

The Excavation of the Remains of an Eighteenth Century Tannery on Land at Riverside Place, K-Village, Kendal

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Between March and April 2007, North Pennines Archaeology Ltd. undertook an archaeological excavation at Riverside Place, on the site occupied by K-Village, Kendal (centred on NGR SD 517918). The excavation formed part of a mitigation strategy for a new development of shops, offices and accommodation by Kendal Riverside Ltd. The archaeological work was designed by Scott Wilson Ltd., in response to a brief from Cumbria County Council. The evaluation involved the excavation of 13 trenches across the development site. The majority of the trenches did not reveal any archaeological deposits, but four trenches in a car park on the north side of K-Village contained evidence for former tanning pits. Subsequent excavation was targeted to investigate these remains. Archaeological features were revealed over most of this area, associated with the eighteenth century and later tannery. A significant quantity of medieval and post-medieval pottery was also recovered, which was analysed to attempt to date the excavated features.

THE site of the proposed development occupied a strip of land to the south of Kendal town centre, on the east side of the River Kent, bounded by Lound Road (Figure 1). A previous desk-based assessment and evaluation had indicated that this area had been occupied by a tannery in the eighteenth century, followed by the development and expansion of the K Shoes factory.¹ The tanning of hides was a multi-stage, time-consuming process. Methods established in the medieval period continued largely unaltered into the nineteenth century. Firstly, the hides were thoroughly washed and soaked to remove any traces of blood. The removal of flesh and hair was then undertaken, often by soaking in a lime or ash suspension (liming) or urine.² The use of lime is recognised by the presence of partly-burnt fragments or from concentration of slaked lime, sometimes surviving in the archaeological record as lime carbonate or sulphate.³ The leather was de-limed and softened using a solution of bird droppings, dog faeces or fermented barley/rye or wood ash (mastering). Flesh and hair would then be removed by scraping the skin with a curved blade or two-handed knife, followed by further washing.

Hides were tanned for up to 18 months, in order to preserve them. Traditionally the tanning solution was a mixture of water and oak bark, although bark from other trees, such as pine, spruce and sometimes birch, willow or alder, was also used. A series of pits with solutions of varying strengths was used to tan the hides. The hides would be treated with oils to make them supple and prevent them from drying out too quickly (currying), and then hung on racks in a drying room. Finally the currier would prepare and dye the leather, as required, for use in a wide range of products, including clothing, footwear and saddles.

Cattle or horse hides, and sheep, goat or calf skins were most commonly preserved by tanning. Hides were usually delivered to the tannery with several skeletal elements still attached, as these were of little use to the butcher and were time consuming to remove.

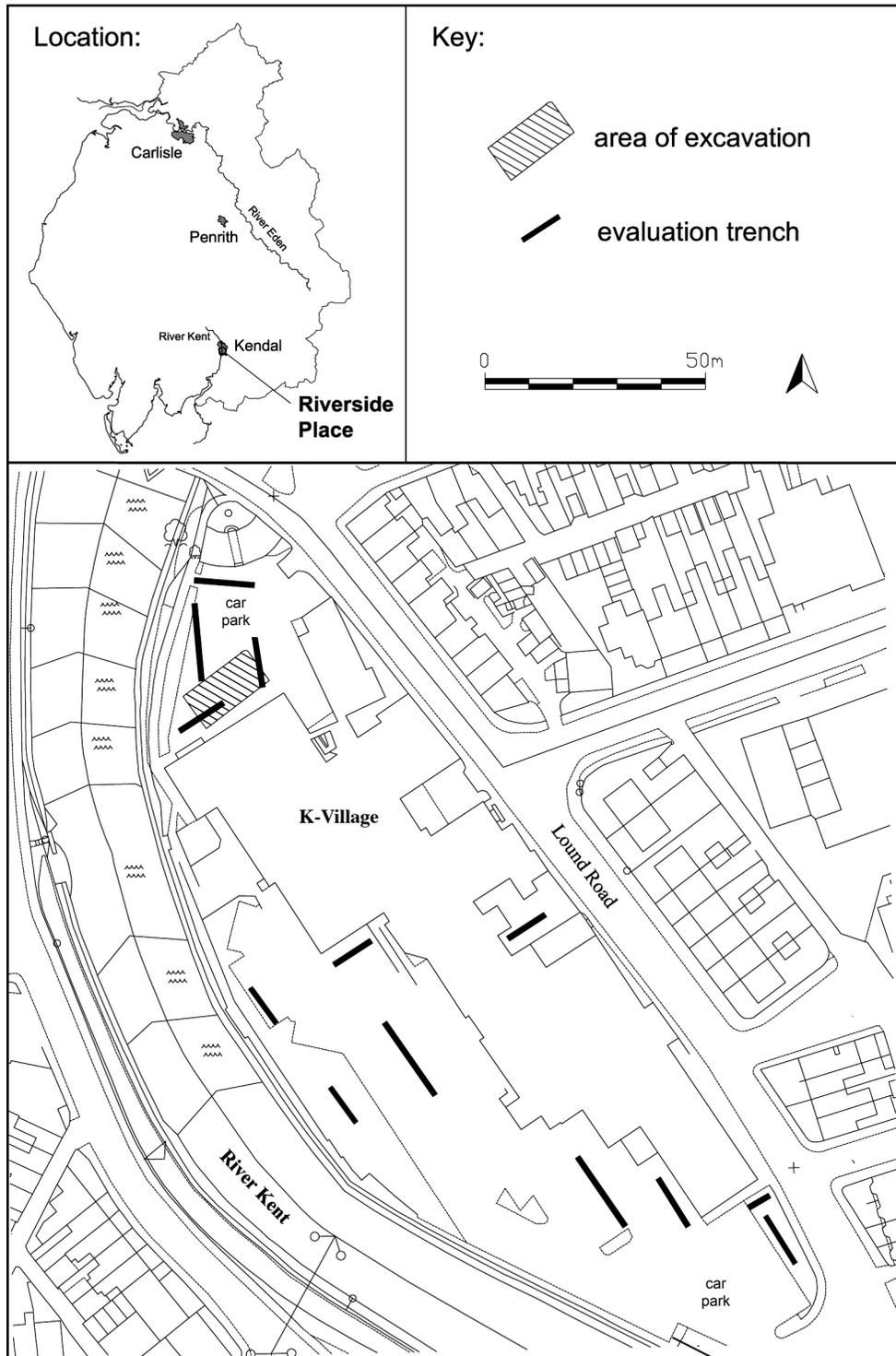


FIG. 1. Location map showing the area of the archaeological excavation and evaluation trenches.

Generally the upper part of the skull with horns (if present) remained attached to the hide, and also elements of the feet and tail to varying degrees. These bones often survive in the archaeological record, and provide an indication of the species being processed, if soil conditions allow.

Tanning pits were either rectangular or round, and were usually lined with clay, stone or timber to make them water-tight (unless ground conditions meant that linings were unnecessary). They were located close to streams or rivers to ensure a plentiful supply of water for processing, and for the removal of effluent. The tanning pits were sometimes contained within an open-sided tan-yard.

A large number of small-scale rural tanneries were established in Cumbria in the eighteenth century, as the demand for leather products increased in this period. Rusland Tannery, near Newby Bridge, is an example where the tannery buildings have survived largely intact.⁴ Archaeological work there has revealed a series of rectangular, slate and timber-lined tanning pits, a drain, well, lime pits, and a cobbled yard surface.⁵ During the nineteenth century a revolving drum system was introduced to speed up the penetration of tanning solutions into the leather, and a process using chromium salts was also introduced. By the early twentieth century the introduction of synthetic methods of tanning, and large-scale industrial processes led to the demise of small-scale tanneries.

Historical background

The K-Village development site was situated on the southern periphery of the medieval town of Kendal. Nether Bridge, immediately to the north of the site, seems to have marked the southern extent of the early settlement, the development area presumably being used as agricultural land. The first cartographic evidence for activity at the site is on John Todd's *Plan of Kendal*, dated 1787 (Fig. 2). This shows five buildings immediately to the south of Nether Bridge, and a series of 12 square pits, indicating the presence of a tannery by this time. Two other tanneries are illustrated in Kirkland on the opposite side of Nether Bridge. In 1829 the site is recorded as being run by Robert Elleray, one of seven tanners then operating in Kendal.⁶ On John Wood's *Plan of Kendal*, dated 1833, the buildings are labelled as a tannery, belonging to one Elleray, presumably the same Robert Elleray.

How long the early tannery remained in operation is uncertain; the tanning pits are not illustrated on later maps, and had certainly gone out of use by 1843. John Bintley's 1843 plan of the Nether Field Manufactory, shows the central part of the K-Village site occupied by weaving shops, a dye house, stove, warehouse, offices and cottages (Fig. 3). Two of the tannery buildings shown on Bintley's plan, on the northern part of the site, are labelled as a weaving shop and stables. The area previously occupied by tanning pits is shown as a garden. The first edition Ordnance Survey map of 1858 shows a similar layout of buildings.

Twenty-three tanneries are believed to have existed in Kendal Township by 1850, and the town had a reputation for the production of good quality sole leather.⁷ However,

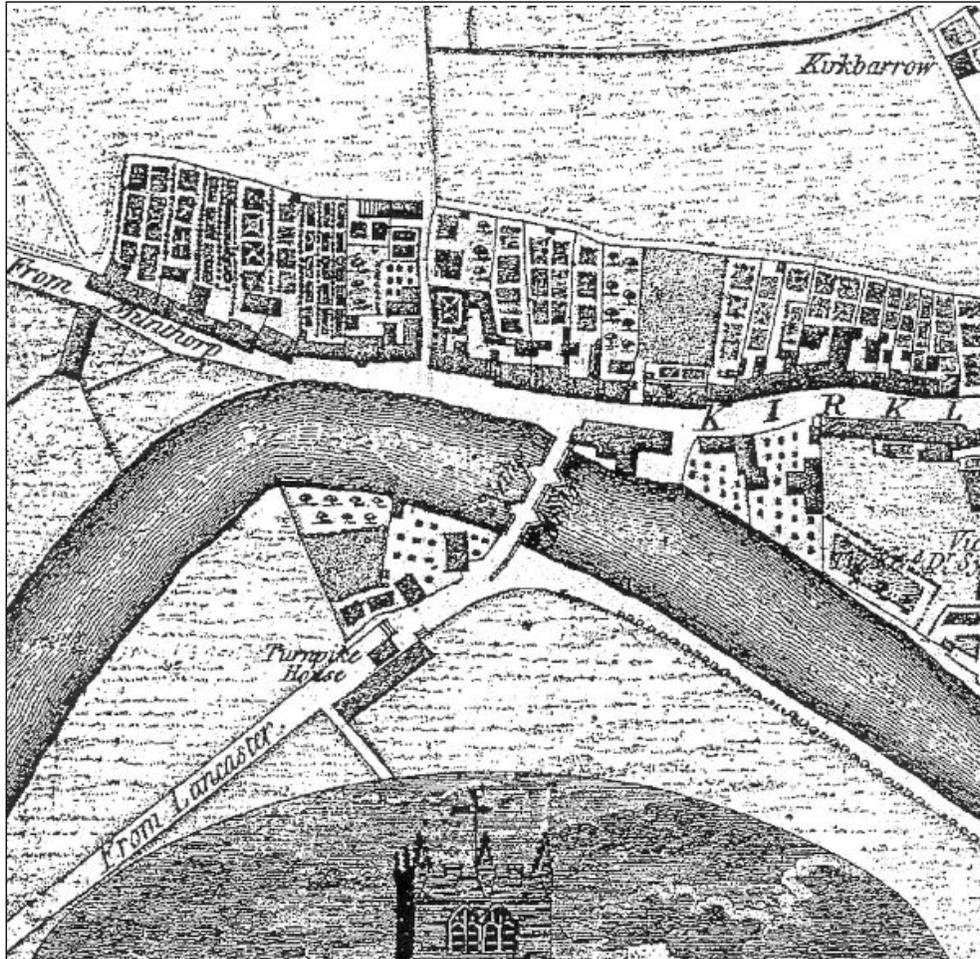


FIG. 2. Extract from John Todd's *Plan of Kendal* (1787), showing the position of the eighteenth-century tannery.

documentary research into the Kirkland tanneries has indicated that by the early nineteenth century the tanning trade in Kendal was already in decline. A report of 1823 states that a number of tanneries were either being decommissioned or were unoccupied. Tenants could not be found for the Kirkland tanneries, leading to their removal, and the creation of extended gardens for the adjacent Vicarage House after 1825.⁸

It was probably at the beginning of 1845 that Robert Miller Somervell, shoemaker, moved to the Nether Field site and established an office in the Bridge End building, situated immediately to the south of Nether Bridge. This building later became the head office of the K Shoes factory. In 1848 Robert entered into partnership with his brother John, and they began the currying of leather in the lower room at Bridge End. The business steadily expanded, and in 1853 the whole of the Netherfield site

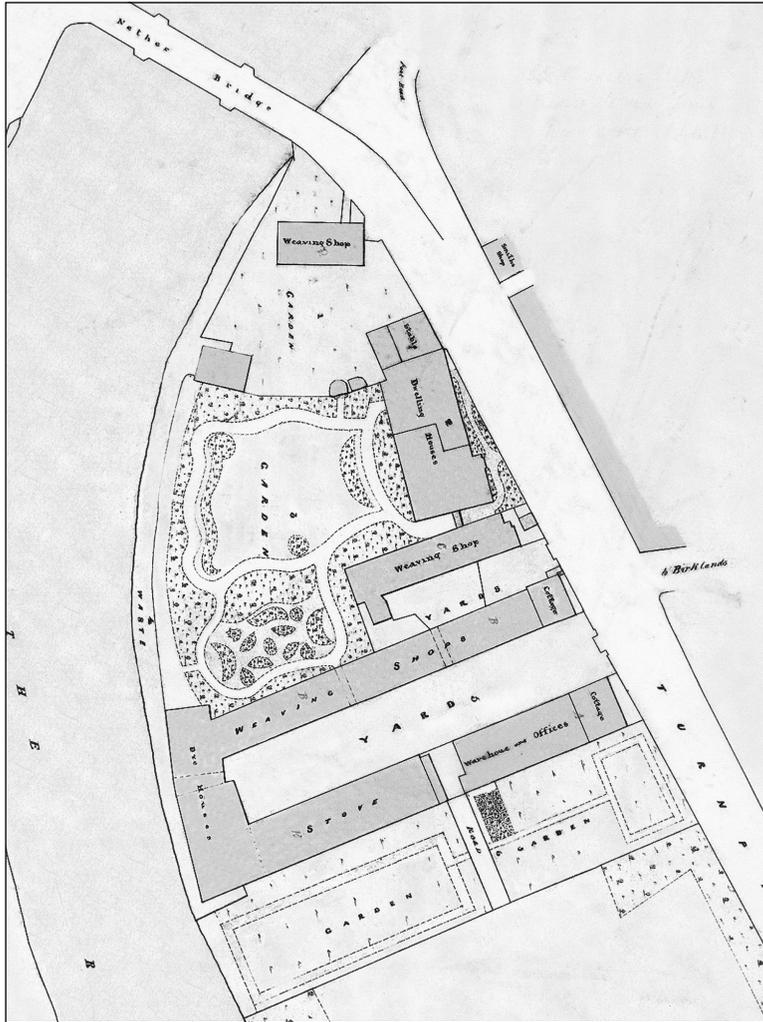


FIG. 3. Extract from John Bintley's 1843 *Plan of Nether Field Manufactory*.
(Courtesy of Jonathon Somervell)

was purchased for the production of shoes and boots. The first sewing machines were imported from America in 1857. The 'K' mark was adopted in 1865, and officially became the trade mark of K Shoes in 1875.⁹

The second edition Ordnance Survey map of 1911 shows the K Shoes factory (labelled as a boot factory), which occupied the central part of the K-Village site. By this time the factory had doubled in size, with the addition of several buildings. The survival of tanning pits at the site was first recorded in the 1930s. In 1932 John Somervell wrote:

Clear evidence of disused tan pits at the lower end of the yard was shown when on one occasion a steam roller was buried, and later when the foundations of the five story building of 1930 were dug.¹⁰

The factory continued to produce shoes throughout the twentieth century, with the addition of other factory sites in the town. The last K Shoes to be made in Kendal came off the production line in 2003.

The excavation

Of the 13 trial trenches excavated during the evaluation, four trenches on the north side of the site revealed archaeological features dating to the medieval and post-medieval periods, including a series of inter-cutting pits associated with the former tannery. A boundary wall was also revealed which was thought to be the southern boundary of the tan-yard depicted on Todd's map of 1787.

The excavation was located in the car park on the north side of K-Village, in the area of a proposed new heritage centre, targeting the pits identified during the evaluation. This area measured 18m by 9m, the maximum depth of the excavation being 1.2m. Archaeological features were identified over most of the excavated area, and could be attributed to three distinct phases:

Phase 1: The earliest features identified at the site were a series of five post-medieval plough furrows (seen in plan and section), which ran parallel with the River Kent on the west side of the excavation. These were probably created in the seventeenth or eighteenth centuries, and were related to the agricultural use of the site prior to the establishment of the tannery shown on Todd's map of 1787.

Phase 2: Five closely-spaced sub-rectangular tanning pits (**TP 1 to 5**) were identified on the western edge of the excavation (Fig. 4). These were between 1m and 1.7m wide and 1.8 to 2.5m long, with straight vertical sides and flat bases, surviving up to 0.6m deep. All were aligned approximately east-west, in a north-south row. The fills of these pits contained large quantities of angular stone rubble and pieces of plaster, slate, and brick, as well as both medieval and post-medieval pottery, clay pipe fragments, glass, and a number of corroded iron objects. None of the tanning pits contained any evidence for linings, nor *in situ* material directly relating to the tanning process. Rather, they appeared to have been well maintained, and the linings removed, before being deliberately back-filled at the end of their use.

Situated *c.*1m to the east of the row of tanning pits, was another sub-rectangular tanning pit (**TP6**), which contained traces of *in situ* clay at the bottom and sides of the pit, measuring 3mm thick. The clay showed clear signs of chemical alteration, due to the presence of tanning chemicals, interpreted as evidence of a former lining, which had been removed before the deliberate backfilling of the pit. This clay was probably considered too valuable to be left in the pits when they went out of use, and was presumably taken out to be reused elsewhere.

Running into the north-west edge of the excavation was another probable tanning pit (**TP7**), which was sub-oval in plan, being 1.2m wide, at least 3.3m long, and 0.3m deep with rounded sides and base (Fig. 4). The pit was filled with deliberate backfill, containing a large amount of angular waste stone, in appearance similar to

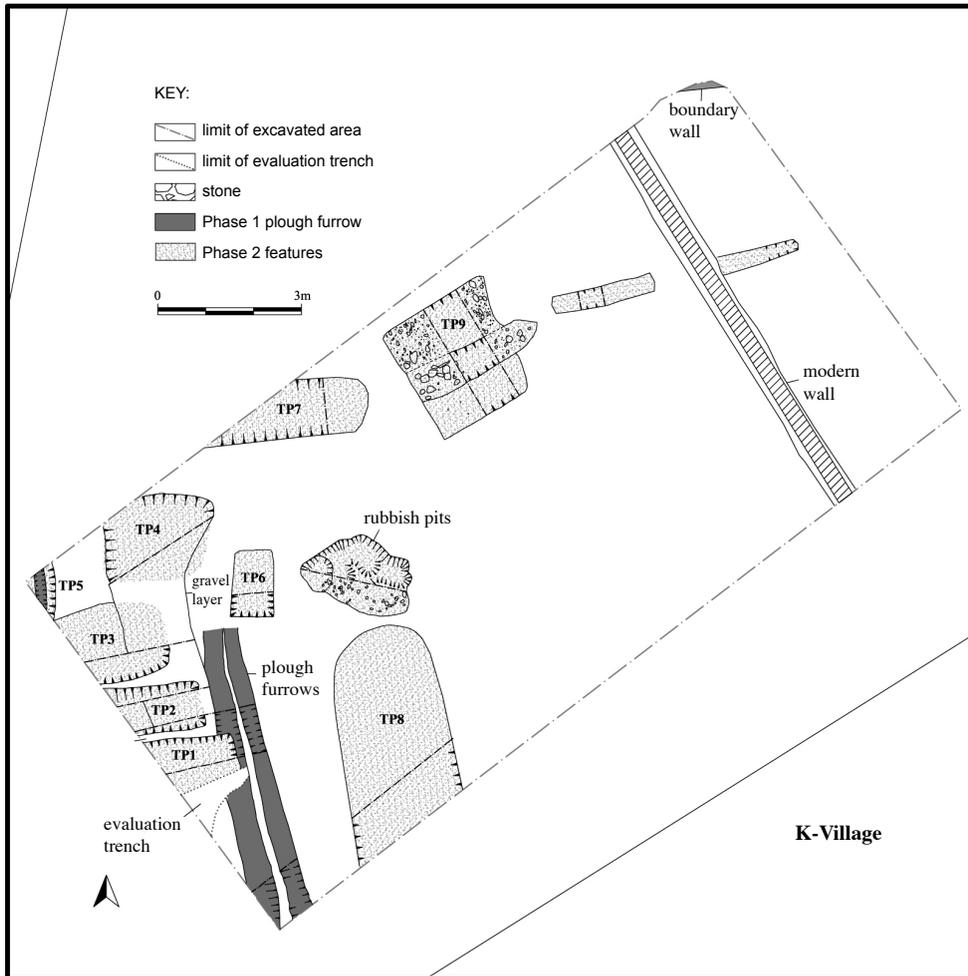


FIG. 4. Plan of the early tanning pits and excavated features at Riverside Place, K-Village, Kendal.

quarry waste. A corroded iron scraper, iron slag, a piece of fire brick, a clay pipe fragment, sheep skull fragments and several sherds of post-medieval pottery were recovered from this deposit. With its curved blade measuring 225mm long, 40mm wide and with a thickness of 3mm, the iron scraper was probably used for removing hair from the hides prior to tanning. Another larger sub-oval tanning pit (**TP8**), was situated *c.*4m to the south, and extended into the south-east edge of the excavation. The pit was 2.4m wide, at least 4.3m long, and 0.3m deep, with a rounded west side, vertical straight east side, and a flat base. A few sheep bones were the only finds to be recovered from the upper fill.

The truncated base of another possible tanning pit was identified on the north side of the excavation (**TP9**). This contained a relatively large number of pieces of post-medieval pottery, a clay pipe stem, and a number of cattle rib bones. Unusually, a human toe was recovered from this deposit.

The differences in the size and shape of these early pits suggest that they were used for a variety of different processes within the tannery, probably including the washing, soaking and tanning of hides. The relatively small size of these pits also suggested that they were used for tanning sheep skins rather than cattle hides. It is uncertain how long these pits remained in operation, but it was evident that the clay linings were removed, and they were deliberately back-filled at the end of their use. It was noted that the sub-rectangular pits (**TP1-6**) were deliberately backfilled with rubbish, whilst the sub-oval pits (**TP7** and **TP8**) contained tannery waste and large amounts of stone, suggesting that these were decommissioned at different times, and may have served different functions within the tannery.

All these pits could be broadly dated to the late eighteenth or early nineteenth centuries, and probably related to the tannery shown on Todd's map of 1787. Associated with these were two inter-cutting rubbish pits, containing deliberate mixed backfill deposits with yellow and grey clay within the fills. Several sherds of medieval and post-medieval pottery, and clay pipe fragments were recovered from these. Several linear features of unknown purpose were also identified.

In the early nineteenth century, the initial row of tanning pits was sealed beneath a deposit of dark brown sandy silt, and a layer of redeposited gravel. Surprisingly, fragments of cattle and sheep bone, and two human toe bones were retrieved from the gravel layer. It is possible that the tannery went out of use at this time, as a layer of garden soil and a cobbled surface or path, were laid down at the western end of the site. Two sherds of post-medieval pottery, and a nineteenth century lead musket ball were recovered from this cobble layer. These features may relate to the use of the site as a garden, as shown on Bintley's 1843 *Plan*. (Fig. 3)

Phase 3: During the early nineteenth century the Phase 2 features were sealed beneath a layer of made ground. This layer contained medieval and post-medieval pottery, fired clay, clay pipe and brick, as well as fragments of corroded iron and slag. A number of cattle bones were recovered from this made ground deposit, including several vertebra. Three large rectangular tanning pits (**TP10-12**) were identified, cutting this layer, within the area of the excavation (Fig. 5).

The first (**TP10**) was situated at the centre of the excavation, being 2.25m wide, 4.30m long and 0.2m deep, and had clearly been heavily truncated. The pit was filled by a homogeneous layer of angular stone rubble, which was very similar to quarry waste. A large number of sherds of post-medieval pottery was recovered from this material. Another, probably large, rectangular tanning pit, **TP11**, was situated 3.5m to the east, aligned north-south, and running into the south-east edge of the excavation. This was filled by a similar deposit of stone waste. Both pits, **TP10** and **TP11**, appeared to have been backfilled at the same time using a mixture of domestic waste and stone rubble at the end of their use. Neither pit showed any evidence of a lining or other associated structures. The final tanning pit, **TP12**, was located in the northern corner of the excavation. This comprised a truncated rectangular base, 4.25m wide, at least 4.14m long, and 0.6m deep. The fill of the pit contained frequent rounded river pebbles and some patches of lime.

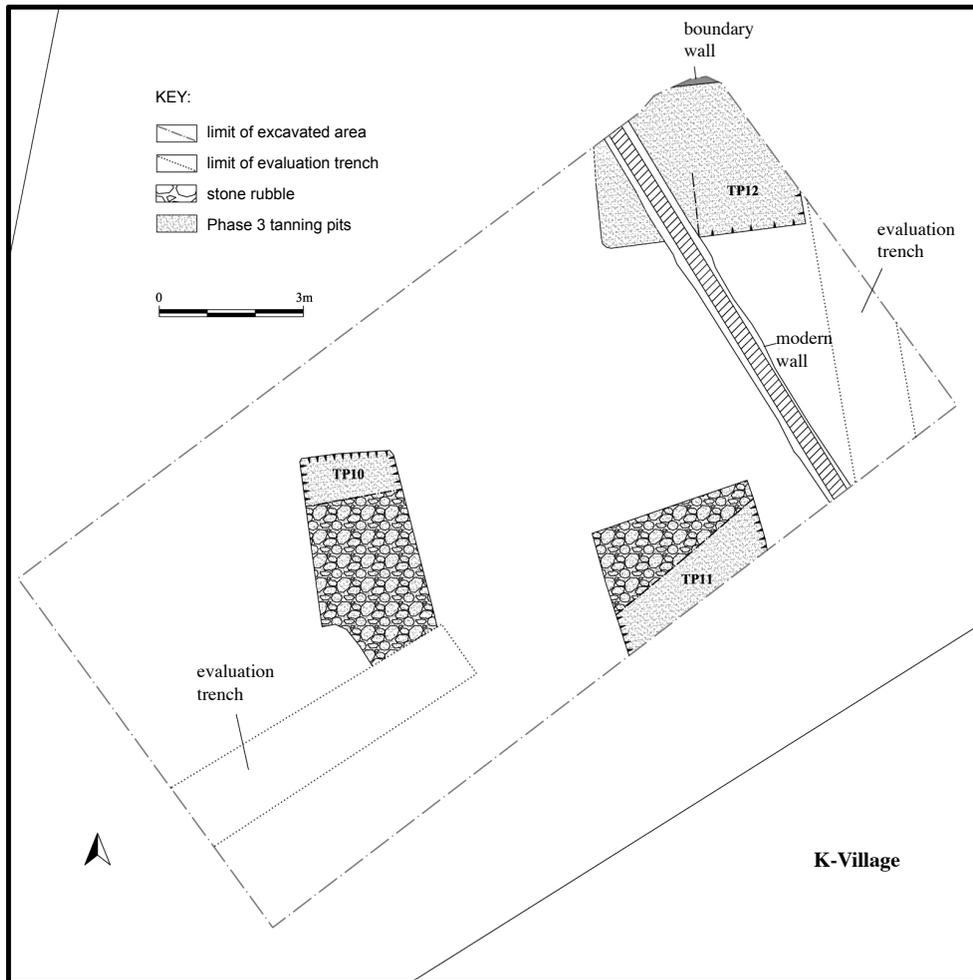


FIG. 5. Plan of the later tanning pits at Riverside Place, K-Village, Kendal.

The larger size of these pits suggests that they were used for tanning cattle hides rather than sheep skins. The presence of lime in the bottom of one of them (TP12) is probably significant, as a lime solution was used to remove fat and hair from the skins prior to tanning. It is possible that this later phase of activity relates to the processing of leather for use in the early shoe factory. However, these pits do not appear to have been in operation for long, and they were deliberately back-filled with stone waste at the end of their use.

A stone boundary wall was revealed in the northern corner of the excavation which was probably constructed in the nineteenth century. The excavated evidence did not support the theory (proposed in the evaluation phase) that this is the original tannery boundary wall shown on Todd's map of 1787.

Animal bone

Animal bone was recovered from a number of contexts, and proved to be quite informative regarding the processes being undertaken on site. Many of the bones had a bleached appearance which may have resulted from the organic chemicals used in the tanning process. Bones from the extremities of both sheep and cattle were present, and also skull fragments, indicating animal waste from the processing of hides. Sheep foot bones and skull fragments were recovered from the fills of two of the earlier tanning pits (TP3 and TP8), and from deposits covering their backfills. It seems that horns, upper parts of the skull, feet and tails were frequently left attached to the hide when received by the tanner, and were later removed. Much of the bone recovered from the excavation was consistent with this process, although unusually for a tanning site, no horn cores were recovered. Notably, only cattle bone was recovered from the layer of made ground, which covered the earlier pits. This could provide further evidence for a change in the species being processed at the site in the early nineteenth century. Other cattle bones were present, and some showed signs of butchery. The majority of the assemblage was therefore interpreted as the result of the processing of hides for tanning with perhaps a minor component of domestic waste.

Pottery

The total pottery assemblage recovered from the evaluation trenches, and the subsequent excavation, was assessed, as it was hoped this would provide dating evidence for the sequence of tanning pits. In total, 252 fragments of pottery were recovered from the site, of which 12 were dated to the medieval period, five provisionally to the medieval/post-medieval transition, three were not closely dateable, with the remaining 232 dated to the post-medieval period.¹⁰

The medieval pottery represented four different ware types dating from the thirteenth to sixteenth century, including Silverdale ware (dated to the late fifteenth to early sixteenth century). These are all typical of the residual medieval pottery present within post-medieval contexts in Kendal. The exception is a very fine orange fabric with a reduced core and splashed lead glaze, not typical of other medieval pottery assemblages in Kendal, and possibly brought in from elsewhere.¹¹

Five fragments of possibly medieval to post-medieval pottery (around fifteenth to seventeenth century), including late medieval fully reduced greenware, a single sherd of yellow/light brown-glazed fine red earthenware, a fragment of hard-fired red earthenware with a mottled brown and yellow glaze, and an over-fired orange fabric with a reduced core, from a flagon neck, dated to the fifteenth to sixteenth century.

Of the post-medieval pottery, just over half of the fragments were finewares, most of which could be dated more closely than their coarseware counterparts, as the former were more subject to changing fashions. The coarsewares were dominated by red earthenware (late seventeenth to early twentieth centuries), with smaller quantities of stoneware and glazed buff-coloured earthenware (eighteenth to twentieth centuries). The vessel types (where they could be identified) appeared to be crocks,

pancheons, jars, jugs, dishes, and possible flower pots. The earliest post-medieval finewares were essentially versions of the main coarsewares present, and comprised blackware (seventeenth century), brown-glazed and black-glazed red earthenware (late seventeenth century to early twentieth centuries), and glazed buff-coloured earthenware (much of which was slip-decorated, and dated to the late seventeenth to early eighteenth centuries). Salt-glazed stoneware, fine brown stoneware, and tin-glazed earthenware, all dated to the eighteenth century, were present as tableware including cups, plates, and saucers. The factory-produced finewares were dated from the mid-eighteenth to twentieth centuries, and comprised creamware, pearlware, porcelain, and white earthenware.

Dating: The excavations produced a relatively small pottery assemblage spanning a brief time period. However, given that a fairly comprehensive stratigraphic matrix could be built up for the area, it was possible to assign broad date ranges to each of the contexts that produced pottery, and therefore to suggest dates for the phases of tanning pit activity evident within the stratigraphic matrix. The phase represented by the backfilling of the early tanning pits, and the filling of the possible rubbish pits, was dated to the eighteenth to early nineteenth century. The building up of made ground and garden soil occurred in the early nineteenth century, closely followed by the backfilling of the large tanning pits at around the same time.

Comparative sites

The only other known tannery to be excavated in Cumbria is Rusland Tannery, near Newby Bridge, where many elements still survive, including the main tannery building, stone-lined tanning pits and lime pits. Rusland Tannery is typical of a small-scale eighteenth-century rural tannery, situated to take advantage of locally produced hides. Pottery from Rusland Tannery consisted almost exclusively of nineteenth-century coarse red earthenwares and some small quantities of better quality tableware, suggesting that the site had been used as a rubbish dump late in the life of the tannery.¹²

The K-Village site is an example of a medium-scale tannery, of which only a selection of the pits have so far been excavated. Comparable sites have been excavated outside Cumbria, including The Green, Northampton, where complexes of both round and rectangular timber-lined tanning pits, dating from the late fifteenth to the seventeenth century, were discovered.¹³ The rectangular pits at The Green were similar in size to the earliest phase of tanning pits at K-Village. Similar pits have also been revealed at the waterfront at Eton, Berks, where a series of medieval wood-lined sub-rectangular tanning pits were excavated, dating from the thirteenth century.¹⁴ The remains of a sixteenth century tannery, comprising rows of clay-lined pits, have also been excavated at the Oracle, Reading. These findings indicate that rectangular tanning pits, similar to those excavated at the K-Village site, had a wide distribution from the medieval period.

Discussion and conclusions

Very few tanneries have been subject to archaeological excavation in Cumbria. This project therefore provided a valuable opportunity to investigate the remains of a medium-scale post-medieval tannery, with direct connections to the establishment and development of a major industry in Kendal: K Shoes. The tannery was situated close to the River Kent ensuring a good water supply for washing and processing hides, and removing effluent. Tanning was a foul-smelling, water-polluting process, and it is no coincidence that the K-Village tannery (as well as those in Kirkland) were deliberately situated downstream and downwind from Kendal's better quality residential areas. In the late eighteenth century a nearby turnpike road would also have provided good transport links to Kendal's rural hinterland, facilitating the delivery both of raw materials and finished products.

The excavated remains comprised an initial phase of nine tanning pits, associated rubbish pits, and linear features dating to the eighteenth or early nineteenth centuries. The archaeological and limited environmental evidence has indicated that the pits in this initial phase were used for the tanning of sheep skins rather than cattle, which were more widely available locally. The resulting leather was probably sold in local markets for use in leather clothing. The opening of the nearby Lancaster Canal (the Kendal extension opened in 1819) would have also facilitated transportation to markets in Lancashire.

Three large pits seemingly for tanning cattle hides were also identified, associated with a later phase of leather production dated to the mid-nineteenth century. This phase can be directly associated with the production of high quality leather for shoes and boots, which would have brought a higher price than that produced from sheep skins. Currying was probably undertaken in Kendal, which had a good reputation for producing high quality shoe leather at that time, used locally for the manufacture of footwear.

Animal bone was recovered from a number of contexts, and was associated with the processes being undertaken on site. The animal bone assemblage supported the interpretation that both sheep and cattle hides were being processed at the site at different times. Bone assemblages from other tannery sites of the period, however, suggest that the division between the heavy (cattle) and light (sheep/goat) leather industries was not rigidly defined.¹⁵

The presence of human bone on site was surprising, and something of an enigma. Three toe bones were recovered from two contexts, the fill of an early tanning pit, and the material covering the series of early pits. It seems implausible that these bones were directly associated with the operation of the tannery. Rather, it is thought that this material was probably re-deposited at the site from an unknown source in the early nineteenth century.

The majority of the pottery was post-medieval, and was dated to the seventeenth to early nineteenth centuries. All the medieval pottery recovered was believed to be residual, and typical for Kendal. The absence of later pottery is consistent with the

commercial use of the site as a shoe factory in the nineteenth and twentieth centuries. An attempt has been made to use the pottery evidence to date the sequence of tanning pits on site. The date ranges produced for the post-medieval finewares from the pit fills has allowed an approximate dating of features, which is consistent with the stratigraphic sequence discussed above.

Ultimately, the traditional tanneries of Kendal, including the K-Village site, were unable to meet the demand for leather, due to length of time taken in the tanning processes. They were replaced in the nineteenth and twentieth centuries by a smaller number of large-scale tannery sites using synthetic chemicals and industrial methods. It is probable that the K-Village tannery was eventually closed as a direct result of expansion of the K Shoes factory at the Nether Field site from the early nineteenth century.

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Acknowledgements

North Pennines Archaeology Ltd. is grateful to the manager and staff at K-Village, Kendal, for facilitating the archaeological excavation, and to Kendal Riverside Ltd. and Scott Wilson Ltd. for commissioning the work. Thanks are also due to Richard Newman, then County Archaeologist, Cumbria County Council, and to Sue Stallibrass, English Heritage Regional Science Advisor for their assistance with the project. North Pennines Archaeology Ltd. is also grateful to Jonathon Somervell for providing historical information about the history of the K Shoes brand and factory, and for providing a copy of John Bintley's 1843 plan of the Nether Field Manufactory. Thanks are also due to Anna Hall of Kendal Museum for allowing access to the Museum's stores, and to Ian Miller of Oxford Archaeology North, for assessing the medieval and transitional pottery.

The excavation was conducted by Martin Railton, Nicola Gaskell, Kevin Mounsey, and Martin Sowerby of North Pennines Archaeology Ltd. The pottery analysis and reporting was conducted by Jo Dawson, Greenlane Archaeology, and the environmental assessment was conducted by Patricia Shaw, North Pennines Archaeology Ltd. Previous archaeological evaluation was undertaken by Oxford Archaeology North.

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