

SPECIALIST APPENDICES

Appendix 1: Scientific dating results

The results of the radiocarbon dating programme are given in Tables A1.1-A1.4 and Table A1.5 presents the results obtained by Optically Stimulated Luminescence dating of sediments (OSL) (see Chapter 2).

Radiocarbon dating by *Rebecca Nicholson*

Thirty samples of bulk organic sediment, wood and charcoal were processed by Beta Analytic Inc., Florida, USA (lab. code Beta) for conventional radiometric dating or (in the case of Beta-152742 only, see Table A1.3) AMS dating. Subsequently, during the post-excavation analytical phase 34 samples of wood, sediment, charred grain, cremated bone and charred pot residues were submitted to the Scottish Universities Environmental Research Centre (lab. code SUERC (GU)) in East Kilbride, Scotland for Accelerator Mass Spectrometry (AMS) dating. Unfortunately two dates on charred residues adhering to potsherds failed, including potsherd SF12 from FRU01 (GU-18957; context 17) and a potsherd from TGW00 TR23 (GU-18955; context 38).

Where sediment (peat) samples were processed by Beta Analytic they were combusted and dated by Liquid Scintillation Spectrometry (LSC). In some cases, wood was extracted from the peat and this was dated rather than the submitted sediment. For sediment samples processed for AMS dating by SUERC, the laboratory standard methodology was used and the humic (alkali soluble) fraction was extracted and dated. The radiocarbon results are quoted in accordance with the international standard known as the Trondheim convention (Stuiver and Kra 1986). They are conventional radiocarbon ages, where 0 BP is the year 1950 (Stuiver and Polach 1977; Mook 1986). All dates have been calibrated using datasets published by

Reimer *et al.* (2004) and the computer program OxCal (v3.10) (Bronk Ramsey 1995; 1998; 2001) with the end points rounded out to 5 or 10 years. The calibrated date ranges cited in the tables, as in the text, are those for 95.4% (2σ) confidence.

OSL dating by *Edward Rhodes and Rebecca Nicholson*

A suite of 7 sediment samples, from two sections from Prince Regent Lane and Movers Lane, were collected. Samples CT1 and CT3 (see Table A1.5) were collected from a section exposed in the east edge of TP66 at the junction of the A13 with Prince Regent Road. Sample CT1 was from context 204, a sandy horizon 2.08m below the ground surface. Sample CT3 came from context 212, a sandy silt 2.75m below the ground surface. Samples CT4 and CT6 were collected from the south edge of TR6 at Movers Lane. Sample CT4 came from context 514, within sandy horizon 0.8m below the ground surface. Sample CT6 came from context 515, a sandy silt with pebbles, at 1.20m below the ground surface.

Optically Stimulated Luminescence (OSL) dates based on sand-sized quartz grains from these four samples were measured. Equivalent dose (D_e) determinations were made using a single aliquot regenerative dose (SAR) technique. Uranium (U), thorium (Th) and potassium (K) concentrations were determined *in situ* using sodium iodide gamma spectrometry. The cosmic dose rate contribution was estimated as a function of geomagnetic latitude, altitude and overburden using the formulae of Prescott and Hutton (1994). The *in situ* water content of each sample was measured and used to calculate dose rate attenuation. Full methodological details and a discussion of the results are available in the site archive.

Table A1.1 Radiocarbon results from Prince Regent Lane and Freemasons Road

Lab code	Event code	Context	OD(m)	Material	$\delta^{13}\text{C} \text{‰}$	Conventional ^{14}C yr BP	Calibrated date at 2σ (OxCal 3.10)	Period
Beta-154891	PGL00 T23	Weathered sand (20)	-0.35	Wood	-25.0	3340±70	1870BC (1.6%) 1840BC, 1780BC (93.8%) 1450BC	EMBA
Beta-153982	PGL00 T21	Ditch (46) [48] <I1>	-	Charred plant remains	-25.0	1770±60	120AD (95.4%) 410AD	ROM
Beta-154892	PGL00 T23	Top of peat (63)	-0.43	wood	-25.0	3280±50	1690BC (95.4%) 1440BC	EMBA
Beta-154893	PGL00 T23	Pile 182 Str.32	-	Wood (oak)	-25.0	3400±50	1880BC (6.5%) 1840BC, 1830BC (83.9%) 1600BC, 1590BC (4.9%) 1530BC	EBA
SUERC-24604 (GU-18962)	FRU01 Area A	Peat (2) <I11>	-0.32	Sediment	-28.4	2800±35	1050BC (95.4%) 840BC	LBA
SUERC-24600 (GU-18961)	FRU01 Area A	Peat (2) <I12>	-0.6	Sediment	-26.7	3745±35	2280BC (7.5%) 2240BC, 2230BC (87.9%) 2030BC	EBA
SUERC-24599 (GU-18960)	FRU01 Area B	'Enclosure' gully (198) [199] <I65>	-	Non oak wood	-26.0	3445±35	1890BC (95.4%) 1660BC	EBA
SUERC-24598 (GU-18959)	FRU01 Area B	Pot (125) SF150	-	Charred residue	-24.5	3020±35	1400BC (90.3%) 1190BC, 1180BC (5.1%) 1130BC	MBA
SUERC-24831 (GU-18958)	FRU01 Area A	Pot (9) SF3	-	Charred residue	-	2740±45	1000BC (95.4%) 800BC	LBA
SUERC-24503 (GU-18859)	FRU01 Area A	Peat (2) <I12>	-0.48	Sediment	-28.3	3435±30	1880BC (95.4%) 1660BC	EBA
SUERC-24291 (GU-18858)	FRU01 Area B	Stake 334 Gp 21a	-	Wood (hazel)	-27.6	3010±30	1390BC (95.4%) 1120BC	MBA
SUERC-27349 (GU-20652)	FRU01 Area A	Layer 49 'silver' wood chip	-	Wood (oak)	-25.6	3330±30	1690BC (95.4%) 1520BC	EBA
SUERC 27345 (GU-20651)	FRU01 Area A	Layer 49 mandible	-	Bone (cattle)	-22.5	3340±30	1690BC (94.0%) 1520BC, 1730-1710 (1.4%)	EBA
SUERC-27362 (GU-20675)	FRU01 Area A	Layer 49 wood chip (93)	-	Wood (alder)	-28.0	3330±30	1690BC (95.4%) 1520BC	EBA

Table A1.2 Radiocarbon results from Woolwich Manor Way

Lab code	Event code	Context	OD(m)	Material	$\delta^{13}\text{C}$ ‰	Conventional ^{14}C yr BP	Calibrated date at 2σ (OxCal 3.10)	Period
Beta-152741	WMW00 T17	Base of peat (2069)	-3.19	Wood	-28.2	5510±70	4500BC (95.4%) 4230BC	LMeso
Beta-147954	TGW00 TP1	Top of peat <M3/86>	-2.04 to -2.13	Sediment	-27.8	3330±60	1760BC (93.6%) 1490BC, 1480BC (1.8%) 1450BC	EBA - MBA
Beta-147955	TGW00 TP1	Middle of peat <M2/85>	-2.92 to -3.02	Sediment	-28.3	4410±70	3340BC (95.4%) 2900BC	ELN
Beta-147956	TGW00 TP1	Base of peat <M1/84>	-3.66 to -3.76	Wood	-28.9	5630±60	4600BC (95.4%) 4340BC	LMeso
Beta-152738	TGW00 TP8	Trackway 1531 (=29), intrusive from 'platform' 61?	-	Wood	-26.0	2900±70	1310BC (95.4%) 900BC	MLBA
Beta-152739	TGW00 TP9	Wood (1523) <68>, residual	-	Wood (<i>Taxus baccata</i>)	-25.7	3830±60	2740BC (94.5%) 2130BC	EBA
Beta-152740	WMW00 T16	Base of peat (2078)	-3.13	Wood	-29.2	5460±80	4460BC (78.5%) 4220BC, 4210BC (16.9%) 4050BC	LMeso
Beta-153983	WMW00 T15 EN	Layer (2008) <25>	-0.4	Charred plant remains (grain + charcoal)	-25.0	4850±100	3950BC (95.4%) 3350BC	EBA
Beta-153984	TGW00 TP9	Trackway stake <64>	-	Wood (<i>Corylus</i>)	-25.0	3390±60	1880BC (95.4%) 1520BC	EBA
SUERC-24292 (GU-18860)	WMA02 Area 2	Trackway 2/14 (21) <3>	-	Wood (<i>Alnus</i>)	-27.6	3230±30	1610BC (7.2%) 1570BC, 1560BC (88.2%) 1430BC	EMBA
SUERC-24296 (GU-18861)	WMA02 Area 1	Trackway 50 (49) <11>	-	Roundwood indet.	-25.3	3725±30	2210BC (95.4%) 2030BC	EBA
SUERC-24297 (GU-18862)	WMA02 Area 1	Trackway 29 (62) <19>	-	Wood (<i>Fraxinus</i>)	-26.7	3400±30	1770BC (95.4%) 1610BC	EBA
SUERC-24504 (GU-18863)	WMA02 Area 1	Platform' 61 (63) <21>	-	Wood (<i>Corylus</i>)	-28.1	2945±30	1270BC (95.4%) 1040BC	MLBA
SUERC-24830 (GU-18954)	WMW00 T15	EN pottery sherd (2008)	-	Charred residue	NA	4685±45	3630BC (14.8%) 3570BC, 3540BC (80.6%) 3360BC	EN
SUERC-24597 (GU-18956)	WMW00 T15	Layer (2008) <25>	-0.4	Charred grain (<i>Triticum dicoccum</i>)	-24.0	4890±35	3770BC (95.4%) 3630BC	EN
SUERC-25562 (GU-19424)	WMA02 Area 2	Sandy peat <2B>	-0.73	Sediment	-28.4	3645 ± 35	2140BC (95.4%) 1910BC	EBA
SUERC-25563 (GU-19425)	WMA02 Area 2	Sandy peat <2A>	-1.3	Sediment	-28.2	4265±35	2930BC (83.7%) 2860BC, 2810BC (10.3%) 2750BC, 2720BC (1.3%) 2700BC	LN
SUERC-27350 (GU-20653)	WMA02 Area 1	Trackway 50 (49) <11>	-	Wood (<i>Alnus</i>)	-25.0	3635±30	2130BC (12.5%) 2080BC, 2050BC (82.9%) 1900BC	EBA

Table A1.3 Radiocarbon results from Movers Lane

Lab code	Event code	Context	OD(m)	Material	$\delta^{13}\text{C}$ ‰	^{14}C yr BP	Conventional ^{14}C yr BP	Calibrated date at 2σ (OxCal 3.10)	Period
Beta-147957	TGW00 TP39	Top of peat <30> 0.17-0.27m (superseded by GU-19428)	-0.94 to -1.04	Sediment	-28.3	3040±60	1440BC (95.4%)	1120BC	MBA
Beta-147958	TGW00 TP39	Middle of peat <34> (superseded by GU-19429)	-1.20 to -1.45	Wood	-28.3	3220±70	1690BC (94.3%)	1370BC, 1340BC (1.1%)	EMBA
Beta-147959	TGW00 TP39	Base of peat <29> (superseded by GU-19426)	-1.87 to -1.97	Sediment	-27.7	4490±70	3370BC (90.2%)	3000BC, 2990BC (5.2%)	EN
Beta-152742	MOE00 T5	Beaver dam (838)	-	Wood	-28.3	3010±40	1390BC (95.4%)	1120BC	MBA
Beta-152743	MOE00 T5	Beaver dam (838)	-	Wood	-28.5	2970±70	1400BC (95.4%)	1000BC	MLBA
Beta-152744	MOE00 T13	Peat (811) <137>	-0.13	Wood	-29.2	3230±70	1690BC (95.4%)	1380BC	EMBA
Beta-152745	MOE00 T13	Peat (811) <134>	-0.13	Wood	-29.2	3120±60	1520BC (94.2%)	1250BC, 1240BC (1.2%)	MBA
SUERC-24288 (GU-18855)	RIR01 Area 3	Trackway 5268	-	Wood (<i>Alnus</i>)	-27.5	3275±30	1630BC (93.1%)	1490BC, 1480BC (2.3%)	EMBA
SUERC-24289 (GU-18856)	RIR01 Area 3	Stakehole Str.5247 <36>	-	Wood (<i>Alnus</i>)	-27.5	3370±30	1750BC (91.1%)	1600BC, 1580BC (4.3%)	EBA
SUERC-24290 (GU-18857)	RIR01 Area 2	Cremation (1208) Gp. 1207 <25>	-	Cremated bone	-21.1	2920±30	1260BC (3.6%)	1230BC, 1220BC (91.8%)	MLBA
SUERC-24590 (GU-18950)	RIR01 Area 3	Stakehole Str.5168 SF1145	-	Wood (<i>Alnus</i>)	-27.5	3125±35	1500BC (3.4%)	1470BC, 1460BC (92.0%)	MBA
SUERC-24594 (GU-18951)	RIR01 Area 3	Burnt mound (5083) Gp. 5264 <7>	-	Charcoal (<i>Corylus</i> / <i>Alnus</i> type)	-26.5	3070±35	1430BC (95.4%)	1250BC	MBA
SUERC-24595 (GU-18952)	RIR01 Area 2	Trackway 3031 (3010) <54>	-	Wood (<i>Alnus</i>)	-28.9	3295±35	1680BC (95.4%)	1490BC	EMBA
SUERC-24596 (GU-18953)	RIR01 Area 3	Stakehole Str.5168 SF180	-	Wood (<i>Corylus</i> / <i>Alnus</i> type)	-27.1	3325±35	1690BC (95.4%)	1510BC	EBA
SUERC-25567 (GU-19426)	TGW00/TP39	Base of peat <29>	-1.91 to -1.93	Sediment	-27.5	4680 ± 35	3630BC (8.0%)	3590BC, 3530BC (87.4%)	EN
SUERC-25568 (GU-19427)	TGW00/TP39	Organic silt below peat <29> 0.40-0.42m	-2.27 to -2.29	Sediment	-28.1	5055 ± 35	3960BC (95.4%)	3770BC	EN
SUERC-25569 (GU-19428)	TGW00/TP39	Top of peat <30> 0.13-0.14m	-0.90 to -0.91	Sediment	-28.7	2860 ± 35	1130BC (95.4%)	910BC	LBA
SUERC-25570 (GU-19429)	TGW00/TP39	Middle of peat <30> 0.48-0.49m	-1.25 to -1.26	Sediment	-28.1	3330 ± 35	1730BC (1.1%)	1710BC, 1690BC (94.3%)	EBA
SUERC-25571 (GU-19430)	RIR01 / A3	Peaty sand (5154) <40>	-0.38 to -0.39	Sediment	-28.2	3625±35	2130BC (9.5%)	2080BC, 2050BC (85.9%)	EBA
SUERC-25572 (GU-19431)	RIR01 / A3	Organic sand (5215) <40>	-0.58 to -0.62	Wood	-27.1	3950±35	2570BC (95.4%)	2330BC	LNEBA

Table A1.4 Radiocarbon results from Canning Town and Roding Bridge

Lab code	Event code	Context	OD(m)	Material	$\delta^{13}\text{C}$ ‰	Conventional ^{14}C yr BP	Calibrated date at 2σ (OxCal 3.10)	Period
Beta-147960	TPAR 29 M4	0.30-0.42 Top of peat (FT3)	-0.79/ -0.89	Sediment	-28.3	3120±60	1520BC (94.2%) 1250BC 1240BC (1.2%) 1210BC	MBA EN
Beta-147961	TPAR 29 M7	0.27-0.37 Base of peat (FT3)	-1.94/ -2.04	Wood	-27.9	4720±70	3640BC (95.4%) 3360BC	EN
Beta-147962	TGW00 IRAR1	6.2-6.29 Top of peat (FT3)	-1.24/ -1.33	Wood	-27.5	3650±70	2210BC (94.0%) 1870BC 1850BC (1.4%) 1810BC	EBA
Beta-147963	TGW00 IRAR1	6.49-6.56 Base of peat (FT3)	-1.53/ -1.60	Sediment	-28.7	3560±70	2140BC (4.1%) 2080BC 2060 (90.1%) 1730BC	EBA EBA
Beta-147964	TGW00 IRAR3	5.86-5.97 Organic lens in clay-silts (FT1)	-1.74/ -0.85	Sediment	-27.6	3730±70	1720BC (1.2%) 1690BC 2350BC (95.4%) 1930BC	EBA EBA
Beta-147965	TGW00 IRAR3	6.65-6.62 Upper peat (FT3)	-1.42/ -1.50	Wood	-27.8	4480±70	3370BC (89.1%) 3000BC 2990BC (6.3%) 2920BC	EN
Beta-147966	TGW00 IRAR4	5.62-5.685 Base of peat (FT3)	--2.46/ -2.56	Wood	-27.8	4650±70	3650 (88.3%) 3300BC 3250 (7.1%) 3100BC	EN
Beta-147967	RDAR 1	4.3-4.35 Top of peat	-0.60/ -0.65	Sediment	-28.7	3180±60	1610BC (95.4%) 1310BC	EMBA
Beta-147968	RDAR 1	4.6-4.65 Base of peat	-0.90/ -0.95	Sediment	-28.1	3220±80	1690BC (95.4%) 1310BC	EMBA
Beta-147969	RDAR 4	5.81-5.87 Peat	-1.36/ -1.42	Wood	-29.5	3050±70	1460BC (95.4%) 1080BC	MLBA

Table A1.5 Optically Stimulated Luminescence dating results

Lab code	Field code	Age estimate code	Site	Event code	Context	Result yr BP
X408	CT1	OxL -1106	Prince Regent Lane	TGW00 TP66	(204)	15800+/-840
X410	CT2	OxL -1107	Prince Regent Lane	TGW00 TP66	(212)	16300+/-820
X411	CT3	OxL -1108	Movers Lane	MOE00 T6	(514)	15800+/-850
X412	CT4	OxL -1109	Movers Lane	MOE00 T6	(515)	23900+/-1300