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A453 Widening Scheme
M1 Junction 24 to A52 Nottingham
Nottinghamshire

Radiocarbon Dating

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86085 A453 Radiocarbon Dating

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Four radiocarbon dates (SUERC-50610 to 50613) were obtained on samples submitted to the Scottish Universities Environmental Research Centre (SUERC) (Table 1). They have been calculated using the calibration curve of Reimer *et al.* (2013) and the computer program OxCal (v4.2.3) (Bronk Ramsey and Lee 2013) and cited in the text at 95% confidence and quoted in the form recommended by Mook (1986), with the end points rounded outwards to 10 years. The ranges in plain type in the radiocarbon tables have been calculated according to the maximum intercept method (Stuiver and Reimer 1986). All other ranges are derived from the probability method (Stuiver and Reimer 1993).

A Bayesian approach has been adopted for the interpretation of the chronology from this site (Bayliss *et al.* 2007). Although the simple calibrated dates are accurate estimates of the dates of the samples, it is the dates of the archaeological events, which are represented by those samples, which are of interest. In the case of the A453, it is the chronology of the burials and associated activity that is under consideration, and not just the dates of individual samples. The OxCal programme provides the methodology to combine the dates with other information (eg, stratigraphic phasing) to produce realistic estimates.

In addition, the $\delta^{13}C$ and $\delta^{15}N$ values for each individual (see Table 1: burials 1018 and 1245) are consistent with a terrestrial diet and, therefore, the potential for date offsets is unlikely (see Bayliss *et al*. 2004). Dietary offsets can cause radiocarbon measurements to appear older than their actual date, which in turn can lead to misleading conclusions about the phase of a site.

The aim of the radiocarbon dating programme was to determine the age of two burial deposits and two features containing charred spelt. SUERC-50610 is on a deposit of charred spelt glumes from a fill within structure 1394 and SUERC-50611 is on a similar deposit of material from the fill of boundary ditch 1267. SUERC-50612 and 50613 were on samples of articulated bone from burials 1018 and 1245.

The earlier of the two burials, 1245, (SUERC-50612) is likely to have been made during the first century AD, possibly either pre- or post-conquest (*10BC-130 AD (93.4%) at 95% probability*), whilst burial 1018 (SUERC-50613) is probably late 2nd century or 3rd century AD (*140-330 AD at 95% probability*). The radiocarbon dating supports the stratigraphic phasing as the two deposits of spelt, which produced probability ranges that are not consistent and therefore of a different date: SUERC-50611 is earlier than SUERC-50610 (see Fig. 1 and Table 1). The later deposit (SUERC-50610) is statistically consistent with burial 1018 (SUERC-50611)(passes a T'=1.4; ν=1; T'(5%)=3.8) and, therefore, could belong to the same phase of activity. Both deposits are likely to be of third century date.

Table 1 Radiocarbon measurements on samples from selected features

Laboratory Code	Context & sample	Radiocarbon age BP	$\delta^{13}C$ ‰	d15 N‰	C:N Ratio	Calibrated date range (95% confidence)	*Posterior density estimate (95% probability)*
SUERC-50610	Structure 1394 sunken building (1354), charred plant remains, *Triticum spelta glumes (x12)*	1732±29	-23.7			230-400 AD	*230-380 AD*
SUERC-50611	Boundary ditch 1267 (), charred plant remains, *Triticum spelta glumes (x9)*	1844±27	-24.9			80-250 AD	*110-240 AD (89.6%)*
SUERC-50612	Burial 1245 (1247), articulated human bone, left humerus	1959±30	-20.9	11.50	3.3	40 BC-130 AD	*10BC-130 AD at (93.4%)*
SUERC-50613	Burial 1018 (1024), articulated human bone, left femur	1782±30	-20.5	11.50	3.3	130-340 AD	*140-330 AD*

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