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Date List 6: Luminescence dates for Late Bronze Age and Iron Age pottery assemblages in eastern and northern Britain

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Introduction

This Date List presents a corpus of over 160 dates for Later Prehistoric pottery from Britain which were obtained as part of a single research project. Given the size of the dataset, the form of the Date List entries departs from earlier lists by providing additional technical details and archaeological background in this prologue.

Archaeological background

The dating of Later Prehistoric (c. 1000 BC - AD 50) sites in Britain relies heavily on pottery typologies and yet the pottery in some regions is notoriously difficult to date stylistically (Willis, 1999). In southern Britain, although there are distinct regional styles, most show little development over several centuries and there is uncertainty concerning the duration of use of each and the chronological relationships between styles of different regions. In northern Britain, the pottery is sparse and predominantly undecorated throughout this important period and typologies cannot be established. The little absolute dating that has been performed to test individual typologies relies almost exclusively on radiocarbon dates and only a small proportion of the 700 published dates can be directly associated with individual pottery styles. With this background, luminescence dating was applied directly to the pottery in order to both verify existing typologies and to provide individual site chronologies. A full discussion of the technical aspects and archaeological implications of this work is to be given elsewhere.

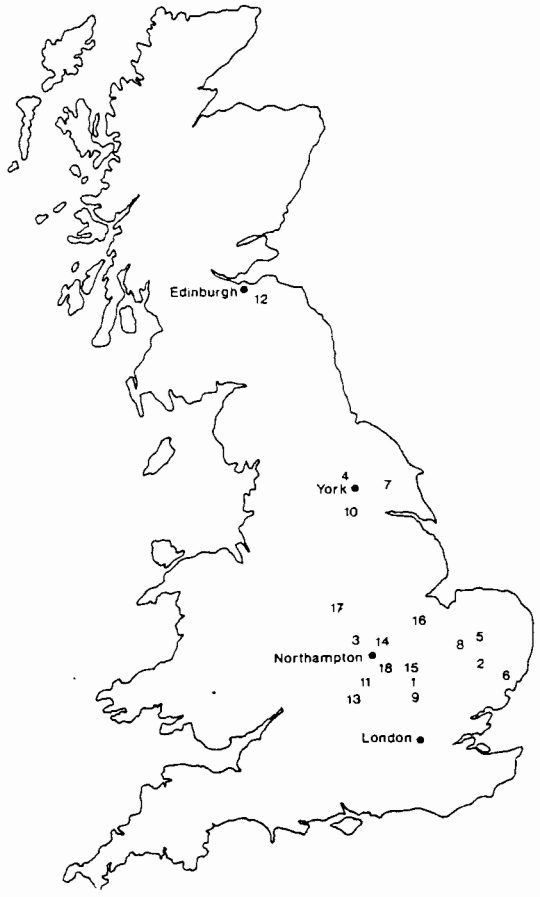

Figure 1.
Locations of sites studied, 1: Broom Quarry, 2: County Farm, 3: DIRFT East, 4: Easingwold, 5: Fornham St Genevieve, 6: Foxhall, 7: Hayton, 8: Landwade Road, 9: Lobs Hole, 10: Methley, 11: Piddington, 12: Port Seton, 13: Slade Farm, 14: Sywell, 15: Warren Villas Quarry, 16: Welland Bank Pit, 17: Willington Hill Farm, 18: Wollaston Quarry and Hardwater Road.

Sites and sampling

Over 200 pottery samples were obtained from 18 recent excavations of Late Bronze Age and Iron Age settlements with important ceramic assemblages, see Figure 1 and Table 1. Many of the excavations were necessitated by the extensive gravel extraction and development in the East Midlands and East Anglia; the number of sites of this period excavated recently in northern Britain is much less. All the ceramics were examined by pottery specialists and fabric type, form and decoration recorded; details of the pottery reports are available from the author. Each sherd was cut in such a way as to retain any profile or decoration and a portion retained for reference.

Experimental details

Luminescence

Measurements were performed on 90-150 μm quartz inclusions (~1 mg aliquots) which were extracted following a modification of the quartz inclusion technique (Aitken, 1985). Heavy liquid separation with solutions of sodium polytungstate was used to isolate the fraction of density 2.62 - 2.68 g cm^{-3}. A typical multiple aliquot measurement sequence is shown in Table 2. Eight aliquots were used for measurement of the natural signal and additive measurements were typically made with a further twelve, usually divided into five groups. Regenerative measurements were performed with the aliquots which had not received additional laboratory dose so as to minimise the potential effect of sensitisation during measurements. Aliquot-to-aliquot normalisation was achieved by sample weight or by measurement of the response to a final beta dose. In general, palaeodoses determined by weight and by beta normalisation were in agreement, but, in several cases, sensitivity changes dictated that only the former could be used. For three samples, it was possible to employ a single aliquot regeneration procedure (see Table 2). Integrations were performed with a single resolved peak and therefore a plateau test was not performed routinely; otherwise, the range of the plateau is indicated in the 'Procedure' column of the Date List.

Luminescence measurements were made in Risø TL/OSL-DA-12 and TL/OSL-DA-15 automated readers. The detection window for TL measurements was defined by a Kopp 5-60 filter (blue/violet); for some samples a Kopp 7-51 filter (uv/violet) improved the signal to noise ratio.

Approximately eighteen sherds were also dated by OSL (stimulation range 420-560 nm) with a detection window defined by Hoya U340 filters. Both multiple and single aliquot procedures were used; these are summarised in Table 3. In procedure C, following Murray and Mejdahl (1999), a test dose was employed to monitor, and ultimately to correct for, sensitivity changes resulting from successive dosing/heating cycles. The ratio of the final regenerative to first (post-natural) test dose response has been specified in the Date List following the precedent set by Roberts *et al.* (1998). In these samples, the ratio is high due to the stringent preheats used, varying from 1.26 to 1.78, indicating that the calculated OSL date should be viewed with caution.

Dose Rate Determination

The beta dose rate within the pottery was determined by β-TLD (Bailiff, 1982). General determinations of the gamma activity were performed on-site using a Harwell gamma ray spectrometer, but it was seldom possible to make direct measurements within the fills yielding the pottery which was subsequently dated. The gamma dose rate for the sample environment was calculated on the basis of U, Th and K concentrations (derived from β-TLD and TSAC), taking into account the geometry of the burial context, the position of the sherd and the general gamma ray spectrometer measurements. Because of the limited duration of the excavations, γ-TLD was not performed. No radon loss was detected by comparison of sealed and unsealed TSAC, and secular equilibrium has been assumed in all samples.

Summary of dating evidence

1. The luminescence dates were compared with archaeological dating of the pottery based on form and fabric; 18 sherds were dated by characteristic profile or decoration and a further 54 by fabric type, the remainder were undiagnostic. Figure 2 shows a generally good correlation between the luminescence and archaeological dates based on profile and surface decoration (gradient 0.99 ± 0.02, R^2 = 0.90). Correlation with dating based on fabric type is, however, poor, suggesting that fabric alone is not a reliable chronological indicator. This is of significance since many sites lack pottery with diagnostic profile or decoration and the chronology may rest entirely on fabric typologies. This study shows that if dating of the ubiquitous, undiagnostic, coarse wares is based on fabric alone, the dates are likely to be in

error. This conclusion was accepted by a meeting in October 1998 of the UK Prehistoric Ceramics Research Group.

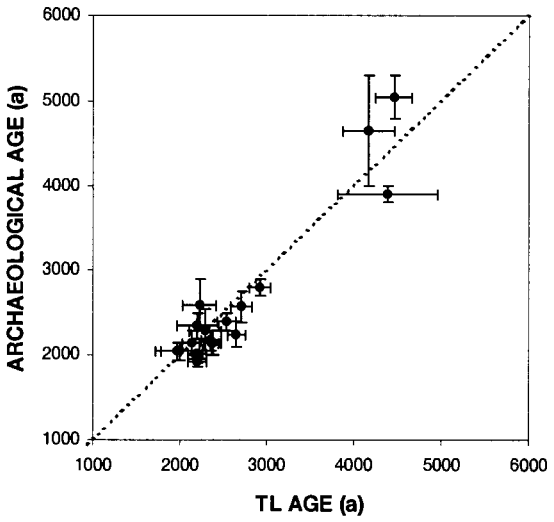

Figure 2.
Comparison of luminescence ages with archaeological dating (profile and decoration) of diagnostic pottery sherds. Two of the ages included were determined using OSL procedure A, while the majority were determined by TL using the additive dose procedure outlined in the text.

2. From the perspective of dosimetry, the sampling of large features with uniform fills previously advocated for luminescence dating is reasonable. However, this study has shown that for Later Prehistoric period in Britain, the pottery from large features such as enclosure ditches and animal pens is often residual, probably due to persistent use and continual reworking. Thus smaller features of shorter lifetime are preferable although for such contexts the assessment of the gamma dose rate requires a more detailed approach. In dating pottery from Sywell, Northamptonshire (lab ref. 194), for example, shallow features were sampled and a simple modelling procedure for the gamma dose rate gave a set of dates consistent with the typological dating.

3. By averaging luminescence ages to obtain higher precision, examination of the relationship between individual features was possible on certain sites. For example, pooled means were calculated based on the luminescence ages for samples from features within three spatially related groups at Willington Hill Farm, Derbyshire (lab ref. 202). The pooled mean dates of 2420 BC ± 160 ± 320 (samples 202-1,4,7,11,12) and 2220 BC ± 240 ± 360 (samples 202-3,9,14) show that two of the groups are contemporaneous while the third is significantly later with a pooled mean date of 560 BC ± 300 ± 340 (samples 202-216).

4. It is worth noting that as a result of the completion of such a large programme of dating, several professional field archaeology units now routinely distribute sampling requirements for luminescence dating, and one large archaeological service has adopted luminescence as the preferred technique for dating Later Prehistoric sites in Britain.

Acknowledgements
This work was supported by NERC grant no GT5/95/SBA/1 and the University of Durham. I would like to thank all those who made available pottery for this work: Aileen Connor, Roy Friendship-Taylor, Kasia Gadienc, Colin Haselgrove, J.D. Hill, Mark Hinman, Gwilym Hughes, Jonathan Hunn, Mark Johnson, David Knight, Ian Meadows, Martin Millett, John Newman, Ben Robinson, Anna Slowikowski, Mark Whyman. I am also grateful to Claire Pickin who prepared the samples. I thank Martin Aitken and Ian Bailiff for their invaluable comments.

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Reviewer
M. Aitken

Table 1: Gazetteer of sites.

Site Name	Location	National Grid Ref.	Publications
Broom Quarry	Biggleswade, Bedfordshire	TL 175440	Mortimer, 1996
County Farm	Chilton, Sudbury, Suffolk	TL 423888	Abbott, 1998
DIRFT East	Crick, Northamptonshire	SP 572734	Chapman, 1994; Hughes, 1998
Easingwold	North Yorkshire	SE 521683	
Fornham St Genevieve	Ingham, Suffolk	TL 847686	
Foxhall	Ipswich, Suffolk	TM 235436	Newman, 1992; Martin, 1999
Hayton	Humberside	SE 8246	Halkon and Millett, 1997; Halkon *et al.*., 1998
Landwade Road	Fordham, Cambridgeshire	TL 631683	Barnett, 1999
Lobs Hole	Stevenage, Hertfordshire	TL 263263	
Methley	West Yorkshire	SE 417270	
Piddington	Northamptonshire	SP 8154	
Port Seton	Lothian	NT 409754	Haselgrove and Lowther, 1999
Slade Farm	Bicester, Oxfordshire	SP 580240	Hughes and Jones, 1997
Sywell	Northamptonshire	SP 825675	Webster, 1997
Warren Villas Quarry	Sandy, Bedfordshire	TL 181472	Dawson and Maull, 1996
Welland Bank Pit	Deeping St James, Lincolnshire	TF 184082	
Willington Hill Farm	Willington, Derbyshire	SK 299295	Barnett, 1999
Wollaston Quarry and Hardwater Road	Wollaston, Northamptonshire	SP 895641	

Table 2. TL measurement procedure. The beta doses are chosen such that the dose range for additive and regenerative measurements is ~3 times and ~4 times the estimated natural dose respectively. Normalisation by both aliquot weight and response to a beta dose were used. In run 4, doses are chosen such that aliquots 7 and 8 receive a dose equal to the dose used in the normalisation of aliquots 9-20 (and hence this measurement is used for normalisation of aliquots 7 and 8 in the additive dose, beta normalised, growth characteristic). The beta dose for the normalisation measurement was chosen to be equal to the estimated natural dose.

		TLA		TLR
		Aliquots 1-8	Aliquots 9-20	
Step	**1**		additive beta doses	
	2	PH: heat to 180°C @ 2°C/s		PH: heat to 180°C @ 2°C/s
	3	TL: heat to 450°C @ 5°C/s		TL: heat to 450°C @ 5°C/s
	4	beta doses	beta dose for normalisation	beta dose
	5	PH: heat to 180°C @ 2°C/s		PH: heat to 180°C @ 2°C/s
	6	TL: heat to 450°C @ 5°C/s		TL: heat to 450°C @ 5°C/s
	7	beta normalisation dose		repeat steps 4-6
	8	PH: heat to 180°C @ 2°C/s		
	9	TL: heat to 450°C @ 5°C/s		

Table 3. OSL measurement procedures. The range of the doses administered was determined as for TL measurements (Table 2). Procedure A is based on that proposed by Duller (1991) and procedure C on that of Murray and Mejdahl (1999) with the same preheat treatment throughout. The procedure, preheat and measurement temperatures used are specified in the 'Procedure' column of the Date List entries. Several different preheat treatments were used, denoted by 1-5 respectively in the Date List: (1) heat to 180°C at 2°C/s; (2) heat to 220°C at 2°C/s; heat to 220°C and hold for (3) 10s, (4) 300s or (5) 600s. OSL measurements were performed while holding the sample at 50°C, 110°C or 125°C.

Procedure A: Single aliquot additive	Procedure B: multiple aliquot regenerative		Procedure C: single aliquot regenerative
Aliquots 1-10	Aliquots 1-8	Aliquots 9-20	Aliquots 1-8
PH	1s OSL normaliser		PH
1s OSL		additive beta doses	100s OSL
	PH		test dose (0.7 Gy)
	100s OSL		PH
	16 h halogen lamp bleach		100s OSL
Additive doses βn	regenerative doses βn		regenerative doses βn
PH	PH		PH
1s OSL	100s OSL		100s OSL
			test dose (0.7 Gy)
			PH
			100s OSL

Date List 6: Luminescence dates for late Bronze Age and Iron Age pottery assemblages in eastern and northern Britain

Sarah M. Barnett

Notes (see also preceding Tables 2 and 3)

1. Dates and errors have been rounded to the nearest 20 years reflecting the precision of the date obtained and the precision with which the errors are estimated.
2. Error formulation follows Aitken, M.J. (1976) Archaeometry 18 233-238. Dates are quoted ± random error ± overall error at 68% level of confidence.
3. temper are abbreviated as follows:

Do dolerite
Fl flint
Gn granite
Grgrog (=crushed pottery)
Ir ironstone
Li limestone
Qu quartz
Sh shell
Vevesicular (=organic)

4. luminescence measurements are abbreviated as follows:

P palaeodose
I/P fractional contribution of the supralinearity correction to the palaeodose
m2/m1 ratio of slopes regenerative : additive
TD ratio ratio of final regenerative to first (post-natural) test dose in OSL procedure C.
TLA multiple aliquot additive and regenerative dose TL
TLR single aliquot regenerative TL
DR dose rate
c cosmic
W_s saturation water uptake of pottery, ± 10%
W_c 'as-dug' water content of burial medium, ± 10%

5. Information given in 'Procedure' column comprises procedure; preheat; TL peak/OSL measurement temperature.

Preheats are denoted as follows:

1 - preheat to 180°C at 2°C/s
2 - preheat to 220°C at 2°C/s
3 - preheat at 220°C for 10s
4 - preheat at 220°C for 300s
5 - preheat at 220°C for 600s

Site name: Broom Quarry
Site ref.: BRQ 96
Location: Biggleswade, Bedfordshire
Excavation: Cambridge Archaeology Unit

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 49

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
920 BC ± 120 ± 280	Dur98TLqi 198-2		F15 ring ditch ; 182 0669	5.55 ± 0.15			TLR; 1; 325°C	1.91 ± 0.06	57	35	8	31	36
1040 BC ± 300 ± 380	Dur98TLqi 198-4	Sh	" ; "	7.14 ± 0.67	0.11 ± 0.07	0.71 ± 0.06	TLA; 1; 380°C	2.35 ± 0.08	65	28	7	20	36
960 BC ± 260 ± 360	Dur98OSLqi 198-7	"	" ; 511/241	5.24 ± 0.42			OSLA; 1; 50°C	1.78 ± 0.06	54	38	8	28	36
1380 BC ± 400 ± 460	-12	"	F210 pit ; 576 0045	6.14 ± 0.71	0.59 ± 0.11	0.74 ± 0.06	OSLA; 1; 125°C	1.82 ± 0.06	52	40	8	17	15
540 BC ± 180 ± 240	Dur98TLqi 198-17	Qu	F210 pit ; 576 0052	5.56 ± 0.35	0.05 ± 0.04	0.99 ± 0.05	TLA; 1; 380°C	2.20 ± 0.07	61	33	6	13	15
820 BC ± 320 ± 360	-18	"	" ; "	6.42 ± 0.70	0.06 ± 0.02	0.97 ± 0.07	"	2.28 ± 0.08	62	31	7	13	15
1700 BC ± 360 ± 440	-19	Sh	" ; "	7.06 ± 0.65	0.13 ± 0.07	1.06 ± 0.14	"	1.91 ± 0.06	55	38	7	21	15
1180 BC ± 180 ± 260	-26	Qu	F174 well ; 591B 0171	7.55 ± 0.32	0.08 ± 0.07	0.86 ± 0.03	"	2.38 ± 0.08	69	25	6	14	19
760 BC ± 240 ± 320	-27	"	" ; "	8.39 ± 0.35	0.09 ± 0.02	0.89 ± 0.01	"	2.17 ± 0.07	66	27	7	24	19
1020 BC ± 240 ± 300	Dur98OSLqi 198-28	Sh	F174 well ; 701 0182	5.33 ± 0.39	0.22 ± 0.06	0.67 ± 0.09	OSLB; 1; 125°C	1.77 ± 0.06	58	34	8	21	15
840 BC ± 180 ± 300	Dur98TLqi 198-30	"	F15 ring ditch ; 511/241	5.97 ± 0.30	0.03 ± 0.04	0.65 ± 0.06	TLA; 1; 380°C	2.10 ± 0.07	61	32	7	29	36
									β-TLD	TSAC β-TLD gSpEC			

Site name: County Farm
Site ref.: CHT009
Location: Chilton, Sudbury, Suffolk
Excavation: Suffolk County Council Archaeological Services

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 50

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
320 BC ± 120 ± 200	Dur98TLqi 231-1		0124	5.32 ± 0.23	0.32 ± 0.05	0.95 ± 0.04	TLA; 1; 325°C	2.29 ± 0.08	54	39	7	25	18
1120 BC ± 100 ± 220	-3		"	7.42 ± 0.04	0.32 ± 0.09	0.74 ± 0.05	"	2.37 ± 0.08	56	38	6	19	18
2500 BC ± 160 ± 320	Dur98OSLqi 231-4		"	10.31 ± 0.10		(1.31 ± 0.01)	OSLC; 2; 110°C	2.30 ± 0.08	54	39	7	17	18
1640 BC ± 160 ± 280	-5		0140	10.68 ± 0.23		(1.28 ± 0.01)	"	2.93 ± 0.11	66	29	5	18	20
2220 BC ± 160 ± 340	-6		"	10.84 ± 0.09		(1.27 ± 0.01)	"	2.57 ± 0.09	61	34	5	22	20
2320 BC ± 160 ± 320	Dur98TL/OSLqi 231-7		"	9.93 ± 0.10	0.18 ± 0.02	0.94 ± 0.04	TLA; 1; 300-430°C	2.31 ± 0.08	56	37	7	20	20
				10.11 ± 0.19		(1.26 ± 0.04)	OSLC; 2; 110°C						
2460 BC ± 180 ± 360	Dur98OSLqi 231-8		"	11.51 ± 0.25		(1.69 ± 0.04)	"	2.58 ± 0.09	61	33	6	22	20
1720 BC ± 160 ± 300	Dur98TL/OSLqi 231-9		0310	9.27 ± 2.00	0.01 ± 0.01	0.87 ± 0.15	TLA; 1; 330°C	2.92 ± 0.10	65	30	5	15	19
				10.91 ± 0.29		(1.62 ± 0.04)	OSLC; 2; 110°C						
1700 BC ± 140 ± 280	Dur98OSLqi 231-13		"	9.04 ± 0.08		(1.69 ± 0.05)	"	2.44 ± 0.08	58	36	6	22	19
									β-TLD	TSAC β-TLD			

Site name: DIRFT East
Site ref.: DRE97/98
Location: Crick, Northamptonshire
Excavation: Birmingham University Field Archaeology Unit

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 51

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
600 BC ± 100 ± 220	Dur98TLqi 229-1	Qu/Gr; scored	F180 ditch ; 1123	11.04 ± 0.12	0.03 ± 0.01	1.08 ± 0.05	TLA; 1; 270-400°C	4.24 ± 0.16	72	25	3	23	18
200 BC ± 100 ± 220	-2	Qu	F191 ditch ; 1143	5.88 ± 0.20	0.19 ± 0.07	0.93 ± 0.07	TLA; 1; 330°C	2.67 ± 0.09	61	33	6	34	31
360 BC ± 120 ± 220	-4	Qu/Gr/Ir; scored	F210 ditch ; 1171	9.54 ± 0.32	0.09 ± 0.05	0.85 ± 0.03	TLA; 1; 250-350°C	4.06 ± 0.16	77	20	3	25	25
380 BC ± 80 ± 180	-5	Qu	F207 gully ; 1163	5.54 ± 0.07	0.14 ± 0.02	0.95 ± 0.03	TLA; 1; 325°C	2.34 ± 0.08	54	39	7	16	27
340 BC ± 100 ± 320	-7	Ve	F223 ditch ; 1191	5.58 ± 0.16	0.12 ± 0.04	0.93 ± 0.05	TLA; 1; 330°C	2.39 ± 0.08	59	35	6	60	34
400 BC ± 100 ± 240	Dur98TL/OSLqi 229-9	Qu/Li	F230 ring ditch ; 1203	6.41 ± 0.13	0.06 ± 0.04	0.93 ± 0.03	"	2.73 ± 0.09	61	33	6	35	29
				7.85 ± 0.44	0.16 ± 0.14	1.01 ± 0.13	OSLB; 1; 50°C						
840 BC ± 180 ± 320	Dur98TLqi 229-11	Ve	F500 ditch ; 3340	8.28 ± 0.41	0.12 ± 0.06	1.03 ± 0.11	TLA; 1; 330°C	2.91 ± 0.10	58	37	5	39	25
1040 BC ± 120 ± 280	-14	Qu/Ve	F286 ditch ; 1279	7.45 ± 0.17	0.08 ± 0.02	1.03 ± 0.05	"	2.45 ± 0.08	59	35	6	31	29
620 BC ± 120 ± 200	-17	Qu	F295 gully ; 1290	10.32 ± 0.17	0.02 ± 0.01	0.90 ± 0.04	TLA; 1; 260-410°C	3.94 ± 0.15	74	22	4	11	28
240 BC ± 240 ± 300	-18A	Qu/Gr; scored	F291 gully ; 1287	6.91 ± 0.69	0.15 ± 0.18	0.89 ± 0.20	TLA; 1; 240-380°C	3.08 ± 0.11	66	29	5	27	32
680 BC ± 100 ± 240	-19	Qu/Ve	F296 ring ditch ; 1292	7.52 ± 0.10	0.01 ± 0.02	0.91 ± 0.02	TLA; 1; 320°C	2.80 ± 0.10	58	36	6	25	29
AD 240 ± 80 ± 160	-21	Ve	F162 gully ; 1296	5.65 ± 0.10	0.12 ± 0.03	0.82 ± 0.02	TLA; 1; 330°C	3.21 ± 0.11	63	32	5	33	23
160 BC ± 60 ± 220	-23	Qu/Gr; scored	F663 hearth ; 1315	8.23 ± 0.50	0.38 ± 0.19	0.80 ± 0.10	TLA; 1; 250-430°C	3.82 ± 0.14	71	25	4	16	27
760 BC ± 100 ± 240	-24	Qu/Ve; scored	F207 gully ; 1163	6.52 ± 0.07	0.04 ± 0.02	0.89 ± 0.02	TLA; 1; 320°C	2.37 ± 0.08	56	38	6	31	25
620 BC ± 100 ± 280	-25	Qu	F668 ditch ; 1320	6.91 ± 0.16	0.13 ± 0.03	0.90 ± 0.06	TLA; 1; 330°C	2.64 ± 0.09	61	33	6	42	29
AD 540 ± 340 ± 360	-32	Qu/Ve	F610 ; 1387	4.86 ± 1.11	0.23 ± 0.22	0.84 ± 0.09	TLA; 1; 340°C	3.35 ± 0.12	65	31	5	29	37
380 BC ± 100 ± 200	-33	Qu/Ve	F615 ditch ; 1440	5.51 ± 0.09	0.13 ± 0.03	0.88 ± 0.03	"	2.32 ± 0.08	56	37	7	18	42
880 BC ± 120 ± 300	-34	Gr	F851 ditch ; 3646	7.04 ± 0.14	0.08 ± 0.01	1.00 ± 0.02	"	2.44 ± 0.08	55	39	6	47	20
760 BC ± 120 ± 240	-35	Sh	F820/3 ditch ; 2031	5.99 ± 0.16	0.08 ± 0.03	0.94 ± 0.02	"	2.17 ± 0.07	48	45	7	29	27
320 BC ± 120 + 210	-40	Gr	F559 pit ; 3592	6.85 ± 0.28	0.27 ± 0.05	0.98 ± 0.05	TLA; 1; 360-400°C	2.96 ± 0.10	58	37	5	26	22
760 BC ± 100 ± 280	-42	Gr/Ve	F556 pit ; 3594	8.39 ± 0.05	0.25 ± 0.12	0.75 ± 0.14	TLA; 1; 330°C	3.04 ± 0.10	58	37	5	45	20
AD 140 ± 120 ± 180	Dur99TLqi 229-45	Li/Gr; scored	F985 gully ; 2385	8.31 ± 0.41	0.14 ± 0.04	0.84 ± 0.03	TLA; 1; 320°C	4.47 ± 0.17	69	27	4	19	15
360 BC ± 140 ± 220	-47	Sh; scored ware	F981 ditch ; 2316	6.33 ± 0.30	0.23 ± 0.06	0.94 ± 0.04	TLA; 1; 330°C	2.68 ± 0.09	47	47	6	22	23
900 BC ± 180 ± 400	Dur99OSLqi 229-52	Sh	F1290 ditch ; 2679	6.86 ± 0.37		(1.76 ± 0.02)	OSLC; 3; 125°C	2.36 ± 0.08	50	44	6	70	22
820 BC ± 380 ± 420	-55	Li	F1414.2 ring ditch ; 2879	7.04 ± 0.90		(1.78 ± 0.04)	"	2.50 ± 0.08	54	40	6	25	23
420 BC ± 180 ± 260	Dur99TLqi 229-58	"	F1129 ring gully ; 3237	6.58 ± 0.44	0.01 ± 0.08	1.06 ± 0.07	TLA; 1; 325°C	2.72 ± 0.09	44	51	5	29	24
240 BC ± 120 ± 200	-59	Gn/Gr; scored	F1453 ditch ; 4180	9.26 ± 0.31	0.03 ± 0.03	0.84 ± 0.03	TLA; 1; 330°C	4.14 ± 0.16	74	23	3	19	15
260 BC ± 160 ± 220	-61	Qu/Gr/Li; scored	F1418.2 ring gully ; 4207	9.32 ± 0.56	0.12 ± 0.08	0.84 ± 0.04	TLA; 1; 320°C	4.11 ± 0.15	67	30	3	21	21
360 BC ± 120 ± 200	-62A	Gn	F1598 ; 4299	10.34 ± 0.40	0.04 ± 0.02	0.92 ± 0.04	"	4.40 ± 0.16	70	27	3	17	24
AD 80 ± 180 ± 220	-62B	"	F1598 ; 4299	8.29 ± 0.74	0.19 ± 0.04	0.69 ± 0.06	"	4.34 ± 0.16	69	27	4	17	24
									β-TLD	TSAC β-TLD gSpEC			

Site name: Easingwold
Site ref.: 1993-5000
Location: North Yorkshire
Excavation: York Archaeological Trust

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 52

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
AD 40 ± 160 ± 200	Dur95TLqi 173-4	Qu	1069	4.84 ± 0.37	0.24	0.82	TLA; 1; 380°C	2.47 ± 0.10	63	31	6	14	15
140 BC ± 280 ± 320	-5	Do	1444	5.73 ± 0.74	0.33	1.13	"	2.68 ± 0.10	66	29	6	14	15
AD 180 ± 180 ± 200	-7	Qu	1057	3.87 ± 0.35	0.21	0.83	"	2.13 ± 0.07	58	35	7	10	15
220 BC ± 280 ± 300	-8	"	1103	5.20 ± 0.62	0.25	0.84	"	2.34 ± 0.09	68	25	7	13	16
AD 600 ± 160 ± 180	-9	"	1240	3.41 ± 0.38	0.21	0.79	"	2.44 ± 0.11	64	30	6	10	15
200 BC ± 180 ± 240	-10	"	1384	5.23 ± 0.39	0.29	0.92	"	2.37 ± 0.08	62	32	6	13	29
180 BC ± 180 ± 220	-11	"	1443	5.26 ± 0.37	0.42	0.91	"	2.42 ± 0.08	60	33	7	16	18
100 BC ± 280 ± 300	-12	Do	803	5.35 ± 0.69	0.28	0.80	"	2.55 ± 0.10	73	22	5	11	
AD 80 ± 180 ± 220	-14	Qu	1444	4.56 ± 0.42	0.12	0.81	"	2.39 ± 0.08	62	32	6	13	15
AD 240 ± 160 ± 200	-15	"	1240	4.58 ± 0.38	0.07	0.66	"	2.60 ± 0.12	66	28	6	13	15
AD 40 ± 200 ± 220	-18	"	1444	5.57 ± 0.52	0.23	1.03	"	2.85 ± 0.10	68	27	5	11	15
180 BC ± 200 ± 240	-19	"	1381	4.80 ± 0.42	0.33	0.77	"	2.21 ± 0.08	59	34	7	14	29
240 BC ± 240 ± 280	-20	"	1384	5.25 ± 0.56	0.29	0.87	"	2.34 ± 0.08	62	32	6	19	29
AD 40 ± 240 ± 260	-21	"	1240	4.35 ± 0.49	0.32	0.76	"	2.26 ± 0.10	61	33	7	16	15
AD 540 ± 340 ± 340	-22	"	1220	3.70 ± 0.82	0.17	0.79	"	2.56 ± 0.12	65	29	6	15	15
									β-TLD	TSAC β-TLD gSpEC			

Site name: Fornham St Genevieve.
Site ref.: FSG013
Location: Ingham, Suffolk
Excavation: Suffolk County Council Archaeological Services

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 53

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
1160 BC ± 140 ± 240	Dur98TLqi 220-1	Qu	0022	5.48 ± 0.15	0.06 ± 0.03	0.82 ± 0.08	TLA; 1; 325°C	1.74 ± 0.06	58	33	9	24	7
860 BC ± 120 ± 220	-2	"	"	5.24 ± 0.14	0.10 ± 0.03	0.86 ± 0.02	"	1.84 ± 0.06	61	31	8	24	7
580 BC ± 100 ± 200	-3	"	"	4.54 ± 0.12	0.05 ± 0.04	0.79 ± 0.02	"	1.76 ± 0.06	59	33	8	24	7
900 BC ± 120 ± 220	-4	"	"	5.57 ± 0.09	0.06 ± 0.03	0.95 ± 0.10	"	1.92 ± 0.07	62	30	8	24	7
620 BC ± 160 ± 220	-5	Fl	0036	4.97 ± 0.26	0.15 ± 0.07	0.90 ± 0.05	"	1.89 ± 0.06	58	34	8	15	6
2000 BC ± 200 ± 300	-6	"	"	7.19 ± 0.27	0.06 ± 0.02	0.81 ± 0.04	"	1.80 ± 0.06	56	36	8	13	6
660 BC ± 120 ± 220	-8	"	0060	4.63 ± 0.15	0.27 ± 0.06	0.89 ± 0.02	"	1.74 ± 0.06	55	36	9	25	17
120 BC ± 140 ± 240	-9	"	"	6.09 ± 0.19	0.04 ± 0.03	0.95 ± 0.03	"	1.96 ± 0.07	60	32	8	17	17
900 BC ± 100 ± 200	-10	"	"	5.71 ± 0.04	0.09 ± 0.07	0.96 ± 0.04	"	1.97 ± 0.07	57	35	8	17	17
420 BC ± 120 ± 200	-11	Qu	0126	4.94 ± 0.20	0.08 ± 0.07	0.88 ± 0.04	"	2.04 ± 0.07	67	26	7	19	7
800 BC ± 140 ± 220	-12	"	"	5.54 ± 0.21	0.08 ± 0.05	0.86 ± 0.04	"	1.98 ± 0.07	66	27	7	17	7
180 BC ± 100 ± 160	-13	"	"	4.48 ± 0.11	0.23 ± 0.04	0.92 ± 0.02	"	2.06 ± 0.07	67	26	7	6	7
940 BC ± 100 ± 200	-14	"	"	5.81 ± 0.02	0.15 ± 0.01	0.95 ± 0.03	"	1.98 ± 0.07	66	27	7	18	7
1600 BC ± 280 ± 400	-15	Fl	0192	7.44 ± 0.52	0.01 ± 0.01	0.66 ± 0.06	"	2.07 ± 0.07	65	28	7	32	5
2040 BC ± 480 ± 520	-16	"	"	7.90 ± 0.88	0.06 ± 0.02	0.79 ± 0.04	"	1.95 ± 0.07	63	29	8	18	5
2180 BC ± 520 ± 620	-17	"	"	7.77 ± 0.94	0.10 ± 0.21	0.64 ± 0.13	"	1.86 ± 0.06	61	31	8	40	5
									β-TLD	TSAC β-TLD gSpEC			

Site name: Foxhall
Site ref.: FXL013
Location: Suffolk
Excavation: Suffolk County Council Archaeological Services

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 54

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
280 BC ± 100 ± 200	Dur97TLqi 212-1	Qu	0386	3.82 ± 0.08	0.04 ± 0.04	0.87 ± 0.03	TLA; 1; 330°C	1.67 ± 0.06	67	24	9	28	8
1080 BC ± 180 ± 260	-2	"	"	5.87 ± 0.27	0.03 ± 0.08	0.93 ± 0.10	"	1.91 ± 0.07	71	21	8	15	8
300 BC ± 180 ± 260	-3	"	"	4.14 ± 0.27	0.06 ± 0.18	0.76 ± 0.08	"	1.80 ± 0.06	70	22	8	33	8
360 BC ± 120 ± 200	-4	"	"	4.27 ± 0.17	0.07 ± 0.06	0.86 ± 0.05	"	1.81 ± 0.07	70	22	8	24	8
560 BC ± 120 ± 220	-5	"	"	4.75 ± 0.12	0.08 ± 0.06	0.74 ± 0.06	"	1.85 ± 0.07	70	22	8	27	8
1060 BC ± 160 ± 240	-7	"	0274	5.47 ± 0.19	0.10 ± 0.03	0.88 ± 0.06	"	1.79 ± 0.06	65	27	8	21	8
400 BC ± 100 ± 180	-8	"	"	4.31 ± 0.09	0.14 ± 0.04	0.92 ± 0.03	"	1.80 ± 0.06	66	26	8	20	8
340 BC ± 80 ± 180	-9	"	"	4.89 ± 0.03			TLR; 1; 330°C	2.10 ± 0.08	70	23	7	23	8
									β-TLD	TSAC β-TLD			

Site name: Hayton
Site ref.: KINCH 1995
Location: Humberside
Excavation: University of Durham

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 55

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
540 BC ± 140 ± 200	Dur97TLqi 191-17		1020/557	5.29 ± 0.24	0.17 ± 0.04	1.07 ± 0.03	TLA; 1; 340°C	2.08 ± 0.07	58	35	7	15	15
140 BC ± 180 ± 220	-18		"	4.76 ± 0.34	0.12 ± 0.06	0.98 ± 0.04	"	2.23 ± 0.08	60	33	7	15	15
AD 240 ± 100 ± 160	-19		"	3.92 ± 0.20	0.12 ± 0.03	1.10 ± 0.02	"	2.24 ± 0.08	61	33	6	15	15
AD 110 ± 120 ± 160	-20		"	4.07 ± 0.20	0.15 ± 0.03	0.97 ± 0.02	TLA; 1; 330°C	2.16 ± 0.07	59	34	7	15	15
									β-TLD	TSAC β-TLD			

Site name: Landwade Road
Site ref.: FORLR 96
Location: Fordham, Cambridgeshire
Excavation: Cambridgeshire County Council Archaeology Field Unit

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 56

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_c %
1460 BC ± 180 ± 280	Dur97TLqi 206-2	Sh	592	4.96 ± 0.22			TLR; 1; 220°C	1.33 ± 0.04	58	30	11	16	15
180 BC ± 440 ± 460	-5	Fl	680	4.02 ± 0.78	0.08 ± 0.18	0.66 ± 0.06	TLA; 1; 350°C	1.85 ± 0.07	69	23	8	15	19
460 BC ± 120 ± 200	Dur97TL/OSLqi 206-6	"	"	4.66 ± 0.37	0.18 ± 0.06	0.82 ± 0.06	TLA; 1; 380°C	1.86 ± 0.07	69	23	8	14	19
				4.55 ± 0.17			OSLB; 1; 125°C						
460 BC ± 360 ± 400	Dur97TLqi 206-7	Qu	913	5.95 ± 0.86	0.02 ± 0.09	0.72 ± 0.08	TLA; 1; 350°C	2.43 ± 0.08	63	31	6	16	6
500 BC ± 260 ± 280	-8	Fl	1070	4.00 ± 0.38	0.19 ± 0.08	0.92 ± 0.07	TLA; 1; 380°C	1.61 ± 0.05	59	32	9	13	12
560 BC ± 200 ± 240	-9	"	"	4.00 ± 0.27	0.13 ± 0.04	0.94 ± 0.04	"	1.56 ± 0.05	57	33	10	13	12
1300 BC ± 220 ± 280	-10	"	1097	4.35 ± 0.25	0.02 ± 0.04	0.96 ± 0.04	"	1.32 ± 0.04	56	33	11	10	15
500 BC ± 360 ± 400	-11	"	"	5.63 ± 0.76	0.19 ± 0.12	0.90 ± 0.12	"	2.25 ± 0.09	74	19	7	12	15
400 BC ± 340 ± 380	-13	Sh	1763	5.90 ± 1.10	0.06 ± 0.13	1.02 ± 0.09	"	2.46 ± 0.09	69	25	6	20	10
720 BC ± 180 ± 240	-15	Fl	759	5.84 ± 0.31	0.06 ± 0.03	0.96 ± 0.03	"	2.15 ± 0.08	67	26	7	15	16
1540 BC ± 320 ± 400	-19	"	1097	4.58 ± 0.40	0.28 ± 0.04	0.90 ± 0.08	TLA; 1; 350°C	1.29 ± 0.04	55	33	12	17	15
920 BC ± 280 ± 340	-20	"	"	5.43 ± 0.49	0.26 ± 0.06	0.74 ± 0.06	"	1.86 ± 0.07	69	23	8	11	15
1800 BC ± 300 ± 360	-21	"	"	5.25 ± 0.38	0.24 ± 0.06	1.05 ± 0.06	"	1.38 ± 0.05	58	31	11	12	15
900 BC ± 160 ± 220	-22	"	"	3.88 ± 0.16	0.13 ± 0.04	0.92 ± 0.02	"	1.34 ± 0.04	57	32	11	14	15
920 BC ± 200 ± 260	-23	"	"	4.95 ± 0.06	0.26 ± 0.05	0.94 ± 0.05	"	1.69 ± 0.06	66	25	9	17	15
									β-TLD	TSAC β-TLD gSpEC			

Site name: Lobs Hole
Site ref.: LHS-2-96
Location: Stevenage, Hertfordshire
Excavation: Archaeological Services and Consultancy Ltd

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 57

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_c %
AD 380 ± 60 ± 120	Dur97TLqi 218-2		151	3.33 ± 0.74	0.62 ± 0.25	1.12 ± 0.17	TLA; 1; 350°C	2.14 ± 0.07	50	43	7	21	17
360 BC ± 200 ± 260	-4		308	5.04 ± 0.41	0.09 ± 0.07	0.54 ± 0.02	"	2.14 ± 0.07	51	42	7	18	23
1500 BC ± 240 ± 360	-5		"	7.72 ± 0.47	0.21 ± 0.02	0.74 ± 0.01	"	2.20 ± 0.07	52	41	7	24	23
680 BC ± 240 ± 280	-6		"	5.17 ± 0.41	0.30 ± 0.06	0.73 ± 0.03	"	1.93 ± 0.06	45	47	8	15	23
									β-TLD	TSAC β-TLD			

Site name: Methley
Site ref.: METH 96
Location: Castleford, West Yorkshire
Excavation: MAP Archaeology

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 58

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_c %
AD 380 ± 100 ± 140	Dur97TLqi 207-1	pottery	1008	3.32 ± 0.17	0.16 ± 0.07	0.70 ± 0.06	TLA; 1; 350°C	2.06 ± 0.07	47	46	7	23	7
160 BC ± 140 ± 200	-2	daub	1006	5.15 ± 0.26	0.02 ± 0.10	0.72 ± 0.12	"	2.39 ± 0.08	54	40	6	28	13
	Dur97TL/OSLqi 207-4	burnt clay						2.06 ± 0.07	51	42	7	23	10
60 BC ± 100 ± 160	Dur97TL/OSLqi 207-4 S1	"	1155	4.24 ± 0.14	0.09 ± 0.03	0.95 ± 0.03	TLA; 1; 350°C						
				4.18 ± 0.10			OSLA; 4; 50°C						
80 BC ± 80 ± 160	Dur97TLqi 207-4 S2	"	"	4.27 ± 0.09	0.15 ± 0.04	0.95 ± 0.03	TLA; 1; 350°C						
260 BC ± 140 ± 200	-4 S3	"	"	4.68 ± 0.22	0.09 ± 0.02	0.85 ± 0.02	"						
AD 40 ± 100 ± 160	-4 S4	"	"	4.04 ± 0.16	0.05 ± 0.03	0.78 ± 0.02	"						
									β-TLD	TSAC β-TLD			

Site name: Piddington
Site ref.:
Location: Northamptonshire
Excavation: Upper Nene Archaeological Society

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 59

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_c %
0 BC ± 240 ± 280	Dur97TLqi 208-5		Ditch F180 layer L4	5.69 ± 0.63	0.23 ± 0.10	1.18 ± 0.11	TLA; 1; 380°C	2.85 ± 0.11	73	22	5	15	24
									β-TLD	TSAC β-TLD			

Site name: Port Seton
Site ref.: PSE 95
Location: East Lothian
Excavation: University of Durham

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 60

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
AD 140 ± 160 ± 180	Dur96TLqi 192-1		1004	3.81 ± 0.28	0.21	0.94 ± 0.06	TLA; 1; 380°C	2.05 ± 0.07	0.56	0.37	0.07	18	15
									β-TLD	TSAC β-TLD			

Site name: Slade Farm
Site ref.: SFB 96
Location: Bicester, Oxfordshire
Excavation: Birmingham University Field Archaeology Unit

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 61

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
340 BC ± 100 ± 180	Dur97OSLqi 219-1	Sh	F173 1049	4.93 ± 0.13			OSLA; 4; 50°C	2.11 ± 0.07	53	40	7	22	19
600 BC ± 620 ± 640	Dur97TLqi 219-2	Gr	F136.04 1036	5.88 ± 1.39	0.14 ± 0.21	0.74 ± 0.13	TLA; 1; 350°C	2.26 ± 0.08	57	36	7	15	15
									β-TLD	TSAC β-TLD			

Site name: Sywell
Site ref.: SA 96/SAE 96
Location: Northamptonshire
Excavation: Northamptonshire Archaeology

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 62

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
AD 100 ± 180 ± 200	Dur96TLqi 194-5		TR2 2/15	4.04 ± 0.50	0.01 ± 0.04	1.05 ± 0.10	TLA; 1; 380°C	2.14 ± 0.07	56	39	5	23	15
AD 120 ± 220 ± 260	-8		TR2 2/14	4.10 ± 0.54	0.17 ± 0.12	0.80 ± 0.07	"	2.20 ± 0.07	56	37	7	26	17
420 BC ± 280 ± 320	-11	Sh/Qu	pit 22	5.20 ± 0.52	0.15 ± 0.09	0.91 ± 0.07	"	2.14 ± 0.08	48	45	7	19	13
280 BC ± 160 ± 220	-13	Sh/Ir	ditch 27	5.05 ± 0.33	0.14 ± 0.04	0.98 ± 0.07	"	2.21 ± 0.07	48	45	7	17	13
AD 40 ± 380 ± 400	-14	"	"	4.35 ± 1.04	0.07 ± 0.20	1.02 ± 0.18	"	2.23 ± 0.07	54	40	6	21	14
200 BC ± 180 ± 240	-16	"	ditch west 09	4.89 ± 0.35	0.11 ± 0.04	0.88 ± 0.05	"	2.21 ± 0.07	48	45	7	24	13
240 BC ± 220 ± 260	-18	Sh	pit 54	4.92 ± 0.51	0.10 ± 0.06	0.91 ± 0.09	"	2.20 ± 0.08	49	44	7	24	11
									β-TLD	TSAC β-TLD			

Site name: Warren Villas Quarry
Site ref.:
Location: Sandy, Bedfordshire
Excavation: Bedfordshire County Archaeology Service

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 63

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_c %
20 BC ± 120 ± 200	Dur96TLqi 196-1		3160 / 847	4.25 ± 0.18	0.23 ± 0.11	0.80 ± 0.09	TLA; 1; 380°C	2.15 ± 0.07	52	41	7	18	36
360 BC ± 100 ± 200	-2		3228 / 829	4.51 ± 0.10	0.24 ± 0.04	0.82 ± 0.05	"	1.92 ± 0.06	52	40	8	21	39
280 BC ± 140 ± 240	-3		3295 / 898	5.39 ± 0.27	0.21 ± 0.14	0.81 ± 0.08	"	2.36 ± 0.08	63	31	6	23	44
									β-TLD	TSAC β-TLD			

Site name: Welland Bank Pit
Site ref.: WQE 96
Location: Deeping St James, Lincolnshire
Excavation: Heritage Lincolnshire

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 64

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_c %
240 BC ± 160 ± 200	Dur97TL qi 201-2		1040	5.31 ± 0.32	0.16 ± 0.05	0.94 ± 0.04	TLA; 1; 360°C	2.38 ± 0.08	65	29	6	19	79
									β-TLD	TSAC β-TLD gSpEC			

Site name: Willington Hill Farm
Site ref.: WHF 96
Location: Willington, Derbyshire
Excavation: Birmingham University Field Archaeology Unit

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 65

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
2020 BC ± 280 ± 360	Dur97TLqi 202-1		1030 F20 SF29	13.22 ± 0.77	0.29 ± 0.03	0.63 ± 0.05	TLA; 1; 350°C	3.29 ± 0.12	64	31	5	14	13
560 BC ± 380 ± 420	-2		1045 F40 SF4	9.37 ± 0.14	0.46 ± 0.15	0.78 ± 0.13	"	3.65 ± 0.14	70	26	4	15	23
1760 BC ± 380 ± 440	-3		1109 F106	12.60 ± 1.14	0.11 ± 0.04	0.65 ± 0.08	"	3.36 ± 0.12	64	31	5	14	12
2580 BC ± 380 ± 460	-4		1038 F33 36	12.49 ± 0.93	0.09 ± 0.08	0.75 ± 0.08	"	2.72 ± 0.09	58	37	5	15	11
540 BC ± 520 ± 540	-6	Qu	1068 F57 SF28	6.57 ± 1.32	0.11 ± 0.17	0.31 ± 0.05	"	2.60 ± 0.09	53	31	6	16	13
2340 BC ± 420 ± 500	-7	"	1023 F23 SF11	12.24 ± 1.07	0.12 ± 0.02	0.55 ± 0.05	"	2.83 ± 0.11	72	23	5	16	18
2400 BC ± 480 ± 560	-9	Gr	1098 F100 SPIT2 W	13.98 ± 1.45	0.07 ± 0.05	1.06 ± 0.13	"	3.19 ± 0.11	63	32	5	22	14
3580 BC ± 740 ± 800	Dur98TLqi 202-11	Qu	1038 F33	16.25 ± 2.07	0.32 ± 0.08	0.96 ± 0.12	"	2.92 ± 0.10	64	31	5	14	10
2420 BC ± 400 ± 480	-12	"	1030 F20	13.97 ± 1.15	0.28 ± 0.07	0.61 ± 0.03	"	3.16 ± 0.11	63	32	5	15	13
3020 BC ± 640 ± 720	-13	"	1068 F57	12.53 ± 1.54	0.32 ± 0.11	0.58 ± 0.07	"	2.49 ± 0.09	62	32	6	17	13
2500 BC ± 400 ± 480	-14	"	1109 F106	13.83 ± 1.20	0.20 ± 0.04	0.69 ± 0.06	"	3.07 ± 0.11	61	34	5	16	12
									β-TLD	TSAC β-TLD			

Site name: Wollaston Quarry
Site ref.: WollQ 94
Location: Wollaston, Northamptonshire
Excavation: Northamptonshire Archaeology

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 66

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_e %
340 BC ± 160 ± 240	Dur96TLqi 193-3	Sh/Ir	6547	5.02 ± 0.31	0.17 ± 0.03	0.92 ± 0.06	TLA; 1; 330°C	2.15 ± 0.07	52	41	7	24	20
320 BC ± 320 ± 360	-4	"	"	5.16 ± 0.69	0.26 ± 0.13	0.93 ± 0.10	"	2.22 ± 0.07	54	40	6	23	20
AD 80 ± 200 ± 240	Dur97TLqi 193-5	Sh	"	3.64 ± 0.38	0.30 ± 0.10	0.77 ± 0.03	"	1.91 ± 0.06	48	44	8	16	20
120 BC ± 80 ± 160	Dur97TL/OSLqi 193-10	Sh/Ir	"	3.57 ± 0.62	0.30 ± 0.10	0.94 ± 0.07	"	1.88 ± 0.06	45	47	8	15	20
				3.98 ± 0.62			OSLA; 5; 50°C						
									β-TLD	TSAC β-TLD			

Site name: Hardwater Road
Site ref.: HWR 96
Location: Wollaston, Northamptonshire
Excavation: Northamptonshire Archaeology

Laboratory: Durham
Technique: quartz inclusion (90-150μm)

Entry: 67

Luminescence Single Dates:	Lab ref.	Fabric	Archaeological Context	P (Gy)	I/P	m2/m1 (TD ratio)	Procedure	total DR (mGy/a)	DR components % β	γ	c	W_s %	W_c %
480 BC ± 160 ± 220	Dur97TLqi 193-16	Sh; scored	301	6.06 ± 0.34	0.19 ± 0.08	0.96 ± 0.07	TLA; 1; 330°C	2.46 ± 0.09	62	32	6	20	9
AD 40 ± 120 ± 180	-33	"	180	4.71 ± 0.25	0.10 ± 0.03	0.93 ± 0.02	"	2.40 ± 0.08	64	30	6	12	20
540 BC ± 200 ± 260	Dur97OSLqi 193-34	Sh/Ir	"	5.94 ± 0.41			OSLA; 5; 50°C	2.34 ± 0.08	62	31	6	18	20
540 BC ± 160 ± 240	Dur98TLqi 193-36	"	"	5.69 ± 0.30	0.23 ± 0.07	0.92 ± 0.06	TLA; 1; 330°C	2.24 ± 0.08	61	32	7	17	20
820 BC ± 120 ± 220	Dur97TLqi 193-37	Sh	"	5.88 ± 0.14	0.04 ± 0.02	0.89 ± 0.04	"	2.09 ± 0.07	59	34	7	18	20
240 BC ± 160 ± 220	Dur98TLqi 193-38	Sh/Qu	"	4.93 ± 0.30	0.39 ± 0.06	0.53 ± 0.05	TLA; 1; 330°C	2.20 ± 0.08	61	33	7	18	20
640 BC ± 120 ± 200	Dur97TLqi 193-39	Sh/Ir	"	6.19 ± 0.15	0.11 ± 0.02	0.86 ± 0.02	"	2.34 ± 0.08	63	31	6	16	20
320 BC ± 140 ± 200	Dur98TLqi 193-40	Sh	"	4.75 ± 0.25	0.17 ± 0.08	1.04 ± 0.06	"	2.05 ± 0.07	58	35	7	18	20
340 BC ± 100 ± 180	-41	"	"	5.35 ± 0.17	0.14 ± 0.04	0.89 ± 0.03	"	2.30 ± 0.08	62	31	7	14	20
660 BC ± 300 ± 340	-45	"	"	5.20 ± 0.55	0.08 ± 0.25	1.34 ± 0.25	"	1.96 ± 0.07	56	37	7	16	20
900 BC ± 140 ± 240	-47	Sh; scored	"	5.97 ± 0.21	0.06 ± 0.05	0.95 ± 0.04	"	2.06 ± 0.07	58	35	7	19	20
20 BC ± 120 ± 180	-50	Sh	105	4.43 ± 0.22	0.18 ± 0.04	0.94 ± 0.05	"	2.19 ± 0.07	52	41	7	24	10
720 BC ± 180 ± 240	-52	"	"	5.27 ± 0.30	0.39 ± 0.22	0.99 ± 0.12	"	1.93 ± 0.06	46	47	7	18	10
1580 BC ± 200 ± 300	Dur97TLqi 193-55	"	24	7.49 ± 0.33	0.07 ± 0.02	1.01 ± 0.05	"	2.09 ± 0.07	57	36	7	18	12
220 BC ± 80 ± 160	Dur98TLqi 193-61	"	20	4.19 ± 0.09	0.06 ± 0.05	0.92 ± 0.03	"	1.88 ± 0.06	54	39	7	15	13
300 BC ± 140 ± 180	Dur97TLqi 193-62	"	"	3.91 ± 0.19	0.08 ± 0.04	0.83 ± 0.04	"	1.71 ± 0.06	49	42	9	15	13
260 BC ± 180 ± 220	Dur98TLqi 193-66	Sh/Ir	"	6.36 ± 0.45	0.20 ± 0.13	0.91 ± 0.18	"	2.83 ± 0.10	68	27	5	15	13
									β-TLD	TSAC β-TLD gSpEC			