Kendal Flood Risk Management Scheme

PEOPLE & PLACES
PAST & PRESENT

Volumn I

Unearthing Kendal's past whilst protecting Kendal's future

Background

Work to construct a flood scheme to better protect 1,920 homes, 2,250 businesses and make them more resilient in the future has uncovered the industrial and economic foundations of a Cumbrian town.

Finds uncovered during the construction of Kendal flood sheme are of considerable archaeological significance and their recovery and subsequent analysis can tell us a great deal about the past lives of the inhabitants of Kendal.

The Government is funding multi-millions of pounds of investment in the Kendal Flood Risk Management Scheme (FRMS), to protect property in Kendal and across the river Kent catchment.
The flood scheme excavations in the area of Parish Church and Waterside uncovered more about the industrial and economic history which formed the foundation of trade and business in Kendal.

Present uncovering the past

Whenever modern developments are planned, several environmental factors have to be considered, including the protection of watercourses, trees, wildlife, plants, and archaeology, to make sure any items of archaeological importance are protected from accidental damage, recovered, and recorded.

The Environment Agency's planning system states that cultural heritage and archaeology is important to a communities' sense of place, wellbeing, and health.

Archaeologists are often brought in when excavations happen in areas where archaeological remains are likely and are also sometimes brought in ahead of any construction works occurring, to record features as they are revealed.

Ahead of construction works, the Environment Agency's Archaeologists can find out which places are more likely to have archaeological remains than others, based on historic maps, artefacts and written sources describing where things have happened in the past, and when. This information is brought together in databases, which are updated by every county in the country, known as the Historic Environment Record, and this can be accessed by anyone at any time online.

Human remains key to the past

The finding of the human remains was not entirely unexpected due to the close proximity to the boundary of the church yard but were found hidden underneath an existing boundary wall. The team of archaeologists undertook detailed recoding, careful removal and extensive analysis and examination.

A total of 15 articulated skeletons (skeletal remains attached at joints so that the relative position of the bones which existed in life is preserved) were lifted off-site. And post excavation work revealed an additional 13 individuals recovered with these remains.

A very large quantity of comingled and mixed human remains (where remains of more than one person are mixed) were also recovered. These remains made up an additional 38 individuals. In total, there were 66 individuals recovered from the area identified as Parish Church in the Kendal Flood Risk Management plan.

The human remains were discovered clustered very tightly together around the periphery of the church; the boundary wall had significantly damaged the individuals and many of the bones were squashed. In line with Christian burial practice, they were all aligned east-west. None of the burials had any grave goods or personal items buried with them. This is fairly standard for Christian burial practices in the medieval period.

When the excavation started, it was originally thought we were dealing with later post-medieval to Victorian archaeological remains. Five samples of human bone were submitted for radiocarbon analysis at a laboratory in Glasgow and the dates came back very different.

The remains are in fact medieval and much earlier than originally thought, and also predating the medieval pottery recovered from the Parish Church site.

Illustration of gravediggers from the medieval period.

There was no indication that any religious building pre-dated the Parish Church, however the dating of these skeletons suggests there was an older religious building here before the Parish Church. There appear to be two phases of burial activity; phase one is 11th to 13th century and phase two appears to be late 12th to 13th century.

This is highly significant for this cemetery as it provides earlier evidence of burial activity occurring at the site of this church. During the medieval period, there would have been a fairly high mortality rate and graveyards and cemeteries would have filled up very quickly. This meant that gravediggers would have found earlier remains when excavating a fresh grave. This explains the sheer quantity of human remains found in the area around the Parish Church.

The profiles of the skeletons include five perinate-neonate individuals (liveborn baby from 20 weeks of gestation to 7 completed days following the time of birth), four neonates (babies in the first four weeks of life), two toddlers and five children aged between 4.5-13 years and 11 adults.

Analysis of the other remains revealed a further 24 adults and 14 non-adults - a total number of 35 adults and 31 child remains. For the adults, three of them were classed as young which is 19-30 years, four of them were middle-aged adults which was classed as 30-45 years and two of them were older adults, which is assigned as 45+ years. There were at least six perinate-neonate individuals and seven children aged under 11 years of age recorded.

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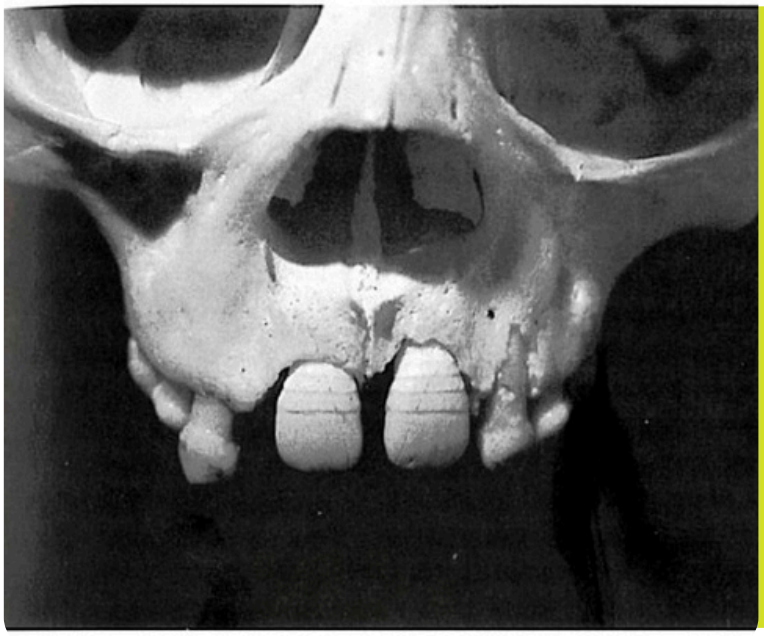
Disease, trauma, and dental conditions.

Overall, the dental health of the Kendal human remains discovered at the Parish Church were fairly poor. The skeletal remains were riddled with pathological conditions, including calculus (plaque or tartar), gum disease, ante-mortem tooth loss and abscesses. There was also a recording of a condition called linear enamel hypoplasia.

This condition is most prevalent in children and is caused by growth arrest in the immature skeleton, which is in turn caused by prolonged physiological stress such as a weaning deficiency and malnutrition. A chronic illness such as TB, pneumonia, whooping cough and diphtheria can also cause these lines to appear. Generally speaking, each line represents one episode of prolonged physiological stress.



Ante-mortem tooth loss - the recording of a condition called linear enamel hypoplasia

Post-cranial diseases and injuries

At least 10 individuals had evidence of age-related degenerative changes such as osteoarthritis with several individuals being affected worse than others. Evidence of intervertebral disc disease on one skeleton was observed, which affected the neck vertebrae.

You can see that on the vertebrae on the top slide with that sort of Swiss cheese effect. This person would have been in considerable pain trying to move their neck.

Schmorl's Nodes (a type of herniated disk that can affect the spine) were also recorded; these are small herniations which form in the vertebral disc via compression when the spine is subjected to prolonged and repetitive physical activity - e.g., shifting heavy loads and repeatedly bending.

A possible tapeworm casing was recovered from the abdominal cavity of pregnant female skeleton - which probably meant she ate infected beef or pork. Soft-tissue injuries were observed on the lower arm of older male adult skeleton and on the ankle of the skeleton - these were possibly caused by sprains and or tearing ligaments.

A healed fracture was observed on the arm of female skeleton which was probably the result of a fall.

Diseases such as osteoarthritis and IDD (disorders that are usually present at birth and that negatively affect the line of the individual's physical, intellectual, and/or emotional development) were also recorded as well as certain dental pathologies such as gum disease and tartar. Interestingly, there was a distinct lack of caries (tooth decay) in this cemetery population, which probably means that they didn't have a lot of sugar in their diet.

An interesting case study is of a female adult skeleton. Severe osteoarthritis of her hip was observed; the ball and socket joint were completely riddled with lesions and the top part of the leg was completely bent as you can see from the slide. There is a possibility that this was also cancerous. She would have been in some considerable pain and absolutely wouldn't have been able to walk without a crutch or some form of walking aid.

Laypeople such as this female individual skeleton probably would have turned to the church for alms, pain relief and medicine – the church almost certainly would have had a physic or botanical garden where they would have grown medicinal herbs and plants for use as poultices or to be ingested. Overall, these pathologies indicate that these individuals were not wealthy and were likely to have been poor laypeople of lower social status – these skeletal conditions indicate lives subjected to hard, heavy work.

Severe osteoarthritis of hip found in one of the skeletons, possibly cancer.
The person would have needed crutches to walk and it would have been very painful
Laypeople would have turned to church for alms and pain relief.

One skeleton was of a young mother, probably aged between 19-20 years of age and the skeleton of an unborn baby was recovered from her abdominal cavity. Childbirth, and or complications arising from it, is highly likely to have been the cause of death, although other causes can't be ruled out.

In AD 1236, the Councils of Canterbury and Treves decreed that it was unlawful to bury a woman in consecrated ground until the foetus had been cut from the body. This skeleton's presence in the Kendal cemetery is interesting and also unusual because of this; deceased pregnant females were not normally permitted in burial grounds as the baby was unbaptised, which meant that their soul was unclean.

On the other hand, archaeological evidence from sites such as Hull Augustinian Friary and Hartlepool Franciscan Friary contradicts this - pregnant females have been found at these sites and we now have one at Kendal. She died sometime between 1037 and 1210 AD which interestingly predates the decrees which suggests that rules weren't always adhered to.

With the case of the *Kendal Skeletons* (mother and unborn child) it appears that pastoral and spiritual conscience may have won over in the end - it's certainly a greater comfort to think that, in this instance, a more sympathetic human condition prevailed and that they were allowed to be buried in this cemetery.

There were a high quantity child remains found in the area around the Parish Church, many perinates (which are unborn in-utero foetuses) and neonates (new-born babies) which isn't unusual for the medieval period and even later into the post-medieval period.

They didn't have an NHS back then or antibiotics or proper medical facilities for that matter and there was no shortage of illnesses available to kill a person. Unbaptised infants were not usually allowed to be buried in graveyards; the Roman Catholic Church, particularly with the establishment of the Purgatory doctrine from AD 1215, forbade the burial of unbaptised individuals and social outcasts on consecrated ground.

Social outcasts could be drownings, suicides, or excommunicated individuals. An unbaptised individual was deemed as unclean and couldn't be accepted into Heaven; the gift of God's love and eternal salvation were ultimately denied.

Skeletons of a young mother and unborn baby.

Importance of baptism

Baptism was that important that even parents could perform a baptism in an emergency. As a consequence of this, clandestine and illegal burials were commonplace in the medieval period.

Grieving parents would often travel to the graveyards at night by lantern-light to illegally bury their deceased child at the edges of the graveyard. It was also quite often the case that new-borns were buried in freshly dug graves, hence why you sometimes get infant remains mixed in with other burials which may have happened at the site in Kendal. People were so desperate for their children to be buried in consecrated ground that quite often, if they didn't bury their child illegally under the cover of darkness, they ended up bribing the church sexton with coin and beer to look the other way.

Another important aspect observed in this cemetery population was green staining on several bones, which has originated from copper alloy pins, which means that these individuals were shrouded in a simple winding sheet or blanket.That they were prepared for burial in this manner indicates that the deceased person was loved and cared for, despite potentially being unbaptised and or a social outcast.

Industrial Heritage

As well as the discovery of human burials, the excavations revealed features in the form of a garden boundary wall and an external cobbled surface, found in association with artefacts dating from the 1300s to 1800s to the south of the Parish Hall, and wall foundations and steps to the north.

The industrial heritage of Kendal has also been uncovered. In the 1400s Kendal developed as a key textile centre, based on the sheep grazing the surrounding landscape and aided by the river, which was important for industry as a means of power and transport, as well as a raw material and domestic purposes.

In the area to the west of the Waterside Flats, walls, cobbled surfaces, and wells represented the remains of small-scale cottage industry. Arectangular tank was found close to one well, with a number of glass bottles within, each engraved 'Whitakers and Co Colourworks Kendal.'

Whitakers & Co Colourworks dye bottles found during the Kendal excavation.

Although Whitaker's itself, who made the dye, was located at Old Shambles Yard, it is likely small-scale dying occurred elsewhere, using their dyes, and a riverside location would have been perfect for a constant water support.

Beneath some of these features, and therefore earlier in tie, small square pits were encountered, several timber lined.

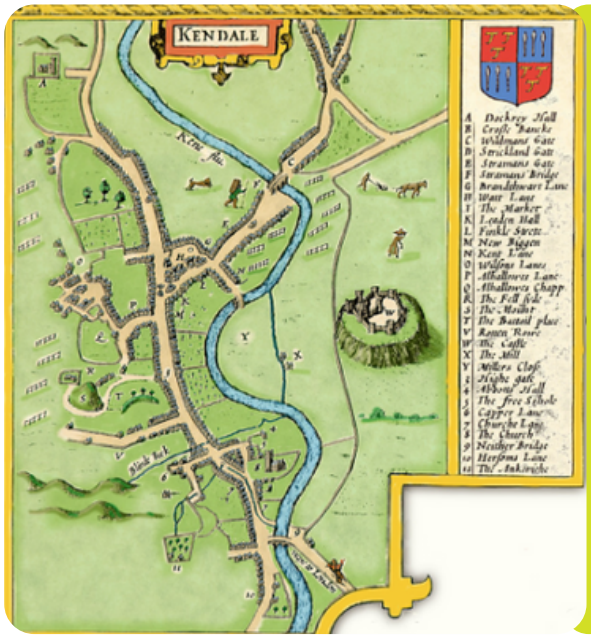
A bone-handle of a knife was found in one of them, and a high number of animal bones nearby, including feet and horns, not typically found in association with meat-consumption. As Tanyards are shown in these areas on historic maps of the late 1700s, it seems likely these were used to soak animal hides to produce leather.

The well found during the excavation near the Parish Church.

Evidence for early water management was also found, some beneath the Tanyard features. These were culverts, covered tunnels for water, discovered across the area to the south of the Parish Centre leading to the river. Water management would have been important for Kendal's burgeoning industries including the cloth trade

The textile industry and its demand for workers fuelled Kendal's rapid from the late 1600s. During the 1700s and 1800s, yards which linked street frontages to the riverside gradually became more cramped and over-populated leading to ill health and disease. Many were cleared in the 1900s. The Kendal Scheme archaeologists have found the only surviving remains of where the poorest in Kendal had lived and worked for several generations.

John Speed created the first map of Kendal in 1611-1612, which links the importance of the river Kent with Kendal's emerging wool, textile, dying and tanning trade. These industries are also featured in the town's coat of arms, which has the Latin phrase 'pannus mihi panis' which reams 'wool is my bread'.



John Speed map of Kendal

The Kendal Woman

Because they sat beneath the churchyard wall for centuries, most of the skeletons had been crushed and archaeologists are now working to piece together their stories. However, one woman's skull survived in a good enough condition for scientists at Liverpool John Moores University's Forensic Arts Unit to rebuild it and, using computer technology, reconstruct a first draft of what she looked like. While we will never know her real name, her teeth and bones can tell at least part of her story. Today however, we call her 'The Kendal Woman'.

The Kendal Woman was roughly 50 years of age. Ancient DNA extracted from her bones, and isotope analysis of her teeth suggest she had been born and probably spent her whole life living inland. It's likely indeed that she was born in or around Kirkby in Kendal (Kendal's name in the 1200s) and spent most, if not all, of her life in and around the town.

The Kendal Woman

As soon as she was discovered, it was very evident she was not buried in a coffin, likely being laid to rest wrapped in a linen shroud. Her burial, on the outer edge of the churchyard, coupled with the lack of coffin suggests she occupied a lower position in the fledgling town's social order. Analysis of her teeth and bones support this theory, pointing to a relatively poor diet, which comprised of grains supplemented by vegetables, fruits and (when available) meat, fish, and dairy products.

Bread would have been an important part of her diet, and she probably ate dark-coloured stone ground loaves.Her teeth were in a poor condition.This was unsurprising as there was no access to any form of dentistry, but it also stemmed from eating the stone ground bread of the period which was known to contain quantities of grit and so caused considerable dental wear.

Her bones suggest she led a hard life, and our reconstruction shows the ruddy complexion of one who has worked outdoors extensively, probably in the fields which would have surrounded the town. A break in her left arm points to a fall from height; this likely occurred in her youth as the fracture healed cleanly and it is not thought to have caused her issues later in life.

What did cause her pain was chronic osteoarthritis. Her life of manual labour will have put considerable strain on her joints and this, coupled with her age and sex (women are more likely to develop osteoarthritis than men) resulted in the onset of this condition.

In her later life she would likely have relied on care, this may have been provided by close family, the broader community and possibly the church. Medieval churches often provided charity to parishioners and did accept and promote the use of natural herb and plant-based remedies.

The Kendal Woman would have worn simple, loose-fitting clothing coloured with readily available natural plant dyes to produce muted browns, greys, yellows, and dark greens. Medieval women of all social standing tended to cover their hair for a variety of reasons (modesty, social status, fashion, and practicality). With The Kendal Woman, practicality and durability is likely to have been the principal reason - she would have worn linen or woollen clothing and her head covering by a simple cap to protect her hair from the elements, keep it hair cleaner and make it easier to manage while working outdoors.

We can't say how this woman died but her age at death suggests a woman cared for, if not by family, then by church and community. The Christian Church no doubt played a significant role in her life and her burial within the churchyard, even on its fringes, would have offered her the opportunity of respite in the afterlife.'

In summary

The Kendal human remains found in the area around the Parish Church are of considerable archaeological significance and their recovery and subsequent analysis can tell us a great deal about the past lives of the inhabitants of Kendal. There are at least 66 individuals from the area who were probably poor laypeople.

The injuries and diseases noted are indicative that they led hard lives, and lives of toil. The inclusion of a young pregnant mother and her unborn baby indicates that she was allowed to be buried in the church graveyard by sympathetic clergymen, despite the rules of religious decrees. The high number of perinates and neonates probably indicates illegal burial practices and is a stark reminder that grieving parents went to considerable lengths to ensure their child went to Heaven.

The radiocarbon dating of these human remains as medieval is certainly significant as it reveals earlier burial practice being undertaken at the church.

Ancient DNA results are forthcoming. This will be part of a significant national mapping genome project of which the human remains will form an important part of this research – The lead scientist of the project was incredibly excited about receiving samples from these human remains, as data from the northwest, especially Cumbria, is fairly sparse.

Significant archaeological features have been exposed and recorded as a result of the Kendal Flood Risk Management Scheme

The archaeological results have led to a better understanding of:

- The origins of the church;

-Diet and death in medieval Kendal

-The fast-paced industrial development of the riverside

-The type of cottage industries utilising the River Kent.

The walls uncovered during the dig near Kendal Parish Church.

Kendal Flood Risk Management Scheme

Kendal Flood Risk Management Scheme will better protect businesses and homes and adapt further to the changing climate – protecting lives and livelihoods from flooding and enhancing the ability to recover quickly.

The Kendal Scheme received European Union funding and is delivered by the Environment Agency, designed by Jacobs and WSP.

The contractor undertaking the on-site works in the Parish Church area and on other part of the scheme are VolkerStevin Ltd and the archaeological investigations are undertaken by staff from Wardell Armstrong.