....	383
Table 16.6	(Appendix 1:) Plant macrofossil data from Report 1740.....	389
<b>Report 1770.....</b>		<b>390</b>
Table 16.7	Identifiable faunal remains from the bulk samples & inhumations.....	393
Table 16.8	Appendix 1a: Contents of the residues & flots from Report 1770.....	399
Table 16.9	(Appendix 1b:) Charred & waterlogged plant remains from Report 1770.....	400





Plate 16.8	Vessel 1 showing condition on arrival; <i>in situ</i> cremated bone; and vessel following reconstruction.....	401
<b>Report 1786.....</b>		<b>402</b>
Table 16.10	Identifiable faunal remains from bulk samples.....	409
Table 16.11	(Appendix 1a:) Contents of the residues & flots from Report 1786.....	409
Table 16.12	(Appendix 1b:) Charred & waterlogged plant remains from Report 1786.....	410
Plate 16.9	Vessel 2 – emptied.....	411
Plate 16.10	Vessel 3 and stone in soil block.....	411
Plate 16.11	Stone after washing.....	411
Plate 16.12	Vessel 4.....	412
Plate 16.13A	Leather shoe following conservation – top.....	412
Plate 16.13B	Leather shoe following conservation – underside.....	412
Plate 16.13C	Leather shoe following conservation – side view.....	412
<b>Report 2081.....</b>		<b>413</b>
Table 16.13	Summary of the archaeological information for the inhumation burials.....	422
Table 16.14	Summary of osteological and palaeopathological results.....	424
Table 16.15	Summary of cremation burials.....	430
Table 16.16	Summary of cremated bone fragment size.....	431
Table 16.17	Summary of identifiable elements.....	431
Table 16.18	Weight and proportion of animal bone.....	432
Table 16.19	Summary of osteological results for the cremation burials.....	432
Table 16.20	Summary of funerary information for inhumation burials.....	433
Table 16.21	Summary of sample information and results of AMS radiocarbon dating.....	438
Table 16.22	(Appendix 1a:) Plant macrofossil data from non-waterlogged Roman contexts.....	443
Table 16.23	(Appendix 1b:) Plant macrofossil data from the Roman and prehistoric waterlogged contexts.....	445
<b>Human Remains.....</b>		<b>446</b>
Table 16.24	Summary of archaeological information for inhumation burials..	447
Table 16.25	Summary of osteological and palaeopathological results.....	449
Table 16.26	Summary of cremation burials.....	471
Table 16.27	Summary of cremated bone fragment size.....	473
Table 16.28	Summary of identifiable elements.....	475
Table 16.29	Weight and proportion of animal bone.....	476
Table 16.30	Summary of osteological results for the cremation burials.....	477
Table 16.31	Summary of funerary information for inhumation burials.....	481
Table 16.32	(Appendix III:) Catalogue of articulated skeletons.....	498
Table 16.33	(Appendix IV:) Catalogue of disarticulated human bone.....	508
Table 16.34	(Appendix V:) Catalogue of cremated human bone.....	509
Table 16.35	(Appendix VI:) Non-metric traits.....	519
Plate 16.14	Scoliosis of the spine in skeleton (4037), T4-8 (anterior).....	523
Plate 16.15	Bennett's fracture of right first metacarpal (arrow), normal left metacarpal for comparison (skeleton 4039).....	523



Plate 16.16	Skeleton (4050), right temporal: A – view of internal surface, with two cuts delivered from behind (orange arrow showing direction of blow), (1) terminated in the petrous part of the temporal, and (2) cut right through the petrous part; B – posterior view of cuts.....	524
Plate 16.17	Skeleton (4050), atlas: cut through left side of anterior arch.....	524
Plate 16.18	Skeleton (4050), cervical vertebra: cut through superior right arch.....	524
Plate 16.19	Skeleton (4050), acromial end of right clavicle: A – superior view of cuts; B – posterior view of cuts.....	524
Plate 16.20	Skeleton (4050), left fifth metacarpal (medial view): periostitis probably caused by an overlying skin ulcer.....	525
Plate 16.21	Skeleton (4039), left scaphoid: eburnation of facet for trapezoid.....	525
Plate 16.22	Skeleton (4039): anterior view of T10 and T11, showing prominent 'candle-wax' type osteophytes on the right side of the bodies.....	525
Plate 16.23	Skeleton (4037), adult female: impaction of lower right third molar (A); calculus deposits (B).....	525
Plate 16.24	Lytic lesion in the upper body surface of the fifth lumbar vertebra, skeleton (4039).....	525
Plate 16.25	Skeleton (4037), adult female: possible congenital absence/ impaction of upper left premolar, with unusual position of remaining premolar.....	525
Figure 16.1	(Appendix VIII:) Data from AMS radiocarbon dating and calibration.....	526

## Recognition

This Report is the product of the contributions of a considerable number of committed and informed people, none more so than George Children, Stephen Priestley and Michelle Bithell. Their application and dedication to completion of this Record has been exemplary and we at Border Archaeology are greatly indebted to them.

Neil Shurety  
Summer 2009