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Rediscovering the dead: Reanalysis of a lost Iron Age cemetery at Highsted, Kent

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ABSTRACT (SUMMARY)

Highsted, near Sittingbourne in Kent, was the location of a large cemetery, thought to date to the Late Iron Age. The site was excavated under rescue conditions in 1955, but due to apparent theft of the archive and finds, was never published. As part of a wider project, the human remains have been subject to new osteological examination, ancient DNA (aDNA) and isotope analysis, and AMS dating. Alongside this, surviving finds have been reassessed, and the excavation pieced together from contemporary photographs and newspaper records. Analysis revealed a burial population which spanned the Late Iron Age and early Romano-British periods, with continuity into the 2nd century AD and possibly beyond. Burial rites echo those from the nearby site of Mill Hill, Deal, confirming Highsted as a major Deal-rite cemetery. Despite continental parallels for these types of burials, the Highsted population grew up in the local area, with homogeneous diets including some marine resource exploitation, reflecting the dietary impacts of the Roman conquest on indigenous rural communities. The approach used here also serves as an example of how much value can be gained from fragmented archive material that may otherwise be overlooked.

INTRODUCTION

New archaeological sites are excavated every day, and new data made available. There are, however, countless assemblages that have, for one reason or another, remained unpublished, forgotten, or otherwise ignored. There is tremendous value in revisiting this material and the cemetery at Highsted, Sittingbourne, is an excellent, though complex, candidate for re-examination. The site was excavated in 1955, the only contemporary surviving record being a series of articles in the East Kent Gazette (EKG 1955a-d). The finds, most of the photographs, and the written archive went missing (presumed stolen) either during, or shortly after, the excavation, and so the site has remained unpublished until now. In the intervening period, the human remains have been moved more than once and have subsequently become irreparably commingled. The bones are presently curated in Maidstone Museum where they were identified in 2018 during doctoral research (Legge 2022).

Here we present results of the analysis of the human remains from Highsted, combining genetic, isotopic, funerary and osteological analysis conducted as part of the ERC-funded COMMIOS Project (Armit 2022). These analyses enable us to re-interpret the site, and its important contribution to understanding funerary rites across the Late Iron Age to Romano-British transition in Kent.

SITE AND EXCAVATION HISTORY

Highsted is the site of a (now disused) chalk quarry, located 1.8 km south of the centre of Sittingbourne and *c.* 1 km northwest of Romersham Green (TQ 908 618). (FIGURE 1). The bedrock is Seaford Chalk, with a current elevation of 25.8–41.5 m OD. The first archaeological discovery in the area, in 1828, was a mixed-rite Romano-British cemetery 800 m to the northeast of the site reported here (HER TQ 96 SW 18), with four further Romano-British cremations discovered 900 m north of the quarry in 1865 (HER TQ 96 SW 19). The first excavation within the quarry itself took place in 1934, *c.* 100 m from the site under consideration here (which was itself excavated in 1955). Local archaeologist R. F. Jessup, who was also present for the 1955 excavations (EKG 1955b), unearthed four late Romano-British inhumation burials, as well as a lead coffin, and several vessels dated to the 4th century AD (Jessup 1935, 211–2).

FIGURE 1 - MAP

A "horse and cart, complete with its trappings" was also found in the quarry around 1920, buried with a "soldier" (Feakes 2001, 5). This discovery might also relate to the Highsted cemetery, although the information was obtained second hand from three Rodmersham village residents (all now deceased) and the burial is not recorded in the Kent Historic Environment Record (HER). Presuming this account is reliable, the burial is therefore potentially contemporary with, and a part of the Late Iron Age to early Roman cemetery.

TABLE 1 - SOURCES

The Highsted site itself was initially identified in 1955 by quarry worker Archie Pack, who witnessed a skull roll down the bank at the edge of the pit, and Frederick George Winter, who uncovered the first skeletons and pot sherds (EKG 1955a, 1). A rescue excavation was subsequently led by Mr D.T.A. Ponton and Miss M. Blumstein (Archaeologia Cantiana 1955, xlvi) who uncovered twenty inhumations and (what they describe as) six cremation burials, together with 'Belgic' pottery and a La Tène (III) brooch (Kelly 1978, 267). The excavations ran over several weeks, and while the East Kent Gazette reported that the full extent of the cemetery was not known, the entire area has since been quarried away. The human remains were originally destined for Guy's Hospital, London, for examination (EKG 1955b), but either this did not happen or no report was produced.

There is some uncertainty as to what happened to the finds and the written archive after the excavation. The dominant narrative is that everything was stolen (Kelly 1978, 267). However, an article in The Gazette and Times newspaper (19th December 2001) contained an interview with the last surviving member of the excavation team, Dr Raymond Birch, who claimed that the finds were not stolen but were transferred to Maidstone and Milton Regis Court Hall Museums, and that a full report was written by the Kent Archaeological Society (Hammond 2001). A report in the East Kent Gazette (EKGb, 12th August 1955) stated that the location of the excavation had been kept secret for the previous six weeks to prevent illicit activity; however, one local man, Brian Jarrett, claimed in 1994 that the excavation was public knowledge: "I was able to look around the dig to my heart's content" (Rayner 1994a). The only other possible fate for the finds, as stated by Thompson (1982, 820), is that the pottery and drawings were returned to the quarry owners "and subsequently disappeared". Thompson gives no sources for her statement, however, and theft of the material seems likely, as no excavation report has been located, and neither Maidstone nor Milton Regis Court Hall Museums currently curate any of the artefactual material.

Arthur Page, a professional photographer, documented the 1955 excavations and produced 22 images, one of which he shared with the Gazette and Times in August 1994. Some of these photographs (FIGURES 2-5, 8) were presented to Maidstone Museum by Hubert Berry, who had himself taken part in the excavation. The photographs form the only surviving official archive. Two other photographs, taken by Brian Jarrett, were published in the Gazette and Times in July 1994. The most detailed account of the excavations was reported in the East Kent Gazette on Friday 12th August 1955. A front-page article included several photographs of the excavation in progress and information on both the discovery and the excavators themselves. Fourteen skeletons were reported to have been found by this point, as part of "a Roman [sic] burial ground dating back to between 75 BC and 20 AD" (EKG 1955a, 1). Two statements within the article provide detail about the burials. The first states that "on Monday, with two other helpers, Mr. Ponton unearthed several skeletons, one of which was found with two pieces of very well preserved pottery against the skull" (FIGURE 3), while the second notes that "it is believed that one of the skeletons may be considerably older than the remainder which have been found. It was lying in earth which has become blackened. None of the other burial places have shown this characteristic" (ibid., 1) (FIGURE 4a-c). In Figure 4b-c some disturbance and truncation of graves is clear; a pelvic bone is visible near the skull of the skeleton under excavation, with further long bones alongside and a pile of small hand or foot bones and vertebrae. The long bones are at a higher level, which with the disturbance could indicate a longer period of use for the cemetery.

FIGURE 2 - SITE

FIGURE 3 - SINGLE GRAVE

FIGURE 4 A-C - BERRY EXCAVATING AT THE QUARRY EDGE

A second article, published on 19th August, mentioned one further burial and a "trench" containing "many fragments of pottery with animal bones. One animal skull had tusks a few inches long" (EKG 1955b). It is unclear whether this faunal assemblage relates to the cemetery (the remains of funerary feasting activity perhaps), or whether it derives from another part of the site.

A third article, on the 2nd September 1955, announced the impending closure of the site, with 17 skeletons found, of which "six showed signs of cremation" (EKG 1955c). The trench is again mentioned, as located at the edge of the site and containing "pottery of two different periods" (ibid). The final contemporary newspaper article was published on the 9th September 1955. This gave a total of 26 individuals, stating that one of the most recently found was thought to be that of a child (EKG 1955d). Another was described as a "six-foot man", buried in a deeper grave than the others (3 ft (0.9 m) below the turf), and it was noted that "on various parts of the skeleton traces of burned wood were found. It is believed that these could have been left after the performance of some burial rite" (ibid).

No further mention is made of the human remains until the Sittingbourne and Swale Archaeological Group newsletter for January 1974, which states that one of the skeletons was on display in the Milton Regis Court Hall Museum dungeon. Janet Halligan, the current curator, remembers a skeleton being laid out on the upper floor of the museum in 1964–5, with the other bones 'bin-bagged' in the dungeon (Halligan pers.comm.).

In 1981, R.P. Whimster (1981, 326) recorded that a clustered group of six (not 20) inhumations had been excavated at Highsted, some or all with La Tène III vessels. Notably, he suggests that everything from the site was lost, including the human remains (ibid., 27, 326), which could explain why no attempts were made to locate and analyse them before now.

Two letters concerning the human remains are held in the Maidstone Museum archive. The first, from July 1987, is from Dr R. Baxter, secretary of the Sittingbourne Archaeological Group, to Miss J. Vale of the County Museums Service, in which he mentions transfer of the human remains from his garage to the museum. Miss Vales' reply in August confirms their arrival, and notes that "a few of the leg bones have had holes drilled into them"; presumably this was for some form of sampling, although there is no record of any sampling having taken place. A further letter (dated 1st August 1987) from Baxter to Maidstone Museum, mentions that the human remains were rediscovered at Milton Regis Court Hall that year, in large paper sacks, with the bones wrapped in newspaper. "The bags and their contents had deteriorated during their time in the damp conditions of the Hall store. Some spillage and mixing had occurred". At least 16 individuals were represented, including one juvenile.

The Gazette and Times article from 3rd August 1994 includes an interview with Baxter, who does not mention theft of the material but simply states that it was "lost. Important pottery finds were dispersed. They apparently found their way into private hands" (Rayner 1994b). The same article contains a comment from Alan Couchman, who was present at the excavation, who recalls that most burials were

1.5 ft (0.45 m) below the surface, and who corroborates that one individual was buried 3 ft deep, surrounded by burned wood, and that each skeleton was individually labelled and placed in paper bags (ibid.). Dr Birch (Hammond, 2001) notes that the graves were all on the same alignment, confirms that the cemetery extent was not found, and identifies men, women and children among the burials, with signs of osteoarthritis in many. Birch states that there were no coffins or wrappings, and that no grave goods aside from pottery were found (ibid.). It is, however, known that one brooch was recovered, and one of the photos taken by Page during the excavations shows a coffin (FIGURE 5).

FIGURE 5 - COFFIN

The only other direct record of the site is Feakes (2001), whose brother David took part in the excavations in 1955, aged 15, and relayed information of the finds to her. Feakes states that one grave contained several geode stones, or sling stones, and that the six cremations were not 'true cremations' but burnt skeletons: "it was supposed at the time that they had been burnt for some 'ritual' reason" (ibid., 17). While no burnt bone survives in the archive, it is likely that Feakes is describing the same skeleton surrounded by burned wood as noted in the East Kent Gazette article in September 1994. Feakes also published a final photograph taken by Arthur Page (FIGURE 6), showing one of the inhumations inside what appears to be a small square barrow/enclosure, though the grave is located off-centre. If this is a barrow, it would have contemporary parallels with two 1st century AD weapon burials from Brisley Farm (Stevenson 2013), and a further two from Mill Hill, Deal (Parfitt 1991), *c.* 23 km southeast and *c.* 47 km east of Highsted respectively.

Further photographs from the excavation, and summarised background information on key individuals involved, are recorded in Supplementary 5.

FIGURE 6 - BARROW

THE POTTERY

In 1977, three pottery vessels, purportedly from Highsted, were donated to the then Royal Scottish Museum, Edinburgh (Kelly 1978, 267) (acc. numbers A.1978.373-5). The donor had apparently insisted that the pots remain in Edinburgh, not Maidstone, and a fourth pot had been retained in private ownership (ibid., 267). The donor is recorded by National Museums Scotland (NMS) as Miss Madeline Brunton (1901-1980). Miss Brunton was born and died in Biggar, Lanarkshire, (Ancestry.com), and it is unclear how the Highsted vessels came into her possession. While it is possible that she simply bought them, her apparent insistence that they were not sent to Maidstone suggests that she might have known the circumstances of their discovery.

Descriptions of the donated vessels are available on the NMS website (NMS 2024 a, b c), and two are also described in an Archaeologia Cantiana report from the year in which they were donated (Kelly 1978), alongside the fourth vessel (ibid.); this is the source of the measurements given below. More

typological referencing and specific dating is possible than these two sources provide, and this information is hence included below, noting that this is on the basis of assessment of the available photographs.

A.1978.373 (FIGURE 7a) is a butt beaker, 13.4 cm high, with a rim diameter of 8.2 cm and a base diameter of 5.5 cm. The surface is brown-grey while the fabric, which can be seen from a chip on the rim, is fired red and comprises a fine 'paste'. The vessel has a rounded rim and is decorated with two zones of vertical rouletting separated and demarcated by raised cordons, and can be categorized as a Camulodunum type 119 butt beaker. This will be a local copy of the well-known Cam. 113 type butt beaker. Whilst a dark surface to the vessel follows the local tradition of firing at this time it could be that, given the red fabric, the finishing mimics the 'fuming' seen on Terra Rubra 3 type beakers, including butt beakers (Hawkes and Hull 1947, 238). This vessel most likely dates AD 35-70.

A.1978.375 (FIGURE 7b) is a dark grey ware vessel with a shouldered body and upright neck (an 's' profile jar), with a single cordon at the base of the neck. The jar is 8.8 cm tall, with a rim diameter of 7 cm and a base diameter of 4.2 cm. The vessel finds a parallel with Thompson's type B1-3, with a date range of c. 20 BC - AD 100 (Thompson 1982, 101-3 no.6).

David Kelly of Maidstone Museum had thought both of these vessels were 'Belgic' as would have been the conventional parlance at the time he as writing (Kelly 1978, 267; NMS). Use of that term would not necessarily have implied they were imports; indeed, it is likely these were made in Kent.

The third vessel (not photographed and so not subject to a reassessment as with the other three vessels) is in private hands. This is a globular beaker with a bead rim and a groove above the body. The beaker is of oxidised ware, 12.2 cm tall with a 10.9 cm rim (Kelly 1978, 267; Ellis-Haken pers. comm.). The description as a globular beaker makes it unlikely this vessel dates to before the first century AD, and a globular beaker type would fit well with the dating of the two vessels listed above. All three vessels find parallels in Late Iron Age to early Roman burials in south-east Britain, at Welwyn (Herts.) and Kelvedon (Essex) (Ellis-Haken pers. comm; Stead 1967; Sealey 2007).

Completing the available archive of donated vessels is the pottery item recorded as A.1978.374 (FIGURE 7c). This is a flanged bowl in Black Burnished ware type 2 fabric, dating AD 270-370, based on Lyne's type 6.8 (Lyne 2022, 12-3, fig. 6; although Lyne's dating relates to Black Burnished ware type 1 fabric this date would still be applicable to this vessel). The bowl is 7.1 cm tall, with a rim diameter of 15.9 cm and a base diameter of 10 cm (NMS). The central hole in the floor of the vessel is consistent with the action of 'killing' the pot before deposition as a grave good (cf. Carter 2022). Judging from the condition of the inner surface this item appears to have been used prior to deposition. Accordingly, this might be an 'heirloom' vessel (Carter 2022). While its treatment is in harmony with that of some vessels accompanying burials in southern Britain in the Late Iron Age and Roman eras its date is much later than that of the other donated vessels listed here. If this bowl is from

Highsted, it is possible that the Late Roman cemetery excavated in 1934 overlaps spatially with that excavated in 1955 (noting Jessup's finds reported above) and may, therefore, represent the growth of a single cemetery over time. The presence of a lead coffin in one of the photos (FIGURE 5) supports this, but there is no mention of Late Romano-British pottery or other material culture in any of the reports or newspaper articles relating to the 1955 site.

(FIGURE 8).

Amongst the available photographs showing the excavations there are several pottery vessels visible. These appear in the photos reproduced as Figures 3, 4a-4c and 8 and of these some typological details and dates can be suggested with varying degrees of confidence. None of the four vessels catalogued above are present in the site photographs, although A.1978.375 (FIGURE 7b) is a similar form to two vessels recorded in Fig. 8.

Figure 3 shows what appears to be a jar placed to the right of the skull. Both the angle and focus of the photograph make it difficult to discern whether this is a small jar or a butt beaker though this is likely to have an everted rim jar. Given this uncertainty no date is suggested other than if it is a butt beaker this would be consistent with a Late Iron Age/early Roman date. Placed on top of this vessel, at the right shoulder of the inhumation, is a second vessel which appears very likely to be a platter or possibly a large dish, with much of the rim circumference visible. Again, the angle of the photograph, together with the fact that the interior of the vessel is obscured, makes it difficult to say with any certainty what parallels for the form there may be. If it is a platter this is likely to be a Terra Nigra import perhaps Cam. 12 or 13, or a copy of such in a local grogged fabric. With either type this would date to AD 25/30-65.

With Figures 4a, 4b and 4c, the vessel placed to the right of the skull appears to be a narrow-necked jar like a flask or bottle with a cordon defining the junction of the neck and the start of the body. This is a very globular vessel, the visible upper section of which is not unlike that of a pedestal urn, though none of the photos shed light on the presence or absence of a pedestal as the wall of the grave cut obscures the lower part of the vessel in the photographs (cf. Thompson 1982, A1 no.44 dated 20 BC-AD 65; or cf. Thompson B1-6 no. 7 dated AD 5–50; or Thompson B3-9 no.4. AD 70-100; or Thompson C6-2 no.3 AD 43-65).

Three ceramic vessels are visible in Figure 8, two seemingly complete vessels, and one damaged vessel largely obscured by unremoved soil. It is unclear whether this in situ group relates to a cremation burial, or whether they were associated with an inhumation. Whilst one vessel is seemingly a close match to A.1978.375 the considered conclusion is that these are separate vessels of similar form. The vessel at top left is another cordoned jar with everted rim (cf. Thompson B1-3 no.6 20 BC-AD 100). To the right another similar vessel occurs being a cordoned jar (cf. Thompson B1-3 no.6 20 BC-AD 100). Similar vessels to these are illustrated in the report on the Late Iron Age cemetery at

Swarling, Kent (Bushe-Fox 1925, pl. VIII nos 12-18). The latter jar partly overlies the obscured vessel, which, from the exposed rim, is evidently a copy of a Terra Nigra platter or dish, given its seemingly chunky wall (cf. Cam. 26-30, c. AD 25-75).

RE-EXAMINATION OF THE HUMAN REMAINS

A programme of multi-method analysis of the Highsted human remains, comprising AMS dating, and osteoarchaeological, aDNA, and isotope analysis, provides an unparalleled opportunity to tell the story of this site, and those buried there, for the first time in 70 years.

AMS DATING

TABLE 2 - AMS DATES

Two samples chosen for aDNA analysis were also subject to radiocarbon dating (TABLE 2). The radiocarbon ages have been calibrated using the IntCal20 calibration curve of Reimer et al. (2020) and OxCal v4.4 (Bronk Ramsey 2009). The first (PSUAMS-7826) spans the Late Iron Age to Roman transition, which is consistent with the descriptions of the finds from the site (a La Tène III brooch and three 1st century BC vessels). The second date (PSUAMS-7859), however, reveals that the cemetery continued in use after the Roman conquest of AD 43, potentially into the 2nd century.

OSTEOLOGY

Osteoarchaeological analysis of the surviving Highsted assemblage is hampered by the commingled nature of the remains, resulting from their problematic history of storage and multiple relocations (see above). A full description of the methods is presented in the Supplementary Material, with a summary of the results provided here.

The assemblage was highly fragmentary, with extensive root etching/surface erosion (Brickley and McKinley 2004 grades 3–5+). Soil matrix still adhered to the majority of bones, which supports the story that the bones were bagged but never analysed, rather than Dr. Birch's suggestion (above) that a report was written and subsequently lost. The fragmentation, surface erosion, and soil matrix, coupled with the degree of commingling, meant that any estimations of skeletal sex were extremely limited, since this usually draws upon the assessment of several elements of the same skeleton.

The minimum number of individuals (MNI) for this assemblage is calculated as 16, based on the left femur. Skulls were poorly represented, with only eight crania and eight mandibles recorded. Assuming that 20 individuals were originally excavated, the surviving assemblage represents 0.3-77.5% of the original skeletal elements. The most poorly represented are small bones like the carpals (0.3%), foot phalanges (0.5%) and metatarsals (10%), which are more likely to have been overlooked during excavation. The vertebrae are also poorly represented (19%), but preservation will certainly be a factor

here. All long bones were over 50% present, except for fibulae (13%). Based on pelvic bones, there are at least six males, one probable male, one female and two probable females present, but in almost every case this is based solely on the sciatic notch.

Where epiphyseal ends were preserved, almost all bones were fused, except for one left ilium fragment with acetabulum and ischium/pubis completely unfused, a left humerus showing unfused (and missing) distal epiphysis, and a proximal right femur showing unfused head and greater trochanter. All are indicative of juvenile(s). Taking the presence of juvenile individuals into account, the MNI increases to 17.

Very few teeth survived to aid in estimating adult age, but where mandibles were present, there was a remarkably high level of antemortem loss of the molar teeth. This may indicate advanced age, but could also be the result of trauma, pathology, or tooth loss due to habitual wear or use of the teeth as a 'third hand' for activities like rope-making.

Evidence of pathology was limited, again due in part to the commingling and variable preservation of the bones. Dental pathology consisted of calculus (plaque), present on almost all the surviving teeth, as well as three carious lesions (cavities) and one abscess. Mandibular bone resorption was also noted in several cases, owing to the high degree of antemortem tooth loss in every surviving mandible. Bony outgrowths were present on vertebrae, as well as on one ulna, one patella, six ribs, an acetabulum and one femur head. A second cervical vertebra showed ossification of the odontoid ligament. One vertebra showed a hyperostotic bone outgrowth emerging from its centre, which could suggest early stages of diffuse idiopathic skeletal hyperostosis development (DISH; Castells Navarro and Buckberry 2020). One individual had a slipped femoral epiphysis, which most commonly occurs in individuals aged 9–16 years and which affects males more often than females (Ortner and Putschar 1985, 239; Buikstra 2019, 496).

The cranium held in Milton Regis Court Hall Museum showed a single sub-circular depressed area at the ectocranial surface of the squama of the occipital bone (FIGURE 9a-b). The margins of the lesion have suffered severe post-mortem damage but, at the endocranial surface, there are two adhering flakes of bone *c.* 1.5 cm in diameter. Additionally, there is a probable radiating fracture running vertically from the inferior margin of the depressed area to the damaged edge of the occipital bone. Despite the damage observed at the ectocranial surface, the presence of adhered flakes and the potential radiating fracture suggests this lesion may represent a peri-mortem blunt force trauma.

FIGURE 9a-b - CRANIUM SHOWING BLUNT FORCE TRAUMA

MULTI-ISOTOPE ANALYSIS

Multi-isotope analysis was conducted on a subsample of the remains to gain further insights into the lifeways of the people buried at Highsted. Diet was investigated for nine elements using carbon ($\delta^{13}C$) and nitrogen ($\delta^{15}N$) isotopes, and geographic origins were considered for five elements using strontium ($^{87}Sr/^{86}Sr$) and oxygen ($\delta^{18}O$) isotopes. While it is beyond the scope of this paper to detail the numerous drivers of isotope variation, a brief overview is provided in the Supplementary Material, alongside the methodology.

Interpretation of the isotope data is complicated by the commingled nature of the assemblage. Due to post-excavation mixing, it is impossible to match dentition and postcranial elements to a single individual with confidence. Results are therefore presented and discussed per sampled element, rather than as representative of particular individuals.

Carbon and nitrogen isotope results are presented in TABLE 3 and FIGURE 10. The absence of faunal remains complicates the interpretation of the dietary proxies, as these are typically analysed for $\delta^{13}C$ and $\delta^{15}N$ to develop an environmental baseline, which was not possible for Highsted. However, consideration of the relative values among the samples, together with comparisons to previously published data, can guide interpretation of the results.

TABLE 3 - C&N VALUES

The $\delta^{13}C$ value range is very narrow, from -19.9‰ to -19.3‰. Such close values most likely indicate dietary homogeneity among the population, with all individuals eating foods from isotopically similar landscapes, at least for the last few years of their lives. The $\delta^{15}N$ values, though exhibiting a greater range from 8.4‰ to 10.5‰, are similarly restricted. For both carbon and nitrogen isotope results, the overall sample range is less than the expected amount of a trophic shift, demonstrating that, while there may be some variation in the proportions of animal protein in the diet or the amount of physiological stress the individuals experienced (causing more varied dietary isotope values to be averaged into similar collagen isotope values), their diets were likely drawn from the same resource base.

FIGURE 10 - C&N

When compared with other Iron Age and Roman sites across Britain (FIGURE 11, SUPP. TABLE 3), Highsted has mean values which fall between the two periods, with Roman sites exhibiting higher carbon isotope values than Iron Age sites. Although variations in environmental baselines and analytical equipment can create variations in measured isotope proxies despite similarities in diet, this pattern is well established, with Roman sites seeing an increase in marine exploitation (Redfern et al. 2010; 2012; Müldner 2013), imported foods, and new food distribution systems (van der Veen 2008; Lodwick 2022). Other sites have demonstrated an increase in nitrogen isotope values likely as a result of increased physiological stress under Roman rule (Redfern et al. 2019). The enrichment of both $\delta^{13}C$ and $\delta^{15}N$ from the Iron Age to the Roman period is evidenced for all regions for which analyses from both

periods have been undertaken (Dorset, Hampshire, and Oxfordshire, though the shift in Dorset is negligible for nitrogen) (FIGURE 11).

FIGURE 11 - SITE COMPARISONS

The new dating evidence (above) reveals that the cemetery at Highsted was in use during the Roman period for longer than previously thought, with one of the individuals (K2114/i) likely dating to the 2nd century AD. The similarities of the site mean to Roman sites in Dorset and Hampshire could reflect this later chronology. However, the artefactual material and the earlier AMS date from another individual (K2114/H) at Highsted could suggest that the community adopted Roman foodways rather earlier. Regardless of chronology, all analysed individuals from Highsted have carbon isotope values greater than -20.0‰, which is typically understood as the upper limit for a terrestrial diet (Richards et al. 2006; Richards 2019). This suggests that the community practiced some form of small-scale marine resource exploitation, although the incorporation of imported foods with higher carbon isotope baselines could also contribute to these values.

Strontium and oxygen isotope results are presented in TABLE 4 and FIGURE 12. Geology in the immediate vicinity of the site includes the Thanet Formation, Seaford Chalk, and London Clay Formation. While obtaining environmental samples from the site was not possible within the scope of this project, samples collected by the British Geological Survey for these formations have documented $^{87}Sr/^{86}Sr$ ranges of 0.7084–0.7104, 0.7077–0.7083, and 0.7081–0.7102 respectively (Evans et al. 2018a; 2018b). This results in an expected 'local' range of 0.7077–0.7104, although investigations of nearby Cliffs End Farm set the local range at 0.7074–0.7119 to incorporate potential clay and clay-with-flints outcrops in the vicinity (Millard 2014).

TABLE 4 AND FIGURE 12 - Sr&O

Due to uncertainties in using modern samples, the influence of food preparation methods, and climatic fluctuations, predicting oxygen isotope ratios for an archaeological population is challenging (Daux et al. 2005; 2008; Brettell et al. 2012; Lightfoot and O'Connell 2016). Mapping by Evans et al. (2012; 2018a; 2018b) suggests that the $\delta^{18}O_P$ range for the island of Britain is 16.6–18.7‰, with Highsted having an expected local range of 16.6–17.9‰. However, this predicted 'local' range is not inclusive of the values produced by the Highsted remains. The study of Cliffs End Farm presented a similar mis-match, with three sheep samples having $\delta^{18}O_P$ values ranging from 18.5–19.2‰. Millard (2014) therefore used a broader 'local' range of 17.0–19.0‰ based on the faunal values and the clustering of the wider human dataset.

Among the analysed samples from Highsted, all individuals fall within the more conservative ranges established by Millard (2014), and are therefore likely to have originated from what is now Kent. The presence of entirely local individuals in this cemetery is a departure from the results at Cliffs End Farm

(Thanet), which suggested a high degree of mobility among the Late Bronze Age, Early Iron Age, and Middle Iron Age populations, with individuals potentially originating in Scandinavia and southern Europe (Millard 2014, 143). In contrast, at Highsted, all individuals have $\delta^{18}O_P$ values within 1‰ of one another, which is consistent with a population utilising the same water source (Longinelli 1984).

Although the $^{87}Sr/^{86}Sr$ ratios from Highsted are consistent with the range established by Millard (2014), one individual has a value which exceeded the comparative samples collected by BGS (Evans et al. 2018a; 2018b). K2114/G has a strontium isotope ratio of 0.7108, which is greater than the observed values on the Thanet Formation, but it is consistent with the nearby Weald Clay Formation to the south (0.7077–0.7110), and Budd (in Millard 2014) has suggested that the London Clay Formation could have an upper limit of 0.7115. Therefore, this individual from Highsted may have grown up in a neighbouring community. Although equifinality remains a challenge in isotope studies (Madgwick et al. 2021), and there are other places in Britain where these values can be obtained, the provenancing proxies nevertheless suggest that the majority of the population buried at Highsted were local. Given the dating evidence, the fact that all isotope values for the sampled individuals are consistent with the region suggests that any incorporation of Roman foodways (as suggested by the dietary proxies) does not indicate the presence of Roman migrants, but was potentially established by the existing Late Iron Age population.

DNA ANALYSIS

Ancient DNA was successfully analysed from six Highsted individuals, comprising four females and two males (TABLE 5; full details in the Supplementary Material and Appendix). Both males carried the Y chromosome (paternal) haplogroup R1b which is dominant in British Iron Age populations, having been introduced through population movement into Britain from continental Europe during the late third millennium BC (Haak et al. 2015; Patterson et al. 2022). Mitochondrial haplogroups were diverse, as is again common in prehistoric populations from Britain (Cassidy et al. 2025, Fig.1).

Five samples (i.e. excluding I19566) had sufficient data quality to undertake more detailed analysis. Comparison with other Iron Age individuals from north-west Europe shows that the Highsted group lie within the expected range for southern Britain, although several have some genetic affinity with individuals from France/Switzerland (FIGURE 13). One individual (I18600), by contrast, displays more affinity with Iron Age individuals from Scotland. Nonetheless, based on the qpWave analysis, the Highsted individuals form a genetically homogenous group with no obvious outliers (Supplementary Material; Appendix).

IBD (Identity by Descent) analysis revealed that one male (I18600) and one female (I20370) were biologically related at the 3rd degree or higher. This same female also had distant biological relationships

with two females (I36960 and I41276) at the broadly contemporary cemetery of Tothill Street, some 40 km east of Highsted (see Supplementary Table). Additional distant biological relationships were also identified between some of the Highsted group and Iron Age individuals from Yorkshire and Gloucestershire. Despite genetic affinities of some individuals with continental Europe and Scotland, no IBD links were observed with any individuals outside England.

TABLE 5 - DNA DATA

FIGURE 13 - PCA CHART

DISCUSSION

The cemetery at Highsted, though originally reported as Roman, has always been considered to date to the Late Iron Age (Whimster 1981). Ceramically, all bar one of the surviving attributed vessels, together with the evidence from the site photos with pottery items visible, indicate a Late Iron Age to early Roman date, to this part of the cemetery at least, spanning the middle decades of the first century AD. With all of these items likely to have been produced in Kent (the only possible exception is the open form in Figure 3 if that is indeed a Terra Nigra platter). The new AMS dates, however, suggest that the cemetery continued in use well after the Roman Conquest of AD 43, potentially into the 2nd century. Furthermore, the lead coffin and Late Roman flanged bowl purported to have come from the same 1955 excavations suggest that the Late Romano-British cemetery excavated in 1934 either forms a spatial and temporal continuation of that excavated in 1955, or that the area of the 1955 excavations was re-used sometime after AD 300, implying knowledge of the earlier cemetery for at least two centuries.

Although the published information is fragmentary and largely second hand, it allows us to confirm that a dedicated inhumation cemetery of earth-cut graves was present at Highsted. A ditch at the edge of the site, which contained pottery and animal bone may represent the cemetery boundary, filled with funerary feasting waste. The photographed skeletons were in extended supine positions, and apparently aligned north–south, though with at least one perpendicular to the others (Fig. 4b). The graves were in ordered rows, but a degree of intercutting was present, and it is unclear as to whether they were laid out in relation to other features. A change in orientation (to east-west?) and intercutting graves is suggestive of continuation or re-use of the site over an extended period.

Twenty inhumations were reported to have been excavated, as well as six others which may have been cremations. However, the skeleton surrounded by burnt wood, and Feakes' (2001) claim that the 'cremations' were in fact 'burnt skeletons', opens the possibility that these may be *'bustum'*-style burials, wherein the dead were cremated on a pyre built above an open pit/grave, into which they fell as the pyre burned (Biddulph 2006, vi). *Busta* are rare in Britain, and are thought to originate around the Rhine and Danube areas of continental Europe (ibid.); however, possible examples have been identified in 1st century AD pre-Conquest cemeteries at Suddern Farm, Hampshire (Cunliffe and Poole

2000) and Latton Lands, Wiltshire (Powell et al. 2009). There are also several post-Conquest examples at Pepper Hill and East Hill, Kent (Biddulph 2006; Black 1986, 143), around 30–40 km west of Highsted.

Evidence for wealth, status, and social stratification is limited at Highsted; the condition of the skeletal remains hampers meaningful discussion of population health, but there was a very high prevalence of antemortem tooth loss, as well as degenerative disk and joint disease. Osteologically, at least 17 people are represented, though incomplete. At least seven have been identified as osteologically male, and three female; although these estimations are based on single criteria in many cases. Genetically more females (4) than males (2) were represented in the sample subject to aDNA analysis. There were no immediate genetic relationships between the six sampled individuals, but one male and one female were biologically related at the 3rd degree or higher; they may have been first cousins, great-grandparent/child, half-siblings, or were potentially more distantly related. More distant biological relationships were identified between Highsted and Tothill Street, also in Kent, as well as sites in Yorkshire and Gloucestershire. While, genetically, the Highsted individuals are consistent with the expected range for southern Britain, it is notable that at least one had genetic affinity to France/Switzerland, and one to Scotland. Despite the availability of genetic data from nearby Mill Hill, Thanet Earth (below), and Cliffs End Farm, no IBD connections between those sites and Highsted were identified. Overall this is in keeping with a local resident group, perhaps with wider ancestral links, but present in the area for some time, and with a large enough total population that the sampled cemetery group contained no 1st or 2nd degree relationships.

Isotope analysis revealed a diet largely based on terrestrial resources, with small-scale marine exploitation. The limited range among all isotope proxies suggests that these individuals were part of the same community, and, despite the possibility that one individual may have originated from a little further south, the majority produced results which were consistent with the expected range for Kent. These results contrast with those of nearby Cliffs End Farm, dating from the Late Bronze Age to the Middle Iron Age (Millard 2014), as well as hillfort sites such as Maiden Castle (Redfern et al. 2021), Danebury (Stevens et al. 2010) and Ham Hill (Madgwick 2015), and investigations of urban and military Roman sites, (e.g. Eckardt et al. 2009; Chenery et al. 2010, Richards et al. 1998; Quinn 2017, Redfern et al. 2016; Shaw et al. 2016) where the identification of non-local individuals is common. This is not true at all large sites, however, with recent isotope analyses from the large Iron Age cremation cemetery at Westhampnett (West Sussex) revealing homogeneity across the sample (Bleasdale et al. 2025), also suggesting a local population. The analysis of Highsted highlights the variability present across the Iron Age to Roman transition and adds to the growing corpus of studies conducted on small, rural cemetery sites (Chenery et al. 2011; Cheung et al. 2012).

The burials themselves conform to Middle/Late Iron Age to Early Romano-British 'Deal-rite' burials found in Kent, most notably at the eponymous cemetery of Mill Hill, Deal (Parfitt 1995), around 40 km east of Highsted. With 26 burials, Highsted is the third largest 'Deal' cemetery, after Mill Hill itself, and Thanet Earth (Holman et al. 2023). Extended inhumations in earth-cut graves, oriented primarily north–south or southwest–northeast, form the majority rite at Mill Hill, which comprises mainly adults, with some non-adults, but a near absence of very young individuals (Lamb 2018, 197). As with Highsted, however, preservation at Mill Hill was poor, and there were several small, empty graves that may have represented those of children (Parfitt 1995, 165–6). Also like Highsted, Mill Hill sees continued activity from the 1st century BC into the early Roman period, and pottery vessels accompany some individuals as grave goods (Lamb 2018, 253). These 'Kentish' inhumation burials have continental parallels, in La Tène cemetery traditions across Picardy and the Champagne-Ardenne region (Lamb 2018, 210), but while there is some evidence for genetic affinities with France/Switzerland among the Highsted population, they are more consistent with Iron Age British ancestry, supported by isotope values that indicate a local population

Two weapon burials from Brisley Farm, Kent (Stevenson 2013) were contained within enclosures, as were two individuals from Mill Hill (114 and 123; Parfitt 1991) and a double inhumation from Thanet Earth (G8172; Henshaw et al. 2019). These may well represent parallels to the possible square barrow burial from Highsted, although the 'rich' warrior burial accompaniments at both Brisley Farm and Mill Hill are not represented here.

The presence or otherwise of the alleged cart, or chariot, burial found at Highsted in 1920 will likely never be known, but it too has regional and continental parallels. The Folly Lane 'chieftain' (Hertfordshire, *c.* AD 55) was buried with chariot fittings and weapons (Niblett 1999), and a hoard from Bigberry hillfort, outside Canterbury, that included tyres, snaffle-bits, linch-pins and other horse equipment, has been alternatively interpreted as a disturbed burial (Sparey-Green 2021, 48). Across the channel, an inhumation from Orval, Normandy contained weapons and a complete vehicle (1st century BC; Lepaumier et al. 2010; Lamb 2018, 375). A similarly late chariot burial was also recently discovered in Wales, but none have yet been positively identified in Kent (Legge 2022) and, while others are known from Yorkshire and Scotland, they are all considerably earlier. If the 'cart' and 'soldier' from Highsted did indeed represent a Late Iron Age chariot burial, it would imply a high-status element to the cemetery, as is the case at Mill Hill and Brisley Farm. Such a burial, potentially within a mound, may well have become a focus for the late Roman cemetery, as was noted at Rhodaus Town, Canterbury, 25 km east of Highsted (Helm 2022).

CONCLUSION

By investigating the excavation history of the Highsted cemetery, and re-examining the human remains, a more complete picture of the site, its discovery, and its buried population has been revealed. Long thought lost, the human remains have been demonstrated to span the Roman Conquest, and were buried in accordance with regional inhumation traditions found elsewhere in Kent. Men, women and children were present, some with grave goods, and one potentially contained within a square barrow. The group was local, but with few direct biological links between them, suggesting that the Highsted individuals may have been selected from a much larger population. More distant connections were identified with other sites in Kent, but also as far as Yorkshire. The cemetery appears to have continued, without interruption, into the post-Conquest period, and possibly into the 4th century AD. Perhaps the greatest impact of this research is in highlighting the importance of revisiting archives and re-analysing overlooked or 'forgotten' assemblages. Great value can be gained by drawing together fragmented and disparate sources of evidence, and reinforcing them with the latest scientific techniques. Even with the limitations present here, of commingled human remains and an absent physical archive, it has been possible to gain an insight into the lives and deaths of this population, and show what could be possible with similar assemblages. When debates surrounding reburial of archaeological dead are ever present (see, for example HAD 2006; Fletcher et al. 2014; Kendall Adams 2025), research like this provides a new opportunity to humanise those in museum collections.

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FIGURE AND TABLE CAPTIONS

Figure 1 - The location of Highsted quarry, as well as nearby sites mentioned in the text (drawn by Helen Goodchild). Contains OS Data (c) Crown Copyright and database right 2025. Contains data from OS Zoomstack).

Table 1 – The finds as reported in each original source.

Figure 2 – (photo 25A/B3/2) showing the cemetery, with one grave being planned, and many others clearly visible, in rows, on the same orientation. An ‘N’ drawn on the top of the photo may imply that it is taken looking north, in which case the graves would largely be N-S aligned. At least two skeletons are visible in this photo, both in extended supine positions. If the undulations in this photo are all graves, then the reported total of 20 inhumations and six cremations seems appropriate. © Maidstone Museums

Figure 3 – (photo 240/01/1) shows the extended supine inhumation of an adult, in a rectangular grave. Their arms are by their sides, and to the right of the head and over the right shoulder are two vessels, one of which appears truncated. The reverse of the photograph reads "Highsted Chalk Quarry Sittingbourne Aug 1955 20 skeletons & 6 cremations and Belgae pottery & 1 La Tene brooch", along with fainter text that appears to read "this skull smashed by machine in clearing 18" soil from chalk". © Maidstone Museums

Figure 4 A-C – all document the excavation of the same grave. FIG.A (photo 25A/A4) and B (photo 25A/A3/2) show Mr Berry excavating the skeleton, while the quarry works continue in the background. B also shows the leg bones of another skeleton on a different orientation, and what may be several other grave cuts. A note on the reverse reads "heap of small bones + 2 leg bones on left and a pelvis in the mouth of skeleton. Legs cut off on pit edge. Burnt soil under + over skeleton but none near heap of bones. + grey ware pot". This note suggests that the skeleton photographed is the one mentioned in the East Kent Gazette (1955a, 1) as lying in blackened earth. C shows the skeleton once cleaned; an adult-sized inhumation, with arms by the sides. The quarry edge has truncated the lower legs, leaving the proximal half of the right femur, and a near complete left. There is a single small vessel to the right of the head. The disturbed remains of at least one other individual are also visible in the photograph, with a pelvis fragment near the head of the principal burial, as well as two long bones on the edge of the grave, and a pile of what appear to be phalanges or metapodials. © Maidstone Museums

Figure 5 – A lead coffin, and what appears to be a cranial fragment and long bones. This coffin is not mentioned in any archival sources, although one was found in the adjacent Romano-British cemetery in 1934 (Jessup 1935, 210). If this photo was taken by Page, it seems more likely that it was taken at the 1955 excavations, rather than those 20 years prior; in any case, this coffin does not resemble that photographed in 1934 (ibid., fig.2) © Maidstone Museums.

Figure 6 – The possible square-ditched barrow burial, published by Feakes (2001, 19). Reproduced with kind permission of Feakes.

Figure 7a-c – The three vessels from Highsted now in the National Museums Scotland. Reproduced with kind permission of NMS.

Figure 8 - Several vessels from an unspecified context. © Maidstone Museum.

Table 2 - AMS radiocarbon dates from two of the Highsted bones sampled for aDNA.

Table 3 - Carbon ($\delta^{13}C$) and Nitrogen ($\delta^{15}N$) results for Highsted human bone collagen.

Figure 9a-b - Photos showing the blunt force trauma exhibited on the cranium held at the Milton Regis Court Hall Museum. Fig. 9a shows the ectocranial surface, with the sub-circular depression at the

squama of the occipital bone, and the possible radiating fracture below it. Fig. 9b shows the endocranial surface of this same fragment, note the still adhered bone flakes.

Figure 10 - Carbon ($\delta^{13}C$) and Nitrogen ($\delta^{15}N$) results for Highsted human bone collagen. The sample mean is represented by hollow symbols with error bars representing one standard deviation. Analytical error is represented by error bars of one standard deviation.

Figure 11 - Carbon ($\delta^{13}C$) and Nitrogen ($\delta^{15}N$) results for Highsted samples (hollow circles) compared to amalgamated values from previously published Iron Age and Romano-British sites in Berkshire (Stevens et al., 2012), Dorset (Redfern et al., 2010), Hampshire (Bonsall and Pickard, 2015; Stevens et al., 2010; 2013), Kent (Millard, 2014), Oxfordshire (Lightfoot et al., 2009), and Somerset (Jay, 2008).

Table 4 - Strontium ($^{87}Sr/^{86}Sr$) and Oxygen ($\delta^{18}OPO4$ ‰ (VSMOW)) results for Highsted enamel samples.

Figure 12 - Strontium ($^{87}Sr/^{86}Sr$) and Oxygen ($\delta^{18}OPO4$ ‰ (VSMOW)) results for Highsted enamel samples. The sample mean is represented by hollow symbols with error bars representing one standard deviation. Analytical error is represented by error bars of one standard deviation for $\delta^{18}O$ and two standard deviations for $^{87}Sr/^{86}Sr$, to enable visibility.

Table 5 - Summary of the aDNA results. Although eight samples were initially selected, two pairs of samples were found to derive from the same individuals (I18598 and I20370), despite being stored in different boxes and under different accession numbers. Data quality was generally good, with only one sample (I19566, female, K2114) having low coverage that prevented its use in the more detailed genetic analyses.

Figure 13 - PCA showing the Highsted samples plotted against other ancient individuals.